

**ARE FISCAL RULES A RECIPE FOR GROWTH
IN DEVELOPING ECONOMIES?**

by

Genta Menkulasi

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Economics

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DEDICATION

To my father, Fatos Menkulasi

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ABSTRACT

This paper empirically investigates the impact of national fiscal rules in the economic growth of developing countries, and supranational fiscal rules on the growth of developing countries which are currency union members. Using the recent IMF 2013 fiscal rule database, a standard neo-classical growth model with short-run dynamics is estimated for 17 developing countries and three currency unions: the Eastern Caribbean Currency Union, the Central African Economic and Monetary Community and the West African Economic and Monetary Union. System GMM, Difference GMM and Dynamic Fixed Effects estimates suggest that the impact of national fiscal rules on growth is positive, but they are inconclusive when it comes to statistical significance. However, the evidence is slanted toward an insignificant effect implying so that fiscal rules do not matter. Moreover, when national fiscal rules are present with formal enforcement procedures or any mechanisms outside the government that monitor the compliance of rules, the differential effect of fiscal rules with enforcement has a negative effect on growth, decreasing the magnitude of the total positive effect of fiscal rules with enforcement. This is likely due to the governments' behavior in developing countries which when faced with a binding budget constraint; they tend to reduce public investment rather than current expenditures. However, even when rules have exclusion clauses regarding public investment or any other priority items, their impact on growth is negative as these types of rules create incentives for “creative accounting” techniques. Nevertheless, whether the effect of fiscal rules with

enforcement or fiscal rules with exclusions is significant cannot be determined. As a result, developing countries should not be following blindly advanced economies when regulating their fiscal policies. On the other hand, there is evidence that the presence of supranational fiscal rules in currency union members has a positive and significant impact on the economic growth of these countries.

Chapter 1

INTRODUCTION

Governments tend to not follow fiscal discipline due to politicians' short-sightedness and their tendency to push out the burden of indiscipline to future governments. Consequently, fiscal deficits and public debt have been increasing significantly in most of the developed countries, as well as in some developing ones. The recent crises have exacerbated the situation, thus while countries exit from the crisis, the sustainability of public finances has become a serious concern. The main challenge ahead is to develop fiscal policies that will put public finances back on track. Highly volatile fiscal policy can be detrimental to growth (Ramey & Ramey, 1995). As a result, in order to solve such problems and make fiscal policy more transparent and predictable, several fiscal arrangements have been introduced globally such as medium-term budgetary frameworks, expenditure ceilings, tax reforms etc.

Another way to improve fiscal performance is by introducing fiscal rules. A fiscal rule is a numerical target on budgetary aggregates and such target can be revised very rarely (Kopits & Symansky, 1998). The main objective of these rules is to reduce deficit bias which is induced by government short-sightedness and the phenomenon called the "common pool problem" (Debrun et al., 2008). Alessina and Tabellini (1990) show that government short-sightedness on excessive debt can be due to the anticipation of the present government to be replaced in the future; therefore the burden of the debt will be on the future government. The "common-pool problem"

happens when particular interest groups influence fiscal policy and pressure for public spending for their own interest. In such cases, fiscal deficits and public debt increase substantially over time.

Fiscal rules put constraints on irresponsible politicians and help keep public finances under control. However, the effect of these rules on economic growth for countries that implement them is irresolute¹. Nevertheless, most of the studies fail to test this hypothesis empirically using appropriate econometric methodology. A vast majority of the available papers are policy-oriented ones and simply evaluate these rules based on descriptive statistics. In addition, most studies have looked at the effect of European Union supranational fiscal rules on budgetary outcomes and economic growth, while the impact of national fiscal rules in other countries have not been explored much, even though 45 countries now have these rules in effect (IMF Fiscal Rule Dataset, 2013). Additionally, to my knowledge, there have been no empirical studies that examine the effect of such rules for developing countries. Starting from the early 2000s, the IMF reports that more than 20 developing countries have been implementing these rules.

This paper contributes to the existing fiscal rules literature by carrying out an empirical investigation on the effect of national fiscal rules on economic growth of

¹ Some studies find that fiscal rules positively impact economic growth (Castro, 2011), other studies argue that fiscal rules have no effect on growth. (Arestis et al.(2001), Andrés, J., & Doménech, R. (2006), Wyplosz (2006), Merrifield, J. D., & Poulson, B. W. (2016))

developing countries, and supranational fiscal rules on growth of currency unions that consist of developing countries only. I use a standard neo-classical growth model with short-run dynamics as in Castro (2011) and I estimate it using Generalized Method of Moments and Dynamic Fixed Effects estimators. This paper will proceed as follows. Section II serves as a background on fiscal rules. It describes national and supranational fiscal rules, their history of implementation and why they were implemented. Section III outlines the literature on the effect of fiscal rules. Section IV discusses the econometric methodology and empirical techniques used in estimations. Section V presents information on the datasets used. Results are presented in section VI, section VII concludes and section VIII introduces some recommendations that policy makers should consider.

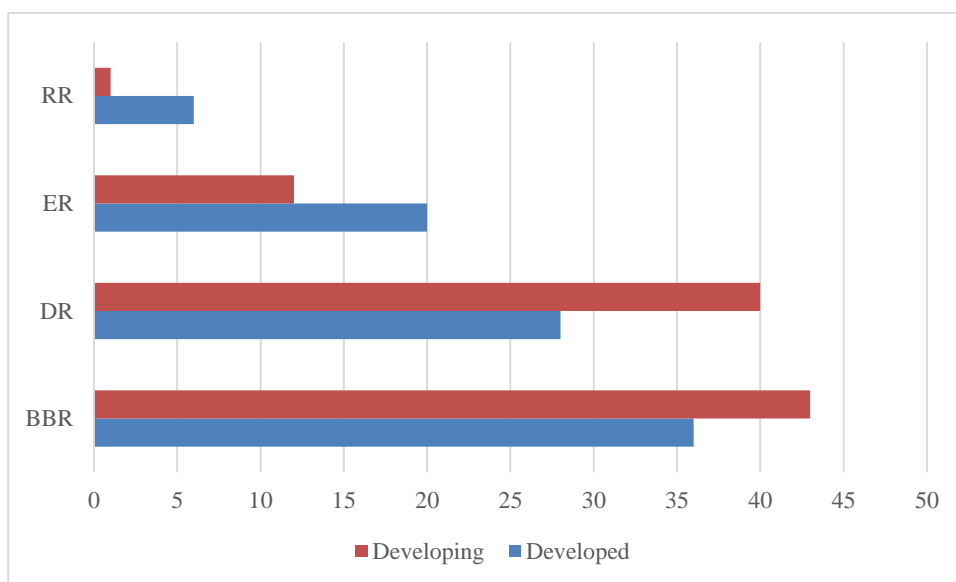
Chapter 2

BACKGROUND ON FISCAL RULES

What is considered a fiscal rule varies across studies and sometimes it can be unclear. As I use data from the IMF 2013 Fiscal Rule Dataset, in this paper the definition of a fiscal rule corresponds to the definition used by Schaechter et al. (2012). They define fiscal rules in the following way: “fiscal rules are those that set numerical targets on aggregates such as budget deficits, debt, revenue or expenditure, and are applied at least at the central government. Additionally, fiscal rules are considered just those for which the targets cannot be revised frequently and they should be binding constraints for at least three years.”

Based on the aggregates on which the numerical target is set, fiscal rules can be classified into four main types of rules: revenue rules, budget balance rules, expenditure rules and debt rules (IMF Fiscal Rule Dataset, 2013). The most common rules for both developing and developed countries are the budget balance and the debt rule.

Figure 2.1 Distribution of types of rules by country's economic level



Note: Includes countries with both national and supranational fiscal rules

Sources: IMF Fiscal Rules Database

There are different ways to define budget balance rules depending on where the limit is set on. For instance, a budget balance rule can be in the form of a limit on the overall balance (budget deficit), a limit on the cyclically adjusted or structural balance, and on the “over the cycle balance” (Schaechter et al.,2012). Rules on the overall balance do not account for economic shocks, while structural or cyclically adjusted balance rules control for the economic cyclical fluctuations that can have an effect on the budget. “Over the cycle” budget balance rules set a target on the nominal budget balance that must be maintained on average over the cycle. Usually during the time of exogenous shocks, the immediate response from government is a procyclical fiscal policy which evidence suggests that it is stronger in the good times rather the bad times, hence consistently deteriorating public finances. Moreover, procyclical

fiscal policies also have high social costs as they are usually followed by cuts in social programs in bad economic times (Ter-Minassian, 2010). Indeed, Kaminsky et al. (2004) find that fiscal policy is pro-cyclical in developing countries.

In order to avoid procyclicality, researchers recommend using a structural budget balance which allows for using automatic stabilizers in case of exogenous shocks in the economy (Ter-Minassian, 2010). Based on the IMF 2013 dataset, only 16 countries with national fiscal rules have cyclically adjusted budget balance rules and out of these 16 countries only four of them are developing economies (Colombia, Mongolia, Panama and Serbia). Even though cyclically adjusted balance rule is still not that common among countries, it has started to gain popularity and open a discussion (Debrun et al. 2008). Some researchers argue that this is a better measure than overall budget balance as it encourages long term sustainability (Blanchard, 1990) and helps monitoring financial market pressures (Muller & Price, 1984). However, a cyclical adjusted budget deficit has its downsides due to its complexity which allows for more twisting.

Studies show that the primary role of a budget balance rule is to send credible signals for a sustainable public debt. Fiscal rules promote transparency (Manganelli & Wolswijk, 2007), hence convey credibility to the financial markets which then reduces yield spreads and eases the costs of government financing (Iara & Wolf, 2010). Alt and Lassen (2006) find that countries with greater fiscal transparency have lower public debt and deficits. Even though their study is on 19 advanced economies, Dabla-Norris et al. (2010) derive a similar conclusion for transparent

developing countries. However, in order to be credible a budget balance rule needs to be designed in a way that can effectively anchor expectations (Ter-Minassian, 2010).

A debt rule sets a numerical target on public debt as a percentage of GDP. This rule is directly associated with debt sustainability. The relationship between public debt and economic growth has been widely discussed in the literature, but the debate is still inconclusive. While there is agreement that a moderate level of public debt should be maintained in order not to hinder growth, the literature has not settled yet on a specific threshold that would promote macroeconomic stability. Even though the discussion is still open, there are more than 60 countries that have a debt rule present in 2013 (IMF Fiscal Rule 2013 Dataset). Among the first countries that started using debt rules were EU countries. Stability and Growth Pact sets a debt-to-GDP ratio rule of no more than 60% for all EU countries. The presence of a debt rule aims to attain debt sustainability; however its presence can also make the fiscal policy procyclical when a country experiences a shock such as an economic crisis.

An expenditure rule sets a target on the amount of total, current or primary spending of the government. This rule is most of the time designed to help achieving the goals of Budget Balance Rule or the Debt Rule and it is usually introduced years later after the Budget Balance Rule or Debt Rule is introduced (Cordes et al., 2015). It is a rule that promotes countercyclical fiscal policy given that it puts a constraint on spending even in good economic times when governments are more likely to overspend. Holm-Hadulla et al. (2012) find that strictly enforced expenditure rules in EU member countries reduce the procyclical bias. Expenditure rules tend to be more

transparent given that they are easier to communicate to the public and easy to monitor as well.

A revenue rule sets a minimum or maximum threshold on government revenues with the goal of increasing revenues and preventing an excessive tax burden (Schaechter et al., 2012). Given that revenues are cyclical, complying with such a rule is difficult. Indeed, there are only 7 countries who have had or have this rule and 6 of them are advanced economies.

Fiscal rules can be in the form of national rules or supranational ones. Supranational rules are rules set by a currency union for all its members. They were created in order to restrict fiscal policies conducted by individual member countries that were inconsistent or harmful to the monetary union. For instance, the West African Economic and Monetary Union has a public debt-to-GDP ratio that cannot exceed 70 %. Otherwise, national fiscal rules are rules implemented by the country itself. The main factors that pushed the implementation of national rules were excessive debt and economic crises in the early 1990s, as well as the recent financial crisis.

According to the available data, Japan and Germany are the first countries to have implemented fiscal rules covering at a minimum the central government level in 1947 and 1969 respectively. In 1990, in addition to Japan and Germany, three other countries had implemented fiscal rules: Indonesia, Luxembourg and the United States. Due to the financial crisis in late 1990 in Latin America, several of Latin American countries implemented fiscal rules as well. In 1992 the European Union (EU) decided to constrain its members from following fiscal policies that could harm the economic

and monetary union by introducing the Maastricht Treaty which was designed to ease the path of the introduction of EURO as a common currency in EU. This treaty set several convergence criteria that EU countries had to comply with in order to enter the euro zone. One of the criteria was keeping the annual budget deficit within 3 percent and the debt to GDP ratio within 60 percent.

However, Maastricht Treaty did not provide clear documentation of how should countries with excessive debt or deficit be handled. As a result, in 1997 EU countries agreed to introduce the Stability and Growth Pact (Kumar et al., 2009), which is an extension of the Maastricht Treaty. The purpose of SGP was to have a clear Excessive Debt and Deficit procedure that EU countries should follow under such circumstances. Additionally, it provided a more detailed guideline on the enforcement and monitoring of the compliance with fiscal rules. Although the intention of SGP was to avoid vague procedures and not create room for confusion and misinterpretation of the rules, over the years this pact has been constantly in need to be amended and updated. For instance, in 2005 SGP was amended with documentation that covered how to consider economic situation and country characteristics when applying fiscal rules. When determining the compliance of budget balance rule, starting from 2005 EU commission had to evaluate the structural budget balance of the specific EU country.

After the turmoil brought by the financial crisis in 2008, SGP was amended again in 2011 with a new package of legislation known by the name of Six Pack (EU

Commission, 2016)². Six Pack introduced more details in the guidelines used on enforcement mechanisms given that most of the EU countries failed to follow the rules during the financial crisis. Moreover, this legislation added a new expenditure benchmark whose purpose is to ensure that governments should use the good times to establish healthy public finances that can be helpful in bad times. In 2015 EU had to make further changes to SGP such as updating the structural reform clause, the investment clause and the cyclical conditions.

Even though, European Union commission has tried consistently to update the SGP rules and provide detailed guidelines on how these rules will be enforced, countries have consistently violated them over the years. For instance, in 2003 France and Germany exceeded the 3 percent budget deficit. In 2013 France broke the rule again. Malta did the same thing for that year, while Finland breached it in 2014. Based on the recent forecasts by EU Commission, Belgium, Spain, Italy, Slovenia, Austria, Portugal and Lithuania are at risk of non-complying with the rules³. Recently, European Union countries have augmented their supranational rules with national fiscal rules (Kumar et al., 2009). Due to the increasing budget deficits and financial crisis, during the last two decades many countries have incorporated such rules. The IMF reports that by the end of March 2012, there were 76 countries that have implemented national and/or supranational fiscal rules. (Schaechter et al., 2012)

² http://ec.europa.eu/economy_finance/publications/eeip/pdf/ip021_en.pdf

³ [http://www.europarl.europa.eu/RegData/etudes/note/join/2014/497746/IPOL-ECON_NT\(2014\)497746_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/note/join/2014/497746/IPOL-ECON_NT(2014)497746_EN.pdf)

Chapter 3

LITERATURE REVIEW

3.1 Fiscal Rules Literature

The literature on the impact of fiscal rules on economic growth is controversial and limited. Research reports significantly different results depending on the countries and time periods analyzed. Some studies find a positive effect of fiscal rules on economic growth (Castro, 2011), while others conclude that fiscal rules might undermine growth, because they limit economic responses when a country faces asymmetric shocks.⁴ One of fiscal rules' goals is to contribute to economic stabilization. However, emerging markets experience large output volatility which can make stabilization policies non plausible, hence fiscal rules are unlikely to bring discipline to the countries that have them in place. Governments in these countries tend to bet on good output realizations that will help when rules are not followed (Manasse, 2005).

However, there are three potential channels through which fiscal rules can impact growth:

1) Fiscal rules can reduce fiscal volatility which is known to be detrimental to growth. (Ramey & Ramey, 1995)

⁴ Warin (2005), Andrés, J., & Doménech, R. (2006), Merrifield, J. D., & Poulson, B. W. (2016)

2) Fiscal rules can improve fiscal behavior or fiscal policy through improving budgetary outcomes.

3) Fiscal rules might negatively impact public investment. When facing a binding budget constrain, governments tend to decrease investment spending rather than current spending as the political cost of cutting investment is lower (Perée & Vålilä, 2005).

The first channel implies that discretionary fiscal policy can induce economic instability. Indeed, Fatas and Mihov (2003) find that discretionary fiscal policy characterized by high volatility creates macroeconomic instability. They conclude that the discretionary fiscal policy has a negative effect on output volatility and the subsequent impact of that on economic growth is substantial. Perry (2004) argues that the macroeconomic volatility of Latin American countries has been aggravated from procyclical fiscal policies and they should follow a fiscal rule that incorporates counter-cyclical policies such as a goal of structural balance.

Concerning the second channel, several studies have explored how rules have affected the fiscal policy conducted by governments, but an agreement has not yet been reached. Gali and Perotti (2003) and Annett (2006) conclude that after the implementation of SGP, fiscal policy has become more counter-cyclical, while Fatas and Mihov (2003) find the opposite. Caceres, Corbacho and Medina (2010) test whether fiscal performance and its volatility improved after the implementation of Fiscal Responsibility Laws (FRL) using a sample consisting of developed and developing countries, but they do not find any significant results. On the other hand,

Debrun et al. (2008) find that national fiscal rules have a positive effect on fiscal performance in EU countries.

Regarding the third channel, the literature remains inconclusive. Gali and Perotti (2003) conclude that the downtrend in public investment in European Monetary Union (EMU) countries started before Maastricht Treaty was signed; hence the decline in public investment cannot be attributed to EMU fiscal rules. Similarly, Perée & Vålilä (2005) find that fiscal rules embodied in EMU countries have not had any statistically significant impact on public investment. On the other hand, Turrini (2004) argues that the impact of EMU fiscal rules is not clear and depends on a country's characteristics. He finds a negative indirect effect of EMU fiscal rules in countries with high deficits and debt. However, improvements in the budget balances as a result of EMU fiscal rules might have increased public investment for some EU countries. All these studies do not continue to explore the indirect effect of such a decrease in public investment on economic growth.

Despite these papers, only a few empirical studies have been conducted to study the direct effect of fiscal rules on economic growth. Most of the studies are policy-oriented papers, meaning they elaborate on how fiscal rules should be improved in order to promote growth or they argue that such rules might be detrimental to growth based on descriptive statistics or simple correlations, without proving causation. Even the studies that attempt to prove some causation fail to follow the growth literature. For example, Soukiazis and Castro (2005) in their growth equations fail to include physical and human capital, which are important determinants of growth (Mankiw et al., 1992).

To my knowledge, the only study that takes growth literature seriously and takes into account the heterogeneity of countries and short run fluctuations of output is Castro (2011). As a result, in this paper I follow his empirical specification and his methodology. He uses pooled cross-section time series data for 15 European Union countries covering the period 1970-2005. While he includes a dummy for the presence of the supranational fiscal rule and builds a variable that captures the margin of maneuver of fiscal policy, my variable of interest is a dummy that represents the existence of a national fiscal rule and I interact that with a dummy that represents the enforcement of such rule in a specific country. Additionally, my sample consists of only developing countries. Using fixed effects and system GMM to compare the results, he concludes that Maastricht and Stability and Growth Pact fiscal rules were not detrimental to growth.

As is evident by now, the empirical literature on the effect of fiscal rules is irresolute and limited only to European Union countries that have incorporated fiscal rules imposed by the EU on its members. These are supranational rules. Since the early 2000s, many developing countries have implemented national fiscal rules, but still there are no studies that look at the effect of such rules in these countries. To my knowledge, the only studies that look at the fiscal rules in developing countries are descriptive and do not employ econometric methodology.

Moreover, it is not only EU countries that have implemented supranational fiscal rules. There are many developing countries that are part of a currency union and have implemented supranational fiscal rules as well. For instance, member countries of Eastern Caribbean Currency Union have implemented supranational rules (budget

balance and debt rules) since 1998, while West African Economic and Monetary Union members have implemented such rules since 2000, and Central African Economic and Monetary Community since 2002. However, no studies have been conducted yet to study the effect of rules in these countries.

I contribute to the existing literature by empirically investigating the effect of national fiscal rules on economic growth for developing countries. While EU countries were the first to implement supranational rules, nowadays many developing countries under the supervision of IMF have been implementing national rules. However, to my knowledge, no studies have estimated the impact of such rules in these countries. Consequently, studying how the economic growth of developing countries is affected by national fiscal rules is imperative.

Additionally, supranational fiscal rules might be not harmful to growth for EU countries as Castro (2011) concludes, but that does not necessarily mean that this result will stand for other currency unions that consist of developing countries, and not of developed countries such as the European Union countries. Markets in developing countries might not react the same way to supranational rules as markets in developed ones. Subsequently, a second contribution from this paper to the literature is exploring the effect of supranational fiscal rules on economic growth of other currency unions such as the Central African Economic and Monetary Community, the West African Economic and Monetary Union, and the Eastern Caribbean Currency Union.

3.2 Economic Growth Literature

In order to avoid cyclical fluctuations that an economy experiences in short time periods most of the growth literature averages the data used to estimate growth regressions. However, averaging over time is possible if one has series that are available for long time periods. If data was available, researchers have typically used 10-year and 20-year averaged data. When data was not available in such long time periods, they use five-year averages (Islam, 1995; Caselli et al. 1996). This method not only implicates a potential loss of information, but it also does not eliminate all cyclical fluctuations from 5-year averages. Recently, researchers have started to embrace more estimations using annual data. For instance, Bassanini and Scarpetta (2001), Iradian (2007) and Castro (2011) use annual data for their main estimations of growth regression and then compare the results for robustness with estimations using 5-year time spans. Results are mostly robust across the two different methodologies.

Among the first studies that advocated the use of annual data instead of average data is Cellini (1997). He argues that using annual data not only will reduce the risk of the potential loss of information that happens when using time spans, but it also derives more reliable values for elasticity of output to input. He finds that using panel annual data with regressions that account for short run fluctuations lead to efficient and reliable estimates. To control for the short-run dynamics he uses the first differences of the explanatory variables. I follow this approach when I run my estimations using Dynamic Fixed Effects.

While the growth literature was mostly built on using cross-section data and OLS estimations, when long available time series became available researchers started

to introduce the use of panel data and its estimation techniques such as fixed effects. However, the endogeneity issues started to raise concerns among econometricians which consequently introduced other estimation techniques in the growth literature such as Generalized Method of Moments. Even though GMM estimations have produced mostly reliable results for developed countries, this cannot be said for estimations following these techniques in samples of developing countries. The following studies explained below illustrate the controversial results that these techniques can sometimes provide.

Giuliano and Ruiz-Arranz (2009) studies the effect of remittances on economic growth using a sample of developing countries covering the period of 1975-2002. They use OLS and System GMM methodology to run a growth model where the control variables are the initial level of GDP per capita, population growth, investment, human capital, inflation, openness to trade and government fiscal balances. The level of significance on these variables changes across specifications. OLS estimation gives more significant results than system-GMM. Within the traditional growth components, investment is significant in all estimations, but population growth and education have volatile estimates and they are mostly insignificant. The same thing can be said for the policy variable, openness to trade.

Vieira, MacDonald and Damasceno (2012) investigate the importance of institutions on economic growth for a sample of developing countries using both difference and system-GMM estimations. They estimate the growth regression using education, population growth, trade, inflation and government final consumption expenditure as growth components and several institutional variables as their variables

of interest. Across estimations, all the growth components except government final consumption expenditure are very volatile when it comes to their significance. The significance of the variables decreases even more when instruments are collapsed following Roodman (2006) which is a necessary method in cases where the number of instruments is higher than the number of groups. In my GMM estimations, I also follow the collapsing methodology of Roodman (2006).

Hou and Chen (2013) investigate the effect of military expenditure on growth for a sample of 35 developing countries during 1975-2009. Similarly to my estimation methodology, they estimate an augmented Solow growth model using fixed effects, difference and system GMM two-step estimations with Windmeijer (2005) correction for standard errors. This correction is made to make the estimations more efficient. Their fixed effects estimations have more significant coefficients than the GMM estimations. Moreover, difference GMM estimations do not have any significant results at all, but the significance of the variables improves when system-GMM estimation is used.

Rajan and Subramanian (2008) estimate the impact of aid on economic growth in a panel dataset with all developing countries that have received post-war aid. They run the growth regression using both Blundell-Bond GMM and Arellano-Bond GMM estimations. Life expectancy which serves as a proxy for human capital is insignificant across all estimations. Such result is consistent with the fact that finding the right proxy variable for human capital remains problematic in the growth literature. In the growth literature, the two most used variables to proxy human capital are life expectancy and number of years in school. I used the latter in my estimations but due

to many missing observations for this series on the developing countries of my sample, the estimates were not reliable. As a result, in my estimations, I use life expectancy as a proxy for human capital and my results regarding the significance of these variables are not conclusive either. However, life expectancy is significant in most of my estimations.

Chapter 4

METHODOLOGY

4.1 Econometric Specification

To determine the policy-augmented growth equation, I follow the work of Mankiw et al. (1992), Barro and Sala-i-Martin (1995), and Bassanini and Scarpetta (2001). Using the standard constant- returns- to- scale Cobb-Douglas production function augmented with human capital

$$Y(t)=K(t)^{\alpha} H(t)^{\beta} [A(t)L(t)]^{1-\alpha-\beta} \quad (1)$$

where $A(t)$ is the total factor productivity, $Y(t)$ is the real output per capita at time t , $H(t)$ is human capital, $L(t)$ is labor and $K(t)$ is physical capital, α and β are the output elasticities of physical and human capital

the growth equation is :

$$\Delta \ln Y_i(t) = \alpha_0 + \phi \ln Y_i(t-1) + \alpha_1 \ln INV_i(t) + \alpha_2 \ln H C_i(t) + \alpha_3 \ln POP_i(t) + \sum_j \alpha_{j+4} \ln E_j(t) + \beta_1 \Delta \ln INV_i(t) + \beta_2 \Delta \ln H C_i(t) + \beta_3 \Delta \ln [POP_i(t)] + \sum_j \beta_{j+3} \Delta \ln E_j + \varepsilon(t) \quad (2)$$

where like common in the growth literature, $Y_i(t)$ is the level of real GDP per capita for country i at time t , $INV(t)$ is the investment rate, $H C_i(t)$ is human capital, $POP_i(t)$ is population growth, $E_j(t)$ is the vector of economic policy variables, and ε is the error term. To control for output variations in the short-run, I include in the growth model the first differences of the explanatory variables.

In order to control for business cycle fluctuations, when estimating growth equation, most of the growth literature uses averages over time. Due to an insufficient number of years available in my dataset, I choose to use annual data for most of my estimations. Moreover, while using large time spans one can lose important information. However, yearly data in output have cyclical components; therefore, a specification that includes short-run dynamics is necessary.

4.2 Empirical Work

I estimate equation (2) using panel data for 17 developing countries covering the period of 1985-2013 to identify the effect of national fiscal rules on economic growth. I estimate the growth equation using both annual and 4-year average data. Additionally, I re-estimate equation (2) using a sample of 12 countries where fiscal rules have been present for at least 10 years in order to isolate the hypothesis that fiscal rules impact on growth might show up with a lag. I also estimate equation (2) using panel data for three currency unions (West African Economic and Monetary Union, Eastern Caribbean Currency Union, Central African Economic and Monetary Community) to evaluate the impact of supranational fiscal rules on growth. I use the ratio of gross fixed capital formation to real GDP as a proxy for investment in physical capital. The proxies for human capital and population growth will be life expectancy and population growth. However, physical and human capital are not the only determinants of economic growth, there are also other variables that affect growth. Bassanini and Scarpetta (2001) suggest that inflation, trade and government

consumption expenditure must be considered in the growth analysis. Barro (1996) uses these macroeconomic policy variables as well. I follow the same approach and include these variables in the augmented growth regressions.

There are four types of fiscal rules that countries might have implemented. Most of the countries have implemented two rules, a combination of a debt rule (DR) and a budget balance rule (BBR). These rules have the same starting date for some countries, while others have different starting dates. Alternatively, there are countries that have implemented only one rule, or two rules but with a different combination from the above mentioned, or even three rules. In order not to lose any observations and because it is hard to differentiate the effect of each rule on growth when they are present in the same time period, I create only one dummy variable for the presence of fiscal rules. This dummy will be equal to 1 if there is at least one fiscal rule present in country i at time t , and zero otherwise.

When dealing with cross-country data, heterogeneity is always an issue. To address this issue, I include country specific fixed effects in the model. Unfortunately, heterogeneity is not the only issue when estimating growth equation across countries. The independent variables in the growth regression might be endogeneous. Endogeneity can be in the form of omitted variable bias (OVB) or in the form of reverse causality. For instance, in my case the fiscal rule variable might be correlated with an omitted determinant of economic growth. Additionally, fiscal rules might improve the budgetary outcomes of a country and increase its GDP per capita, but high growth countries might tend to implement fiscal rules more than the others. Such endogeneity issues can be solved using the Generalized Method of Moments (GMM)

approach. This approach differences out the individual effect, while instruments the explanatory variables using their lagged values. If there are enough observations, all the lagged values of the independent variables are used. As my time period is not very long, in order not to lose observations I will use only the second and the third lag. Once the model is estimated using GMM, it will be compared with the estimates from Dynamic Fixed Effects.

Another issue that might bias the estimated effect of fiscal rules on economic growth is the fact that fiscal rules might be present in a country, but the government might not necessarily be following the rule. Consequently, I add to the model a dummy variable representing fiscal rule enforcement. The dummy will be equal to 1 if there is any formal enforcement procedure or any monitoring mechanism of compliance outside the government. Additionally, an interactive variable of fiscal rules and enforcement will be added to the model to see if there is any differential effect of a fiscal rule when formally enforced on economic growth.

In order to test the sensitivity of my results, I estimate the growth regression using the IMF Fiscal Rule Index as well. Given that some rules are present with escape clauses which allow countries to not follow the rules in case of recessions or extraordinary events, I also check whether the results change if fiscal rules are present with escape clauses. Moreover, some countries have in place the so called “golden rules”, rules that have exclusion clauses on public investment or any other priority items for their economy from ceiling. As a result, I re-do the estimations controlling for these type of exclusions.

Chapter 5

DATA

Data on fiscal rules are obtained from the IMF database. The IMF has created a new dataset (launched in 2012) on fiscal rules for all IMF members that were identified using national or supranational fiscal rules during the period from 1985 to end of March 2012. The dataset counts a total of 81 developing and developed countries. It covers four different types of rules: revenue rules, debt rules, expenditure rules and budget balance rules, as well as the main characteristics for each rule such as enforcement, escape clauses, coverage, the legal basis, supporting procedures and clauses regarding cyclical adjustments. For most of the above characteristics, it uses dummy variables coded with a score equal to one if the fiscal rule for a specific country does have the characteristic, and equal to zero otherwise.

However, a few characteristics have a greater differentiation than the above coding. For instance, in terms of coverage (at what government level is the rule applied?), there is a differentiation between the central government and general government. Regarding the enforcement mechanisms, the dataset separates fiscal rules into two groups: rules with formal enforcement procedure and rules that have mechanisms outside of the government that monitor government's compliance with the rules. The differentiation in the legal basis is by political commitment, coalition agreement, statutory and constitutional.

As some of the fiscal rules are flexible in terms of what they include, the dataset divides fiscal rules in those with clearly defined escape clauses and those with fiscal balances defined in cyclically adjusted terms. Application and monitoring of fiscal rules requires on-ground supporting procedures and institutions. In the IMF dataset, countries are divided according to whether they have the following procedures or institutions in place: fiscal responsibility law, independent body setting budget assumptions, multi-year expenditure ceilings and independent body monitoring budget implementation.

Proxies for all determinants of growth are obtained from the World Development Indicators database (World Bank). As a proxy for physical capital I use gross capital formation as a percent of GDP while as a proxy for human capital I use life expectancy. Growth literature uses both years of schooling and life expectancy as proxies for human capital, however years of schooling is a more favorite proxy to be used for human capital. Unfortunately, data on years of schooling for all the countries in my samples are not available and estimating regressions with the available data would cause significant shrinkage in the samples used. As a result, estimations would suffer from small sample bias.

I follow Barro (1996), Bassanini and Scarpetta (2001) and Castro (2011) to determine the macroeconomic policy variables for the policy augmented growth models. As policy variables, they use openness to trade, inflation and government consumption expenditure. To measure openness to trade I use the sum of exports and imports as a percentage of GDP. I use as a proxy for inflation percentage change of consumer price index. Government consumption expenditure is represented by series

government final consumption expenditure as a percentage of GDP. To measure economic growth, I use the change in real GDP per capita.

Descriptive statistics on time series used in the predictions are listed in Tables A.19- A.24 in the Appendix. As one can see, on average real GDP per capita in the developing countries with national fiscal rules has increased by around 2%. However, in some cases the real GDP per capita growth has increased by significantly more than 2%, such as in the case of Nigeria in 2004 where growth is around 26.5% or in the case of Liberia in 1990 where real GDP per capita decreased by 70%. Due to these outliers, this time series has a skewed distribution, but the median of the time series is around 2% which corresponds to the mean of this variable.

Similarly, inflation (annual % change in CPI) has a very high mean of around 71%. However, the median of this series is around 8% implying so that the high mean is due to some outliers present in the data. Indeed, Brazil and Peru in the 90s experienced hyperinflation and annual percentage change in CPI for Peru reached 7482% in 1990 while for Brazil reached around 2947%. Openness to trade (sum of export and imports as a % of GDP) series is on average around 70%. The lowest value for this variable is around 17% (Peru in 1987), while the maximum value reaches around 220% (Malaysia in 2000). Population in these countries has increased by around 2%. The mean on the natural log of life expectancy is 4.18 implying so that life expectancy has been on average around 65 years.

Chapter 6

RESULTS

As I study the impact of both supranational and national fiscal rules on economic growth, I use several different samples for the estimations. Therefore, the Results section will proceed as follows. Section VI a. discusses the results for supranational fiscal rules. Section VI b. presents the results for national fiscal rules. Section VI c. presents the results using 4-year time span intervals for a sample of developing countries with and without national fiscal rules, the latter serving as a control group.⁵ I redo the estimations on this sample using annual data as well. These results are also discussed in section VI c. Section VI d. illustrates results on estimations that control for the presence of escape clauses in fiscal rules. In order to avoid the cut on public investment due to the presence of fiscal rules, some fiscal rules are introduced so that public investment is excluded from them. In other words, spending and borrowing to fund public investment is not part of the deficit limit set by the fiscal rule. I estimate my regressions controlling for fiscal rules that are present with such exclusions. The results of these estimations are shown in section VI e. In order to check for robustness, I run the growth regression using the *Fiscal Rule Index* (FRI) as the variable of interest instead of the dummy variable *Fiscal* and the

⁵ Estimations using 4-year time span intervals are not done for the samples with supranational fiscal rules due to the small number of country members in the currency unions studied, hence using averages shrinks significantly the number of observations.

interaction variable $Fiscal_{it} * Enforcement_{it}$.⁶ These results are presented in Section VI f. In section VI g. I present results from the estimations using a sample of countries that have had fiscal rules in place for at least 10 years.

6.1 Results on Supranational Fiscal Rules

I estimate the augmented growth equation using panel data over the period 1985-2013 for three currency unions. Tables 6.1-6.3 present results using three different estimators for each currency union. Columns (1) and (2) in each table show results from the first-differenced GMM (DIFF-GMM) and the system GMM (SYS-GMM) estimations, while Columns (3) show results from the Dynamic Fixed Effects (DFE). Following Castro (2011), I use the second and the third lags of the log of GDP per capita and $Fiscal_{it}$ as instruments for the Difference GMM estimator. I assume all other regressors to be exogenous hence their own values are used as instruments. In the system GMM estimations, the first lag of the difference of the log of GDP per capita is used as an additional instrument.

In order to correct for panel-specific autocorrelation and heteroskedasticity, the two-step estimator with Windmeijer standard errors is used for GMM regressions. Additionally, in order to avoid the over identification problem due to large number of instruments I follow Roodman (2009) and limit the number of instruments to be less than or equal to the number of panels. In order to do so I collapse the instruments. If

⁶ The interaction variable $Fiscal_{it} * Enforcement_{it}$ is not used in the estimations for currency unions due to multicollinearity problem, given that supranational fiscal rules were accompanied by enforcement procedures at the same time when they were introduced.

instruments are not collapsed, in the instrumental matrix each instrument creates one column for each year and lag available to that year. The uncollapsed and collapsed instrumental matrix for the second lag of y will look like:

$$\text{Uncollapsed Instrumental Matrix: } \begin{pmatrix} 0 & 0 \dots & 0 \\ yi1 & 0 \dots & 0 \\ 0 & yi2 \dots & 0 \\ \vdots & \vdots & \vdots \\ 0 & 0 & yiT - 2 \end{pmatrix} \quad \text{Collapsed: } \begin{pmatrix} 0 \\ yi1 \\ yi2 \\ \vdots \\ yiT - 2 \end{pmatrix}$$

Hansen and Arellano-Bond tests are also reported in the output. The Hansen test has a null hypothesis of “the instruments as a group are exogenous”. As a result, the higher the p-value of Hansen statistic the better; however, when the p-value of Hansen statistic is equal to 1, that is a sign of too many instruments in the model. In other words, Hansen test checks for the validity or exogeneity of instruments. This test is the most common one used to evaluate the suitability of a GMM model (Baum et al., 2003). The Arellano-Bond test has a null hypothesis of “no autocorrelation in the differenced error terms”.

Table 6.1 presents results from the estimations for the West African Economic and Monetary Union. The conditional convergence coefficient is negative in all three estimations, but it is significant only when the Dynamic Fixed Effect estimator is used. Moreover, the convergence coefficient is smaller in magnitude in the DFE estimation compared to the GMM estimations. This trend is present in other papers as well. Indeed, in Bassanini and Scarpetta (2001) DFE estimations produce a conditional

convergence coefficient around 0.04, while GMM estimates produce a coefficient around 0.4.

In my case, the value of the coefficient on initial GDP per capita in the difference and system GMM is 0.307 and 0.378 respectively, implying so a speed of convergence equal to 26% and 32% , holding all other variables constant. The speed of convergence is considerably lower when I estimate the growth regression using Dynamic Fixed Effects technique (column 3). The coefficient on the initial GDP per capita in column (3) is 0.134 which implies that countries are converging to their steady state level at a rate of 12.5%. However, the initial level of GDP per capita is significant only in the Dynamic Fixed Effects estimation, hence I assume a convergence rate to be equal around 12.5% as this technique suggests.

Investment has the anticipated positive sign when Difference and System GMM are used, but it is significant only in the Difference GMM estimation. The coefficient on investment in the latter is 0.077; hence a one standard deviation increase in gross capital formation (6.5) will increase GDP per capita growth by 0.5005. Population growth has the anticipated negative sign in all three types of estimations, but it is insignificant. Life expectancy is significant only in the Dynamic Fixed Effects (DFE) estimation and its coefficient is equal to 0.558 implying so that one standard deviation increase in the log of life expectancy (0.08) is estimated to increase the growth rate of real GDP per capita by 0.044.

The variable of interest, $Fiscal_{it}$ is positive in the GMM estimations and negative in the DFE, nevertheless it is insignificant across three estimations. Even though system GMM is more efficient as an estimation technique given that it allows

for more instruments to be used, it may not be appropriate to use the system-GMM when the number of countries is small due to the possibility of having more instruments than the number of panels. In such case, Hansen test will be weak which implies that the instruments are not satisfying the orthogonality condition required for them to be valid.

When the growth regression for West African Economic and Monetary Union is estimated using system-GMM, the number of instruments is greater than the number of panels. Although, the p-value of Hansen statistic suggests to not reject the null of instruments being exogenous as a group, estimates using system-GMM might be biased. On the other side, as fixed effects estimation does not correct for any endogeneity problems, its estimators might be inconsistent for growth models. Given that the determinants of economic growth are endogenous variables, OLS estimation with fixed effects estimation might give biased estimates due to reverse causality, therefore a regression with instrumental variables is more appropriate. As a result, in the case of a sample with a small number of countries, first-differenced GMM can provide more reliable results. In my case such estimator suggests that the impact of fiscal rules on the economic growth for the countries that are members of the West African Economic and Monetary Union is positive and insignificant.

Table 6.2 shows results for the Eastern Caribbean Currency Union countries. Human Capital is removed from the growth model for this sample due to the large number of missing observations for this variable. The convergence estimate is negative and significant only in the Dynamic Fixed Effects estimation. The coefficient on initial GDP per capita is -0.149 suggesting a speed of convergence around 0.16.

Dynamic Fixed Effects estimates on investment and population growth are both insignificant, but the signs are consistent with the literature. An increase in investment increases economic growth, while an increase in population growth decreases growth. The fiscal rule estimate from DFE is positive and significant implying that their presence increases economic growth by 2.9%. However, DFE estimates might suffer from Nickell bias (Nickell, 1981), providing inconsistent estimates when the number of time periods is small and fixed. In my case $T=29$, but Judson and Owen (1999) find that even when T is large such as $T=20$ or larger, the bias can be sizable.

As this currency union has only 5 countries, the too many instruments problem is present when using GMM estimation. Even though the Hansen test suggest not rejecting the hypothesis that the full set of orthogonality conditions is valid for both difference-GMM and system-GMM, the number of instruments is greater than the number of panels. In the difference-GMM, the number of instruments exceeds the number of countries only by one, therefore it is more reasonable to continue with the interpretation of the difference-GMM estimators. According to this method, supranational fiscal rules have an insignificant impact on economic growth for the country members of Eastern Caribbean Currency Union. However, one should be cautious in deriving conclusions given that all the variables in this estimation are insignificant.

GMM estimates can be problematic for small samples as they do not provide accurate p-values in moderate to small samples (Burnside & Eichenbaum, 1996). Moreover, Hansen test tend to be under-rejected in the case of small samples ($N \sim 100$), therefore the exogeneity assumption is never rejected (Soto, 2009). This does clearly

happen in my case where the number of instruments is higher than the number of panels, but the Hansen test does not reject the null of exogeneity. As a result, even though Dynamic Fixed Effects might be biased, it is safer to consider the conclusion that DFE suggest as most of the variables in this estimation are significant. Following this estimation results, there is evidence that the presence of fiscal rules might have a positive and significant impact on economic growth in the case of Eastern Caribbean Currency Union.

Table 6.3 reports results for the Central African Economic and Monetary Community. The p-values of Hansen statistic indicate over identification problem for the system-GMM estimations. The difference-GMM provides some controversial results for the traditional determinants of economic growth. Investment and population growth have reverse signs when difference-GMM estimation is used. With DFE estimation, the signs of investment and human capital are positive, but the first differences of them have negative signs, nevertheless insignificant effects. DFE estimates are all insignificant except $Investment_{it}$ and $Fiscal_{it}$. The presence of fiscal rules increases growth by 3.7%. The coefficient on $Investment_{it}$ is equal to 0.003, consequently one standard deviation increase in Investment (35.39) increases GDP per capita growth by 0.106.

Nevertheless, DFE estimates should be considered with caution given the biased estimates that one might get from DFE. On the other hand, the system-GMM estimators have the expected signs except for population growth. The convergence coefficient has a negative value and significant. Investment and human capital are positive, but only investment is significant. $Fiscal_{it}$ is positive in all three

specifications, but significant only in system-GMM and DFE, leading so to more evidence towards the idea that the presence of supranational fiscal rules have a positive and significant impact on the economic growth of the 6 country members in the Central African Economic and Monetary Community.

6.2 Results on National Fiscal Rules

I estimate the traditional and also the policy-augmented growth model on a sample of 17 developing countries with national fiscal rules over the period 1985-2013. Each growth model is estimated using both difference and system GMM, as well as Dynamic Fixed Effects. Even though the Dynamic Fixed Effects are known to provide inconsistent estimates for growth models due to endogeneity issues that such estimation technique cannot solve, I still present them in order to check if there is any consistency between the results from GMM techniques and those from Dynamic Fixed Effects. Technicalities regarding estimations using difference and system GMM remain the same as the ones explained in section VI a. The lagged level of output per capita and $Fiscal_{it}$ are considered endogenous variables and their second and third lags are used as instruments. I assume all the other variables to be exogenous, hence I instrument them with their own values, while the difference of the GDP per capita lagged one period is used as an additional instrument for the system-GMM.

The interaction variable of $Fiscal_{it} * Enforcement_{it}$ is considered as a predetermined variable given the fact that enforcement is exogenously determined. The same logic is used for the other interaction variables such as when the dummy variable $Fiscal_{it}$ is interacted with the dummy variables that capture the presence of

escape clauses or exclusion clauses. However, estimates are robust even if the interaction variables are treated as endogenous variables. I use the two-step estimator with Windmeijer standard errors for GMM regressions and I collapse the instruments following Roodman (2009) in order to avoid having too many instruments.

Table 6.4 presents results from system GMM estimations using the traditional growth regression where growth is explained by investment, human capital and population growth. Column (1) shows results of the regression with *Fiscal* as the only variable of interest, while column (2) shows results of the regression where in addition to the variable *Fiscal_{it}*, I add the interaction variable *Fiscal_{it} * Enforcement_{it}*. In both columns, the convergence coefficient is negative and significant. Investment and human capital have both positive signs and significant with coefficients around 0.02 and 2 respectively. As a result, one standard deviation increase in investment (6.64) increases GDP per capita growth by 0.13, while one standard deviation increase in the natural log of human capital increases GDP per capita growth by 0.3. Population growth has the anticipated negative sign, but insignificant.

Regarding my variable of interest, *Fiscal_{it}* has a positive sign in column (1) suggesting so a positive effect. However, when *Fiscal_{it} * Enforcement_{it}* is introduced, the interaction variable has a positive and significant coefficient while *Fiscal* has a negative sign. The magnitude of the latter is small; hence the total effect of the presence of rules with enforcement is positive. The significance of it though is questionable given that only the interaction variable is significant, while *Fiscal_{it}* is insignificant. In order to test the significance of the total effect of the presence of fiscal rules with enforcement, I run a significance test on the sum of the *Fiscal_{it}* and

$Fiscal_{it} * Enforcement_{it}$ coefficients using `lincom` command in STATA which estimates coefficients, standard errors, confidence intervals, p-values and t or z-statistics for linear combination of coefficients after any estimation command. The output of this test is presented below. As one can see, the presence of fiscal rules with enforcement is positive and significant at 10% level of significance.

Figure 6.1 Significance Test corresponding to column (2) of Table 6.4

```
. lincom fiscal+ ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.30349	.16172	1.88	0.061	-.0134754	.6204554

Consequently, I estimate the policy-augmented growth model where I add policy variables such as inflation, openness to trade and government consumption. Table 6.5 illustrates the results of these estimations. Columns (1) to (7) illustrate the results of regressions where only one of the policy variables is included, different combinations of two policy variables and all three policy variables. Coefficient on initial GDP per capita is negative and significant in all specification but in column (2). However, the value of the coefficient changes across specification ranging from around 0.3 to around 0.8, hence speed of convergence is in the range of 0.38 to 1.74.

Traditional determinants of growth have the anticipated signs in all 7 specifications, but the traditional determinants of growth are not significant across all specifications. Column (1) where $Trade_{it}$ is the only policy variable included has all the determinants of growth significant except population growth. In this estimation, investment has a coefficient equal to 0.017 which implies that one standard deviation increase in investment (6.64) increases GDP per capita growth by 0.11. The coefficient on $lnHK_{it}$ is equal to 2.453 suggesting so that one standard deviation increase of it (0.15) increases economic growth by 0.36. The presence of fiscal rules has a positive and insignificant impact on growth in columns (1), (2) and (4), but it suggests a negative and insignificant impact in the other columns.

Table 6.6 presents results of augmented growth regressions controlling for the presence of fiscal rules with enforcement. Similarly, as in Table 6.5 columns (1) to (7) correspond to specifications with different combinations of policy variables included in the estimations. While coefficient on initial GDP per capita is negative and significant in all specifications, its values range between 0.3 and 0.7 implying so a speed of convergence ranging from 0.34 to 1.42. Coefficients on the other traditional determinants of growth have intuitive signs but their significance change across specifications. Column (3) which illustrates results from the growth regression augmented with government consumption as a policy variable has all the determinants of growth significant. Estimation results in column (3) show that holding all other variables constant, for every one standard deviation increase in investment GDP per capita growth increases by 0.07, while for every one standard deviation increase in population growth GDP per capita decreases by 0.12. If the natural log of life

expectancy increases by one standard deviation, GDP per capita growth increases by 0.26.

In this column, $Fiscal_{it}$ has a negative sign, while the interaction $Fiscal_{it} * Enforcement_{it}$ has a positive sign. Due to the high magnitude of the interaction variable, the total effect of the presence of fiscal rules with enforcement is positive. The magnitude of the total effect of fiscal rules with enforcement is around 0.2 which suggests that holding all other variables constant, the presence of fiscal rules with enforcement increased GDP per capita growth by around 0.2 while if fiscal rules are present without any enforcement they have a negative impact on it by 0.2.

However, one cannot conclude anything on the significance of the effect of fiscal rules on growth given that the interaction $Fiscal_{it} * Enforcement_{it}$ has a significant estimate, while $Fiscal_{it}$ has an insignificant one. As a result, I run the lincom test for the significance of the sum of the two coefficients. According to this test, the total effect of fiscal rules with enforcement is significant at 5% level of significance. The test is presented below. However, the significance of the sum of these two coefficients is not consistent across all specifications. In 4 out of 7 specifications, the total effect of fiscal rules with enforcement is insignificant. Results are presented in Appendix, A.7.1.

Figure 6.2 Significance Test corresponding to column (3) of Table 6.6

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2071913	.1012466	2.05	0.041	.0087516	.4056309

In order to check for differences in results between different estimation techniques, I also estimate the traditional and augmented growth regression using difference-GMM. As difference GMM results did not provide significant results, I include them in the appendix. Difference-GMM estimations are very sensitive toward the sample size and also the number of the instruments compared to the number of groups. In my case, the sample size is not large enough for difference GMM to provide significant estimates. Difference-GMM might lead to biased and imprecise estimates when the series are persistent. System-GMM improves the difference-GMM estimates as it introduces extra moment conditions; it uses lagged first-differences of the variables as instruments for equations in levels (Blundell and Bond, 1998).

When I estimate the traditional growth model using DFE (Table 6.7), fiscal rules have a positive significant effect on growth, however when I introduce $Fiscal_{it} * Enforcement_{it}$, the interaction variable is negative. Nevertheless, the magnitude of the Fiscalit coefficient is larger hence the effect on growth of fiscal rules present with enforcement is positive. Regarding the significance level of the total effect of fiscal rules with enforcement, column (2) estimates suggest an insignificant

effect. To account for short run fluctuations, the first differences of the main components of growth are included in the model. Results for the traditional determinants of economic growth correspond with the growth literature except population growth.

The coefficient on initial GDP per capita is negative and significant at 5%. The coefficient is around -0.038 implying a speed of convergence of around 0.039. However, the coefficient is significantly lower in Dynamic Fixed Effects compared to the system or difference GMM estimates. This is actually common in the growth literature. Among the first studies who investigated the differences in speed of convergence between two methods is Caselli et al. (1996). He finds that correcting for endogeneity and omitted variable bias via GMM estimation jumps the estimate of the convergence coefficient from 0.02 or 0.03 to 0.1 per year. Investment and human capital are both positive and highly significant with coefficients around 0.0147 and 0.19 respectively. As a result, one standard deviation increase in investment increases GDP per capita growth by 0.097 while one standard deviation increase in $\ln HK_{it}$ increases economic growth by 0.0285.

Table 6.8 shows results from DFE estimations on augmented growth regressions with policy variables. Similar to the results in Table 6.7, the coefficient on initial GDP per capita is negative and statistically significant and it suggests a speed of convergence from 0.04 to 0.05. The coefficients on physical capital are positive in both short and long term across all specifications and significant for most of them. Investment is significant for three specifications in the long run and for all specifications in the short run. In the long term, the coefficient on investment is

estimated to be around 0.016-0.017 which suggests that an increase of investment by one standard deviation (6.64) increases economic growth by 0.1062.

The coefficient on population growth is positive in the short run for some specifications. In the long run, population growth is negative in all of them but in column (2) where the growth regression is augmented with government consumption as a policy variable. The positive effect of population growth is controversial with the growth literature; however, such effect is insignificant for all of the specifications. Human capital is positive in both short and long run, but it is significant in all specifications only in the long run. The coefficient on human capital ranges from 0.15 to 0.22, hence an increase of $\ln HK_{it}$ by one standard deviation increases economic growth by 0.023 and 0.033. Regarding my variable of interest $Fiscal_{it}$, most of the DFE specifications from Table 6.8 suggest a positive and significant impact on growth.

Table 6.9 presents results from Dynamic Fixed Effects estimations controlling for fiscal rules that are present with any kind of enforcement procedure or any monitoring mechanism. Regarding the determinants of growth, results are similar with the ones in Table 6.7. While the presence of fiscal rules has a positive sign and it is significant in three specifications, the differential effect of having fiscal rules with enforcement procedures is negative in 5 out of 7 specifications and insignificant in all of them. However, given that the negative effect is small in absolute value, the total effect of the fiscal rule when enforcement is present is positive but one cannot derive a conclusion regarding the significance of it. Consequently, the lincom test is useful in this case and its results are presented in A.7.2 of the Appendix. As one can see, the

total effect of the presence of fiscal rules with enforcement is positive and significant at 10% level of significance for estimates of columns (2) and (7), positive and significant at 5% level of significance for estimates of column (4).

To conclude based on both GMM estimations and Dynamic Fixed Effects, there is evidence that national fiscal rules might have a positive impact on economic growth when they are present with enforcement procedures. However, as the significance of $Fiscal_{it}$ and $Fiscal_{it} * Enforcement_{it}$ is sensitive across specifications and different estimations, one needs to be cautious in deriving conclusions regarding the significance of the effect of the national fiscal rules on growth. When fiscal rules are not present with enforcement though, system GMM estimates suggest a negative impact of them on economic growth, while the DFE estimates suggest the opposite. In order to check whether my results stand true I redo the estimations on a sample of countries with and without fiscal rules, the latter serving as a control group.

6.3 Results on National Fiscal Rules Using a Control Group

When estimating the impact of national fiscal rules on economic growth, I use a sample of 17 developing countries with national fiscal rules. In this section, I extend my sample by adding 3⁷ other developing countries with national fiscal rules, and 20

⁷ The three developing countries that I add in this sample were previously added when I run the estimations with annual data, however due to insufficient number of observations on predicting variables; these countries were dropped from estimations from that sample. As a result, I add them back here given that using averages instead of annual data creates more room for data imputation without errors.

developing countries without national fiscal rules to serve as a control group in the estimations. However, due to insufficient observations, when estimating the growth regressions, I drop 7 of these countries, three of them from the control group and four of them from the list of countries with fiscal rules.⁸ Additionally, while I have used only annual data to do the estimations in the previous sections, here I use time intervals as well, given that adding more countries in the sample has extended significantly the number of observations. Using averages over time avoids the common issue of the short-run output fluctuations.

As my sample consists of 29 years, I use 4-year intervals⁹, therefore I construct seven 4-year intervals for 40 countries. Tables 6.10-6.11 present results using 4-year averages. All the variables are measures as averages over each 4-year period and the $\ln Y_{it-1}$ will be the logarithm of GDP per capita at the start of each period. The presence of fiscal rules is measured by a dummy variable *Fiscal* which is equal to 1 if the rules are present for two or more years in the 4-year interval and 0 otherwise. *Enforcement_{it}* dummy is built in the same way and $Fiscal_{it} * Enforcement_{it}$ is the interaction of *Fiscal_{it}* with *Enforcement_{it}* variable. Estimations are done using both difference and system GMM, as well as Dynamic Fixed Effects on both traditional and policy-augmented growth models.

From difference-GMM estimations, one can see that variables are not significant at all. Consequently, I include these results in the Appendix section (Table

⁸ Albania, Jamaica, Serbia, Uganda, Rwanda, Armenia and Cape Verde.

⁹ I drop year 2013 from my sample.

A.11). Given that the p-values might not be accurate when GMM estimation is used on small or moderate samples, these results should be interpreted with caution. The convergence coefficient is negative in three specifications but insignificant for both traditional and augmented growth specifications. Population growth and human capital have counterintuitive signs, but they are also insignificant. The coefficient on Fiscalit is positive and insignificant, implying so that the presence of national fiscal rules has an insignificant impact on growth. However, when the rules are present with enforcement, the magnitude of the effect decreases as the interaction variable of Fiscal with Enforcement is negative in the policy-augmented growth regression. Nonetheless, the coefficients are insignificant.

In Table 6.10, one can see that the significance of most estimates has improved when System-GMM estimation is applied on the traditional growth model. Also, the convergence coefficients are negative and significant. The coefficient on initial GDP per capita is around 0.12 which implies a speed of convergence around 0.032.¹⁰ Investment continues to be somewhat problematic given that it is significant only in one specification. One standard deviation increase in investment (6.12) increases GDP per capita growth by 0.006. Both population growth and human capital have the anticipated signs and are highly significant. One standard deviation increase in population growth (0.01) decreases GDP per capita growth by around 0.03, while one standard deviation increase in human capital (0.14) increases GDP per capita growth by around 0.028.

¹⁰ Speed of convergence $\lambda = [\ln(1+\beta)]/4$

The coefficient on the dummy variable *Fiscal* is positive insignificant suggesting so a positive impact of fiscal rules with no enforcement. $Fiscal_{it}$ * $Enforcement_{it}$ is positive and significant, implying so a positive effect of fiscal rules that are present with enforcement. However, the significance of the presence of fiscal rules with enforcement cannot be determined as the coefficient on $Fiscal_{it}$ is insignificant. As a result, I run the lincom test to check for its significance. The test result is illustrated below. According to this significance test, the effect of fiscal rules present with enforcement is significant.

Figure 6.3 Significance Test corresponding to column (2) of Table 6.10

```
. lincom fiscalavg+ruleenforcedavg
```

```
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0655686	.0248706	2.64	0.008	.0168231	.114314

Table 6.11 illustrates results from system-GMM estimations on the augmented growth model using 4-year time spans. Similarly to the previous estimations on augmented growth model, each column represents different combinations of policy variables included in the model. As one can see, system-GMM estimations give more reliable results than difference GMM even when a policy-augmented model is estimated. The coefficients on initial GDP per capita are negative in all specifications and significant in columns (1) and (5). The values of it in these two columns are 0.07 and 0.08 implying so a speed of convergence around 0.018 and 0.02. These values are

consistent with the speed of convergence values estimated in the growth literature when estimations are done using 5-year or 10-year averages. The estimate of population growth is negative in all specifications and significant in columns (2), (4) and (7). Regarding the variable of interest, $Fiscal_{it}$ is positive and significant in some specifications suggesting so a positive impact on economic growth.

I re-run the estimations presented in Table 6.11 with the interaction $Fiscal_{it} * Enforcement_{it}$ to explore if results change when fiscal rules are present with enforcement (Table 6.12). The determinants of growth behave similarly as in Table 6.11. Column (2) has more significant estimates than the other specifications. The coefficient on initial GDP per capita in this column is equal to 0.111, consequently the speed of convergence is equal to 0.029. The coefficient on investment is 0.002 and highly significant. One standard deviation increase in investment (6.12) increases GDP per capita growth by 0.012, while one standard deviation increase in population growth (0.01) decreases GDP per capita growth by 0.029. The impact of fiscal rules without any enforcement is positive in all specifications apart from three of them where the coefficient on $Fiscal_{it}$ is negative. However, when the rules are present with enforcement, the effect is positive in all specifications as the differential effect of rules with enforcement is higher in magnitude than the negative coefficient on $Fiscal_{it}$ in those two estimations. Nevertheless, the total effect of fiscal rules present with enforcement is insignificant.

Table 6.13 presents the results from DFE estimations using 4-year average data with specifications consisting only of traditional economic growth predictors while Table 6.14 presents results of estimations augmented with policy variables. The

convergence coefficients are negative and significant. All the main determinants of economic growth are significant and have the expected signs. The openness to trade variable has a positive sign in the long term and a negative sign in the short term, however when negative $Trade_{it}$ is insignificant. Government consumption also has a counterintuitive sign in the long term, nevertheless insignificant. Government Consumption is negative and significant (columns (5) and (7)) in the short term. Inflation is negative and significant both in long and short term.

In the traditional growth regressions, $Fiscal_{it}$ is positive and significant, but $Fiscal_{it} * Enforcement_{it}$ is negative insignificant though the magnitude of the coefficient is smaller than the one of $Fiscal_{it}$. As a result, the effect of the presence of fiscal rules with enforcement is positive, but one cannot determine its significance by just looking at the estimation results. I run the lincom test which concludes that the effect of rules with enforcement is insignificant. The significance test result is presented below.

Figure 6.4 Significance test corresponding to column (2) of Table 6.13

```
. lincom fiscalavg+ruleenforcedavg  
  
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdppeer-h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0055825	.0066749	0.84	0.409	-.0080138	.0191788

In the augmented growth estimations, the effect of fiscal rules on growth is positive in all estimations but significant only in two of them. To control for the presence

of fiscal rules with enforcement, I add the interaction $Fiscal_{it} * Enforcement_{it}$ and re-run the estimations. Results are presented in Table 6.15. The coefficient on $Fiscal_{it}$ continues to be positive and also significant for most specifications; however, the differential effect of fiscal rules with enforcement is negative. As the coefficient on $Fiscal * Enforcement$ is smaller in magnitude than the one on $Fiscal_{it}$, the total effect of fiscal rules with enforcement is positive. Nevertheless, as in the traditional growth regression its significance cannot be determined as in columns (1)-(4) and column (6) $Fiscal_{it}$ is significant but $Fiscal_{it} * Enforcement_{it}$ is insignificant. Consequently, I run the significance test on the sum of the two variables: $Fiscal_{it}$ and $Fiscal_{it} * Enforcement_{it}$ for the specifications in these columns. According to the significance test, the effect of fiscal rules with enforcement is insignificant in all these specifications.

Figure 6.5 Significance Test corresponding to column (1) of Table 6.15

```
. lincom fiscalavg+ruleenforcedavg
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0052184	.0073388	0.71	0.482	-.0097302	.020167

Figure 6.6 Significance Test corresponding to column (2) of Table 6.15

```
. lincom fiscalavg+ruleenforcedavg
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0044634	.0069059	0.65	0.523	-.0096035	.0185303

Figure 6.7 Significance Test corresponding to column (3) of Table 6.15

```
. lincom fiscalavg+ruleenforcedavg  
  
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0012615	.0059732	0.21	0.834	-.0109055	.0134284

Figure 6.8 Significance Test corresponding to column (4) of Table 6.15

```
. lincom fiscalavg+ruleenforcedavg  
  
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0041668	.0074804	0.56	0.581	-.0110702	.0194038

Figure 6.9 Significance Test corresponding to column (6) of Table 6.15

```
. lincom fiscalavg+ruleenforcedavg  
  
( 1)  fiscalavg + ruleenforcedavg = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0011037	.0063451	0.17	0.863	-.0118208	.0140282

Tables 6.16-6.21 report system-GMM and DFE results on the estimations using annual data. Table A.10 in the Appendix illustrates results from difference-GMM

estimations. However, due to the insignificant results from difference-GMM, I concentrate on the interpretation of results coming only from system-GMM and DFE estimations. Even though system-GMM estimates from traditional growth model (Table 6.16) have all the expected signs, they are not significant. When not controlling for fiscal rules with enforcement, the coefficient on $Fiscal_{it}$ is positive. When I add the interaction $Fiscal_{it} * Enforcement_{it}$ the coefficient on $Fiscal_{it}$ becomes negative while the one on the interaction variable is positive. However, as all the other determinants of growth are insignificant in these estimations one should not be deriving any conclusions from them. Indeed, Hansen test statistic suggests to reject the null of instruments being jointly exogenous implying so an identification problem in these estimations. Results improve significantly when the augmented growth model is estimated (Table 6.17).

Indeed, in Table 6.17 one can see that Hansen test improves by large margins and the traditional determinants of growth are significant. Human capital is positive in all specifications and significant in 6 out of 7 estimations. On the other hand, investment has an unexpected negative sign in some of the specifications, but in these cases investment is insignificant. Investment is positive and significant in column (5). Regarding the policy variables, trade is positive and significant, while inflation and government consumption has unexpected positive signs, though coefficient on inflation is equal to 0. The coefficients on $Fiscal_{it}$ suggest a positive impact of fiscal rules on growth; however, none of them are significant.

Table 6.18 shows results from system-GMM estimations on augmented growth models that control for the presence of fiscal rules with enforcement. Results on the determinants of growth are similar to the ones in Table 6.17 with slight deteriorations

on their significance level. The convergence coefficient is negative. Population growth and human capital have the expected signs and are highly significant across specifications. The only traditional determinant of growth that is not significant is investment. The presence of fiscal rules has a negative and insignificant impact on economic growth for all specifications but one; however when the rules are present with enforcement procedures the effect on growth is positive and significant. The coefficient on $Fiscal_{it} * Enforcement_{it}$ is positive significant and large enough for the total impact of fiscal rules with enforcement on economic growth to be positive. Regarding the significance of the total effect of rules, the significance cannot be determined given that the coefficient on $Fiscal_{it}$ is insignificant but the coefficient on the $Fiscal_{it} * Enforcement_{it}$ is significant therefore I run the lincom significance test. Its results are listed on the section A.7.3 of the Appendix. Significance test suggests that the effect of fiscal rules with enforcement is positive and significant for most of the specifications.

On the other hand, Dynamic Fixed Effects estimations (Tables 6.19-6.21) lead to slightly different results on my variable of interest: the overall effect of fiscal rules with enforcement is positive, but the differential effect of fiscal rules with enforcement is negative. The significance level cannot be determined given that $Fiscal_{it}$ is significant but $Fiscal_{it} * Enforcement_{it}$ is insignificant. Lincom test is used to determine its significance and the results are presented on A.7.4 in the Appendix. According to the significance test, the effect of fiscal rules with enforcement is significant at 10% level of significance for most of the specifications.

Regarding the traditional determinants of growth, they all have the expected signs and are highly significant in both traditional (Table 6.19) and augmented growth models (Tables 6.20-6.21). In order to better identify the long run effect on output, I add the first lag of the policy variables in the augmented growth model, while the differences of all the determinants of growth are added in the model to control for short-run fluctuations. The convergence coefficient is negative and significant, but smaller in magnitude than in the system-GMM.

6.4 Results on National Fiscal Rules with Escape Clauses

As mentioned in the data description section, IMF Fiscal Rules dataset differentiates fiscal rules by several characteristics. One of them is measuring the flexibility of fiscal rules in cases of recession or bad economic times by the presence of escape clauses. Researchers have controversial opinions on whether fiscal rules should have escape clauses. Some believe that when escape clauses are present, governments will take advantage of them and use them ad hoc even when it is not necessary. Politicians will be tempted to use them at their own discretion claiming unexpected circumstances for increased spending whenever elections are close. On the other hand, there are researchers who argue that if fiscal rules are present without any escape clauses, they might hurt the economy even more in cases of recession or bad economic times due to the restrictions they impose to the governments. During recessions governments are expected to boost consumer demand by decreasing taxes or increasing public debt, hence the ability to escape fiscal rules in bad economic times is a necessity.

Tables 6.22-6.24 present results from system-GMM estimations controlling for the presence of escape clauses using the sample of 17 developing countries with national fiscal rules. I build an interacting variable $Fiscal_{it} * Escape_{it}$ to capture the presence of Fiscal Rules with escape clauses, where *Escape* is the dummy variable equal to 1 in the presence of escape clauses, and 0 otherwise. I also build an interacting variable $Fiscal * Enforcement * Escape$ to check the effect of fiscal rules with enforcement mechanisms and escape clauses.

Column (1) in Table 6.22 shows system-GMM results on the traditional growth model controlling only for the presence of fiscal rules with escape clauses, while column (2) also controls for the presence of fiscal rules with escape clauses and enforcement. Besides population growth, all other determinants of growth are significant. The coefficients on $Fiscal_{it}$ and $Fiscal_{it} * Escape_{it}$ are positive in column (1), but negative in column (2). As a result, column (1) estimation suggests a positive impact on growth of fiscal rules with escape clauses, while column (2) estimation suggests the opposite. Although, $Fiscal_{it}$ and $Fiscal_{it} * Escape_{it}$ have negative coefficients, $Fiscal_{it} * Enforcement_{it}$ and $Fiscal_{it} * Enforcement_{it} * Escape_{it}$ have positive and larger coefficients in magnitude to ensure an overall positive effect on growth of fiscal rules present with enforcement and escape clauses.

Table 6.23 present results on augmented growth models where only the impact of fiscal rules with escape clauses is evaluated, while in Table 6.24 I also study the impact of fiscal rules with escape clauses and enforcement. As in the previous sections, columns in these tables represent estimations with different combinations of policy variables included in the growth regressions. Across all different combinations,

traditional determinants of growth have the appropriate signs that growth literature suggests, however apart from the convergence estimate their significance changes between combinations. Human capital is significant in 5 out of 7 of these specifications, while investment is significant in three of them. Regarding the policy variables, Trade has the expected positive sign but it is insignificant. Inflation and Government Consumption have counterintuitive signs, but inflation is insignificant. Hansen tests in all three tables across different specifications suggest to not reject the null of instruments being jointly exogenous.

The coefficient on $Fiscal_{it}$ is negative for most of the specifications in Table 6.23, however the coefficient on $Fiscal_{it} * Escape_{it}$ is positive and larger in magnitude implying so a positive overall effect of the presence of fiscal rules with escape clauses. Coefficients on the variables of interest are all not significant but one of them ($Fiscal_{it} * Escape_{it}$ in column (5)). Table 6.24 results suggest that fiscal rules with escape clauses and enforcement has a positive impact on economic growth, but fiscal rules with escape clauses and no enforcement hurt economic growth. Nonetheless, estimates are not significant.

Tables 6.25-6.27 illustrate the results for Dynamic Fixed Effects estimations. The main determinants of economic growth have the anticipated signs and significance level that the economic growth literature suggests. As regards to the variables of interest, traditional growth regressions suggest that when fiscal rules are present with escape clauses their impact is positive but insignificant on economic growth. Same can be said for fiscal rules with escape clauses and enforcement. Augmented growth regressions convey similar results. The differential effect of fiscal

rules with escape clauses is negative; however, the overall effect of fiscal rules with escape clauses is positive. Regarding the policy variables, trade in the long term is positive in two specifications, but negative in the other two. Nevertheless, they are all insignificant. Government consumption and inflation have the expected negative signs, but inflation is the only one significant.

Table A.14 shows difference GMM results, but the significance level of the variables is not very satisfactory therefore I include these results in the Appendix. Moreover, some signs on the determinants of growth such as population growth and human capital are counterintuitive; therefore one should not pay much attention to difference GMM results. However, in terms of the variables of interest the results indicate that if fiscal rules are present with enforcement mechanisms and escape clauses their effect on economic growth is positive and there is some evidence that the effect might be significant as well. The effect of fiscal rules with escape clauses, but without any enforcement is positive insignificant.

As a result, if one should conclude regarding the presence of rules with escape clauses, my estimations suggest that if fiscal rules have escape clauses and one is not controlling for the presence of enforcement, its effect is positive insignificant. When controlling for enforcement, and when fiscal rules have both escape clauses and enforcement mechanisms, their effect is also positive. However, when fiscal rules are present with escape clauses and no enforcement, the results are inconclusive given that system GMM suggests negative insignificant effect, while Dynamic Fixed Effects suggests positive insignificant effect.

6.5 Results on National Fiscal Rules with Exclusions

In order to find the effect of fiscal rules that exclude public investment or any priority items from the ceiling on deficit, I introduce in my estimations the dummy variable $Exclusion_{it}$. In Tables 28-33 $Exclusion_{it}$ is equal to 1 if public investment is excluded from the fiscal rules, while in Tables 34-39 $Exclusion_{it}$ is equal to 1 if public investment or any other priority items are excluded from the rules. Priority items excluded from the rule are reliant on government's discretion to determine which spending items qualify as priority or not. Such priority items can be interest payments, cyclically-sensitive expenditures, oil revenues etc. The coefficient on the interaction of $Fiscal_{it}$ with $Exclusion_{it}$ conveys the differential effect of having fiscal rules with exclusions, while the coefficient on the interaction of $Fiscal_{it}$ with $Exclusion_{it}$ and $Enforcement_{it}$ indicates the differential effect of fiscal rules with exclusions and enforcement mechanisms/procedures that obligate government to follow fiscal rules.

From system GMM estimations on the traditional growth model (Table 6.28) the presence of fiscal rules that exclude public investment from the rules has a negative but insignificant impact on growth. When fiscal rules have simultaneously an enforcement and public investment exclusion clause, their impact is positive on growth. One cannot determine its significance though as the coefficients on $Fiscal_{it} * Exclusion_{it}$ and $Fiscal_{it} * Enforcement_{it} * Exclusion_{it}$ are significant, but the coefficients on $Fiscal_{it}$ and $Fiscal * Enforcement_{it}$ are not significant. System GMM estimates on the augmented growth models tell a similar story regarding the impact of fiscal rules excluding public investment (Table 6.29) and the impact of fiscal rules with enforcement and public investment exclusion clause (Table 6.30). However,

when fiscal rules exclude public investment but do not have any enforcement clauses in place they have a negative and insignificant impact on growth.

Tables 6.31-6.33 present results from Dynamic Fixed Effects estimations on traditional and augmented growth models controlling for fiscal rules that exclude public investment as well as those with this exclusion and enforcement. Traditional determinants of growth regression (Table 6.31) suggests a positive and insignificant impact on growth from fiscal rules that exclude public investment as well as from fiscal rules that have both public investment exclusion and enforcement clauses in place. Traditional determinants of growth are all significant with the expected signs except population growth that has a positive sign instead of a negative one. Nevertheless, population growth is insignificant. Augmented growth models recommend similar results (Tables 6.32-6.33).

Table A.15 presents results from difference GMM estimations where exclusion of public investment from budget deficit rule is accounted for. As in some of the other difference GMM estimations, there are not any significant coefficients; hence its results should be digested with caution. This table suggests that when fiscal rules exclude public investment, their impact on economic growth is negative but insignificant. This result stands regardless of whether the rule is present with enforcement procedures/mechanisms or not.

Table 6.34 illustrates results from system GMM estimations that control for the presence of fiscal rules excluding public investment or any priority items from ceiling using a traditional growth model. In Column (1) I do not control for the presence of enforcement mechanisms/procedures. Results from these estimations imply that the

presence of rules with such exclusions has a positive impact on growth. I control for the presence of enforcement in the estimation presented in column (2). When rules exclude public investment or any other priority items and no enforcement is present; their impact on growth is negative and insignificant. When rules are enforced, the impact becomes positive, but one cannot determine the significance of it. As a result, I run the *lincom* test which is presented on section A.7.7 in the Appendix. According to this test, fiscal rules that have exclusions and are enforced have an insignificant impact on growth.

Results from system GMM estimations using augmented growth models (Tables 6.35-6.36) conclude similarly. In the case of rules without enforcement and with exclusions, their impact on growth is negative. However, when there is enforcement the impact is positive. In Table 6.35 estimations where I do not control for enforcement, the impact of fiscal rules present with exclusions is also positive but insignificant. Significance of the effect of fiscal rules with exclusions or fiscal rules with exclusions and enforcement cannot be determined without running the *lincom* test, therefore I run this significance test. Its results are presented on A.7.7 in the Appendix. DFE in Table 6.37 tell the same story for rules with enforcement (column 2) or when enforcement is not accounted for (column 1). When rules are not enforced and present with exclusions, DFE using a traditional growth regression suggests a positive and insignificant impact on growth.

Tables 6.38 and 6.39 illustrate results from augmented growth models using DFE estimation technique. Their results conclude similarly with results from the traditional growth model. However, when fiscal rules have exclusion clauses in place

but no enforcement procedures, DFE suggest a positive impact instead of the negative impact that system GMM suggests. Nevertheless, DFE estimations can be biased and suffer from endogeneity problems, hence one should be careful when deriving conclusions using this method. To conclude on the significance of the effect of rules with exclusions or rules with exclusions and enforcement, I run the *lincom* test whose results are presented on A.7.8 in the Appendix. The effect of fiscal rules with exclusions is insignificant. A similar conclusion stands for the effect of fiscal rules with exclusions and enforcement.

As a conclusion, there is evidence that the impact of fiscal rules with exclusion and no enforcement is negative. However, when it comes to the presence of rules with exclusion and enforcement there is some evidence that such rules have a positive impact on growth. Nonetheless, the impact is insignificant for most of the specifications.

6.6 Results Using Fiscal Rule Index

For robustness, instead of using a dummy variable for the presence of fiscal rules, I will estimate the model using the Fiscal Rules Index (FRI) created by IMF as well. In order to build FRI, I follow the methodology in Schaechter et al. (2012). FRI is created from the sum of four sub-indices that correspond to each key characteristic of the rules. The four sub-indices are enforcement, legal basis, coverage, and supporting procedures. The supporting procedure sub-index is the sum of its three indicators: independent fiscal body, multi-year expenditure ceilings and Fiscal Responsibility Laws. Each of these indicators is a dummy variable equal to 1 if the

characteristic is present and zero otherwise. Enforcement sub index is the sum its two indicators: formal enforcement procedures and monitoring mechanisms outside of government. The legal basis and coverage are not sums of any indicators. Legal basis is a qualitative dummy variable equal to 1 if political commitment is the legal basis of the rule, 2 if coalition agreement, 3 if statutory and 4 if constitutional. Coverage is also a qualitative dummy variable equal to 1 if the rule covers central government and 2 if it covers the general government or wider public sector.

However, as countries might have different fiscal rules in place at the same time, the sub-indices are built combining all the different types of rules that are present. For instance, Argentina in year 2000 had two types of rules in place, Expenditure Rule and Budget Balance Rule. For each of these rules, formal enforcement procedures were present, but the monitoring mechanism of compliance outside government was present only for the Budget Balance Rule, therefore the sub index enforcement is equal to 3. Each sub-index is standardized¹¹ to be between 0 and 5 and the sum of all sub-indices is standardized also to be between 0 and 5. As a result, the overall Fiscal Rule Index is between 0 and 5, with 0 implying no rules at all and 5 as a maximum if all rules are strong and well implemented.

Results from system GMM estimations using the overall Fiscal Rule Index are presented in Table 6.40. Results are based on the sample of the developing countries

¹¹ Schaechter et al. (2012) do not specify the way they do the standardization. I do the standardization in the following way: $((x - \min) / (\max - \min)) * 5$

with national fiscal rules.¹² FRI is the same for all countries that are members of the same currency union, therefore the estimations using FRI are done only for countries with national fiscal rules. Column (1) shows results from estimating a traditional growth model, while columns (2)-(8) show results of augmented growth model with different combinations of policy variables added in the growth regression. FRI is used as an endogenous variable in the GMM estimations. The sign of the coefficients on FRI is negative in the traditional growth regression and in two other specifications of augmented growth regressions. In the other five specifications of augmented growth model, FRI has a negative sign. Nevertheless, FRI is not significant implying so that national fiscal rules have no significant impact on economic growth. Table 6.40 does not have many significant estimates though. Among traditional determinants of growth, only human capital and convergence coefficient are significant in some specifications. System-GMM estimations are clearly suffering from an error that might be due to small sample size or too many instruments, given that most of the variables are insignificant.

When I estimate growth regressions in Table 6.40 using DFE (Table 6.41), they are more significant compared to the system GMM estimates. Moreover, the coefficients on FRI are all positive but insignificant. Regarding the other determinants of growth, the signs and the significance of variables follow growth literature. I also use Difference-GMM technique to estimate the impact of FRI on growth. Difference GMM results provides less significant estimates than system GMM and DFE but in

¹² There are only 16 countries included in the regression versus 17 countries in the previous sample used before. FRI was not available for one country.

terms of my variable of interest, this estimation tells the same story: FRI has a positive and insignificant impact on growth. To conclude, all three estimation techniques suggest that fiscal rules do not matter for growth.

Schaechter et al. (2012) do not include the flexibility characteristic as a sub-index when overall FRI index is built. I rebuild the FRI including the flexibility sub-index in order to check if there are any discrepancies in the results when flexibility is added in the index. Results are robust to the FRI with flexibility. DFE estimations (Table 6.43) provide more significant results than the other two techniques. Difference GMM (Table A.4.4) and DFE coefficients on FRI capturing flexibility clauses are all positive and insignificant across different combinations, while system GMM (Table 6.42) estimates provide mixed results as the coefficient is negative insignificant in some specifications and positive insignificant in some others. Nevertheless, conclusion remains the same: fiscal rules do not matter for growth.

6.7 Results on National Fiscal Rules when Present for a Long Time

Assuming that after fiscal rules are introduced into a country, it might take some time until they are truly implemented, or have an impact on the economy or public finances, I change my sample and include in it only countries where fiscal rules have been present for a minimum of ten years.

Tables A3-A8 present results of estimations in a sample of countries where fiscal rules have been present for a relatively long time period, 10 years and higher. Tables A3-A5 present results from the system-GMM estimation. While the signs of the coefficients of the variables are mostly consistent with the growth literature, most

of the variables are insignificant. Variables are significant only in Column (7) of Table A.5 where I list the estimates from the augmented growth regression controlling for both the presence of fiscal rules and enforcement procedures. From this estimation, the convergence coefficient is negative and significant. Investment, human capital and openness to trade are positive and significant as the literature suggests. Population growth is negative and significant.

Coefficients on $Fiscal_{it}$ are positive insignificant in most of the specifications in these tables, however when $Fiscal_{it} * Enforcement_{it}$ variable is introduced, Fiscal becomes negative in some specifications while the interaction variable is positive insignificant, therefore the total effect of fiscal rules is positive insignificant with the exception of the growth regression presented in column (7) of Table A.5. This regression has as explanatory variables all the traditional determinants of growth as well as all the policy variables. Its results suggest that fiscal rules without enforcement have a negative and significant impact on growth, while if enforcement is present they have a positive and significant impact. Nevertheless, following the system-GMM estimations, one is risking the over identification of instruments, as the number of instruments is greater than the number of panels. As a result, system-GMM estimations should not be taken seriously in this case.

Tables A.6-A.8 present results from Dynamic Fixed Effects. Although, Dynamic Fixed Effects do not fix the endogeneity issues present in growth models, this estimation derives much more significant estimates than difference-GMM or system-GMM when this sample is used. From Tables A.6-A.8, one can see that most of the predicting variables are significant and have the expected signs. For instance,

the convergence coefficient is negative and significant, human capital is positive and significant, population growth is negative in all specifications and significant in most of them. Inflation has negative and significant estimates across specifications. The only traditional determinant of growth that is insignificant is investment; however investment shows up as positive and significant in the short term. Regarding the variable of interest, $Fiscal_{it}$ is positive and significant in all specifications, while $Fiscal_{it} * Enforcement_{it}$ is negative insignificant. Nevertheless, the total effect of fiscal rules with enforcement is positive.

Table A.17 shows the Difference GMM estimates, however estimates in this Table are insignificant and some variables have signs that are inconsistent with the growth literature. For instance, the convergence coefficient is positive but insignificant. Investment has the expected positive sign, though insignificant. Human capital is negative in column (1), positive in columns (2) to (4), but insignificant across all specifications. Regarding the variable of interest, $Fiscal_{it}$ has a positive and insignificant impact on growth. The differential effect of fiscal rules with enforcement is negative, but the total effect on growth of the presence of rules in the countries where these rules have been present for a long time is negative in column (2) and positive in column (4). Nevertheless, in both columns estimates are insignificant.

GMM estimates suffer from small sample bias. As the sample size shrinks when I include in the sample only countries with fiscal rules present for 10 years or more, one can see how sensitive GMM results are to small samples given that the significance of the variables radically drops for this sample. Hansen test statistic is

also much lower compared to the corresponding statistic in the estimations using larger samples.

Table 6.1 Results for West African Economic and Monetary Community

VARIABLES	(1)	(2)	(3)
$\ln Y_{it-1}$	-0.307 (-0.296)	-0.378 (-0.951)	-0.134** (-2.738)
Investment_{it}	0.077*** (2.585)	0.015 (0.234)	-0.023 (-1.397)
PopGrowth_{it}	-9.798 (-0.998)	-2.180 (-0.305)	-0.209 (-0.445)
$\ln \text{HK}_{it}$	0.527 (0.355)	1.098 (1.334)	0.558** (3.402)
Fiscal_{it}	0.016 (0.366)	0.034 (0.646)	-0.007 (-0.698)
$\Delta \text{Investment}_{it}$			0.069** (3.490)
$\Delta \text{PopGrowth}_{it}$			3.126 (0.789)
$\Delta \ln \text{HK}_{it}$			1.336 (0.898)
Constant		-1.986 (-1.328)	-1.436* (-2.158)
Observations	135	142	135
R-squared			0.183
Number of countries	6	7	6
AR2	1	0.314	
Hansen	0.286	0.367	
Instruments	7	10	

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.2 Results for Eastern Caribbean Currency Union

VARIABLES	(1)	(2)	(3)
$\ln Y_{it-1}$	0.299 (0.479)	0.013 (1.111)	-0.149*** (-11.832)
Investment_{it}	0.001 (0.778)	-0.001 (-0.268)	0.000 (0.536)
PopGrowth_{it}	36.239 (0.763)	-4.016 (-0.336)	-0.498 (-0.894)
Fiscal_{it}	-0.678 (-0.757)	-0.066 (-0.403)	0.029** (3.204)
$\Delta \text{Investment}_{it}$			0.002** (3.196)
$\Delta \text{PopGrowth}_{it}$			1.284 (0.408)
Constant			1.307*** (11.411)
Observations	135	140	135
R-squared			0.369
Number of countries	5	5	5
AR2	0.510	0.541	
Hansen	0.422	0.656	
Instruments	6	10	

z-statistics in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6.3 Results for Central African Economic and Monetary Community

VARIABLES	(1)	(2)	(3)
LnY_{it-1}	-0.224 (-0.40)	-0.6** (-1.84)	-0.011 (-1.15)
Investment_{it}	-0.0005 (-0.69)	0.0038*** (3.39)	0.003*** (8.59)
Pop Growth_{it}	32.644 (0.63)	26.389 (1.05)	-0.494 (-0.18)
lnHK_{it}	0.777 (0.84)	0.753 (1.26)	0.069 (0.29)
Fiscal_{it}	0.109 (0.39)	0.468*** (2.09)	0.037* (2.29)
$\Delta \text{Investment}_{it}$			-0.002 (-8.26)
$\Delta \text{Pop Growth}_{it}$			-1.617 (-1.35)
ΔlnHK_{it}			-1.404 (-0.73)
Constant		0.322 (0.11)	-0.265 (-0.28)
Observations	156	162	156
R-squared			0.4006
Number of countries	6	6	6
AR2	.	0.229	
Hansen	0.264	1	
Instruments	7	12	

z-statistics in parentheses

Table 6.4 Results from System GMM estimations on a traditional growth model for national fiscal rules

VARIABLES	(1)	(2)
Y_{it-1}	-0.780*** (-3.074)	-0.757*** (-2.970)
Investment _{it}	0.018* (1.702)	0.021* (1.750)
Pop Growth _{it}	-11.246 (-0.975)	-13.854 (-1.233)
lnHK _{it}	2.315*** (3.774)	1.875** (2.510)
Fiscal _{it}	0.047 (0.342)	-0.220 (-0.982)
Fiscal _{it} *Enforcement _{it}		0.524* (1.889)
Constant	-3.973** (-2.199)	-2.282 (-0.879)
Observations	440	440
Number of countries	17	17
AR2	0.574	0.824
Hansen	0.658	0.614
Instruments	12	13

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.5 Results from System GMM estimations on an augmented growth model for national fiscal rules

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.826*** (-3.539)	-0.352 (-1.642)	-0.653*** (-3.320)	-0.322* (-1.806)	-0.681*** (-3.361)	-0.433** (-2.160)	-0.425** (-2.079)
Investment _{it}	0.017* (1.710)	0.008 (1.266)	0.008 (1.350)	0.005 (0.751)	0.007 (1.180)	0.003 (0.565)	0.001 (0.148)
Pop Growth _{it}	-11.743 (-1.254)	-5.288 (-0.760)	-11.402 (-1.574)	-4.830 (-0.822)	-12.491 (-1.573)	-5.457 (-0.895)	-5.209 (-0.900)
LnHK _{it}	2.453*** (3.471)	1.171 (1.186)	2.164*** (3.253)	1.137 (1.081)	2.243*** (3.282)	1.867* (1.658)	1.878 (1.570)
Fiscal _{it}	0.028 (0.199)	0.040 (0.661)	-0.042 (-0.370)	0.012 (0.188)	-0.049 (-0.439)	-0.037 (-0.384)	-0.045 (-0.485)
Trade _{it}	0.002 (0.935)			0.001 (0.895)	0.001 (0.494)		0.001 (0.821)
Inflation _{it}		-0.000 (-0.012)		0.000 (0.016)		0.000 (0.319)	0.000 (0.408)
Gov Consumption _{it}			0.040*** (3.064)		0.042*** (3.084)	0.026*** (2.767)	0.025** (2.415)
Constant	-4.316* (-1.911)	-2.306 (-0.837)	-4.538** (-2.428)	-2.392 (-0.730)	-4.691** (-2.364)	-4.812 (-1.460)	-4.951 (-1.385)
Observations	440	418	440	418	440	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.473	0.291	0.397	0.237	0.453	0.251	0.312
Hansen	0.696	0.159	0.802	0.0930	0.826	0.376	0.369
Instruments	13	13	13	14	14	14	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.6 Results from System GMM estimations on an augmented growth model controlling for enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.760*** (-3.028)	-0.299* (-1.742)	-0.622*** (-3.621)	-0.292* (-1.796)	-0.597*** (-3.413)	-0.399* (-1.858)	-0.393* (-1.865)
Investment _{it}	0.020 (1.595)	0.007 (1.205)	0.011*** (2.623)	0.005 (0.936)	0.012** (2.397)	0.006** (2.007)	0.006 (1.356)
Pop Growth _{it}	-14.085 (-1.201)	-5.531 (-0.787)	-12.008* (-1.691)	-5.097 (-0.779)	-11.382 (-1.590)	-8.322 (-0.936)	-8.077 (-0.913)
lnHK _{it}	1.910*** (2.610)	0.792 (1.071)	1.768*** (2.936)	0.821 (1.091)	1.689*** (2.776)	1.294 (1.444)	1.287 (1.503)
Fiscal _{it}	-0.228 (-0.916)	-0.057 (-0.439)	-0.243 (-1.458)	-0.054 (-0.402)	-0.250 (-1.385)	-0.192 (-0.934)	-0.187 (-0.898)
Fiscal _{it} *Enforcement _{it}	0.529* (1.657)	0.198 (1.184)	0.450** (2.444)	0.182 (0.988)	0.464** (2.298)	0.313 (1.565)	0.306 (1.434)
Trade _{it}	-0.000 (-0.008)			0.000 (0.418)	-0.001 (-0.531)		0.000 (0.036)
Inflation _{it}		-0.000 (-0.193)		-0.000 (-0.117)		0.000 (0.145)	0.000 (0.132)
Gov Consumption _{it}			0.039*** (3.002)		0.038*** (2.849)	0.024* (1.935)	0.024* (1.932)
Constant	-2.390 (-0.897)	-1.087 (-0.501)	-3.169* (-1.815)	-1.267 (-0.558)	-2.989* (-1.710)	-2.663 (-1.118)	-2.675 (-1.197)
Observations	440	418	440	418	440	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.848	0.0815	0.364	0.0916	0.303	0.241	0.246
Hansen	0.628	0.136	0.582	0.109	0.569	0.269	0.268
Instruments	14	14	14	15	15	15	16

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.7 Dynamic Fixed Effects Results on a traditional growth model for national fiscal rules

VARIABLES	(1)	(2)
Y_{it-1}	-0.03839** [0.017]	-0.03884** [0.018]
$Investment_{it}$	0.00147** [0.001]	0.00147** [0.001]
$Pop\ Growth_{it}$	0.05873 [0.975]	0.04443 [0.979]
$\ln HK_{it}$	0.19228*** [0.055]	0.19543*** [0.053]
$Fiscal_{it}$	0.01532* [0.009]	0.01624 [0.011]
$Fiscal_{it} * Enforcement_{it}$		-0.00219 [0.009]
$\Delta Investment_{it}$	0.00567** [0.002]	0.00567** [0.002]
$\Delta Pop\ Growth_{it}$	0.58085 [1.354]	0.59091 [1.335]
$\Delta \ln HK_{it}$	0.48175 [0.373]	0.45591 [0.424]
Constant	-0.53273* [0.277]	-0.54203* [0.263]
Observations	424	424
R-squared	0.326	0.326
Number of countries	17	17

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 6.8 Results from Dynamic Fixed Effects estimations on an augmented growth model for national fiscal rules

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.04041** [0.016]	-0.04232*** [0.014]	-0.05710*** [0.017]	-0.04435*** [0.013]	-0.05679*** [0.017]	-0.05581*** [0.015]	-0.05534*** [0.014]
$Investment_{it}$	0.00167** [0.001]	0.00158** [0.001]	0.00147 [0.001]	0.00181** [0.001]	0.00147 [0.001]	0.00141 [0.001]	0.00144 [0.001]
$Pop\ Growth_{it}$	-0.17049 [0.893]	0.16204 [0.974]	-0.45517 [0.472]	-0.04641 [0.932]	-0.55486 [0.436]	-0.17889 [0.473]	-0.24663 [0.520]
$\ln HK_{it}$	0.18497*** [0.051]	0.22706*** [0.067]	0.20401** [0.073]	0.22385*** [0.068]	0.19662*** [0.064]	0.15205** [0.060]	0.14984** [0.054]
$Fiscal_{it}$	0.01316* [0.006]	0.01752** [0.008]	0.01316 [0.008]	0.01536*** [0.005]	0.01226* [0.007]	0.01314** [0.006]	0.01226** [0.005]
$Trade_{it-1}$	-0.00021 [0.000]			-0.00019 [0.000]		0.00025 [0.000]	0.00027 [0.000]
$\Delta Investment_{it}$	0.00610** [0.002]	0.00545** [0.002]	0.00388*** [0.001]	0.00583** [0.002]	0.00391*** [0.001]	0.00475*** [0.001]	0.00474*** [0.001]
$\Delta Pop\ Growth_{it}$	0.62319 [1.298]	0.50649 [1.272]	-0.01013 [0.746]	0.57556 [1.198]	0.06846 [0.832]	-0.33201 [0.785]	-0.22666 [0.861]
$\Delta \ln HK_{it}$	0.49781 [0.328]	0.28935 [0.384]	0.79956 [0.479]	0.29356 [0.332]	0.86628* [0.443]	0.74875* [0.408]	0.79594** [0.346]
$\Delta Trade_{it}$	-0.00149*** [0.000]			-0.00151*** [0.000]		-0.00102*** [0.000]	-0.00103*** [0.000]
$Gov\ Consumption_{it-1}$		-0.00219 [0.002]		-0.00246 [0.002]	0.00069 [0.002]		0.00034 [0.002]
$\Delta Gov\ Consumption_{it}$		-0.00135 [0.003]		-0.00227 [0.002]	0.00003 [0.002]		-0.00112 [0.002]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.47038* [0.258]	-0.62275* [0.311]	-0.42889 [0.277]	-0.57596* [0.299]	-0.40741 [0.253]	-0.24152 [0.235]	-0.24063 [0.221]
Observations	424	424	401	424	401	401	401
R-squared	0.396	0.334	0.269	0.406	0.270	0.349	0.351
Number of countries	17	17	17	17	17	17	17

Robust standard errors in brackets

Table 6.9 Results from Dynamic Fixed Effects estimations on an augmented growth model controlling for enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.03996** [0.017]	-0.04310** [0.015]	-0.05798*** [0.019]	-0.04414*** [0.014]	-0.05756*** [0.018]	-0.05683*** [0.016]	-0.05627*** [0.016]
Investment _{it}	0.00168** [0.001]	0.00157** [0.001]	0.00147 [0.001]	0.00181** [0.001]	0.00147 [0.001]	0.00141 [0.001]	0.00144 [0.001]
Pop Growth _{it}	-0.16232 [0.910]	0.14001 [0.978]	-0.49819 [0.458]	-0.04328 [0.944]	-0.58988 [0.465]	-0.21848 [0.501]	-0.28128 [0.569]
lnHK _{it}	0.18221*** [0.047]	0.23248*** [0.066]	0.20834** [0.076]	0.22258*** [0.065]	0.20047*** [0.064]	0.15598** [0.061]	0.15351** [0.053]
Fiscal _{it}	0.01207 [0.008]	0.01904* [0.009]	0.01436 [0.011]	0.01489** [0.006]	0.01330 [0.010]	0.01460 [0.009]	0.01360* [0.007]
Fiscal _{it} *Enforcement _{it}	0.00252 [0.009]	-0.00356 [0.009]	-0.00291 [0.010]	0.00107 [0.009]	-0.00250 [0.009]	-0.00343 [0.010]	-0.00311 [0.009]
Trade _{it-1}	-0.00022 [0.000]			-0.00020 [0.000]		0.00026 [0.000]	0.00028 [0.000]
Δ Investment _{it}	0.00610** [0.002]	0.00545** [0.002]	0.00388*** [0.001]	0.00583** [0.002]	0.00391*** [0.001]	0.00475*** [0.001]	0.00474*** [0.001]
Δ Pop Growth _{it}	0.62006 [1.300]	0.52065 [1.257]	0.02468 [0.828]	0.57478 [1.200]	0.09664 [0.906]	-0.30256 [0.843]	-0.20113 [0.917]
Δ lnHK _{it}	0.52766 [0.377]	0.24504 [0.417]	0.76719 [0.515]	0.30695 [0.356]	0.83714* [0.453]	0.70991 [0.452]	0.75980* [0.368]
Δ Trade _{it}	-0.00149*** [0.000]			-0.00151*** [0.000]		-0.00101*** [0.000]	-0.00102*** [0.000]
Gov Consumption _{it-1}		-0.00222 [0.002]		-0.00245 [0.002]	0.00067 [0.002]		0.00034 [0.002]
Δ Gov Consumption _{it}		-0.00135 [0.003]		-0.00227 [0.002]	0.00004 [0.002]		-0.00112 [0.002]
Inflation _{it-1}			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Δ Inflation _{it}			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.46206* [0.240]	-0.63848* [0.304]	-0.43947 [0.278]	-0.57221* [0.288]	-0.41685 [0.247]	-0.25027 [0.232]	-0.24884 [0.213]
Observations	424	424	401	424	401	401	401
R-squared	0.396	0.334	0.269	0.406	0.270	0.349	0.351
Number of countries	17	17	17	17	17	17	17

Table 6.10 Results from 4-year time span estimations using system GMM on a traditional growth regression and a control group

VARIABLES	(1)	(2)
Ln(Initial GDP per capita) _{it}	-0.128* (-1.914)	-0.115* (-1.878)
Investment _{it}	0.001 (1.444)	0.001* (1.757)
Pop Growth _{it}	-3.366* (-1.677)	-2.933* (-1.754)
lnHK _{it}	0.241* (1.890)	0.214* (1.864)
Fiscal _{it}	0.041* (1.674)	0.021 (0.678)
Fiscal _{it} *Enforcement _{it}		0.045* (1.851)
Observations	228	228
Number of countries	33	33
AR2	0.406	0.762
Hansen	0.796	0.871
Instruments	11	12

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.11 Results from 4-year time span estimations using system GMM on an augmented growth regression and a control group

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Initial GDP per capita) _{it}	-0.081** (-2.365)	-0.137 (-1.461)	-0.073 (-1.018)	-0.043 (-1.341)	-0.070* (-1.752)	-0.123 (-0.968)	-0.037 (-1.048)
Investment _{it}	0.000 (0.279)	0.002** (2.530)	0.001 (0.800)	0.001 (0.886)	-0.000 (-0.028)	0.001 (0.684)	0.001 (0.762)
Pop Growth _{it}	-1.513 (-0.991)	-3.466* (-1.832)	-1.761 (-0.604)	-1.448* (-1.767)	-1.369 (-0.772)	-3.455 (-1.164)	-1.404* (-1.647)
lnHK _{it}	0.188* (1.651)	0.390 (1.488)	0.151 (0.857)	0.113 (1.140)	0.220* (1.929)	0.377 (1.105)	0.102 (0.857)
Fiscal _{it}	0.035 (1.609)	0.041 (1.356)	0.035 (1.349)	0.017 (1.224)	0.021 (0.866)	0.020 (0.780)	0.012 (0.959)
Trade _{it}	0.001* (1.934)			0.000 (1.062)	0.000 (1.501)		0.000 (0.892)
Inflation _{it}		-0.000 (-0.397)		-0.000 (-0.417)		-0.000 (-0.175)	-0.000 (-0.511)
Gov Consumption _{it}			0.003 (0.442)		0.002 (0.710)	0.005 (0.854)	0.001 (0.558)
Constant	-0.197 (-0.538)	-0.574 (-1.358)	-0.110 (-0.213)	-0.142 (-0.747)	-0.418 (-1.363)	-0.664 (-1.217)	-0.156 (-0.608)
Observations	228	223	228	223	228	223	223
Number of countries	33	33	33	33	33	33	33
AR2	0.700	0.911	0.596	0.809	0.995	0.466	0.639
Hansen	0.160	0.224	0.139	0.0175	0.0491	0.0298	0.00915
Instruments	13	13	13	14	14	14	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.12 Results from 4-year time span estimations using system GMM on an augmented growth regression controlling for enforcement and a control group

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Initial GDP per capita) _{it}	-0.076** (-2.262)	-0.111* (-1.688)	-0.103* (-1.874)	-0.043 (-1.398)	-0.072* (-1.810)	-0.092 (-1.118)	-0.036 (-1.101)
Investment _{it}	0.001 (0.530)	0.002*** (2.965)	0.002 (0.955)	0.001 (0.977)	0.000 (0.202)	0.001 (1.268)	0.001 (0.866)
Pop Growth _{it}	-1.881 (-1.397)	-2.941* (-1.910)	-2.938 (-1.440)	-1.453* (-1.833)	-1.846 (-1.159)	-2.700 (-1.354)	-1.399* (-1.735)
lnHK _{it}	0.159 (1.631)	0.300 (1.465)	0.198 (1.112)	0.108 (1.194)	0.192* (1.836)	0.258 (1.183)	0.096 (0.920)
Fiscal _{it}	0.011 (0.416)	0.018 (1.005)	-0.006 (-0.174)	0.014 (0.887)	-0.002 (-0.062)	-0.002 (-0.078)	0.009 (0.491)
Fiscal _{it} *Enforcement _{it}	0.028 (1.104)	0.039 (1.644)	0.065** (1.981)	0.005 (0.321)	0.035 (1.084)	0.047 (0.954)	0.007 (0.311)
Trade _{it}	0.001* (1.710)			0.000 (1.076)	0.000 (1.329)		0.000 (0.913)
Inflation _{it}		-0.000 (-0.430)		-0.000 (-0.427)		-0.000 (-0.276)	-0.000 (-0.529)
Gov Consumption _{it}			0.006 (1.277)		0.003 (0.917)	0.004 (0.948)	0.001 (0.532)
Constant	-0.104 (-0.317)	-0.402 (-1.066)	-0.102 (-0.196)	-0.125 (-0.720)	-0.284 (-0.920)	-0.411 (-1.056)	-0.134 (-0.620)
Observations	228	223	228	223	228	223	223
Number of countries	33	33	33	33	33	33	33
AR2	0.527	0.636	0.336	0.768	0.331	0.348	0.596
Hansen	0.340	0.241	0.357	0.0196	0.132	0.0293	0.00990
Instruments	14	14	14	15	15	15	16

z-statistics in parentheses

Table 6.13 Result from 4-year time span estimations using Dynamic Fixed Effects on a traditional growth model and using a control group

VARIABLES	(1)	(2)
Ln(Initial GDP per capita) _{it}	-0.04416** [0.019]	-0.04465** [0.019]
Investment _{it}	0.00148*** [0.000]	0.00147*** [0.000]
Pop Growth _{it}	-1.70458** [0.768]	-1.70671** [0.769]
lnHK _{it}	0.15800*** [0.047]	0.16097*** [0.047]
Fiscal _{it}	0.00736* [0.004]	0.00876** [0.004]
Fiscal _{it} *Enforcement _{it}		-0.00318 [0.008]
ΔInvestment _{it}	0.00128*** [0.000]	0.00128*** [0.000]
ΔPop Growth _{it}	0.15985 [0.633]	0.15789 [0.632]
ΔlnHK _{it}	-0.01037 [0.090]	-0.01588 [0.092]
Constant	-0.31060* [0.164]	-0.31901* [0.165]
Observations	195	195
R-squared	0.429	0.430
Number of countries	33	33

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 6.14 Result from 4-year time span estimations using Dynamic Fixed Effects on an augmented growth model and using a control group

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Initial GDP per capita) _{it}	-0.05091*** [0.017]	-0.04330** [0.019]	-0.02881* [0.017]	-0.04923*** [0.018]	-0.02560 [0.018]	-0.03307* [0.016]	-0.02900* [0.017]
Investment _{it}	0.00149*** [0.000]	0.00137*** [0.000]	0.00106*** [0.000]	0.00142*** [0.000]	0.00093** [0.000]	0.00110** [0.000]	0.00100** [0.000]
Pop Growth _{it}	-1.52302* [0.824]	-1.76721** [0.809]	-1.34214* [0.749]	-1.58187* [0.867]	-1.37627* [0.780]	-1.25208 [0.815]	-1.29945 [0.845]
lnHK _{it}	0.12656** [0.046]	0.15874*** [0.049]	0.11262** [0.042]	0.13224** [0.049]	0.12138*** [0.044]	0.10098** [0.045]	0.11204** [0.048]
Fiscal _{it}	0.00747* [0.004]	0.00646 [0.004]	0.00308 [0.003]	0.00650 [0.004]	0.00185 [0.003]	0.00333 [0.003]	0.00193 [0.004]
Trade _{it-1}	0.00029* [0.000]			0.00026 [0.000]		0.00014 [0.000]	0.00011 [0.000]
ΔInvestment _{it}	0.00162*** [0.000]	0.00130*** [0.000]	0.00138*** [0.000]	0.00162*** [0.000]	0.00140*** [0.000]	0.00152*** [0.000]	0.00152*** [0.000]
ΔPop Growth _{it}	0.04666 [0.581]	0.20398 [0.661]	-0.73195 [0.505]	0.11454 [0.625]	-0.69468 [0.533]	-0.70557 [0.539]	-0.66001 [0.574]
ΔlnHK _{it}	-0.02477 [0.081]	0.00360 [0.083]	0.03606 [0.098]	-0.01851 [0.074]	0.03561 [0.091]	0.02376 [0.093]	0.02046 [0.084]
ΔTrade _{it}	-0.00005 [0.000]			-0.00007 [0.000]		-0.00001 [0.000]	-0.00004 [0.000]
Gov Consumption _{it-1}		0.00077 [0.001]		0.00042 [0.001]	0.00025 [0.001]		0.00015 [0.001]
ΔGov Consumption _{it}		-0.00047 [0.001]		-0.00064 [0.001]	-0.00121* [0.001]		-0.00123* [0.001]
Inflation _{it-1}			-0.00002** [0.000]		-0.00001** [0.000]	-0.00002** [0.000]	-0.00001** [0.000]
ΔInflation _{it}			-0.00002*** [0.000]		-0.00002*** [0.000]	-0.00002*** [0.000]	-0.00002*** [0.000]
Constant	-0.15380 [0.155]	-0.32641* [0.172]	-0.23329* [0.131]	-0.19069 [0.163]	-0.29312* [0.148]	-0.16592 [0.146]	-0.23775 [0.159]
Observations	195	195	190	195	190	190	190
R-squared	0.460	0.441	0.474	0.469	0.497	0.481	0.502
Number of countries	33	33	33	33	33	33	33

Table 6.15 Results from 4-year time span estimations using Dynamic Fixed Effects estimations on an augmented growth model, controlling for rule enforcement and using a control group

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Initial GDP per capita) _{it}	-0.05165*** [0.017]	-0.04383** [0.019]	-0.02947* [0.017]	-0.04998*** [0.017]	-0.02627 [0.018]	-0.03404** [0.016]	-0.02992* [0.017]
Investment _{it}	0.00147*** [0.000]	0.00135*** [0.000]	0.00105*** [0.000]	0.00140*** [0.000]	0.00093** [0.000]	0.00109** [0.000]	0.00099** [0.000]
Pop Growth _{it}	-1.52094* [0.826]	-1.76971** [0.810]	-1.35042* [0.752]	-1.57956* [0.869]	-1.38455* [0.783]	-1.25849 [0.818]	-1.30465 [0.847]
lnHK _{it}	0.13014*** [0.046]	0.16216*** [0.049]	0.11494*** [0.042]	0.13605*** [0.048]	0.12396*** [0.044]	0.10370** [0.045]	0.11476** [0.047]
Fiscal _{it}	0.00935** [0.004]	0.00801* [0.004]	0.00445* [0.002]	0.00844* [0.004]	0.00331 [0.003]	0.00512* [0.003]	0.00366 [0.003]
Fiscal _{it} *Enforcement _{it}	-0.00413 [0.008]	-0.00355 [0.007]	-0.00319 [0.006]	-0.00428 [0.008]	-0.00339 [0.006]	-0.00402 [0.006]	-0.00388 [0.006]
Trade _{it-1}	0.00029* [0.000]			0.00027 [0.000]		0.00015 [0.000]	0.00012 [0.000]
ΔInvestment _{it}	0.00162*** [0.000]	0.00131*** [0.000]	0.00138*** [0.000]	0.00163*** [0.000]	0.00139*** [0.000]	0.00152*** [0.000]	0.00152*** [0.000]
ΔPop Growth _{it}	0.03818 [0.579]	0.20246 [0.661]	-0.72610 [0.509]	0.10634 [0.624]	-0.68830 [0.537]	-0.70224 [0.542]	-0.65669 [0.577]
ΔlnHK _{it}	-0.03097 [0.082]	-0.00258 [0.085]	0.03191 [0.099]	-0.02504 [0.075]	0.03105 [0.091]	0.01947 [0.094]	0.01609 [0.084]
ΔTrade _{it}	-0.00004 [0.000]			-0.00006 [0.000]		-0.00000 [0.000]	-0.00003 [0.000]
Gov Consumption _{it-1}		0.00076 [0.001]		0.00041 [0.001]	0.00024 [0.001]		0.00013 [0.001]
ΔGov Consumption _{it}		-0.00048 [0.001]		-0.00065 [0.001]	-0.00122* [0.001]		-0.00123* [0.001]
Inflation _{it-1}			-0.00002*** [0.000]		-0.00002** [0.000]	-0.00002*** [0.000]	-0.00002** [0.000]
ΔInflation _{it}			-0.00002*** [0.000]		-0.00002*** [0.000]	-0.00002*** [0.000]	-0.00002*** [0.000]
Constant	-0.16334 [0.156]	-0.33631* [0.172]	-0.23773* [0.130]	-0.20104 [0.163]	-0.29839* [0.147]	-0.17024 [0.146]	-0.24233 [0.159]
Observations	195	195	195	195	190	190	190
R-squared	0.461	0.442	0.475	0.470	0.497	0.482	0.502
Number of countries	33	33	33	33	33	33	33

Table 6.16 Results from system GMM estimations on a traditional growth model using a control group (annual data)

VARIABLES	(1)	(2)
Y_{it-1}	-0.542 (-1.352)	-0.481 (-1.226)
Investment _{it}	0.004 (0.639)	0.003 (0.535)
Pop Growth _{it}	-14.396 (-1.071)	-11.209 (-0.955)
lnHK _{it}	1.019 (1.341)	0.898 (1.217)
Fiscal _{it}	0.069 (0.816)	-0.025 (-0.124)
Fiscal _{it} *Enforcement _{it}		0.312 (0.763)
Observations	877	877
Number of countries	33	33
AR2	0.610	0.563
Hansen	0.0297	0.0137
Instruments	11	12

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.17 Results from system GMM estimations on an augmented growth model using a control group (annual data)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.567* (-1.901)	-0.813*** (-5.616)	-0.883*** (-8.699)	-0.707*** (-4.688)	-0.876*** (-6.716)	-0.778*** (-7.152)	-0.783*** (-7.128)
Investment _{it}	-0.004 (-0.712)	0.003 (0.390)	-0.007 (-1.195)	-0.002 (-0.339)	-0.008* (-1.669)	-0.007 (-1.179)	-0.008 (-1.642)
Pop Growth _{it}	-11.363* (-1.669)	-22.765** (-2.370)	-21.878*** (-3.476)	-16.430*** (-2.924)	-22.642*** (-4.387)	-19.596*** (-2.650)	-19.965*** (-3.359)
lnHK _{it}	1.764 (1.352)	2.552*** (4.128)	2.824*** (3.383)	2.093** (2.543)	2.598*** (3.331)	2.396*** (3.107)	2.386*** (3.862)
Fiscal _{it}	0.051 (0.539)	0.064 (0.678)	0.009 (0.066)	0.041 (0.441)	0.018 (0.144)	0.009 (0.071)	0.004 (0.038)
Trade _{it}	0.003* (1.762)			0.003* (1.886)	0.003 (1.325)		0.002 (1.171)
Inflation _{it}		0.000 (1.583)		0.000 (1.484)		0.000** (2.282)	0.000** (1.965)
Gov Consumption _{it}			0.054*** (3.419)		0.052*** (3.602)	0.047*** (2.892)	0.046*** (2.956)
Constant	-3.070 (-0.860)	-4.229 (-1.509)	-5.364* (-1.693)	-3.338 (-1.124)	-4.596* (-1.732)	-4.313 (-1.400)	-4.321* (-1.828)
Observations	877	855	877	855	877	855	855
Number of countries	33	33	33	33	33	33	33
AR2	0.921	0.414	0.547	0.264	0.538	0.189	0.108
Hansen	0.0477	0.875	0.877	0.543	0.754	0.821	0.775
Instruments	13	13	13	14	14	14	15

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6.18 Results from system GMM estimations on an augmented growth model using a control group (annual data), controlling for enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.517 (-1.467)	-0.788*** (-4.336)	-0.852*** (-6.451)	-0.721*** (-3.871)	-0.839*** (-4.210)	-0.759*** (-5.283)	-0.764*** (-4.549)
Investment _{it}	-0.003 (-0.625)	0.004 (0.608)	-0.004 (-0.859)	0.000 (0.028)	-0.005 (-1.030)	-0.003 (-0.469)	-0.004 (-0.713)
Pop Growth _{it}	-10.093 (-1.296)	-21.601** (-2.273)	-21.929*** (-3.634)	-17.606*** (-2.813)	-22.404*** (-3.417)	-20.309** (-2.486)	-21.032*** (-2.710)
lnHK _{it}	1.499 (1.151)	2.174*** (3.615)	2.462*** (2.784)	1.799*** (2.882)	2.237** (2.359)	1.968*** (2.585)	1.951*** (2.763)
Fiscal _{it}	0.018 (0.097)	-0.135 (-0.887)	-0.227 (-0.991)	-0.066 (-0.469)	-0.183 (-0.735)	-0.251 (-1.108)	-0.242 (-1.155)
Fiscal _{it} *Enforcement _{it}	0.222 (0.682)	0.548** (2.341)	0.630** (2.162)	0.432** (2.165)	0.604** (1.971)	0.561** (2.016)	0.586** (2.515)
Trade _{it}	0.003 (1.502)			0.003* (1.852)	0.002 (0.784)		0.002 (0.864)
Inflation _{it}		0.000 (1.630)		0.000 (1.601)		0.000** (2.433)	0.000** (2.032)
Gov Consumption _{it}			0.053*** (3.532)		0.050*** (2.746)	0.048*** (2.877)	0.046** (2.488)
Constant	-2.386 (-0.773)	-2.912 (-1.232)	-4.148 (-1.305)	-2.076 (-1.012)	-3.368 (-1.133)	-2.762 (-0.925)	-2.710 (-1.032)
Observations	877	855	877	855	877	855	855
Number of countries	33	33	33	33	33	33	33
AR2	0.876	0.285	0.387	0.217	0.435	0.181	0.138
Hansen	0.0163	0.542	0.626	0.308	0.400	0.511	0.421
Instruments	14	14	14	15	15	15	16

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6.19 Results from Dynamic Fixed Effects estimations on a traditional growth model using a control group (annual data)

VARIABLES	(1)	(2)
Y_{it-1}	-0.05908*** [0.009]	-0.05962*** [0.009]
Investment _{it}	0.00138*** [0.000]	0.00137*** [0.000]
Pop Growth _{it}	-1.04592*** [0.263]	-1.05044*** [0.256]
lnHK _{it}	0.19391*** [0.045]	0.19755*** [0.045]
Fiscal _{it}	0.01612*** [0.004]	0.01847*** [0.005]
Fiscal _{it} *Enforcement _{it}		-0.00531 [0.007]
Δ Investment _{it}	0.00071 [0.001]	0.00071 [0.001]
Δ Pop Growth _{it}	-0.71864*** [0.203]	-0.71322*** [0.208]
Δ lnHK _{it}	0.40074 [0.259]	0.37077 [0.266]
Constant	-0.36251** [0.167]	-0.37321** [0.168]
Observations	844	844
R-squared	0.164	0.164
Number of countries	33	33

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Table 6.20 Results from Dynamic Fixed Effects estimations on an augmented growth model using a control group (annual data)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.06505*** [0.010]	-0.05867*** [0.009]	-0.05684*** [0.012]	-0.06430*** [0.010]	-0.05645*** [0.013]	-0.06369*** [0.013]	-0.06282*** [0.013]
$Investment_{it}$	0.00140*** [0.000]	0.00137*** [0.000]	0.00149*** [0.000]	0.00139*** [0.000]	0.00147*** [0.000]	0.00149*** [0.000]	0.00148*** [0.000]
$Pop\ Growth_{it}$	-1.08128*** [0.249]	-1.06462*** [0.249]	-0.90449*** [0.242]	-1.09755*** [0.238]	-0.92395*** [0.235]	-0.90278*** [0.251]	-0.91780*** [0.246]
$\ln HK_{it}$	0.17532*** [0.043]	0.19436*** [0.046]	0.19313*** [0.050]	0.17802*** [0.044]	0.19331*** [0.050]	0.17269*** [0.048]	0.17485*** [0.048]
$Fiscal_{it}$	0.01602*** [0.004]	0.01571*** [0.004]	0.01438*** [0.005]	0.01552*** [0.004]	0.01399*** [0.004]	0.01460*** [0.005]	0.01410*** [0.004]
$Trade_{it-1}$	0.00017 [0.000]			0.00017 [0.000]		0.00022* [0.000]	0.00022* [0.000]
$\Delta Investment_{it}$	0.00128 [0.001]	0.00071 [0.001]	0.00066 [0.001]	0.00128 [0.001]	0.00066 [0.001]	0.00127 [0.001]	0.00128 [0.001]
$\Delta Pop\ Growth_{it}$	-0.73692*** [0.188]	-0.67544*** [0.217]	-0.64400* [0.328]	-0.67806*** [0.203]	-0.60718* [0.341]	-0.65755** [0.306]	-0.60960* [0.324]
$\Delta \ln HK_{it}$	0.31489 [0.228]	0.41615 [0.253]	0.52031* [0.307]	0.32373 [0.216]	0.52994* [0.308]	0.41651 [0.271]	0.41919 [0.265]
$\Delta Trade_{it}$	-0.00072*** [0.000]			-0.00073*** [0.000]		-0.00070*** [0.000]	-0.00071*** [0.000]
$Gov\ Consumption_{it-1}$		0.00015 [0.001]		-0.00002 [0.001]	0.00013 [0.001]		-0.00003 [0.001]
$\Delta Gov\ Consumption_{it}$		-0.00092 [0.001]		-0.00136 [0.001]	-0.00085 [0.001]		-0.00125 [0.001]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00002*** [0.000]		-0.00002*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.25179 [0.167]	-0.36875** [0.169]	-0.38134** [0.187]	-0.26790 [0.167]	-0.38589** [0.185]	-0.26056 [0.185]	-0.27479 [0.185]
Observations	844	844	822	844	822	822	822
R-squared	0.204	0.165	0.175	0.207	0.176	0.218	0.221
Number of countries	33	33	33	33	33	33	33

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Table 6.21 Dynamic Fixed Effects estimations on an augmented growth model using a control group (annual data), controlling for enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.06589*** [0.009]	-0.05919*** [0.009]	-0.05836*** [0.012]	-0.06511*** [0.009]	-0.05794*** [0.013]	-0.06581*** [0.013]	-0.06488*** [0.013]
$Investment_{it}$	0.00137*** [0.000]	0.00136*** [0.000]	0.00147*** [0.000]	0.00137*** [0.000]	0.00146*** [0.000]	0.00146*** [0.000]	0.00145*** [0.000]
$Pop\ Growth_{it}$	-1.08314*** [0.243]	-1.06864*** [0.243]	-0.93720*** [0.234]	-1.09881*** [0.232]	-0.95478*** [0.229]	-0.93286*** [0.241]	-0.94543*** [0.238]
$\ln HK_{it}$	0.17920*** [0.043]	0.19782*** [0.046]	0.20014*** [0.052]	0.18175*** [0.044]	0.20016*** [0.051]	0.17967*** [0.048]	0.18167*** [0.048]
$Fiscal_{it}$	0.01901*** [0.005]	0.01795*** [0.005]	0.01922*** [0.006]	0.01837*** [0.005]	0.01871*** [0.006]	0.02033*** [0.006]	0.01966*** [0.006]
$Fiscal_{it} * Enforcement_{it}$	-0.00662 [0.007]	-0.00505 [0.007]	-0.01073 [0.007]	-0.00630 [0.007]	-0.01043 [0.007]	-0.01242* [0.007]	-0.01202* [0.007]
$Trade_{it-1}$	0.00018* [0.000]			0.00018 [0.000]		0.00024* [0.000]	0.00024* [0.000]
$\Delta Investment_{it}$	0.00129 [0.001]	0.00071 [0.001]	0.00066 [0.001]	0.00129 [0.001]	0.00067 [0.001]	0.00127 [0.001]	0.00129 [0.001]
$\Delta Pop\ Growth_{it}$	-0.73470*** [0.190]	-0.67092*** [0.221]	-0.61851* [0.349]	-0.67670*** [0.205]	-0.58386 [0.360]	-0.63501* [0.323]	-0.58970* [0.338]
$\Delta \ln HK_{it}$	0.27749 [0.231]	0.38742 [0.258]	0.47591 [0.306]	0.28771 [0.219]	0.48625 [0.306]	0.36614 [0.268]	0.36966 [0.261]
$\Delta Trade_{it}$	-0.00071*** [0.000]			-0.00072*** [0.000]		-0.00068*** [0.000]	-0.00069*** [0.000]
$Gov\ Consumption_{it-1}$		0.00014 [0.001]		-0.00003 [0.001]	0.00012 [0.001]		-0.00004 [0.001]
$\Delta Gov\ Consumption_{it}$		-0.00091 [0.001]		-0.00134 [0.001]	-0.00082 [0.001]		-0.00121 [0.001]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00002*** [0.000]		-0.00002*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.26186 [0.167]	-0.37884** [0.171]	-0.39817** [0.188]	-0.27753 [0.168]	-0.40224** [0.187]	-0.27405 [0.183]	-0.28797 [0.184]
Observations	844	844	822	844	822	822	822
R-squared	0.205	0.166	0.177	0.207	0.178	0.221	0.223
Number of countries	33	33	33	33	33	33	33

Table 6.22 Results from System GMM estimations on a traditional growth model controlling for escape clauses

VARIABLES	(1)	(2)
Y_{it-1}	-0.794*** (-3.305)	-0.735*** (-2.830)
Investment _{it}	0.019** (2.114)	0.020* (1.735)
Pop Growth _{it}	-10.084 (-0.890)	-13.604 (-1.177)
lnHKit	2.281*** (4.252)	1.856** (2.428)
Fiscal _{it}	0.018 (0.114)	-0.201 (-0.838)
Fiscal _{it} *Enforcement _{it}		0.450 (1.469)
Fiscal _{it} *Escape _{it}	0.125 (0.606)	-0.228 (-1.078)
Fiscal _{it} *Enforcement _{it} *Escape _{it}		0.298 (1.093)
Constant	-3.780** (-2.212)	-2.355 (-0.881)
Observations	440	440
Number of countries	17	17
AR2	0.608	0.898
Hansen	0.618	0.557
Instruments	13	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.23 Results from system GMM estimations on an augmented growth model controlling for escape clauses

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.855*** (-3.943)	-0.358 (-1.637)	-0.693*** (-3.386)	-0.342* (-1.774)	-0.744*** (-3.548)	-0.471** (-2.061)	-0.479* (-1.875)
Investment _{it}	0.018** (2.246)	0.008 (1.479)	0.010** (2.126)	0.005 (0.956)	0.010* (1.831)	0.005 (1.344)	0.003 (0.800)
Pop Growth _{it}	-10.746 (-1.078)	-4.927 (-0.676)	-11.136 (-1.372)	-4.084 (-0.682)	-13.392 (-1.358)	-5.559 (-0.762)	-5.527 (-0.722)
lnHK _{it}	2.370*** (3.861)	1.161 (1.189)	2.030*** (3.678)	1.115 (1.092)	2.112*** (3.814)	1.843* (1.784)	1.900* (1.645)
Fiscal _{it}	-0.033 (-0.186)	0.027 (0.316)	-0.109 (-0.709)	-0.023 (-0.236)	-0.139 (-0.839)	-0.088 (-0.646)	-0.122 (-0.866)
Trade _{it}	0.003 (1.362)			0.001 (1.088)	0.001 (0.778)		0.002 (1.169)
Fiscal _{it} *Escape _{it}	0.231 (1.137)	0.038 (0.320)	0.200 (1.470)	0.107 (0.887)	0.242* (1.870)	0.135 (1.123)	0.184 (1.603)
Inflation _{it}		0.000 (0.046)		0.000 (0.137)		0.000 (0.459)	0.000 (0.623)
Gov Consumption _{it}			0.043*** (3.030)		0.045*** (3.007)	0.028** (2.572)	0.028** (2.112)
Constant	-3.851* (-1.881)	-2.228 (-0.838)	-3.748*** (-2.712)	-2.185 (-0.716)	-3.762** (-2.512)	-4.485* (-1.663)	-4.715 (-1.538)
Observations	440	418	440	418	440	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.463	0.319	0.484	0.455	0.568	0.348	0.492
Hansen	0.691	0.151	0.779	0.0914	0.819	0.400	0.443
Instruments	14	14	14	15	15	15	16

Table 6.24 Results from system GMM estimations on an augmented growth model controlling for escape clauses and enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.743*** (-2.968)	-0.289* (-1.830)	-0.611*** (-3.547)	-0.289* (-1.925)	-0.574*** (-3.352)	-0.394* (-1.913)	-0.505 (-1.590)
Investment _{it}	0.020 (1.579)	0.007 (1.234)	0.011** (2.461)	0.006 (1.024)	0.011** (2.236)	0.006** (2.234)	0.009 (1.151)
Pop Growth _{it}	-13.414 (-1.102)	-5.620 (-0.803)	-11.746* (-1.690)	-5.196 (-0.784)	-10.751 (-1.532)	-8.203 (-0.966)	-14.406 (-0.891)
lnHK _{it}	1.901*** (2.607)	0.770 (1.058)	1.760*** (2.943)	0.812 (1.098)	1.666*** (2.812)	1.282 (1.459)	1.277* (1.897)
Fiscal _{it}	-0.186 (-0.765)	-0.043 (-0.346)	-0.245 (-1.293)	-0.045 (-0.368)	-0.208 (-1.158)	-0.187 (-0.920)	-0.204 (-1.044)
Fiscal _{it} *Enforcement _{it}	0.427 (1.120)	0.184 (1.035)	0.408** (2.019)	0.159 (0.731)	0.402* (1.708)	0.305 (1.502)	0.414 (1.155)
Trade _{it}	0.000 (0.062)			0.000 (0.382)	-0.001 (-0.367)		-0.000 (-0.055)
Fiscal _{it} *Escape _{it}	-0.251 (-1.292)	-0.107 (-0.977)	-0.078 (-0.417)	-0.087 (-0.891)	-0.112 (-0.649)	-0.021 (-0.208)	-0.054 (-0.589)
Fiscal _{it} *Enforcement _{it} *Escape _{it}	0.330 (0.914)	0.100 (0.762)	0.140 (0.641)	0.110 (0.659)	0.133 (0.504)	0.024 (0.189)	-0.006 (-0.037)
Inflation _{it}		-0.000 (-0.241)		-0.000 (-0.104)		0.000 (0.128)	0.000 (0.479)
Gov Consumption _{it}			0.038*** (2.851)		0.036*** (2.710)	0.024** (1.978)	0.033 (1.519)
Constant	-2.488 (-0.911)	-1.075 (-0.485)	-3.212* (-1.835)	-1.265 (-0.552)	-3.049* (-1.786)	-2.640 (-1.119)	-1.846 (-1.079)
Observations	440	418	440	418	440	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.992	0.0821	0.390	0.0947	0.334	0.227	0.280
Hansen	0.575	0.120	0.590	0.100	0.535	0.264	0.411
Instruments	16	16	16	17	17	17	18

Table 6.25 Results from Dynamic Fixed Effects estimations on a traditional growth model controlling for escape clauses

VARIABLES	(1)	(2)
Y_{it-1}	-0.03869** [0.018]	-0.03943** [0.018]
$Investment_{it}$	0.00147** [0.001]	0.00147** [0.001]
$Pop\ Growth_{it}$	0.04535 [0.976]	-0.00462 [0.982]
$\ln HK_{it}$	0.19512*** [0.051]	0.20076*** [0.051]
$Fiscal_{it}$	0.01600 [0.010]	0.01781 [0.012]
$Fiscal_{it} * Enforcement_{it}$		-0.00896 [0.010]
$Fiscal_{it} * Escape_{it}$	-0.00194 [0.008]	-0.01164 [0.011]
$Fiscal_{it} * Enforcement_{it} * Escape_{it}$		0.01885 [0.015]
$\Delta Investment_{it}$	0.00567** [0.002]	0.00567** [0.002]
$\Delta Pop\ Growth_{it}$	0.59359 [1.334]	0.63436 [1.323]
$\Delta \ln HK_{it}$	0.46223 [0.402]	0.40273 [0.446]
Constant	-0.54194* [0.260]	-0.55873** [0.252]
Observations	424	424
R-squared	0.326	0.327
Number of countries	17	17

Table 6.26 Results from Dynamic Fixed Effects estimations on an augmented growth model controlling for escape clauses

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.03979** [0.017]	-0.04323*** [0.014]	-0.05793*** [0.018]	-0.04421*** [0.013]	-0.05744*** [0.017]	-0.05547*** [0.015]	-0.05490*** [0.015]
Investment _{it}	0.00169** [0.001]	0.00156** [0.001]	0.00146 [0.001]	0.00181** [0.001]	0.00147 [0.001]	0.00142 [0.001]	0.00144 [0.001]
Pop Growth _{it}	-0.14404 [0.919]	0.13005 [0.964]	-0.50418 [0.435]	-0.04196 [0.942]	-0.58751 [0.437]	-0.15965 [0.494]	-0.22501 [0.550]
lnHK _{it}	0.17895*** [0.044]	0.23564*** [0.064]	0.20922** [0.075]	0.22256*** [0.063]	0.20105*** [0.061]	0.14996** [0.060]	0.14689** [0.051]
Fiscal _{it}	0.01168 [0.008]	0.01938** [0.008]	0.01433 [0.010]	0.01508** [0.006]	0.01318 [0.008]	0.01266 [0.008]	0.01164 [0.007]
Fiscal _{it} *Escape _{it}	0.00417 [0.009]	-0.00510 [0.008]	-0.00345 [0.009]	0.00078 [0.008]	-0.00261 [0.008]	0.00140 [0.009]	0.00176 [0.008]
Trade _{it-1}	-0.00021 [0.000]			-0.00019 [0.000]		0.00025 [0.000]	0.00027 [0.000]
Investment _{it}	0.00610** [0.002]	0.00545** [0.002]	0.00388*** [0.001]	0.00583** [0.002]	0.00391*** [0.001]	0.00475*** [0.001]	0.00474*** [0.001]
Δ Pop Growth _{it}	0.59715 [1.291]	0.53798 [1.263]	0.03644 [0.813]	0.57106 [1.199]	0.10152 [0.879]	-0.35030 [0.830]	-0.24845 [0.893]
Δ lnHK _{it}	0.53985 [0.359]	0.23193 [0.401]	0.76870 [0.496]	0.30239 [0.345]	0.83968* [0.444]	0.76122 [0.438]	0.81365** [0.363]
Δ Trade _{it}	-0.00149*** [0.000]			-0.00151*** [0.000]		-0.00103*** [0.000]	-0.00103*** [0.000]
Gov Consumption _{it-1}		-0.00226 [0.002]		-0.00245 [0.002]	0.00065 [0.002]		0.00037 [0.001]
Gov Consumption _{it}		-0.00140 [0.003]		-0.00227 [0.002]	0.00000 [0.002]		-0.00110 [0.002]
Inflation _{it-1}			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Δ Inflation _{it}			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.45059* [0.232]	-0.64990** [0.303]	-0.44342 [0.276]	-0.57183* [0.283]	-0.41996 [0.242]	-0.23566 [0.229]	-0.23223 [0.206]
Observations	424	424	401	424	401	401	401
R-squared	0.396	0.334	0.269	0.406	0.270	0.349	0.351
Number of countries	17	17	17	17	17	17	17

Table 6.27 Dynamic Fixed Effects on an augmented growth model controlling for escape clauses and enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.04016** [0.017]	-0.04455*** [0.014]	-0.05888*** [0.019]	-0.04512*** [0.013]	-0.05829*** [0.018]	-0.05691*** [0.017]	-0.05619*** [0.016]
$Investment_{it}$	0.00170** [0.001]	0.00157** [0.001]	0.00149 [0.001]	0.00183** [0.001]	0.00148 [0.001]	0.00144 [0.001]	0.00145 [0.001]
$Pop\ Growth_{it}$	-0.18452 [0.924]	0.07015 [0.959]	-0.57106 [0.476]	-0.09187 [0.936]	-0.63739 [0.502]	-0.23185 [0.569]	-0.27997 [0.628]
$\ln HK_{it}$	0.18262*** [0.044]	0.24540*** [0.064]	0.21419** [0.079]	0.23009*** [0.063]	0.20574*** [0.064]	0.15546** [0.063]	0.15172** [0.053]
$Fiscal_{it}$	0.01274 [0.009]	0.02201** [0.009]	0.01562 [0.013]	0.01688** [0.007]	0.01437 [0.011]	0.01471 [0.010]	0.01348 [0.009]
$Fiscal_{it} * Enforcement_{it}$	-0.00595 [0.011]	-0.01182 [0.008]	-0.00564 [0.012]	-0.00854 [0.008]	-0.00479 [0.012]	-0.00802 [0.012]	-0.00684 [0.012]
$Fiscal_{it} * Escape_{it}$	-0.00598 [0.011]	-0.01900 [0.013]	-0.00802 [0.013]	-0.01333 [0.013]	-0.00620 [0.011]	-0.00145 [0.013]	0.00015 [0.011]
$Fiscal_{it} * Enforcement_{it} * Escape_{it}$	0.01758 [0.015]	0.02607 [0.016]	0.00953 [0.016]	0.02433 [0.017]	0.00760 [0.014]	0.00839 [0.016]	0.00596 [0.015]
$Trade_{it-1}$	-0.00021 [0.000]			-0.00020 [0.000]		0.00027 [0.000]	0.00028 [0.000]
$\Delta Investment_{it}$	0.00609** [0.002]	0.00544** [0.002]	0.00388*** [0.001]	0.00582** [0.002]	0.00391*** [0.001]	0.00475*** [0.001]	0.00474*** [0.001]
$\Delta Pop\ Growth_{it}$	0.63363 [1.295]	0.57919 [1.252]	0.09171 [0.900]	0.60921 [1.198]	0.14166 [0.947]	-0.29682 [0.905]	-0.21054 [0.951]
$\Delta \ln HK_{it}$	0.50168 [0.405]	0.13565 [0.424]	0.72859 [0.536]	0.23069 [0.373]	0.80052 [0.459]	0.70150 [0.482]	0.75936* [0.386]
$\Delta Trade_{it}$	-0.00149*** [0.000]			-0.00151*** [0.000]		-0.00102*** [0.000]	-0.00102*** [0.000]
$Gov\ Consumption_{it-1}$		-0.00242 [0.002]		-0.00260 [0.002]	0.00061 [0.002]		0.00034 [0.001]
$\Delta Gov\ Consumption_{it}$		-0.00136 [0.003]		-0.00224 [0.002]	0.00003 [0.002]		-0.00107 [0.002]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]

Table 6.27 Continued

Constant	-0.46200* [0.225]	-0.67715** [0.297]	-0.45598 [0.279]	-0.59320** [0.279]	-0.43177* [0.243]	-0.24762 [0.228]	-0.24242 [0.206]
Observations	424	424	401	424	401	401	401
R-squared	0.397	0.336	0.269	0.408	0.270	0.349	0.352
Number of countries	17	17	17	17	17	17	17

Table 6.28 Results from system GMM estimations on a traditional growth model controlling for public investment exclusion

VARIABLES	(1)	(2)
Y_{it-1}	-0.782*** (-2.890)	-0.701*** (-2.609)
Investment _{it}	0.017 (1.513)	0.018 (1.316)
Pop Growth _{it}	-12.097 (-1.038)	-9.842 (-1.055)
lnHK _{it}	2.448*** (3.479)	1.995*** (2.943)
Fiscal _{it}	0.100 (0.640)	0.011 (0.073)
Fiscal _{it} *Enforcement _{it}		0.260 (1.317)
Fiscal _{it} *Exclusion _{it}	-0.202 (-0.880)	-0.626* (-1.958)
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}		0.642* (1.787)
Constant	-4.486** (-2.475)	-3.238 (-1.590)
Observations	440	440
Number of countries	17	17
AR2	0.410	0.807
Hansen	0.632	0.499
Instruments	13	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.29 Results from system GMM estimations on an augmented growth model controlling for public investment exclusion

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.825*** (-3.236)	-0.647*** (-3.273)	-0.348* (-1.670)	-0.322* (-1.832)	-0.669*** (-3.240)	-0.430** (-2.179)	-0.424** (-2.096)
Investment _{it}	0.016 (1.516)	0.007 (1.109)	0.007 (1.254)	0.005 (0.765)	0.006 (0.999)	0.002 (0.498)	0.001 (0.126)
Pop Growth _{it}	-12.566 (-1.288)	-11.614 (-1.559)	-5.212 (-0.763)	-4.790 (-0.826)	-12.412 (-1.569)	-5.303 (-0.868)	-5.047 (-0.896)
lnHK _{it}	2.582*** (3.210)	2.256*** (3.099)	1.170 (1.150)	1.124 (1.056)	2.306*** (3.078)	1.879 (1.620)	1.869 (1.545)
Fiscal _{it}	0.074 (0.449)	-0.020 (-0.169)	0.046 (0.679)	0.008 (0.122)	-0.025 (-0.219)	-0.033 (-0.331)	-0.045 (-0.486)
Trade _{it}	0.002 (0.803)			0.001 (0.973)	0.001 (0.380)		0.001 (0.843)
Fiscal _{it} *Exclusion _{it}	-0.175 (-0.747)	-0.084 (-0.789)	-0.017 (-0.155)	0.015 (0.140)	-0.080 (-0.732)	-0.008 (-0.115)	0.009 (0.140)
Gov Consumption _{it}		0.040*** (3.031)			0.041*** (3.023)	0.026*** (2.817)	0.025** (2.461)
Inflation _{it}			0.000 (0.007)	0.000 (0.041)		0.000 (0.317)	0.000 (0.409)
Constant	-4.802** (-2.051)	-4.946** (-2.311)	-2.331 (-0.799)	-2.336 (-0.697)	-5.020** (-2.262)	-4.885 (-1.412)	-4.925 (-1.347)
Observations	440	440	418	418	440	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.404	0.341	0.362	0.254	0.387	0.256	0.315
Hansen	0.658	0.807	0.155	0.0940	0.824	0.365	0.364
Instruments	14	14	14	15	15	15	16

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6.30 Results from system GMM estimations on an augmented growth model controlling for public investment exclusion and enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\ln Y_{it-1}$	-0.704*** (-2.633)	-0.319* (-1.668)	-0.609*** (-3.223)	-0.577*** (-3.101)	-0.386* (-1.931)	-0.323* (-1.739)	-0.479** (-2.188)
Investment_{it}	0.017 (1.214)	0.005 (0.822)	0.010 (1.601)	0.011 (1.533)	0.004 (1.365)	0.004 (0.676)	0.008 (1.338)
Pop Growth_{it}	-9.756 (-1.011)	-5.004 (-0.770)	-10.729 (-1.418)	-10.113 (-1.336)	-7.684 (-0.928)	-4.751 (-0.759)	-13.903 (-1.191)
$\ln HK_{it}$	2.016*** (3.138)	1.011 (1.022)	1.854*** (2.659)	1.791** (2.524)	1.383 (1.405)	1.064 (1.087)	1.245** (2.064)
Fiscal_{it}	0.026 (0.132)	-0.007 (-0.070)	-0.105 (-0.723)	-0.119 (-0.665)	-0.147 (-0.839)	-0.001 (-0.006)	-0.138 (-0.890)
$\text{Fiscal}_{it} * \text{Enforcement}_{it}$	0.247 (0.945)	0.164 (1.246)	0.370* (1.925)	0.403* (1.725)	0.313* (1.658)	0.143 (0.871)	0.370 (1.624)
Trade_{it}	0.000 (0.091)			-0.001 (-0.434)		0.000 (0.272)	-0.000 (-0.147)
$\text{Fiscal}_{it} * \text{Exclusion}_{it}$	-0.626* (-1.917)	-0.238 (-1.117)	-0.359 (-1.467)	-0.317 (-1.531)	-0.128 (-0.972)	-0.260 (-1.230)	-0.192 (-1.586)
$\text{Fiscal}_{it} * \text{Enforcement}_{it} * \text{Exclusion}_{it}$	0.635* (1.766)	0.235 (1.056)	0.258 (0.883)	0.174 (0.675)	0.033 (0.232)	0.276 (1.373)	0.080 (0.527)
Inflation_{it}		-0.000 (-0.096)			0.000 (0.106)	0.000 (0.008)	0.000 (0.544)
$\text{Gov Consumption}_{it}$			0.036*** (2.644)	0.036** (2.533)	0.024* (1.831)		0.031** (2.079)
Constant	-3.302* (-1.659)	-1.848 (-0.632)	-3.638* (-1.737)	-3.559* (-1.679)	-3.121 (-1.109)	-2.054 (-0.705)	-1.891 (-1.125)
Observations	440	418	440	440	418	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.726	0.333	0.295	0.261	0.219	0.451	0.193
Hansen	0.497	0.162	0.446	0.434	0.245	0.150	0.518
Instruments	16	16	16	17	17	17	18

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.31 Results from Dynamic Fixed Effects estimations on a traditional growth model controlling for public investment exclusion

VARIABLES	(1)	(2)
Y_{it-1}	-0.03966* [0.020]	-0.03787* [0.021]
$Investment_{it}$	0.00149** [0.001]	0.00145** [0.001]
$Pop\ Growth_{it}$	0.03640 [1.025]	0.08287 [1.061]
$\ln HK_{it}$	0.19788*** [0.058]	0.18506*** [0.053]
$Fiscal_{it}$	0.01688 [0.010]	0.01401 [0.011]
$Fiscal_{it} * Enforcement_{it}$		0.00891 [0.012]
$Fiscal_{it} * Exclusion_{it}$	-0.00375 [0.012]	0.00842 [0.022]
$Fiscal_{it} * Enforcement_{it} * Exclusion_{it}$		-0.02140 [0.021]
$\Delta Investment_{it}$	0.00565** [0.002]	0.00570** [0.002]
$\Delta Pop\ Growth_{it}$	0.59226 [1.346]	0.55666 [1.333]
$\Delta \ln HK_{it}$	0.43775 [0.462]	0.52569 [0.519]
Constant	-0.54653* [0.270]	-0.50684* [0.244]
Observations	424	424
R-squared	0.326	0.328
Number of countries	17	17

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Table 6.32 Dynamic Fixed Effects estimations on an augmented growth model controlling for public investment exclusion

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.04222** [0.019]	-0.04432** [0.016]	-0.05707*** [0.017]	-0.04700*** [0.015]	-0.05655*** [0.016]	-0.05733*** [0.016]	-0.05680*** [0.016]
$Investment_{it}$	0.00169** [0.001]	0.00160** [0.001]	0.00147 [0.001]	0.00183** [0.001]	0.00147 [0.001]	0.00144 [0.001]	0.00146 [0.001]
$Pop\ Growth_{it}$	-0.19356 [0.909]	0.13073 [1.014]	-0.45443 [0.567]	-0.07526 [0.936]	-0.54784 [0.531]	-0.22187 [0.561]	-0.28466 [0.599]
$lnHK_{it}$	0.19210*** [0.055]	0.23613*** [0.066]	0.20392** [0.072]	0.23476*** [0.068]	0.19567*** [0.063]	0.15709** [0.063]	0.15498** [0.057]
$Fiscal_{it}$	0.01553 [0.010]	0.01991** [0.008]	0.01314 [0.009]	0.01874** [0.008]	0.01201 [0.008]	0.01474* [0.008]	0.01381* [0.007]
$Fiscal_{it} * Exclusion_{it}$	-0.00562 [0.012]	-0.00564 [0.011]	0.00006 [0.011]	-0.00783 [0.011]	0.00058 [0.011]	-0.00375 [0.010]	-0.00356 [0.009]
$Trade_{it-1}$	-0.00020 [0.000]			-0.00018 [0.000]		0.00026 [0.000]	0.00028 [0.000]
$\Delta Investment_{it}$	0.00608** [0.002]	0.00542** [0.002]	0.00388*** [0.001]	0.00580** [0.002]	0.00392*** [0.001]	0.00473*** [0.001]	0.00472*** [0.001]
$\Delta Pop\ Growth_{it}$	0.62858 [1.286]	0.52089 [1.261]	-0.01049 [0.749]	0.57985 [1.179]	0.06512 [0.833]	-0.31448 [0.791]	-0.21138 [0.865]
$\Delta lnHK_{it}$	0.43186 [0.424]	0.21904 [0.442]	0.80025 [0.545]	0.19579 [0.387]	0.87382 [0.520]	0.70234 [0.466]	0.74959* [0.402]
$\Delta Trade_{it}$	-0.00148*** [0.000]			-0.00151*** [0.000]		-0.00102*** [0.000]	-0.00103*** [0.000]
$Gov\ Consumption_{it-1}$		-0.00224 [0.002]		-0.00253 [0.002]	0.00069 [0.002]		0.00032 [0.002]
$\Delta Gov\ Consumption_{it}$		-0.00136 [0.002]		-0.00230 [0.002]	0.00003 [0.002]		-0.00114 [0.002]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.48731* [0.252]	-0.64506** [0.302]	-0.42871 [0.274]	-0.60196* [0.291]	-0.40536 [0.250]	-0.25134 [0.237]	-0.25106 [0.221]
Observations	424	424	401	424	401	401	401
R-squared	0.397	0.334	0.269	0.407	0.270	0.349	0.351
Number of countries	17	17	17	17	17	17	17

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 6.33 Dynamic Fixed Effects augmented growth model controlling for public investment exclusion and enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.04037*	-0.04293**	-0.05411***	-0.04565***	-0.05460***	-0.05313***	-0.05378***
	[0.020]	[0.016]	[0.017]	[0.016]	[0.016]	[0.016]	[0.016]
Investment _{it}	0.00168**	0.00156**	0.00139	0.00183**	0.00136	0.00138	0.00138
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Pop Growth _{it}	-0.14272	0.15679	-0.33842	-0.04587	-0.09962	-0.44019	-0.17617
	[0.958]	[1.046]	[0.551]	[0.973]	[0.606]	[0.547]	[0.660]
lnHK _{it}	0.17811***	0.22617***	0.18654**	0.22445***	0.13961**	0.17301***	0.13335**
	[0.049]	[0.061]	[0.069]	[0.063]	[0.063]	[0.058]	[0.055]
Fiscal _{it}	0.01171	0.01801**	0.00907	0.01607*	0.01109	0.00717	0.00967
	[0.011]	[0.008]	[0.012]	[0.008]	[0.010]	[0.011]	[0.009]
Fiscal _{it} *Enforcement _{it}	0.01210	0.00550	0.01180	0.00818	0.01092	0.01332	0.01167
	[0.013]	[0.012]	[0.013]	[0.012]	[0.012]	[0.012]	[0.011]
Fiscal _{it} *Exclusion _{it}	0.00214	0.00398	0.01814	-0.00322	0.01277	0.02007	0.01354
	[0.016]	[0.023]	[0.023]	[0.016]	[0.017]	[0.023]	[0.016]
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}	-0.01634	-0.01615	-0.03038	-0.01003	-0.02790	-0.03274	-0.02881*
	[0.016]	[0.023]	[0.023]	[0.016]	[0.017]	[0.024]	[0.016]
Trade _{it-1}	-0.00021			-0.00019	0.00028		0.00030
	[0.000]			[0.000]	[0.000]		[0.000]
Δ Investment _{it}	0.00610**	0.00547**	0.00398***	0.00582**	0.00482***	0.00404***	0.00482***
	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]
Δ Pop Growth _{it}	0.59256	0.49893	-0.06261	0.55967	-0.37894	0.01244	-0.27337
	[1.295]	[1.263]	[0.867]	[1.194]	[0.885]	[0.940]	[0.954]
Δ lnHK _{it}	0.54372	0.28287	0.92745	0.27780	0.81811	1.03656	0.89226*
	[0.471]	[0.487]	[0.611]	[0.412]	[0.529]	[0.596]	[0.458]
Δ Trade _{it}	-0.00149***			-0.00151***	-0.00100***		-0.00100***
	[0.000]			[0.000]	[0.000]		[0.000]
Gov Consumption _{it-1}		-0.00216		-0.00245		0.00091	0.00053
		[0.002]		[0.002]		[0.002]	[0.002]
Δ Gov Consumption _{it}		-0.00128		-0.00226		0.00025	-0.00094
		[0.003]		[0.002]		[0.002]	[0.002]
Inflation _{it-1}			-0.00001***		-0.00001***	-0.00001***	-0.00001***
			[0.000]		[0.000]	[0.000]	[0.000]
Δ Inflation _{it}			-0.00001***		-0.00001***	-0.00001***	-0.00001***
			[0.000]		[0.000]	[0.000]	[0.000]
Constant	-0.44338*	-0.61482*	-0.37920	-0.57018*	-0.20117	-0.33987	-0.18820

Table 6.33 Continued

	[0.224]	[0.290]	[0.268]	[0.277]	[0.234]	[0.240]	[0.213]
Observations	424	424	401	424	401	401	401
R-squared	0.398	0.335	0.274	0.408	0.353	0.276	0.356
Number of countries	17	17	17	17	17	17	17

Table 6.34 Results from system GMM estimations on a traditional growth model controlling for exclusions of public investment or any other priority items

VARIABLES	(1)	(2)
Y_{it-1}	-0.781*** (-3.083)	-0.698*** (-2.577)
Investment _{it}	0.018* (1.715)	0.018 (1.302)
Pop Growth _{it}	-11.324 (-1.013)	-9.736 (-1.053)
lnHK _{it}	2.285*** (3.727)	2.004*** (2.904)
Fiscal _{it}	0.034 (0.186)	0.023 (0.174)
Fiscal _{it} *Enforcement _{it}		0.216 (1.176)
Fiscal _{it} *Exclusion _{it}	0.046 (0.229)	-0.624* (-1.942)
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}		0.678* (1.894)
Constant	-3.840** (-2.155)	-3.293 (-1.639)
Observations	440	440
Number of countries	17	17
AR2	0.642	0.807
Hansen	0.648	0.502
Instruments	13	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.35 Results from system GMM estimations on an augmented growth model controlling for any type of exclusion

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.826*** (-3.353)	-0.639*** (-3.380)	-0.338* (-1.726)	-0.319* (-1.810)	-0.661*** (-3.341)	-0.409** (-2.216)	-0.407** (-2.153)
Investment _{it}	0.017 (1.623)	0.007 (1.395)	0.007 (1.166)	0.004 (0.768)	0.007 (1.270)	0.003 (0.626)	0.001 (0.275)
Pop Growth _{it}	-12.019 (-1.291)	-10.359* (-1.716)	-5.414 (-0.850)	-5.058 (-0.886)	-11.267 (-1.590)	-4.921 (-0.914)	-4.989 (-0.905)
lnHK _{it}	2.488*** (3.534)	2.066*** (3.287)	1.077 (1.164)	1.102 (1.084)	2.133*** (3.444)	1.655 (1.575)	1.698 (1.569)
Fiscal _{it}	0.030 (0.149)	-0.065 (-0.527)	0.008 (0.091)	-0.007 (-0.077)	-0.064 (-0.536)	-0.061 (-0.607)	-0.059 (-0.578)
Trade _{it}	0.002 (0.755)			0.001 (0.554)	0.001 (0.356)		0.001 (0.644)
Fiscal _{it} *Exclusion _{it}	-0.023 (-0.081)	0.105 (0.834)	0.094 (0.887)	0.069 (0.522)	0.092 (0.715)	0.099 (1.136)	0.078 (0.891)
Gov Consumption _{it}		0.039*** (3.085)			0.040*** (3.049)	0.023*** (2.729)	0.023** (2.527)
Inflation _{it}			-0.000 (-0.081)	0.000 (0.047)		0.000 (0.213)	0.000 (0.316)
Constant	-4.445** (-2.180)	-4.227** (-2.440)	-1.999 (-0.765)	-2.245 (-0.722)	-4.369** (-2.545)	-4.088 (-1.328)	-4.311 (-1.351)
Observations	440	440	418	418	440	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.472	0.415	0.136	0.149	0.457	0.251	0.287
Hansen	0.690	0.795	0.167	0.106	0.817	0.329	0.336
Instruments	14	14	14	15	15	15	16

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.36 System GMM estimations on an augmented growth controlling for any type of exclusion and enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Yit-1	-0.695** (-2.566)	-0.325 (-1.635)	-0.628*** (-3.292)	-0.613*** (-3.269)	-0.408* (-1.910)	-0.329 (-1.616)	-0.548* (-1.846)
Investmentit	0.017 (1.182)	0.005 (0.765)	0.011* (1.901)	0.012* (1.733)	0.005 (1.506)	0.004 (0.674)	0.009 (1.220)
Pop Growthit	-9.632 (-1.013)	-5.090 (-0.802)	-11.313 (-1.424)	-10.842 (-1.379)	-7.934 (-0.922)	-4.971 (-0.797)	-14.575 (-1.047)
lnHKit	2.013*** (3.047)	1.054 (0.994)	1.839*** (2.787)	1.816*** (2.714)	1.438 (1.427)	1.111 (1.025)	1.483** (2.017)
Fiscalit	0.026 (0.156)	0.004 (0.045)	-0.112 (-0.729)	-0.132 (-0.750)	-0.157 (-0.914)	0.002 (0.025)	-0.160 (-1.055)
Fiscalit*Enforcementit	0.213 (1.119)	0.120 (1.336)	0.345* (1.817)	0.357* (1.791)	0.287* (1.779)	0.117 (1.218)	0.335* (1.892)
Tradeit	0.000 (0.050)			-0.001 (-0.399)		0.000 (0.082)	-0.000 (-0.124)
Fiscalit*Exclusionit	-0.613* (-1.884)	-0.248 (-1.115)	-0.366 (-1.476)	-0.333 (-1.552)	-0.137 (-0.990)	-0.268 (-1.177)	-0.228 (-1.368)
Fiscalit*Enforcementit*Exclusionit	0.661* (1.860)	0.296 (1.099)	0.356 (1.345)	0.340 (1.428)	0.134 (0.942)	0.318 (1.039)	0.268 (1.230)
Inflationit		-0.000 (-0.121)			0.000 (0.169)	-0.000 (-0.001)	0.000 (0.644)
Gov Consumptionit			0.037*** (2.617)	0.037** (2.540)	0.024* (1.859)		0.034* (1.810)
Constant	-3.350* (-1.674)	-1.981 (-0.635)	-3.445* (-1.782)	-3.418* (-1.720)	-3.188 (-1.138)	-2.188 (-0.691)	-2.411 (-1.310)
Observations	440	418	440	440	418	418	418
Number of countries	17	17	17	17	17	17	17
AR2	0.747	0.383	0.299	0.262	0.227	0.503	0.233
Hansen	0.500	0.172	0.480	0.488	0.289	0.158	0.489
Instruments	16	16	16	17	17	17	18

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6.37 Results from Dynamic Fixed Effects estimations on traditional growth model controlling for any type of exclusion

VARIABLES	(1)	(2)
Y_{it-1}	-0.03966* [0.020]	-0.03787* [0.021]
Investment _{it}	0.00149** [0.001]	0.00145** [0.001]
Pop Growth _{it}	0.03640 [1.025]	0.08287 [1.061]
lnHK _{it}	0.19788*** [0.058]	0.18506*** [0.053]
Fiscal _{it}	0.01688 [0.010]	0.01401 [0.011]
Fiscal _{it} *Enforcement _{it}		0.00891 [0.012]
Fiscal _{it} *Exclusion _{it}	-0.00375 [0.012]	0.00842 [0.022]
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}		-0.02140 [0.021]
Δ Investment _{it}	0.00565** [0.002]	0.00570** [0.002]
Δ Pop Growth _{it}	0.59226 [1.346]	0.55666 [1.333]
Δ lnHK _{it}	0.43775 [0.462]	0.52569 [0.519]
Constant	-0.54630* [0.270]	-0.50604* [0.244]
Observations	424	424
R-squared	0.326	0.328
Number of countries	17	17

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Table 6.38 Dynamic Fixed Effects estimations on an augmented growth model controlling for any type of exclusion

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.04222** [0.019]	-0.04432** [0.016]	-0.05707*** [0.017]	-0.04700*** [0.015]	-0.05655*** [0.016]	-0.05733*** [0.016]	-0.05680*** [0.016]
$Investment_{it}$	0.00169** [0.001]	0.00160** [0.001]	0.00147 [0.001]	0.00183** [0.001]	0.00147 [0.001]	0.00144 [0.001]	0.00146 [0.001]
$Pop\ Growth_{it}$	-0.19356 [0.909]	0.13073 [1.014]	-0.45443 [0.567]	-0.07526 [0.936]	-0.54784 [0.531]	-0.22187 [0.561]	-0.28466 [0.599]
$\ln HK_{it}$	0.19210*** [0.055]	0.23613*** [0.066]	0.20392** [0.072]	0.23476*** [0.068]	0.19567*** [0.063]	0.15709** [0.063]	0.15498** [0.057]
$Fiscal_{it}$	0.01553 [0.010]	0.01991** [0.008]	0.01314 [0.009]	0.01874** [0.008]	0.01201 [0.008]	0.01474* [0.008]	0.01381* [0.007]
$Fiscal_{it} * Exclusion_{it}$	-0.00562 [0.012]	-0.00564 [0.011]	0.00006 [0.011]	-0.00783 [0.011]	0.00058 [0.011]	-0.00375 [0.010]	-0.00356 [0.009]
$Trade_{it-1}$	-0.00020 [0.000]			-0.00018 [0.000]		0.00026 [0.000]	0.00028 [0.000]
$\Delta Investment_{it}$	0.00608** [0.002]	0.00542** [0.002]	0.00388*** [0.001]	0.00580** [0.002]	0.00392*** [0.001]	0.00473*** [0.001]	0.00472*** [0.001]
$\Delta Pop\ Growth_{it}$	0.62858 [1.286]	0.52089 [1.261]	-0.01049 [0.749]	0.57985 [1.179]	0.06512 [0.833]	-0.31448 [0.791]	-0.21138 [0.865]
$\Delta \ln HK_{it}$	0.43186 [0.424]	0.21904 [0.442]	0.80025 [0.545]	0.19579 [0.387]	0.87382 [0.520]	0.70234 [0.466]	0.74959* [0.402]
$\Delta Trade_{it}$	-0.00148*** [0.000]			-0.00151*** [0.000]		-0.00102*** [0.000]	-0.00103*** [0.000]
$Gov\ Consumption_{it-1}$		-0.00224 [0.002]		-0.00253 [0.002]	0.00069 [0.002]		0.00032 [0.002]
$\Delta Gov\ Consumption_{it}$		-0.00136 [0.002]		-0.00230 [0.002]	0.00003 [0.002]		-0.00114 [0.002]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.48696* [0.252]	-0.64471** [0.302]	-0.42871 [0.274]	-0.60148* [0.291]	-0.40540 [0.250]	-0.25109 [0.237]	-0.25083 [0.220]
Observations	424	424	401	424	401	401	401
R-squared	0.397	0.334	0.269	0.407	0.270	0.349	0.351
Number of countries	17	17	17	17	17	17	17

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Table 6.39 Dynamic Fixed Effects on an augmented growth model controlling for any exclusion and enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.04037*	-0.04293**	-0.05411***	-0.04565***	-0.05460***	-0.05313***	-0.05378***
	[0.020]	[0.016]	[0.017]	[0.016]	[0.016]	[0.016]	[0.016]
Investment _{it}	0.00168**	0.00156**	0.00139	0.00183**	0.00136	0.00138	0.00138
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Pop Growth _{it}	-0.14272	0.15679	-0.33842	-0.04587	-0.09962	-0.44019	-0.17617
	[0.958]	[1.046]	[0.551]	[0.973]	[0.606]	[0.547]	[0.660]
lnHK _{it}	0.17811***	0.22617***	0.18654**	0.22445***	0.13961**	0.17301***	0.13335**
	[0.049]	[0.061]	[0.069]	[0.063]	[0.063]	[0.058]	[0.055]
Fiscal _{it}	0.01171	0.01801**	0.00907	0.01607*	0.01109	0.00717	0.00967
	[0.011]	[0.008]	[0.012]	[0.008]	[0.010]	[0.011]	[0.009]
Fiscal _{it} *Enforcement _{it}	0.01210	0.00550	0.01180	0.00818	0.01092	0.01332	0.01167
	[0.013]	[0.012]	[0.013]	[0.012]	[0.012]	[0.012]	[0.011]
Fiscal _{it} *Exclusion _{it}	0.00214	0.00398	0.01814	-0.00322	0.01277	0.02007	0.01354
	[0.016]	[0.023]	[0.023]	[0.016]	[0.017]	[0.023]	[0.016]
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}	-0.01634	-0.01615	-0.03038	-0.01003	-0.02790	-0.03274	-0.02881*
	[0.016]	[0.023]	[0.023]	[0.016]	[0.017]	[0.024]	[0.016]
Trade _{it-1}	-0.00021			-0.00019	0.00028		0.00030
	[0.000]			[0.000]	[0.000]		[0.000]
Δ Investment _{it}	0.00610**	0.00547**	0.00398***	0.00582**	0.00482***	0.00404***	0.00482***
	[0.002]	[0.002]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]
Δ Pop Growth _{it}	0.59256	0.49893	-0.06261	0.55967	-0.37894	0.01244	-0.27337
	[1.295]	[1.263]	[0.867]	[1.194]	[0.885]	[0.940]	[0.954]
Δ lnHK _{it}	0.54372	0.28287	0.92745	0.27780	0.81811	1.03656	0.89226*
	[0.471]	[0.487]	[0.611]	[0.412]	[0.529]	[0.596]	[0.458]
Δ Trade _{it}	-0.00149***			-0.00151***	-0.00100***		-0.00100***
	[0.000]			[0.000]	[0.000]		[0.000]
Gov Consumption _{it-1}		-0.00216		-0.00245		0.00091	0.00053
		[0.002]		[0.002]		[0.002]	[0.002]
Δ Gov Consumption _{it}		-0.00128		-0.00226		0.00025	-0.00094
		[0.003]		[0.002]		[0.002]	[0.002]
Inflation _{it-1}			-0.00001***		-0.00001***	-0.00001***	-0.00001***
			[0.000]		[0.000]	[0.000]	[0.000]
Δ Inflation _{it}			-0.00001***		-0.00001***	-0.00001***	-0.00001***
			[0.000]		[0.000]	[0.000]	[0.000]
Constant	-0.44251*	-0.61407*	-0.37841	-0.56936*	-0.20019	-0.33904	-0.18721

Table 6.39 Continued

	[0.224]	[0.290]	[0.268]	[0.277]	[0.234]	[0.239]	[0.213]
Observations	424	424	401	424	401	401	401
R-squared	0.398	0.335	0.274	0.408	0.353	0.276	0.356
Number of countries	17	17	17	17	17	17	17
Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1							

Table 6.40 Results from System GMM estimates using a Fiscal Rule Index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Y_{it-1}	-0.370 (-1.430)	-0.400 (-1.109)	-0.354* (-1.926)	-0.786* (-1.846)	-0.476** (-2.222)	-0.892* (-1.826)	-0.530** (-2.087)	-0.563* (-1.726)
$Investment_{it}$	0.005 (0.869)	-0.002 (-0.291)	0.001 (0.221)	0.005 (0.500)	-0.003 (-0.918)	-0.009 (-1.035)	0.000 (0.023)	-0.007 (-1.033)
$Pop\ Growth_{it}$	-10.776 (-0.976)	-16.447 (-1.023)	-10.628 (-0.997)	-13.008 (-0.916)	-14.776 (-1.376)	-23.363 (-1.441)	-9.104 (-0.696)	-20.118 (-1.283)
$lnHK_{it}$	0.865 (0.755)	0.851 (0.534)	0.821 (1.418)	2.190* (1.760)	1.237 (1.506)	2.393 (1.509)	1.238** (2.280)	1.486*** (2.592)
FRI_{it}	0.017 (0.223)	0.020 (0.167)	0.002 (0.064)	-0.028 (-0.370)	-0.036 (-0.552)	-0.064 (-0.507)	-0.039 (-0.621)	-0.025 (-0.310)
$Trade_{it}$		0.003 (1.097)			0.003** (2.374)	0.006* (1.780)		0.004 (1.414)
$Inflation_{it}$			-0.007** (-2.201)		-0.010*** (-2.600)		-0.009* (-1.672)	-0.010* (-1.699)
$Gov\ Consumption_{it}$				0.059* (1.914)		0.062* (1.806)	0.036* (1.817)	0.032 (1.200)
Constant	-0.737 (-0.198)	-0.417 (-0.079)	-0.544 (-0.240)	-3.795 (-1.209)	-1.304 (-0.458)	-3.726 (-0.949)	-1.308 (-0.559)	-1.919 (-0.855)
Observations	199	199	197	199	197	199	197	197
Number of countries	17	17	17	17	17	17	17	17
AR2	0.0797	0.191	0.286	0.315	0.278	0.129	0.280	0.289
Hansen	0.184	0.159	0.612	0.757	0.707	0.837	0.730	0.618
Instruments	12	13	13	13	14	14	14	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.41 Results from Dynamic Fixed Effects using FRI index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Y_{it-1}	-0.18224*** [0.048]	-0.12751** [0.046]	-0.12206** [0.044]	-0.11022** [0.041]	-0.12335*** [0.041]	-0.11868** [0.044]	-0.10281** [0.038]	-0.11022** [0.041]
$Investment_{it}$	0.00311*** [0.001]	0.00177* [0.001]	0.00165 [0.001]	0.00137 [0.001]	0.00180* [0.001]	0.00144 [0.001]	0.00137 [0.001]	0.00137 [0.001]
$Pop\ Growth_{it}$	-8.54153** [3.549]	-5.70911* [3.060]	-6.22091** [2.793]	-4.58656 [2.788]	-5.85320** [2.682]	-4.43517 [2.933]	-4.49077* [2.511]	-4.58656 [2.788]
$\ln HK_{it}$	0.40991** [0.150]	0.24996 [0.147]	0.25947** [0.115]	0.27728** [0.127]	0.23446* [0.133]	0.27521* [0.144]	0.26465** [0.114]	0.27728** [0.127]
FRI_{it}	0.00614 [0.005]	0.00459 [0.004]	0.00561 [0.004]	0.00190 [0.003]	0.00560 [0.004]	0.00204 [0.003]	0.00268 [0.003]	0.00190 [0.003]
$Trade_{it-1}$		0.00008 [0.000]			0.00011 [0.000]	0.00020 [0.000]		
$\Delta Investment_{it}$		0.00464*** [0.001]	0.00437*** [0.001]	0.00410*** [0.001]	0.00448*** [0.001]	0.00424*** [0.001]	0.00380*** [0.001]	0.00410*** [0.001]
$\Delta Pop\ Growth_{it}$	6.07580* [3.037]	3.84245 [2.677]	4.59834* [2.357]	2.87576 [2.461]	4.26465* [2.302]	2.70200 [2.599]	3.10443 [2.164]	2.87576 [2.461]
$\Delta \ln HK_{it}$	-0.62483 [0.702]	-0.07888 [0.615]	-0.13154 [0.579]	0.04262 [0.745]	-0.02373 [0.569]	0.11993 [0.728]	0.02697 [0.732]	0.04262 [0.745]
$\Delta Trade_{it}$		-0.00039 [0.000]			-0.00048 [0.000]	-0.00025 [0.000]		
$Gov\ Consumption_{it-1}$			-0.00059 [0.002]		-0.00052 [0.002]		-0.00178 [0.002]	
$\Delta Gov\ Consumption_{it}$			-0.00595* [0.003]		-0.00637** [0.003]		-0.00744** [0.003]	
$Inflation_{it-1}$				-0.00167*** [0.000]		-0.00189*** [0.000]	-0.00185*** [0.001]	-0.00167*** [0.000]
$\Delta Inflation_{it}$				-0.00148*** [0.000]		-0.00138*** [0.000]	-0.00178*** [0.000]	-0.00148*** [0.000]
Constant	-0.22465 [0.459]	0.00357 [0.467]	-0.05531 [0.370]	-0.23342 [0.425]	0.04137 [0.402]	-0.17679 [0.445]	-0.21505 [0.329]	-0.23342 [0.425]
Observations	197	196	196	193	196	193	193	193
R-squared	0.228	0.385	0.410	0.421	0.425	0.429	0.467	0.421
Number of countries	17	17	17	17	17	17	17	17

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 6.42 Results from system GMM estimates using a FRI index that captures flexibility

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Y_{it-1}	-0.332 (-1.299)	-0.366 (-0.794)	-0.340* (-1.756)	-0.828* (-1.691)	-0.468** (-2.286)	-1.077** (-2.207)	-0.546** (-2.119)	-0.622** (-2.087)
Investment _{it}	0.005 (0.827)	-0.002 (-0.171)	0.000 (0.027)	0.005 (0.460)	-0.004 (-0.953)	-0.012 (-1.372)	-0.000 (-0.051)	-0.009 (-1.078)
Pop Growth _{it}	-8.969 (-0.840)	-14.457 (-0.825)	-10.127 (-0.868)	-15.648 (-0.912)	-16.421 (-1.384)	-32.444* (-1.680)	-11.222 (-0.803)	-23.206 (-1.585)
lnHK _{it}	0.802 (0.729)	0.860 (0.448)	0.829 (1.316)	2.200* (1.761)	1.093 (1.251)	2.807** (2.392)	1.216** (2.016)	1.472** (2.563)
FRI_flex _{it}	0.011 (0.143)	0.010 (0.074)	0.000 (0.008)	-0.053 (-0.653)	-0.051 (-0.536)	-0.110 (-0.930)	-0.042 (-0.573)	-0.035 (-0.336)
Trade _{it}		0.003 (0.989)			0.004*** (2.645)	0.008** (1.998)		0.004* (1.700)
Inflation _{it}			-0.006* (-1.850)		-0.010** (-2.236)		-0.009* (-1.708)	-0.011* (-1.749)
Gov Consumption _{it}				0.065* (1.730)		0.074** (2.062)	0.037* (1.718)	0.035 (1.454)
Constant	-0.777 (-0.243)	-0.710 (-0.145)	-0.689 (-0.300)	-3.494 (-1.252)	-0.707 (-0.249)	-3.988 (-1.451)	-1.044 (-0.431)	-1.392 (-0.652)
Observations	199	199	197	199	197	199	197	197
Number of countries	17	17	17	17	17	17	17	17
AR2	0.0528	0.268	0.326	0.332	0.315	0.0912	0.276	0.274
Hansen	0.183	0.185	0.571	0.749	0.742	0.928	0.679	0.773
Instruments	12	13	13	13	14	14	14	15

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.43 Results from Dynamic Fixed Effects using a FRI index that captured flexibility

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Y_{it-1}	-0.18240*** [0.048]	-0.12781** [0.046]	-0.12226** [0.044]	-0.11052** [0.040]	-0.12364*** [0.041]	-0.11907** [0.044]	-0.10308** [0.038]	-0.11052** [0.040]
$Investment_{it}$	0.00310*** [0.001]	0.00176* [0.001]	0.00164 [0.001]	0.00137 [0.001]	0.00179* [0.001]	0.00144 [0.001]	0.00137 [0.001]	0.00137 [0.001]
$Pop\ Growth_{it}$	-8.52125** [3.527]	-5.70634* [3.040]	-6.20887** [2.767]	-4.60228 [2.764]	-5.84474** [2.663]	-4.45394 [2.911]	-4.50112* [2.487]	-4.60228 [2.764]
$\ln HK_{it}$	0.41248** [0.149]	0.25003 [0.146]	0.26064** [0.114]	0.27631** [0.126]	0.23498* [0.132]	0.27409* [0.143]	0.26402** [0.113]	0.27631** [0.126]
FRI_flex_{it}	0.00782 [0.005]	0.00614 [0.005]	0.00733 [0.005]	0.00274 [0.004]	0.00740 [0.005]	0.00297 [0.004]	0.00372 [0.004]	0.00274 [0.004]
$Trade_{it-1}$		0.00008 [0.000]			0.00011 [0.000]	0.00020 [0.000]		
$\Delta Investment_{it}$		0.00465*** [0.001]	0.00437*** [0.001]	0.00411*** [0.001]	0.00448*** [0.001]	0.00424*** [0.001]	0.00381*** [0.001]	0.00411*** [0.001]
$\Delta Pop\ Growth_{it}$	6.05627* [3.020]	3.83750 [2.659]	4.58581* [2.335]	2.88835 [2.439]	4.25494* [2.286]	2.71684 [2.579]	3.11223 [2.144]	2.88835 [2.439]
$\Delta \ln HK_{it}$	-0.62639 [0.703]	-0.07583 [0.614]	-0.13025 [0.578]	0.04602 [0.744]	-0.02084 [0.567]	0.12386 [0.727]	0.02969 [0.731]	0.04602 [0.744]
$\Delta Trade_{it}$		-0.00039 [0.000]			-0.00048 [0.000]	-0.00025 [0.000]		
$Gov\ Consumption_{it-1}$			-0.00059 [0.002]		-0.00052 [0.002]		-0.00177 [0.002]	
$\Delta Gov\ Consumption_{it}$			-0.00596* [0.003]		-0.00638** [0.003]		-0.00745** [0.003]	
$Inflation_{it-1}$				-0.00167*** [0.000]		-0.00188*** [0.000]	-0.00184*** [0.001]	-0.00167*** [0.000]
$Inflation_{it}$				-0.00147*** [0.000]		-0.00137*** [0.000]	-0.00178*** [0.000]	-0.00147*** [0.000]
Constant	-0.23575 [0.448]	0.00406 [0.452]	-0.06024 [0.352]	-0.22785 [0.415]	0.03961 [0.387]	-0.17004 [0.438]	-0.21132 [0.317]	-0.22785 [0.415]
Observations	197	196	196	193	196	193	193	193
R-squared	0.228	0.385	0.410	0.421	0.426	0.430	0.468	0.421
Number of countries	17	17	17	17	17	17	17	17

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Chapter 7

CONCLUSION

This paper addresses the impact of fiscal rules on economic growth of developing countries. Literature is limited to studying the impact of such rules only for EU countries. However, nowadays there are more than 80 countries that have these rules. Therefore, studying the effect of fiscal rules for the rest of the world, and especially for developing countries is crucial. I use a standard neo-classical growth model and I estimate the model using Generalized Method of Moments and Dynamic Fixed Effects estimators.

Results show that there is some evidence that differential effect of having supranational fiscal rules is positive and significant for growth, which is in line with results from Castro (2011). Moreover, such result is intuitive with the economic dynamics of a currency union and the peer pressure effect. Fiscal discipline is essential for countries unified by a common currency. If there is high deficit in one member of the union, there is some risk that interest rates will increase for all the members of the state. Hence, in order to mitigate the increase in interest rates, central bank has to ease the monetary policy which would cause instability in prices. As a result, fiscal rules are important for the well-functioning of the union and there is more pressure for the governments to follow the rules. From my estimations, this stands for Eastern Caribbean Currency Union and Central African Economic and Monetary Community.

However, fiscal rules have an insignificant impact on growth in West African Economic and Monetary Community. While the formal enforcement procedures are present in West African Economic and Monetary Union, the compliance with the budget balance rule has been weak (Budina et al., 2013). Given that even when the rules are present governments consistently violate these rules, the presence of them does not have any significant impact on economic growth. Fiscal rules without political commitment to follow them do not make any difference (Schick, 2010).

Regarding the impact of national fiscal rules on growth, I find evidence that the differential effect of having national fiscal rules is positive, but significant only for a few specifications. An interpretation for this can be that the presence of fiscal rules might make a government look more responsible and committed towards the fiscal discipline; therefore the country can become attractive to foreign investment. Demekas et al. (2007) find that predictable policies which promote macroeconomic stability stimulate FDI, while Hassett and Hubbard (1996) argue that a transparent fiscal system can become attractive for FDI.

As it is well known in the literature, increase in FDI promotes growth. Zhang (2001) finds that the effect of FDI on growth depends on the country's characteristics such as macroeconomic stability, trade openness and human capital. Borensztein, De Gregorio and Lee (1998) conclude that FDI is an important contributor to technology diffusion, therefore to economic growth. However, the effect of FDI as a technology transfer depends on the human capital of the host country, which indicates the absorptive capability of the country. The quality and quantity of human capital in

developing countries is far behind the human capital in developed countries (Hanushek & Wößmann, 2007; Hanushek, 2013; Galguera, 2015).

As a result, even if the presence of fiscal rules attract FDI, the effect of FDI will not be that significant in developing countries where there is a lack of human capital. My sample of countries with national fiscal rules consists of 17 developing countries, from which some are ranked among countries with lowest life expectancy in the world.¹³ Moreover, the major drivers of FDI are the exogenous factors such as market size, proximity to the source of investment and business environment (Meyer, 1998; Bevan & Estrin, 2004; Carstensen & Toubal, 2004), hence fiscal policy is not the most important contributor (UNCTAD, 2000). Indeed, in my sample of countries with fiscal rules foreign direct investment trend has been the same even after the introduction of fiscal rules. The only obvious change in its trend for these countries has been during the period 2008-2011. During the financial crisis years, foreign direct investment decreased in most of the countries.

Consequently, the presence of fiscal rules might attract some FDI, but the effect of FDI on growth is so small that after all the presence of fiscal rules do bring any significant impact to growth. Moreover, the presence of rules does not guarantee their compliance by the government. Fiscal rules require procedures and political commitment to ensure compliance; otherwise the enforcement of national fiscal rules is difficult due to the government short-sightedness and the “common- pool problem”.

¹³ Botswana, Liberia, Namibia and Nigeria’s life expectancy is in the early fifties.

As a result, whether a government has fiscal rules or not does not matter if there are no mechanisms to assure their enforcement.

Nevertheless, even when national fiscal rules have some kind of enforcement mechanisms, their effect is positive but insignificant for growth in most of the specifications. Moreover, in some specifications the coefficient of Fiscal*Enforcement has a negative value, thus the differential effect of fiscal rules with Enforcement has a negative effect on growth and it contributes to decreasing the magnitude of the total positive effect of fiscal rules with enforcement. As when rigorously implemented governments in developing countries are more inclined towards cutting public investment rather than current expenditures, the negative impact of enforced rules on growth does not come as a surprise.

When facing a binding budget constrain, governments tend to decrease investment spending rather than current spending as the political cost of cutting investment is lower (Perée & Vålilä, 2005). Francis (2012) claims that the conservative fiscal system in Indonesia slowed the economic growth due to the governments cutting expenditures on public investment. Dessus et al. (2013) find that public investment is pro-cyclical in West Africa Economic and Monetary Union as it is largely affected by the shocks on fiscal revenues, therefore more flexible fiscal rules that allow for more counter-cyclical responses are needed.

Decrease in public investment for developing countries can be detrimental to growth; therefore such governments should not be put under the pressure of fiscal rules. Indeed, when looking at the data after the introduction of fiscal rule, public investment falls dramatically in the following year. For some countries, the decreasing

trend continues for some years, while for others there is just more volatility in the public investment. Graphs A1 to A16 illustrate the changes in public investment before the fiscal rules were introduced and after.

Table A18 presents average public investment (% of GDP) before and after the introduction of rules. The only countries that were not followed with decrease in public investment right after the introduction of fiscal rules were Armenia, Brazil, Pakistan and Sri Lanka. Pakistan and Sri Lanka have violated the rules multiple times though. Public investment in Brazil and Pakistan did not decrease immediately after the introduction of rules, but the average public investment in these two countries has decreased after the rules. Most of my estimations consist of a sample of 17 countries with national fiscal rules; however data on public investment is available only for 14 of these countries. Average public investment decreases after the introduction of fiscal rules in 10 of these countries.

Given that politicians have incentives to cut public investment or any other spending that might positively contribute to a developing economy in order to comply with the rules, several countries introduce fiscal rules with some exclusions. Exclusions can apply to either public investment, or any other priority items for the economy of a specific country that has the exclusion present in its rules. These rules in the fiscal policy literature are known as “golden rules”. One would expect that when rules are present with exclusions, then their impact on growth should be positive. However, my results do not suggest that. Instead, I find a negative impact of fiscal rules when they are present with exclusions and no enforcement.

Unfortunately, exclusion clauses open the doors for politicians to find other ways of going around the rules rather than follow them with rigorousness. They create incentives for “creative accounting”, a practice followed by governments to use the golden rule to classify under investment or priority items all sorts of current government spending, therefore simultaneously allowing a larger deficit than the fiscal rule and complying with the rules. As a result, when governments follow this practice, fiscal rules are not only insignificant for growth, but they might also be detrimental to it.

As a conclusion, fiscal rules cannot be treated as a recipe borrowed from the developed countries and applied to the developing ones in order to promote growth. Policy makers cannot follow a “one size fits all” approach. Before introducing fiscal rules to these countries, it should be the market mechanisms imposing fiscal discipline. Moreover, there is a need for transparency in order to increase credibility. Monetary policy practices can come handy to fiscal policy regulators on this matter. As central banks pre-announce their inflation targets, governments can pre-announce their budgets allowing so for external monitoring and also increasing credibility in the international arena.

Chapter 8

RECOMMENDATIONS

While fiscal rules can be a tool to promote fiscal sustainability, in order for them to be effective countries need to follow certain guidelines for their design as well as implementation. First of all, there is a need for establishment of independent fiscal institutions, institutions that survey public finances closely but are independent from the government. These institutions are identified under different names such as parliamentary budget office, fiscal council or office for budget responsibility. Their main role is to evaluate the budget bills, fiscal rules or any other proposals related to fiscal policy before their enactment by assessing all the macro-fiscal consequences for both short and long term (Kopits, 2011). However, in order for them to be effective on promoting transparency and credibility, they need to be able to prove technical competence and non-partisanship towards specific governments. This requires time and several government changes.

Unfortunately establishing independent fiscal institutions is hard even in the developed countries due to the uneven aligned interests between them and the governments. When fiscal institutions' assessments on fiscal policy are not well accepted by the governments, they can threaten to reduce funding such as in Hungary or to not make available the data needed for analysis such as in Canada (Kopits, 2011). As a result, creating these institutions is not enough if governments are not committed to value and follow their recommendations.

Secondly, rules need to be carefully designed in order to reduce deficit bias and promote counter-cyclical fiscal policy. Manasse (2005) argues that rules should be designed in a way that would reward governments that create surpluses and punishes those that cause deficits. He urges the use of stabilization funds, funds that the government can create in good times and use this accumulated credit in bad times. United States can be a good example of how to implement rules with such requirements given that since the late 70s, several state constitutions require the accumulation of these funds, differently known as rainy day funds (Balassone et al, 2009). However, rainy day funds (RDFs) cannot be implemented in countries that suffer from large deficits.

Thirdly, rules should be strongly enforced at sub-national level. As even when the central governments are committed to follow the rules, in developing countries it is common to have a lack of institutional arrangement between them and the sub-national governments (SNG). As a result, central governments need to insure that their counter-cyclical fiscal policies are not downcast by the pro-cyclical fiscal policies that SNGs might be following (Ter-Minnasian, 2010). Moreover, several researchers argue that developing countries should be implementing a decentralized budget. They argue that for fiscal rules to be effective there should be a top-down approach when setting the budget. Central Governments should be setting the expenditures limit before the distribution of expenditures in order to avoid the demand for spending from the ministries. Doing so, local governments would become more responsible and accountable in following the rules.

Governments in developing countries have been strongly against decentralization due to many reasons ranging from legitimate reasons such as limited human resources, lack of experience in managing and working effectively with the local governments, scarce trainings to illicit ones like fear of losing power and lack of will to jointly control the significant country resources (Smoke, 2001). Nevertheless, in recent years emerging markets have started to ponder about decentralization (Bird & Vaillancourt, 2008). If governments lack the capacity to have fiscal decentralization, then they probably lack the expertise and the commitment to implement and follow fiscal rules.

REFERENCES

- Alesina, A., & Tabellini, G. (1990). A positive theory of fiscal deficits and government debt. *The Review of Economic Studies*, 57(3), 403-414.
- Alt, J. E., & Lassen, D. D. (2006). Fiscal transparency, political parties, and debt in OECD countries. *European Economic Review*, 50(6), 1403-1439.
- Andrés, J., & Doménech, R. (2006). Fiscal rules and macroeconomic stability. *Hacienda Pública Española*, 176(1), 9-42.
- Annett, A. (2006). Enforcement and the stability and growth pact: how fiscal policy did and did not change under Europe's fiscal framework (No. 2006-2116). International Monetary Fund.
- Arestis, P., McCauley, K., & Sawyer, M. (2001). Commentary. An alternative stability pact for the European Union. *Cambridge Journal of Economics*, 25(1), 113-130.
- Balassone, F., Franco, D., & Zotteri, S. (2009). Rainy day funds: Can they make a difference in Europe?. In *Policy Instruments for Sound Fiscal Policies* (pp. 179-203). Palgrave Macmillan UK.
- Barro, R. J. (1996). *Determinants of economic growth: a cross-country empirical study* (No. w5698). National Bureau of Economic Research.
- Barro, R. J., & Sala-i-Martin, X. (1992). Convergence. *Journal of political Economy*, 223-251.
- Bassanini, Andrea and Stefano Scarpetta (2001). The driving forces of economic growth: panel data evidence for the OECD countries. *OECD Economic Studies*, 33(II), 9-56.
- Baum, C. F., Schaffer, M. E., & Stillman, S. (2003). Instrumental variables and GMM: Estimation and testing. *Stata journal*, 3(1), 1-31.

- Bevan, A. A., & Estrin, S. (2004). The determinants of foreign direct investment into European transition economies. *Journal of comparative economics*, 32(4), 775-787.
- Bird, R. M., & Vaillancourt, F. (2008). *Fiscal decentralization in developing countries*. Cambridge University Press.
- Blanchard, O. J. (1990). Suggestions for a new set of fiscal indicators.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, 87(1), 115-143.
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics*, 45(1), 115-135.
- Budina, N., Kinda, T., Schaechter, A., & Weber, A. (2013). Numerical Fiscal Rules: International Trends. *Public Financial Management and Its Emerging Architecture*, 107-135.
- Budina, N., Schaechter, A., Weber, A., & Kinda, T. (2012). *Fiscal Rules in Response to the Crisis: Toward the "Next-Generation" Rules: A New Dataset* (No. 12/187). International Monetary Fund.
- Burnside, C., & Eichenbaum, M. (1996). Small-sample properties of GMM-based Wald tests. *Journal of Business & Economic Statistics*, 14(3), 294-308.
- Carstensen, K., & Toubal, F. (2004). Foreign direct investment in Central and Eastern European countries: a dynamic panel analysis. *Journal of comparative economics*, 32(1), 3-22.
- Caselli, F., Esquivel, G., & Lefort, F. (1996). Reopening the convergence debate: a new look at cross-country growth empirics. *Journal of economic growth*, 1(3), 363-389.
- Castro, Vitor. (2011). The Impact of the European Union Fiscal Rules on Economic Growth. *Journal of Macroeconomics* 33 (2): 313-326.
- Cellini, R. (1997). Growth empirics: evidence from a panel of annual data. *Applied Economics Letters*, 4(6), 347-351.
- Cordes, T., Kinda, M. T., Muthoora, M. P. S., & Weber, A. (2015). *Expenditure Rules: Effective Tools for Sound Fiscal Policy?* (No. 15-29). International Monetary Fund.

- Dabla-Norris, E., Allen, R., Zanna, L. F., Prakash, T., Kvintradze, E., Lledo, V., & Gollwitzer, S. (2010). Budget institutions and fiscal performance in low-income countries. *IMF working papers*, 1-56.
- Debrun, X., Moulin, L., Turrini, A., Ayuso-i-Casals, J., & Kumar, M. S. (2008). Tied to the mast? National fiscal rules in the European Union. *Economic Policy*, 23(54), 298-362.
- Demekas, D. G., Horváth, B., Ribakova, E., & Wu, Y. (2007). Foreign direct investment in European transition economies—The role of policies. *Journal of Comparative Economics*, 35(2), 369-386.
- Dessus, S., Diaz-Sanchez, J. L., & Varoudakis, A. (2014). Fiscal Rules and the procyclicality of public investment in the West African Economic and Monetary Union. *Journal of International Development*, 28, 887–901.
- EU Commission. (2016) Vade Mecum on the Stability and Growth Pact. Institutional Paper 021.
- Fatas, A., & Mihov, I. (2003). On constraining fiscal policy discretion in EMU. *Oxford Review of Economic Policy*, 19(1), 112-131.
- Francis, S. (2012). Fiscal Policy Evolution and Distributional Implications: The Indonesian experience. The IDEAS Working Paper Series, 01/2012.
- Galí, J., & Perotti, R. (2003). Fiscal policy and monetary integration in Europe. *Economic Policy*, 18(37), 533-572.
- Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics*, 90(1), 144-152.
- Hanushek, E. A. (2013). Economic growth in developing countries: The role of human capital. *Economics of Education Review*, 37, 204-212.
- Hanushek, E. A., & Wößmann, L. (2007). The role of education quality for economic growth. *World Bank Policy Research Working Paper*, (4122).
- Harrell, F. E. (2013). Regression modeling strategies: with applications to linear models, logistic regression, and survival analysis. Springer Science & Business Media.
- Hassett, K. A., & Hubbard, R. G. (1996). *Tax policy and investment* (No. w5683). National Bureau of Economic Research.

- Holm-Hadulla, F., Hauptmeier, S., & Rother, P. (2012). The impact of expenditure rules on budgetary discipline over the cycle. *Applied Economics*, 44(25), 3287-3296.
- Hou, N., & Chen, B. (2013). Military expenditure and economic growth in developing countries: Evidence from system GMM estimates. *Defence and peace economics*, 24(3), 183-193.
- International Monetary Fund African Dept. (2014). Central African Economic and Monetary Community (CEMAC)-Staff Report; Press Release; and Statement by the Executive Director for the Central African Economic and Monetary Community. International Monetary Fund.
- Iradian, G. (2007). Rapid growth in transition economies: panel regression approach. *IMF Working Papers*, 1-42.
- Judson, R. A., & Owen, A. L. (1999). Estimating dynamic panel data models: a guide for macroeconomists. *Economics letters*, 65(1), 9-15.
- Kaminsky, G. L., Reinhart, C. M., & Végh, C. A. (2005). When it rains, it pours: procyclical capital flows and macroeconomic policies. In *NBER Macroeconomics Annual 2004, Volume 19* (pp. 11-82). MIT Press.
- Kopits, M. G., & Symansky, M. S. A. (1998). *Fiscal policy rules* (No. 162). International monetary fund.
- Kopits, G. (2004). Overview of fiscal policy rules in emerging markets. In *Rules-based Fiscal Policy in Emerging Markets* (pp. 1-11). Palgrave Macmillan UK.
- Kopits, G. (2011). Independent fiscal institutions: developing good practices. *OECD Journal on Budgeting*, 11(3), 1A.
- Kufa, P., Pellechio, A. J., & Rizavi, S. (2003). Fiscal sustainability and policy issues in the Eastern Caribbean Currency Union.
- Kumar, M., Baldacci, E., Schaechter, A., Caceres, C., Kim, D., Debrun, X., ... & Zymek, R. (2009). Fiscal rules—anchoring expectations for sustainable public finances. *IMF staff paper, Washington DC*.
- Manasse, P. (2005). *Deficit Limits, Budget Rules and Fiscal Policy* (Vol. 5). International Monetary Fund.

- Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107, 407-437
- Caceres, C., Corbacho, A., & Medina, L. (2010). Structural Breaks in Fiscal Performance: Did Fiscal Responsibility Laws Have Anything to Do with Them? *IMF Working Papers*, 1-27.
- Merrifield, J. D., & Poulson, B. W. (2016). Can the Debt Growth be Stopped: Rules-based Policy Options for Addressing the Federal Fiscal Crisis. Lexington Books.
- Meyer, K. E. (1998). Direct investment in economies in transition. *Books*.
- Muller, P., & Price, R. W. (1984). *Structural budget deficits and fiscal stance* (No. 15). OECD Publishing.
- Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica: Journal of the Econometric Society*, 1417-1426.
- Perée, E., & Vålilä, T. (2005). Fiscal rules and public investment. *Economic and Financial Report*, 2. European Investment Bank.
- Perry, G. (2004). Can Fiscal Rules Help Reduce Macroeconomic Volatility? In *Rules-based Fiscal Policy in Emerging Markets* (pp. 53-65). Palgrave Macmillan UK.
- Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of econometrics*, 68(1), 79-113.
- Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446), 621-634.
- Ramey, G., & Ramey, V. (1995). Cross-Country Evidence on the Link Between Volatility and Growth. *The American Economic Review*, 85(5), 1138-1151
- Rajan, R. G., & Subramanian, A. (2008). Aid and growth: What does the cross-country evidence really show? *The Review of economics and Statistics*, 90(4), 643-665.
- Ray, N., Velasquez, A., & Islam, I. (2015). *Fiscal rules, growth and employment: a developing country perspective*. International Labour Organization.
- Roodman, D. (2006). How to do xtabond2: An introduction to difference and system GMM in Stata. *Center for Global Development working paper*, (103).

- Roodman, D. (2009). A note on the theme of too many instruments. *Oxford Bulletin of Economics and statistics*, 71(1), 135-158.
- Schick, A. (2010). Post-crisis fiscal rules: Stabilising public finance while responding to economic aftershocks. *OECD Journal on Budgeting*, 10(2), 35.
- Soto, M. (2009). System GMM estimation with a small sample.
- Soukiazis, E., & Castro, V. (2005). How the Maastricht criteria and the Stability and Growth Pact affected real convergence in the European Union: A panel data analysis. *Journal of Policy Modeling*, 27(3), 385-399.
- Smoke, P. (2001). *Fiscal decentralization in developing countries: A review of current concepts and practice*. Geneva, Switzerland: United Nations Research Institute for Social Development.
- Ter-Minassian, T. (2010). Preconditions for a successful introduction of structural fiscal balance-based rules in Latin America and the Caribbean: a framework paper. Inter-American Development Bank.
- Turrini, A. (2004). *Public investment and the EU fiscal framework* (No. 202). Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.
- UNCTAD (2000), Tax incentives and Foreign Direct Investment; A Global Survey, ASIT advisory studies 16, UNCTAD.
- Galguera, M. P. (2015). UNESCO (2015). Education for all 2000-2015: Achievements and Challenges. EFA Global Monitoring Report 2015.: Paris, France. Publication by the United Nations Educational Scientific and Cultural Organization. 499 pp. ISBN-978-92-3-10085-0. *Journal of Supranational Policies of Education (JOSPOE)*, (3), 328-330.
- Vieira, F., MacDonald, R., & Damasceno, A. (2012). The role of institutions in cross-section income and panel data growth models: A deeper investigation on the weakness and proliferation of instruments. *Journal of Comparative Economics*, 40(1), 127-140.
- Warin, T. (2005). The hidden structural features of the fiscal rule: a European saga. *International Advances in Economic Research*, 11(1), 29-38.

Wyplosz, C. (2006). European Monetary Union: the dark sides of a major success. *Economic policy*, 21(46), 208-261.

Zhang, K. H. (2001). Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. *Contemporary economic policy*, 19(2), 175-185.

Appendix

A.1 DESCRIPTION OF VARIABLES

Table A.1 Description of Variables

Dependent variable:

$\Delta \ln Y_{it}$ – growth rate of real GDP per capita (constant 2005 US dollar)

Convergence variable:

$\ln Y_{it-1}$ – the logarithm of lagged real GDP per capita (constant 2005 US dollar)

Determinants of economic growth variables:

Investment_{it} – gross capital formation as a percentage of GDP

$\ln \text{HK}_{it}$ – the logarithm of life expectancy

POP_{it} – population growth

Economic policy variables:

$(X+M)/\text{GDP}_{it}$ – sum of exports and imports as a percentage of GDP

Infl_{it} – annual percentage change of consumer price index

GovCons_{it} – government final consumption expenditure as a percentage of GDP

Variables of interest:

Fiscal_{it} – dummy that takes value of 1 if at least one fiscal rule is present and 0 otherwise

Enforcement_{it} – dummy that takes value of 1 if enforcement procedures or monitoring mechanisms outside of government are present and 0 otherwise

Escape_{it} – dummy that takes value of 1 if escape clauses are present in the and 0 otherwise

Exclusion_{it} – dummy that takes value of 1 if public investment or any other priority items are excluded from ceiling and 0 otherwise

FRI_{it} – Fiscal Rule Index built following Schaechter et al. (2012).

FRI_flex_{it} – Fiscal Rule Index accounting for flexibility clauses

$\text{Fiscal}_{it} * \text{Enforcement}_{it}$ – the interaction variable of Fiscal_{it} and Enforcement_{it}

A.2 LIST OF COUNTRIES WITH NATIONAL FISCAL RULES

Table A.2 List of countries with national fiscal rules

Country	Time period	Type of Fiscal Rule
Armenia	2008-2013	DR
Botswana	2003-2013	ER
Brazil	2003-2013	ER, DR
Colombia	2000-2013	ER
Colombia	2011-2013	BBR
Costa Rica	2001-2013	BBR
Ecuador	2003-2009	BBR, DR
Ecuador	2010-2013	ER
Indonesia	1985-2013	BBR
Indonesia	2004-2013	DR
Kenya	1997-2013	RR, DR
Liberia	2009-2013	DR
Malaysia	1985-2013	BBR, DR
Mauritius	2008-2013	DR
Mexico	2006-2013	BBR
Namibia	2001-2013	DR
Nigeria	2007-2013	BBR
Pakistan	2005-2013	BBR, DR
Peru	2000-2013	ER, BBR
Sri Lanka	2003-2013	BBR, DR

A.3 ESTIMATION RESULTS ON NATIONAL FISCAL RULES WHEN PRESENT FOR A LONG TIME

Table A.3 Results from System GMM estimations on a traditional growth model in a sample of countries with fiscal rules present for ≥ 10 years

VARIABLES	(1)	(2)
Y_{it-1}	-0.336 (-1.585)	-0.215 (-0.689)
$Investment_{it}$	0.007 (0.950)	0.005 (0.500)
$Pop\ Growth_{it}$	-3.329 (-0.571)	-2.452 (-0.362)
$lnHK_{it}$	0.662 (0.974)	0.270 (0.413)
$Fiscal_{it}$	0.091 (1.443)	0.042 (0.453)
Constant	-0.329 (-0.168)	0.434 (0.262)
$Fiscal_{it} * Enforcement_{it}$		0.093 (0.583)
Observations	324	324
Number of countries	12	12
AR2	0.598	0.512
Hansen	0.158	0.134
Instruments	12	13

z-statistics in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.4 Results from System GMM estimations on an augmented growth model in a sample of countries with fiscal rules present for ≥ 10 years

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.215 (-1.317)	-0.363 (-0.757)	-0.378 (-1.532)	0.067 (.)	-0.459 (-1.184)	-0.446 (-1.001)	-0.062 (-0.290)
$Investment_{it}$	0.002 (0.425)	0.009 (0.613)	0.001 (0.143)	-0.000 (-0.339)	0.000 (0.086)	0.003 (0.677)	-0.002 (-0.753)
$Pop\ Growth_{it}$	-3.243 (-0.683)	-5.477 (-0.553)	-7.382 (-1.236)	1.882 (0.547)	-10.095 (-0.903)	-13.167 (-0.741)	-5.885 (-0.568)
$\ln HK_{it}$	0.389 (0.642)	0.627 (0.787)	1.128 (1.037)	-0.259 (-1.323)	1.174 (1.236)	1.009 (1.035)	-0.002 (-0.005)
$Fiscal_{it}$	0.040 (0.557)	0.096 (0.830)	0.013 (0.116)	0.035 (0.536)	-0.004 (-0.039)	0.003 (0.020)	-0.002 (-0.026)
$Trade_{it}$	0.001 (0.915)			-0.000 (-0.038)	0.002 (1.153)		0.001 (0.484)
$Inflation_{it}$		0.000 (0.240)		-0.000 (-0.973)		0.000 (0.288)	-0.000 (-0.816)
$Gov\ Consumption_{it}$			0.027 (1.488)		0.029 (1.272)	0.029 (0.989)	0.004 (0.326)
Constant	-0.047 (-0.025)	0.006 (0.004)	-2.110 (-0.684)	0.536 (0.436)	-1.777 (-0.895)	-1.049 (-0.731)	0.549 (0.557)
Observations	324	307	324	307	324	307	307
Number of countries	12	12	12	12	12	12	12
AR2	0.638	0.624	0.198	0.131	0.348	0.427	0.122
Hansen	0.199	0.205	0.301	0.489	0.303	0.324	0.695
Instruments	13	13	13	14	14	14	15

z-statistics in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.5 Results from System GMM estimations on an augmented growth model in a sample of countries with fiscal rules present for ≥ 10 years, controlling for enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.158 (-0.720)	-0.217 (-0.499)	-0.332 (-1.198)	-0.179 (-0.594)	-0.307 (-1.254)	-0.171 (-0.468)	-0.722** (-2.473)
Investment _{it}	0.001 (0.194)	0.006 (0.439)	0.005 (0.824)	0.003 (0.398)	0.003 (0.549)	0.004 (0.635)	0.008** (2.140)
Pop Growth _{it}	-2.336 (-0.425)	-4.278 (-0.358)	-11.051 (-0.855)	-3.968 (-0.340)	-8.881 (-0.775)	-3.619 (-0.181)	-45.132** (-2.308)
lnHK _{it}	0.311 (0.484)	0.323 (0.485)	0.487 (1.235)	0.290 (0.486)	0.525 (1.236)	0.354 (0.837)	0.679*** (2.849)
Fiscal _{it}	0.031 (0.343)	0.032 (0.379)	-0.092 (-0.476)	0.031 (0.260)	-0.057 (-0.354)	0.003 (0.011)	-0.515** (-1.981)
Fiscal _{it} *Enforcement _{it}	0.034 (0.291)	0.103 (0.424)	0.238 (0.910)	0.057 (0.327)	0.169 (0.802)	0.089 (0.258)	0.591** (2.090)
Trade _{it}	0.001 (0.537)			0.001 (0.508)	0.001 (0.976)		0.003** (2.482)
Inflation _{it}		-0.000 (-0.131)		-0.000 (-0.150)		-0.000 (-0.368)	0.000 (1.510)
Gov Consumption _{it}			0.022 (1.174)		0.019 (1.285)	0.010 (0.452)	0.048** (2.501)
Constant	-0.127 (-0.061)	0.229 (0.142)	0.313 (0.202)	0.098 (0.046)	-0.074 (-0.045)	-0.337 (-0.195)	2.672 (1.585)
Observations	324	307	324	307	324	307	307
Number of countries	12	12	12	12	12	12	12
AR2	0.572	0.346	0.332	0.576	0.330	0.388	0.122
Hansen	0.187	0.180	0.257	0.190	0.233	0.237	0.995
Instruments	14	14	14	15	15	15	16

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.6 Results from Dynamic Fixed Effects estimations on a traditional growth model in a sample of countries with fiscal rules present for ≥ 10 years

VARIABLES	(1)	(2)
Y_{it-1}	-0.06295*** [0.018]	-0.06419*** [0.016]
$Investment_{it}$	0.00096 [0.001]	0.00097 [0.001]
$Pop\ Growth_{it}$	-1.90998** [0.778]	-1.94905** [0.740]
$\ln HK_{it}$	0.21812*** [0.052]	0.22475*** [0.050]
$Fiscal_{it}$	0.01308** [0.006]	0.01466* [0.007]
$Fiscal_{it} * Enforcement_{it}$		-0.00369 [0.007]
$\Delta Investment_{it}$	0.00321** [0.001]	0.00320** [0.001]
$\Delta Pop\ Growth_{it}$	0.49687 [0.490]	0.52900 [0.489]
$\Delta \ln HK_{it}$	0.28438 [0.413]	0.23458 [0.443]
Constant	-0.39622* [0.198]	-0.41362* [0.200]
Observations	312	312
R-squared	0.243	0.244
Number of countries	12	12

Robust standard errors in brackets

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.7 Results from DFE estimations on an augmented growth model in a sample of countries with fiscal rules present for ≥ 10 years

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.0695*** [0.018]	-0.06298*** [0.018]	-0.05573** [0.021]	-0.06884*** [0.019]	-0.05506** [0.022]	-0.06115** [0.021]	-0.06016** [0.022]
$Investment_{it}$	0.00118 [0.001]	0.00096 [0.001]	0.00087 [0.001]	0.00117 [0.001]	0.00086 [0.001]	0.00105 [0.001]	0.00105 [0.001]
$Pop\ Growth_{it}$	-1.8304** [0.758]	-1.83215** [0.784]	-1.57832 [1.054]	-1.80141** [0.769]	-1.44089 [1.048]	-1.43141 [1.063]	-1.37028 [1.072]
$\ln HK_{it}$	0.2018*** [0.044]	0.23076*** [0.052]	0.19579*** [0.047]	0.22227*** [0.045]	0.20898*** [0.049]	0.17772*** [0.043]	0.19942*** [0.045]
$Fiscal_{it}$	0.0144** [0.006]	0.01449** [0.005]	0.01113* [0.006]	0.01541** [0.005]	0.01271** [0.005]	0.01247* [0.006]	0.01361** [0.005]
$Trade_{it-1}$	0.00004 [0.000]			-0.00001 [0.000]		0.00005 [0.000]	-0.00001 [0.000]
$\Delta Investment_{it}$	0.0032** [0.001]	0.00317** [0.001]	0.00378*** [0.001]	0.00311** [0.001]	0.00374** [0.001]	0.00380*** [0.001]	0.00372** [0.001]
$\Delta Pop\ Growth_{it}$	0.40721 [0.466]	0.41954 [0.506]	0.35720 [0.693]	0.39392 [0.480]	0.24413 [0.702]	0.22263 [0.717]	0.19335 [0.732]
$\Delta \ln HK_{it}$	0.31809 [0.402]	0.17401 [0.326]	0.58119 [0.499]	0.20621 [0.314]	0.45578 [0.379]	0.59462 [0.489]	0.46900 [0.373]
$\Delta Trade_{it}$	-0.00081 [0.000]			-0.00084 [0.000]		-0.00077 [0.001]	-0.00081 [0.001]
$Gov\ Consum_{it-1}$		-0.00099 [0.001]		-0.00105 [0.001]	-0.00112 [0.001]		-0.00118 [0.001]
$\Delta Gov\ Consum_{it}$		0.00010 [0.002]		-0.00045 [0.002]	-0.00022 [0.002]		-0.00078 [0.002]
$Inflation_{it-1}$			-0.00001** [0.000]		-0.00001** [0.000]	-0.00001** [0.000]	-0.00001** [0.000]
$\Delta Inflation_{it}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.28800* [0.157]	-0.43640** [0.190]	-0.36422* [0.178]	-0.35997** [0.153]	-0.41175** [0.171]	-0.25772* [0.139]	-0.33713** [0.139]
Observations	312	312	295	312	295	295	295
R-squared	0.270	0.247	0.287	0.273	0.290	0.312	0.315
No. of countries	12	12	12	12	12	12	12

Table A.8 Results from DFE estimations on an augmented growth model in a sample of countries with fiscal rules present for ≥ 10 years, controlling for enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Y_{it-1}	-0.07104*** [0.017]	-0.06470*** [0.017]	-0.05980** [0.022]	-0.07065*** [0.018]	-0.06002** [0.022]	-0.06535** [0.022]	-0.06484** [0.023]
$Investment_{it}$	0.00118 [0.001]	0.00096 [0.001]	0.00091 [0.001]	0.00118 [0.001]	0.00091 [0.001]	0.00109 [0.001]	0.00109 [0.001]
$Pop\ Growth_{it}$	-1.86253** [0.725]	-1.88209** [0.744]	-1.77637 [1.100]	-1.83773** [0.734]	-1.67299 [1.100]	-1.60565 [1.114]	-1.56311 [1.125]
$\ln HK_{it}$	0.20801*** [0.044]	0.24080*** [0.050]	0.21072*** [0.049]	0.23005*** [0.043]	0.22856*** [0.051]	0.19051*** [0.047]	0.21483*** [0.048]
$Fiscal_{it}$	0.01632** [0.007]	0.01678** [0.006]	0.01410 [0.008]	0.01769** [0.007]	0.01651** [0.007]	0.01560* [0.008]	0.01721** [0.007]
$Fiscal_{it} * Enforcement_{it}$	-0.00434 [0.008]	-0.00513 [0.007]	-0.00731 [0.008]	-0.00503 [0.008]	-0.00901 [0.007]	-0.00743 [0.009]	-0.00837 [0.008]
$Trade_{it-1}$	0.00006 [0.000]			0.00001 [0.000]		0.00007 [0.000]	0.00002 [0.000]
$\Delta Investment_{it}$	0.00316** [0.001]	0.00316** [0.001]	0.00375*** [0.001]	0.00310** [0.001]	0.00369** [0.001]	0.00377*** [0.001]	0.00368** [0.001]
$\Delta Pop\ Growth_{it}$	0.43327 [0.466]	0.46046 [0.505]	0.49843 [0.735]	0.42323 [0.480]	0.40858 [0.752]	0.34471 [0.763]	0.32803 [0.784]
$\Delta \ln HK_{it}$	0.26019 [0.430]	0.09829 [0.346]	0.48321 [0.559]	0.13568 [0.336]	0.32398 [0.433]	0.49551 [0.553]	0.35090 [0.435]
$\Delta Trade_{it}$	-0.00080 [0.001]			-0.00083 [0.000]		-0.00076 [0.001]	-0.00080 [0.001]
$Gov\ Consumption_{it-1}$		-0.00105 [0.001]		-0.00108 [0.001]	-0.00122 [0.001]		-0.00124 [0.001]
$\Delta Gov\ Consumption_{it}$		0.00009 [0.002]		-0.00046 [0.002]	-0.00025 [0.002]		-0.00079 [0.002]
$Inflation_{it-1}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
$\Delta Inflation_{it}$			-0.00001*** [0.000]		-0.00001*** [0.000]	-0.00001*** [0.000]	-0.00001*** [0.000]
Constant	-0.30236* [0.164]	-0.46329** [0.195]	-0.39208** [0.174]	-0.37864** [0.160]	-0.45041** [0.172]	-0.27788* [0.141]	-0.36344** [0.140]
Observations	312	312	295	312	295	295	295
R-squared	0.270	0.247	0.288	0.273	0.292	0.313	0.317
Number of countries	12	12	12	12	12	12	12

A.4 DIFFERENCE GMM ESTIMATIONS

Table A.9 Results of Difference-GMM estimations for national fiscal rules

VARIABLES	(1)	(2)	(3)	(4)
LnY_{it-1}	0.018 (0.354)	0.014 (0.250)	-0.011 (-0.235)	-0.026 (-0.346)
Investment_{it}	0.003 (0.914)	0.003 (0.913)	0.003 (1.121)	0.003 (1.135)
Pop Growth_{it}	1.677 (0.937)	1.670 (0.930)	0.329 (0.412)	0.246 (0.317)
lnHK_{it}	-0.083 (-0.499)	-0.074 (-0.456)	0.040 (0.229)	0.049 (0.259)
Fiscal_{it}	0.011 (0.514)	0.017 (0.432)	0.036 (0.869)	0.067 (0.813)
Trade_{it}			-0.001 (-1.594)	-0.001 (-1.550)
Inflation_{it}			-0.000 (-1.605)	-0.000* (-1.740)
$\text{Gov Consumption}_{it}$			-0.001 (-0.393)	-0.001 (-0.260)
$\text{Fiscal}_{it} * \text{Enforcement}_{it}$		-0.012 (-0.347)		-0.060 (-0.856)
Observations	423	423	401	401
Number of countries	17	17	17	17
AR2	0.620	0.628	0.165	0.262
Hansen	0.265	0.264	0.242	0.247
Instruments	7	8	10	11

Table A.10 Results of Diff-GMM with annual data and control group

VARIABLES	(1)	(2)	(3)	(4)
LnY _{it-1}	-0.021 (-0.791)	-0.000 (-0.000)	-0.016 (-0.491)	-0.028 (-0.378)
Investment _{it}	0.001 (0.556)	0.001 (0.581)	0.001 (0.401)	0.001 (0.370)
Pop Growth _{it}	-1.161** (-2.005)	-1.137* (-1.939)	-1.261*** (-2.831)	-1.291*** (-2.973)
lnHKit	0.069 (0.851)	0.045 (0.395)	0.089 (0.818)	0.102 (0.802)
Fiscal _{it}	-0.007 (-0.245)	-0.031 (-0.344)	0.020 (0.407)	0.047 (0.335)
Trade _{it}			-0.001 (-1.116)	-0.001 (-1.129)
Inflation _{it}			-0.000*** (-3.079)	-0.000*** (-3.194)
Gov Consumption _{it}			-0.004* (-1.854)	-0.004 (-1.624)
Fiscal _{it} *Enforcement _{it}		0.018 (0.245)		-0.041 (-0.355)
Observations	844	844	822	822
Number of countries	33	33	33	33
AR2	0.655	0.694	0.727	0.810
Hansen	0.166	0.186	0.199	0.190
Instruments	7	8	10	11

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.11 Results of Diff-GMM using 4-year time intervals and control group

VARIABLES	(1)	(2)	(3)	(4)
Ln(Initial GDP per capita) _{it}	-0.018 (-0.168)	0.022 (0.199)	-0.016 (-0.266)	-0.025 (-0.615)
Investment _{it}	0.003*** (3.226)	0.003*** (3.288)	0.002** (2.045)	0.002 (1.093)
Pop Growth _{it}	0.441 (0.101)	0.985 (0.235)	0.057 (0.030)	-0.030 (-0.014)
lnHK _{it}	-0.039 (-0.168)	-0.096 (-0.453)	0.048 (0.346)	0.077 (0.786)
Fiscal _{it}	0.024 (0.811)	-0.005 (-0.088)	0.069 (1.238)	0.104 (0.508)
Trade _{it}			0.000 (0.688)	0.000 (0.613)
Inflation _{it}			-0.000** (-1.974)	-0.000 (-1.438)
Gov Consumption _{it}			-0.014 (-1.045)	-0.013 (-0.553)
Fiscal _{it} *Enforcement _{it}		0.015 (0.292)		-0.085 (-0.437)
Observations	195	195	190	190
Number of countries	33	33	33	33
AR2	0.936	0.598	0.457	0.693
Hansen	0.155	0.196	0.493	0.0402
Instruments	7	8	9	10

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.12 Results of Diff-GMM using Fiscal Rule Index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LnY _{it-1}	0.046 (0.506)	0.056 (0.595)	-0.031 (-0.500)	0.072 (0.680)	-0.036 (-0.554)	0.089 (0.798)	0.005 (0.056)	-0.000 (-0.006)
Investment _{it}	0.005*** (4.917)	0.006*** (5.038)	0.005*** (2.840)	0.005*** (5.318)	0.005*** (2.970)	0.005*** (5.623)	0.004*** (3.591)	0.004*** (3.789)
Pop Growth _{it}	-0.341 (-0.977)	-0.283 (-0.778)	-0.507 (-1.341)	0.156 (0.261)	-0.533 (-1.518)	0.293 (0.461)	0.070 (0.115)	0.031 (0.055)
lnHK _{it}	-0.673 (-1.566)	-0.662 (-1.541)	-0.295 (-1.005)	-0.628 (-1.431)	-0.287 (-0.957)	-0.603 (-1.378)	-0.253 (-0.769)	-0.252 (-0.774)
Trade _{it}		-0.001 (-0.612)			0.000 (0.450)	-0.001 (-0.769)		0.000 (0.576)
FRI _{it}	0.026 (1.321)	0.028 (1.255)	0.010 (0.787)	0.024 (1.049)	0.009 (0.732)	0.025 (1.021)	0.007 (0.455)	0.006 (0.416)
Inflation _{it}			-0.002*** (-3.211)		-0.002*** (-3.755)		-0.002*** (-4.378)	-0.002*** (-5.193)
Gov Consumption _{it}				-0.009* (-1.733)		-0.010** (-1.985)	-0.011** (-2.130)	-0.011** (-2.214)
Observations	182	182	180	182	180	182	180	180
Number of countries	17	17	17	17	17	17	17	17
AR2	0.0556	0.0635	0.0414	0.0292	0.0430	0.0486	0.0575	0.0602
Hansen	0.513	0.467	0.394	0.588	0.401	0.534	0.485	0.498
Instruments	7	8	8	8	9	9	9	10

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A.13 Results of Diff-GMM using Fiscal Rule Index with flexibility

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln Y_{it-1}$	0.034 (0.400)	0.044 (0.492)	-0.036 (-0.652)	0.061 (0.605)	-0.041 (-0.674)	0.077 (0.735)	-0.000 (-0.004)	-0.004 (-0.055)
Investment_{it}	0.005* **	0.005* **	0.005** *	0.005* **	0.005** *	0.005* **	0.004** *	0.004** *
Pop Growth_{it}	(4.867)	(5.008)	(2.794)	(5.277)	(2.912)	(5.630)	(3.537)	(3.717)
$\ln HK_{it}$	-0.355 (-1.057)	-0.294 (0.834)	-0.519 (-1.424)	0.131 (0.226)	-0.539 (-1.573)	0.275 (0.446)	0.046 (0.080)	0.018 (0.033)
Trade_{it}	-0.619 (-1.490)	-0.599 (-1.444)	-0.251 (-0.907)	-0.591 (-1.393)	-0.245 (-0.864)	-0.561 (-1.317)	-0.225 (-0.702)	-0.227 (-0.710)
FRI_flex_{it}	0.029 (1.009)	0.029 (0.961)	0.007 (0.336)	0.028 (0.877)	0.006 (0.299)	0.029 (0.853)	0.006 (0.250)	0.005 (0.229)
Inflation_{it}			0.002** *		0.002** *		0.002** *	0.002** *
			(-3.239)		(-3.730)		(-4.498)	(-5.301)
$\text{Gov Consumption}_{it}$				- 0.008* (-1.715)		- 0.010* *	- 0.011**	- 0.011**
						(-1.983)	(-2.154)	(-2.240)
Observations	182	182	180	182	180	182	180	180
Number of countries	17	17	17	17	17	17	17	17
AR2	0.0527	0.0594	0.0391	0.0306	0.0403	0.0504	0.0599	0.0634
Hansen	0.481	0.435	0.381	0.569	0.383	0.522	0.490	0.499
Instruments	7	8	8	8	9	9	9	10

z-statistics in parentheses

*** p<0.01, ** p<0.05, *

p<0.1

Table A.14 Results of Diff-GMM controlling for national fiscal rules with escape clauses

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln Y_{it-1}$	0.034 (0.400)	0.044 (0.492)	-0.036 (-0.652)	0.061 (0.605)	-0.041 (-0.674)	0.077 (0.735)	-0.000 (-0.004)	-0.004 (-0.055)
Investment_{it}	0.005** *	0.005***	0.005***	0.005***	0.005***	0.005***	0.004***	0.004***
	(4.867)	(5.008)	(2.794)	(5.277)	(2.912)	(5.630)	(3.537)	(3.717)
Pop Growth_{it}	-0.355 (-1.057)	-0.294 (-0.834)	-0.519 (-1.424)	0.131 (0.226)	-0.539 (-1.573)	0.275 (0.446)	0.046 (0.080)	0.018 (0.033)
$\ln HK_{it}$	-0.619 (-1.490)	-0.599 (-1.444)	-0.251 (-0.907)	-0.591 (-1.393)	-0.245 (-0.864)	-0.561 (-1.317)	-0.225 (-0.702)	-0.227 (-0.710)
Trade_{it}		-0.001 (-0.651)			0.000 (0.361)	-0.001 (-0.816)		0.000 (0.460)
FRI_flex_{it}	0.029 (1.009)	0.029 (0.961)	0.007 (0.336)	0.028 (0.877)	0.006 (0.299)	0.029 (0.853)	0.006 (0.250)	0.005 (0.229)
Inflation_{it}			-0.002*** (-3.239)		-0.002*** (-3.730)		-0.002*** (-4.498)	-0.002*** (-5.301)
$\text{Gov Consumption}_{it}$				-0.008* (-1.715)		-0.010** (-1.983)	-0.011** (-2.154)	-0.011** (-2.240)
Observations	182	182	180	182	180	182	180	180
Number of countries	17	17	17	17	17	17	17	17
AR2	0.0527	0.0594	0.0391	0.0306	0.0403	0.0504	0.0599	0.0634
Hansen	0.481	0.435	0.381	0.569	0.383	0.522	0.490	0.499
Instruments	7	8	8	8	9	9	9	10

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A.15 Results of Diff-GMM controlling for national fiscal rules with public investment exclusion

VARIABLES	(1)	(2)	(3)	(4)
LnY _{it-1}	0.020 (0.411)	0.022 (0.364)	-0.005 (-0.109)	-0.019 (-0.285)
Investment _{it}	0.002 (0.899)	0.002 (0.906)	0.003 (1.123)	0.003 (1.122)
Pop Growth _{it}	1.683 (0.939)	1.706 (0.942)	0.275 (0.354)	0.195 (0.255)
lnHK _{it}	-0.059 (-0.346)	-0.076 (-0.384)	0.093 (0.485)	0.135 (0.554)
Fiscal _{it}	0.017 (0.616)	0.012 (0.215)	0.053 (0.895)	0.085 (0.727)
Trade _{it}			-0.001 (-1.566)	-0.001 (-1.536)
Inflation _{it}			-0.000 (-1.531)	-0.000 (-1.612)
Gov Consumption _{it}			-0.001 (-0.390)	-0.001 (-0.350)
Fiscal _{it} *Exclusion _{it}	-0.023 (-0.744)	-0.004 (-0.064)	-0.058 (-0.944)	-0.085 (-0.614)
Fiscal _{it} *Enforcement _{it}		0.009 (0.175)		-0.069 (-0.584)
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}		-0.027 (-0.431)		0.054 (0.403)
Observations	423	423	401	401
Number of countries	17	17	17	17
AR2	0.631	0.625	0.270	0.447
Hansen	0.264	0.264	0.244	0.251
Instruments	8	10	11	13

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.16 Results of Diff-GMM controlling for national fiscal rules with any exclusions

VARIABLES	(1)	(2)	(3)	(4)
LnY _{it-1}	0.020 (0.411)	0.022 (0.364)	-0.005 (-0.109)	-0.019 (-0.285)
Investment _{it}	0.002 (0.899)	0.002 (0.906)	0.003 (1.123)	0.003 (1.122)
Pop Growth _{it}	1.683 (0.939)	1.706 (0.942)	0.275 (0.354)	0.195 (0.255)
lnHK _{it}	-0.059 (-0.346)	-0.076 (-0.384)	0.093 (0.485)	0.135 (0.554)
Fiscal _{it}	0.017 (0.616)	0.012 (0.215)	0.053 (0.895)	0.085 (0.727)
Trade _{it}			-0.001 (-1.566)	-0.001 (-1.536)
Inflation _{it}			-0.000 (-1.531)	-0.000 (-1.612)
Gov Consumption _{it}			-0.001 (-0.390)	-0.001 (-0.350)
Fiscal _{it} *Exclusion _{it}	-0.023 (-0.744)	-0.004 (-0.064)	-0.058 (-0.944)	-0.085 (-0.614)
Fiscal _{it} *Enforcement _{it}		0.009 (0.175)		-0.069 (-0.584)
Fiscal _{it} *Enforcement _{it} *Exclusion _{it}		-0.027 (-0.431)		0.054 (0.403)
Observations	423	423	401	401
Number of countries	17	17	17	17
AR2	0.631	0.625	0.270	0.447
Hansen	0.264	0.264	0.244	0.251
Instruments	8	10	11	13

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.17 Results of Diff-GMM using a sample of countries with national fiscal rules present for ≥ 10 years

VARIABLES	(1)	(2)	(3)	(4)
Y_{it-1}	0.016 (0.497)	0.006 (0.136)	0.008 (0.292)	-0.008 (-0.157)
$Investment_{it}$	0.000 (0.194)	0.000 (0.185)	0.001 (0.396)	0.001 (0.386)
$Pop\ Growth_{it}$	0.103 (0.353)	0.068 (0.234)	0.275 (1.133)	0.195 (0.584)
$\ln HK_{it}$	-0.001 (-0.007)	0.028 (0.264)	0.066 (0.573)	0.099 (0.931)
$Fiscal_{it}$	0.006 (0.185)	0.017 (0.366)	0.019 (0.431)	0.036 (0.548)
$Trade_{it}$			-0.001 (-1.167)	-0.001 (-1.143)
$Inflation_{it}$			-0.000 (-1.486)	-0.000 (-1.529)
$Gov\ Consumption_{it}$			-0.002 (-1.060)	-0.002 (-0.962)
$Fiscal_{it} * Enforcement_{it}$		-0.023 (-0.558)		-0.035 (-0.696)
Observations	312	312	295	295
Number of countries	12	12	12	12
AR2	0.0726	0.110	0.0672	0.115
Hansen	0.0972	0.0966	0.157	0.151
Instruments	7	8	10	11

z-statistics in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

A.5 DESCRIPTIVE STATISTICS ON PUBLIC INVESTMENT FOR SELECTED COUNTRIES

Figure A.1 Public investment (% of GDP) in Armenia before and after Fiscal Rules introduction

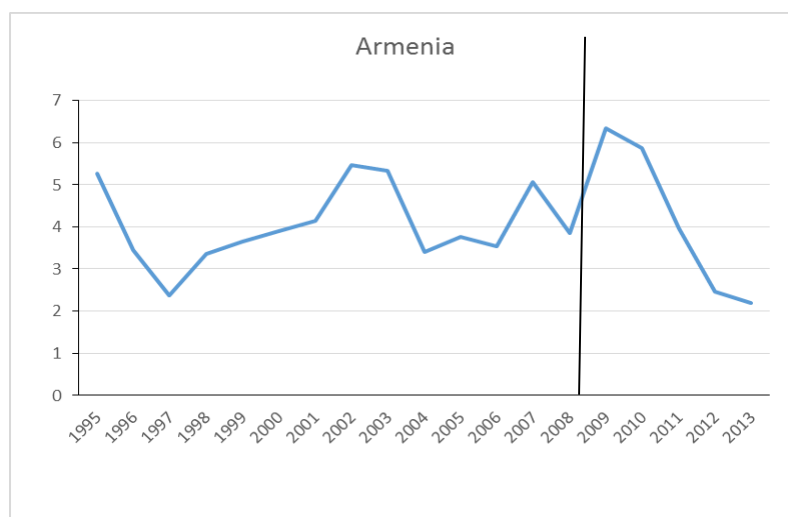


Figure A.2 Public investment (% of GDP) in Botswana before and after Fiscal Rules introduction

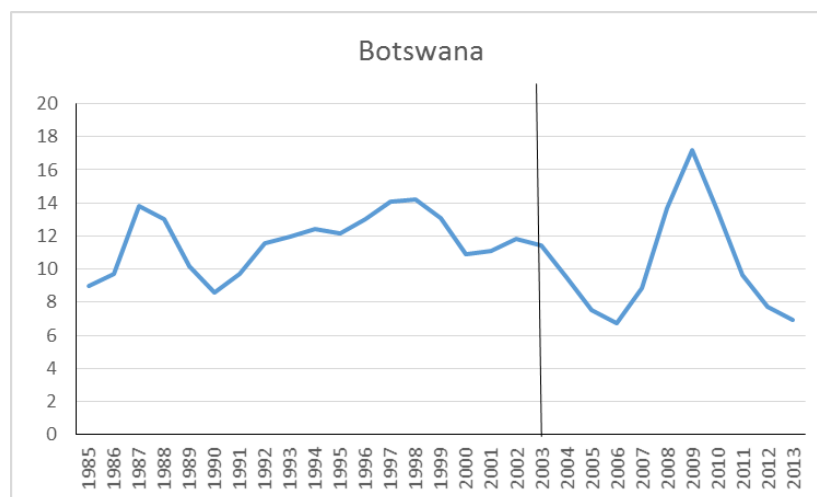


Figure A.3 Public Investment (% of GDP) in Brazil before and after fiscal rules introduction

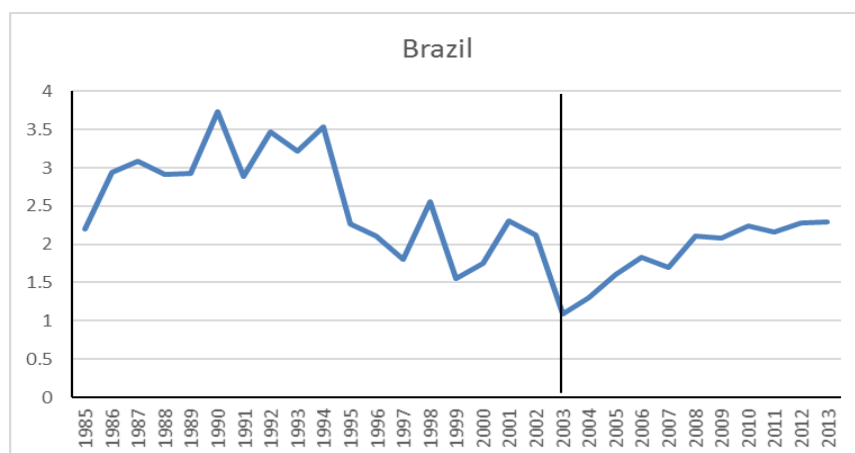


Figure A.4 Public Investment (% of GDP) in Colombia before and after fiscal rules introduction

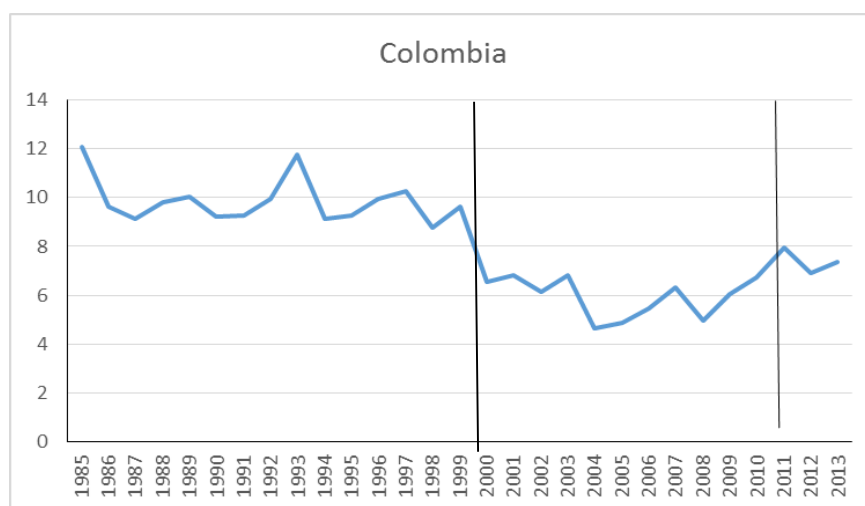


Figure A.5 Public Investment (% of GDP) in Costa Rica before and after fiscal rules introduction

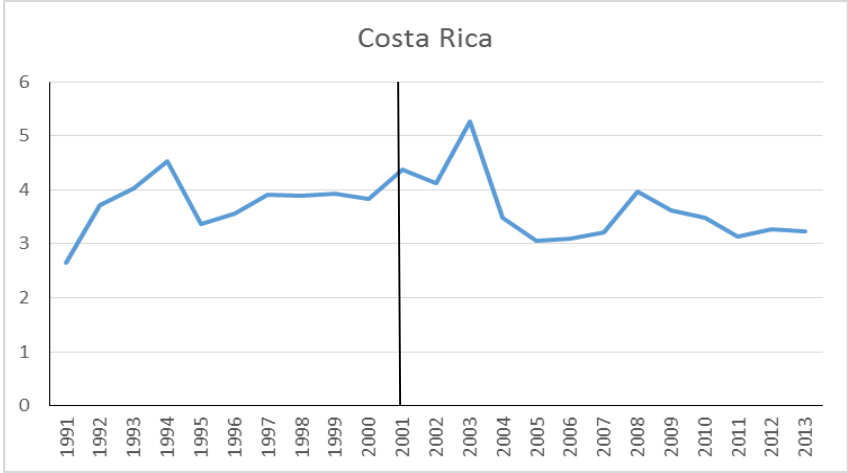


Figure A.6 Public Investment (% of GDP) in Ecuador before and after Fiscal Rules introduction

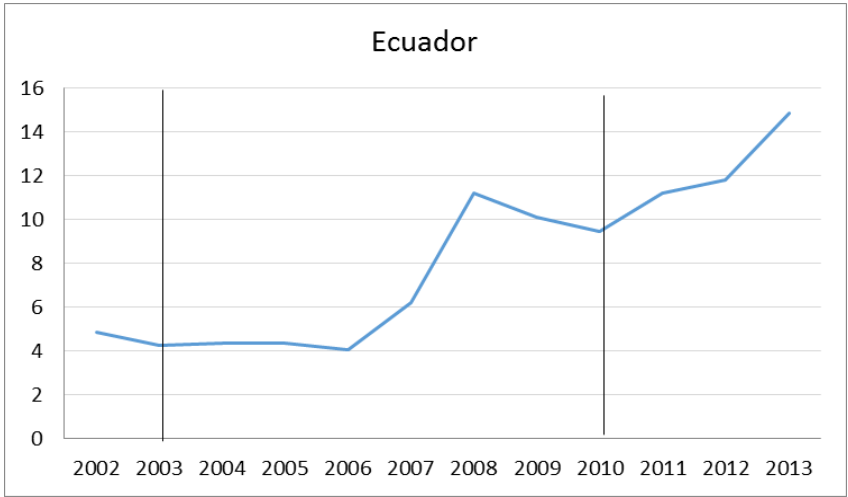


Figure A.7 Public Investment (% of GDP) in Indonesia before and after Fiscal Rule Introduction



Figure A.8 Public Investment (% of GDP) in Kenya before and after Fiscal Rules introduction

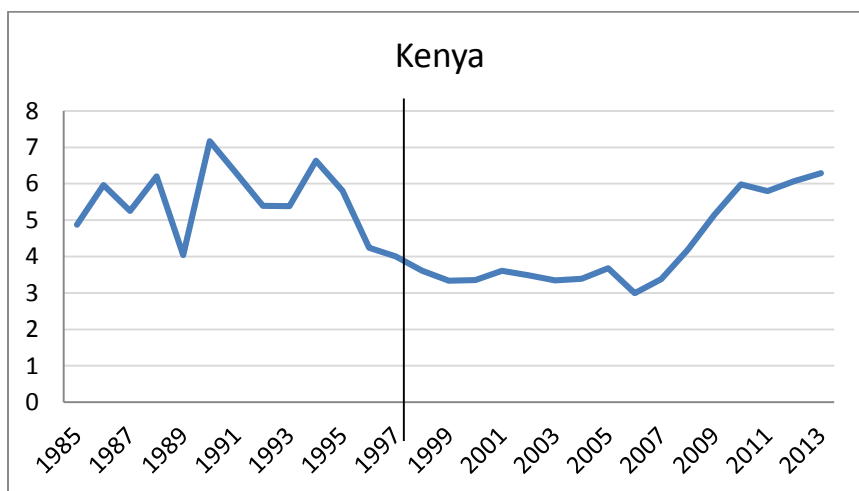


Figure A.9 Public Investment (% of GDP) in Mexico before and after Fiscal Rules introduction

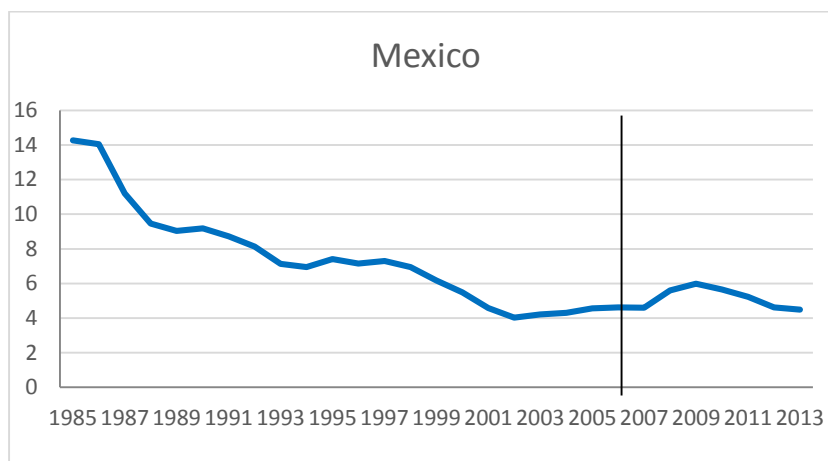


Figure A.10 Public Investment (% of GDP) in Namibia before and after Fiscal Rules introduction

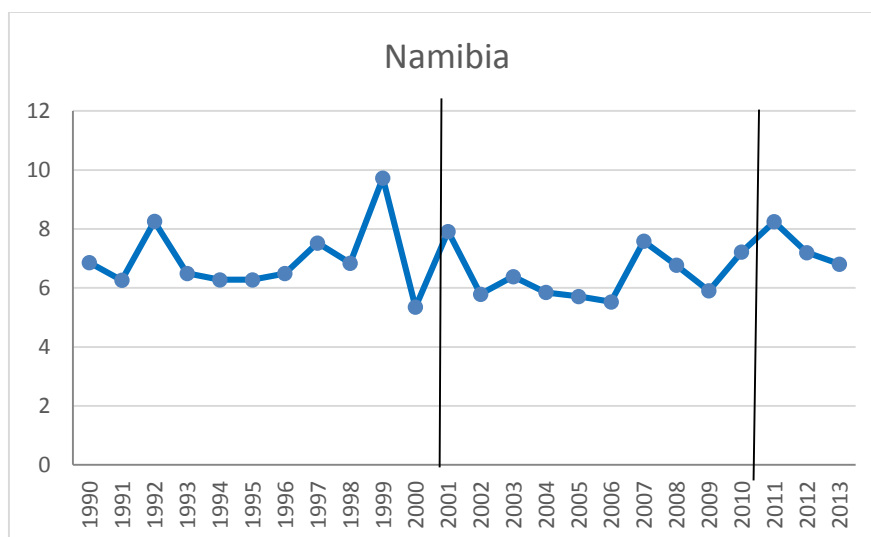


Figure A.11 Public Investment (% of GDP) in Nigeria before and after Fiscal Rules introduction

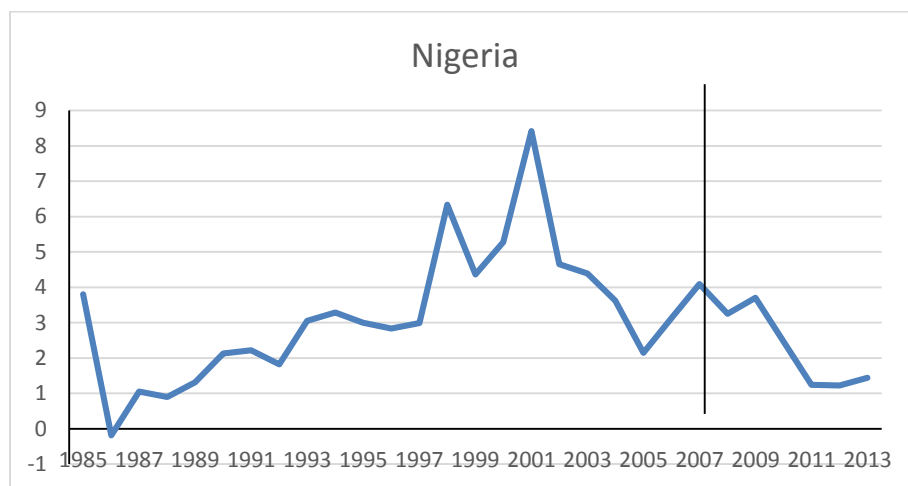


Figure A.12 Public Investment (% of GDP) in Pakistan before and after Fiscal Rules introduction

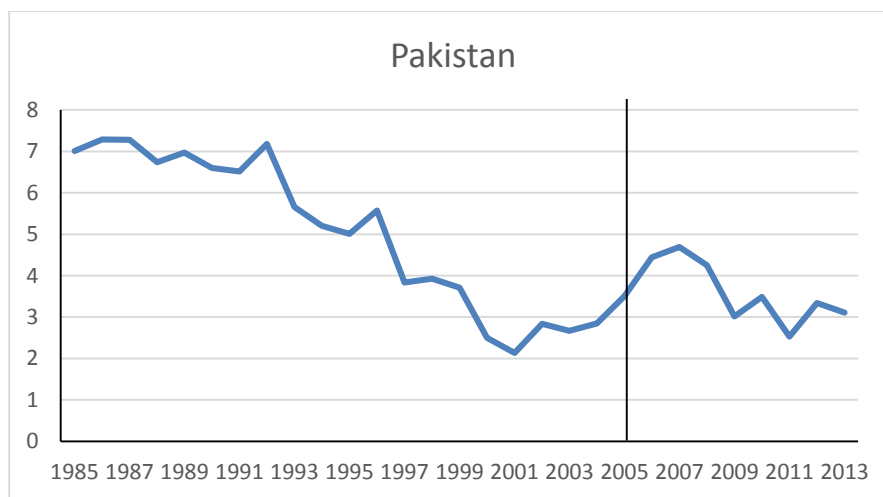


Figure A.13 Public Investment (% of GDP) in Peru before and after Fiscal Rules introduction

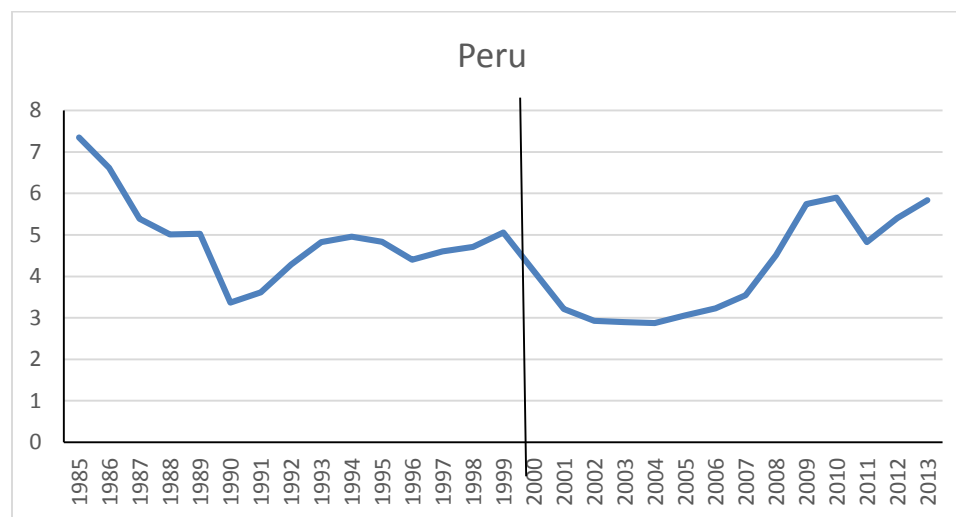
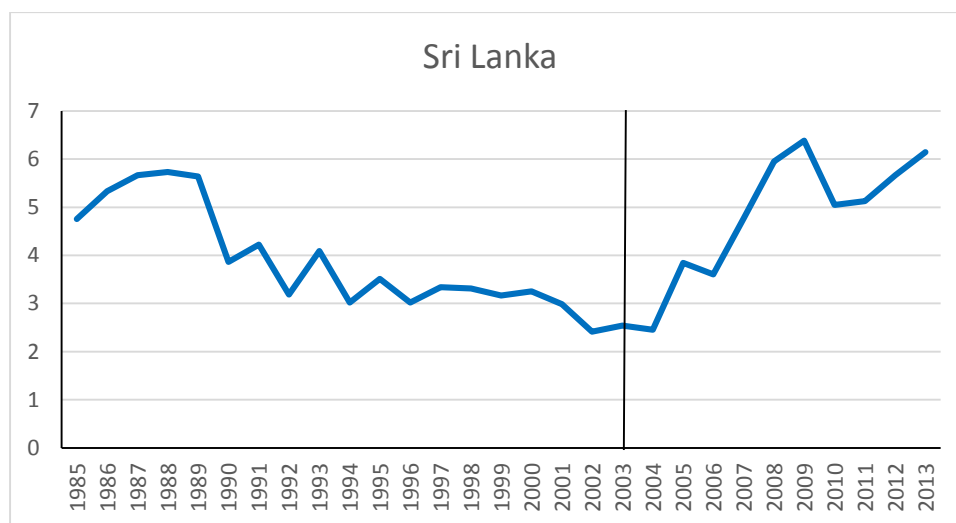


Figure A.14 Public Investment (% of GDP) in Sri Lanka before and after Fiscal Rules introduction



A.6 DESCRIPTIVE STATISTICS

Table A.18 Average Public Investment (% of GDP) before and after the introduction of fiscal rules

Country	Before	After
Armenia	4.048	4.111
Botswana	11.693	10.247
Brazil	2.746	1.917
Colombia	9.851	6.245
Costa Rica	3.740	3.641
Ecuador	4.869	8.356
Indonesia	2.930	3.363
Kenya	5.604	4.215
Mexico	7.632	5.097
Namibia	6.943	6.686
Nigeria	3.208	2.489
Pakistan	5.075	3.595
Peru	4.937	4.149
Sri Lanka	3.917	4.686

Table A.19 Descriptive Statistics in the sample of developing countries with national fiscal rules

Variable	Observations	Mean	S.D.	Min	Median	Max
Real GDP per capita growth (in decimal)	471	0.02	0.08	-0.7	0.03	0.65
Gross capital formation (% of GDP)	472	22.02	6.64	1.63	21.78	47.15
Population Growth (in decimal)	476	0.02	0.01	-0.03	0.02	0.08
Ln (Life Expectancy)	476	4.18	0.15	3.83	4.23	4.38
Government Consumption (% of GDP)	475	13.88	4.96	3.59	12.96	30.07
Trade (% of GDP)	478	70.49	40.25	13.18	59.47	220.41
CPI (annual % change)	449	71.56	467.3	-0.79	8.4	7481.66

Table A.20 Descriptive Statistics in the sample of developing countries with control group

Variable	Observations	Mean	S.D.	Min	Median	Max
Real GDP per capita growth (in decimal)	924	0.02	0.06	-0.7	0.02	0.65
Gross capital formation (% of GDP)	942	21.79	6.73	3.46	20.94	58.96
Population Growth (in decimal)	924	0.02	0.01	-0.03	0.02	0.11
Ln (Life Expectancy)	924	4.16	0.14	3.76	4.21	4.38
Government Consumption (% of GDP)	944	13.6	5.26	3.22	12.92	30.07
Trade (% of GDP)	947	72.96	39.36	11.09	62.18	220.41
CPI (annual % change)	916	49.88	495.6	-3.65	7.43	11749.64

Table A.21 Descriptive Statistics in the sample of developing countries with control group (4-year averages)

Variable	Observations	Mean	S.D.	Min	Median	Max
Real GDP per capita growth (in decimal)	231	0.02	0.04	-0.39	0.02	0.29
Gross capital formation (% of GDP)	228	21.68	6.12	5.99	21.36	41.38
Population Growth (in decimal)	231	0.02	0.01	-0.02	0.02	0.07
Ln (Life Expectancy)	231	4.16	0.14	3.76	4.2	4.37
Government Consumption (% of GDP)	229	13.56	5.17	4.14	12.64	28.22
Trade (% of GDP)	229	72.85	38.91	14.68	61.79	208.28
CPI (annual % change)	223	51.24	299.54	-0.11	7.79	3014.14

Table A.22 Descriptive Statistics in the sample of West African Economic and Monetary Union

Variable	Observations	Mean	S.D.	Min	Median	Max
Real GDP per capita growth (in decimal)	196	0.01	0.04	-0.35	0.01	0.12
Gross capital formation (% of GDP)	185	18.94	6.5	6.69	18.54	48.4
Population Growth (in decimal)	196	0.03	0.004	0.01	0.03	0.04
Ln (Life Expectancy)	196	3.96	0.08	3.77	3.97	4.15

Table A.23 Descriptive Statistics in the sample of Eastern Caribbean Currency Union

Variable	Observations	Mean	S.D.	Min	Median	Max
Real GDP per capita growth (in decimal)	140	0.03	0.05	-0.14	0.02	0.2
Gross capital formation (% of GDP)	145	31.38	9.61	12.04	30.32	58.79
Population Growth (in decimal)	140	0.01	0.004	-0.01	0.01	0.01

Table A.24 Descriptive Statistics in the sample of Central African Economic and Monetary Community

Variable	Observations	Mean	S.D.	Min	Median	Max
Real GDP per capita growth (in decimal)	168	0.02	0.11	-0.47	0.01	0.88
Gross capital formation (% of GDP)	173	33.32	35.39	6.4	22.19	219.07
Population Growth (in decimal)	168	0.03	0.004	0.02	0.03	0.05
Ln (Life Expectancy)	168	3.94	0.1	3.78	3.95	4.14

A.7 SIGNIFICANCE TEST RESULTS

A.7.1 Significance Tests Using Augmented Growth Models on the Sample of Countries with National Fiscal Rules (System-GMM)

Figure A.15 Significance Test corresponding to column (1) of Table 6.6

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.3005117	.1676223	1.79	0.073	-.028022	.6290454

Figure A.16 Significance test corresponding to column (2) of Table 6.6

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1409076	.08783	1.60	0.109	-.031236	.3130512

Figure A.17 Significance test corresponding to column (3) of Table 6.6

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2071913	.1012466	2.05	0.041	.0087516	.4056309

Figure A.18 Significance test corresponding to column (4) of Table 6.6

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1282526	.0941235	1.36	0.173	-.0562261	.3127314

Figure A.19 Significance test corresponding to column (5) of Table 6.6

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2138791	.0951583	2.25	0.025	.0273722	.400386

Figure A.20 Significance test corresponding to column (6) of Table 6.6

```
. lincom fiscal+ruleenforced
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1205948	.0795661	1.52	0.130	-.0353519	.2765416

Figure A.21 Significance test corresponding to column (7) of Table 6.6

```
. lincom fiscal+ruleenforced
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1189799	.0743914	1.60	0.110	-.0268245	.2647842

A.7.2 Significance Tests Using Augmented Growth Models on the Sample of Countries with National Fiscal Rules (Dynamic Fixed Effects)

Figure A.22 Significance Test corresponding to column (2) of Table 6.9

```
. lincom fiscal+ruleenforced
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0154813	.0079297	1.95	0.069	-.0013289	.0322915

Figure A.23 Significance Test corresponding to column (4) of Table 6.9

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0159644	.0072365	2.21	0.042	.0006238	.031305

Figure A.24 Significance Test corresponding to column (7) of Table 6.9

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0104982	.0058904	1.78	0.094	-.0019889	.0229853

A.7.3 Significance Tests Using Augmented Growth Models on the Sample of Countries with National Fiscal Rules and a Control Group using Annual Data (System GMM)

Figure A.25 Significance test corresponding to column (1) of Table 6.18

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2400826	.1855034	1.29	0.196	-.1234973	.6036625

Figure A.26 Significance test corresponding to column (2) of Table 6.18

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.4127149	.1632715	2.53	0.011	.0927086	.7327212

Figure A.27 Significance test corresponding to column (3) of Table 6.18

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.4033425	.1816793	2.22	0.026	.0472575	.7594274

Figure A.28 Significance test corresponding to column (4) of Table 6.18

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.3659549	.148436	2.47	0.014	.0750256	.6568841

Figure A.29 Significance test corresponding to column (5) of Table 6.18

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.4208699	.1679916	2.51	0.012	.0916123	.7501275

Figure A.30 Significance test corresponding to column (6) of Table 6.18

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.3105776	.1743067	1.78	0.075	-.0310573	.6522125

Figure A.31 Significance test corresponding to column (7) of Table 6.18

```
. lincom fiscal+ruleenforced

( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.3437639	.1491035	2.31	0.021	.0515263	.6360015

A.7.4 Significance Test Using Augmented Growth Models on the Sample of Countries with National Fiscal Rules and a Control Group using Annual Data (Dynamic Fixed Effects)

Figure A.32 Significance test corresponding to column (1) of Table 6.21

```
. lincom fiscal+ruleenforced
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0123866	.006485	1.91	0.065	-.0008229	.0255961

Figure A.33 Significance test corresponding to column (2) of Table 6.21

```
. lincom fiscal+ruleenforced
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0129016	.0062106	2.08	0.046	.0002511	.0255521

Figure A.34 Significance test corresponding to column (3) of Table 6.21

```
. lincom fiscal+ruleenforced
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.008494	.0048051	1.77	0.087	-.0012937	.0182816

Figure A.35 Significance test corresponding to column (4) of Table 6.21

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0120714	.0064537	1.87	0.071	-.0010744	.0252173

Figure A.36 Significance test corresponding to column (5) of Table 6.21

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0082837	.0048024	1.72	0.094	-.0014985	.0180659

Figure A.37 Significance test corresponding to column (6) of Table 6.21

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0079142	.0053227	1.49	0.147	-.0029278	.0187562

Figure A.38 Significance test corresponding to column (7) of Table 6.21

```
. lincom fiscal+ruleenforced
```

```
( 1)  fiscal + ruleenforced = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0076419	.0052941	1.44	0.159	-.0031419	.0184256

A.7.5 Significance Tests for Growth Models Controlling for Public Investment Exclusions (System GMM)

Figure A.39 Significance test corresponding to column (2) of Table 6.28

```
. lincom fiscal+ruleenforced+fiscalexcludeINV+fiscalenforcedexcINV
```

```
( 1)  fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2864067	.1984039	1.44	0.149	-.1024578	.6752712

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.6153792	.3185098	-1.93	0.053	-1.239647	.0088886

Figure A.40 Significance test corresponding to column (1) of Table 6.30

```
. lincom fiscal+ruleenforced+fiscalexcludeINV+fiscalenforcedexcINV
```

```
( 1)  fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2823963	.2050634	1.38	0.168	-.1195206	.6843132

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.5999934	.3059381	-1.96	0.050	-1.199621	-.0003657

Figure A.41 Significance test corresponding to column (3) of Table 6.30

```
. lincom fiscal+ruleenforced+fiscalexcludeINV+fiscalenforcedexcINV
```

```
( 1)  fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1634242	.1255187	1.30	0.193	-.0825879	.4094363

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.4637351	.2595212	-1.79	0.074	-.9723874	.0449172

Figure A.42 Significance test corresponding to column (4) of Table 6.30

```
. lincom fiscal+ruleenforced+fiscalexcludeINV+fiscalenforcedexcINV
```

(1) fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1409999	.1235126	1.14	0.254	-.1010802	.3830801


```
. lincom fiscal+fiscalexcludeINV
```

(1) fiscal + fiscalexcludeINV = 0

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.4364287	.2256331	-1.93	0.053	-.8786615	.005804

Figure A.43 Significance test corresponding to column (5) of Table 6.30

```
. lincom fiscal+ruleenforced+fiscalexcludeINV+fiscalenforcedexcINV
```

(1) fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0710798	.0874563	0.81	0.416	-.1003314	.242491


```
. lincom fiscal+fiscalexcludeINV
```

(1) fiscal + fiscalexcludeINV = 0

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.2745842	.240012	-1.14	0.253	-.7449991	.1958307

A.7.6 Significance Tests for Growth Models Controlling for Public Investment Exclusions (DFE)

Figure A.44 Significance test corresponding to column (2) of Table 6.32

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0142745	.0113349	1.26	0.226	-.0097545	.0383034

Figure A.45 Significance test corresponding to column (4) of Table 6.32

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.010908	.0074826	1.46	0.164	-.0049543	.0267704

Figure A.46 Significance test corresponding to column (6) of Table 6.32

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0109885	.0073169	1.50	0.153	-.0045226	.0264996

Figure A.47 Significance test corresponding to column (2) of Table 6.33

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0219884	.0224738	0.98	0.342	-.0256539	.0696307

```
. lincom fiscal+fiscalexcludeINV+ruleenforced+fiscalenforcedexcINV
```

```
( 1)  fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0113441	.0082035	1.38	0.186	-.0060465	.0287348

Figure A.48 Significance test corresponding to column (4) of Table 6.33

```
. lincom fiscal+fiscalexcludeINV
```

```
( 1)  fiscal + fiscalexcludeINV = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0128466	.0128911	1.00	0.334	-.0144814	.0401746

```
. lincom fiscal+fiscalexcludeINV+ruleenforced+fiscalenforcedexcINV
```

```
( 1)  fiscal + ruleenforced + fiscalexcludeINV + fiscalenforcedexcINV = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.010998	.0072942	1.51	0.151	-.0044651	.026461

A.7.7 Significance Tests for Growth Models Controlling for Public Investment or any other Priority Items Exclusions (System GMM)

Figure A.49 Significance test corresponding to column (2) of Table 6.34

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.6003037	.3149799	-1.91	0.057	-1.217653	.0170457

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2940945	.1841045	1.60	0.110	-.0667436	.6549326

Figure A.50 Significance test corresponding to column (1) of Table 6.36

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.5867234	.2958977	-1.98	0.047	-1.166672	-.0067746

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2869691	.2035476	1.41	0.159	-.1119768	.6859151

Figure A.51 Significance test corresponding to column (3) of Table 6.36

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.4786401	.247718	-1.93	0.053	-.9641584	.0068783

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.2226642	.1323081	1.68	0.092	-.0366549	.4819833

Figure A.52 Significance test corresponding to column (4) of Table 6.36

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.4644943	.2163721	-2.15	0.032	-.8885759	-.0404128

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.232044	.1308095	1.77	0.076	-.0243379	.488426

Figure A.53 Significance test corresponding to column (5) of Table 6.36

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.2942655	.2482902	-1.19	0.236	-.7809053	.1923742

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1263575	.0827107	1.53	0.127	-.0357524	.2884674

Figure A.54 Significance test corresponding to column (7) of Table 6.36

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	-.2659327	.2521266	-1.05	0.292	-.7600917	.2282263

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.1694405	.1382711	1.23	0.220	-.1015659	.4404469

A.7.8 Significance Tests for Growth Models Controlling for Public Investment or any other Priority Items Exclusions (DFE)

Figure A.55 Significance test corresponding to column (2) of Table 6.38

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0142745	.0113349	1.26	0.226	-.0097545	.0383034

Figure A.56 Significance test corresponding to column (4) of Table 6.38

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.010908	.0074826	1.46	0.164	-.0049543	.0267704

Figure A.57 Significance test corresponding to column (6) of Table 6.38

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdppeer~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0109885	.0073169	1.50	0.153	-.0045226	.0264996

Figure A.58 Significance test corresponding to column (7) of Table 6.38

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0102433	.0068767	1.49	0.156	-.0043346	.0248213

Figure A.59 Significance test corresponding to column (2) of Table 6.39

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0219884	.0224738	0.98	0.342	-.0256539	.0696307

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0113441	.0082035	1.38	0.186	-.0060465	.0287348

Figure A.60 Significance test corresponding to column (4) of Table 6.39

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0128466	.0128911	1.00	0.334	-.0144814	.0401746

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.010998	.0072942	1.51	0.151	-.0044651	.026461

Figure A.61 Significance test corresponding to column (7) of Table 6.39

```
. lincom fiscal+fiscalexclusion
```

```
( 1)  fiscal + fiscalexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0232132	.0119248	1.95	0.069	-.0020662	.0484926

```
. lincom fiscal+ruleenforced+fiscalexclusion+fiscalenforcedexclusion
```

```
( 1)  fiscal + ruleenforced + fiscalexclusion + fiscalenforcedexclusion = 0
```

realgdpper~h	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
(1)	.0060664	.0071099	0.85	0.406	-.0090058	.0211387