Growth Slowdowns and Middle Income Trap: An Empirical Study on Latin American countries

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Master Thesis

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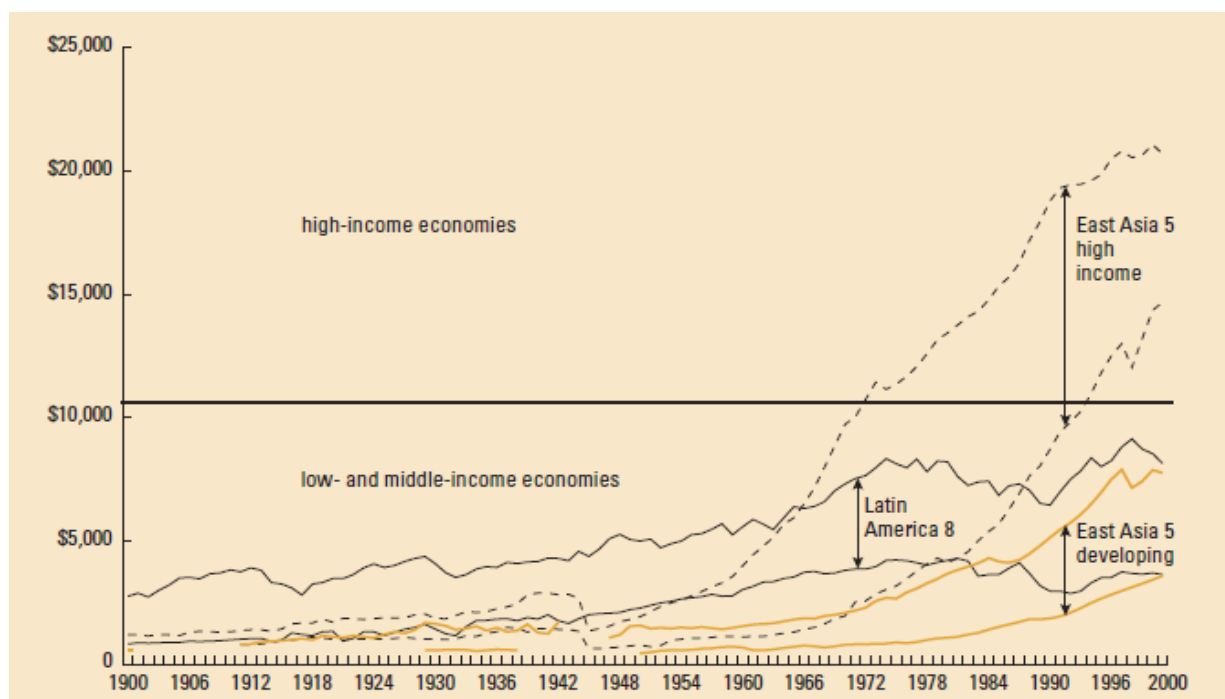Submitted on 22 October 2015

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ABSTRACT

Middle income trap is the phenomenon of rapidly growing economies which experience sudden stops and ultimately led to stagnation at middle income, failing to rank among the high income ones. The main reasons proposed by the literature are the inability to compete with low-wage exporters and the lack of knowledge and skills to link growth with high productivity activities. Reaching this point, middle income countries have to invest on key sectors of the economy in order to create long-lasting conditions that can sustain high growth and reap the benefits that scale economies have to offer.

There are two main approaches in Middle Income Trap literature, Growth Slowdowns and Structural Change & Capability Convergence. This thesis is following the former one, assessing Middle Income Trap as a phenomenon fitted into the neo-classical model. Through this specific approach the current paper is devoted in validating the existence of Middle Income Trap in the Latin American continent – including all Latin American & Caribbean countries. Exploiting Eichengreen et al (2011, 2013) methodology and adjusting it in order to fit for the Latin American case, this study identifies numerous slowdowns episodes from the 1960 to 2010. Therefore, using a probit model several indicators are examined to identify which are the specific factors that raise, or, lessen the likelihood of growth slowdown episodes and consecutively drive Latin American countries into stagnation.

1. INTRODUCTION

As the last half of the 20th century was marked by high growth rates for many countries, some of them performed an outstanding run as they managed to reach high income levels in less than expected. A typical example of it make the Asian Tigers, that managed to overcome difficulties faster than any other and find their way towards high income. On the other hand, many Latin American countries made it to the middle income ranks relatively early, around the 60s' or 70s', but instead they were overtaken by the Asian ones. *Figure 1* presents this gradual gap created between Latin American and the first five Asian countries that achieved high income, as well as, the rest upcoming Asian developing economies which converged much faster and seem to be significantly more promising, than the stagnating Latin American.

Figure 1: Latin American countries stagnating in middle income

Source: Gill & Kharas 2008

Agenor et al. (2012) examine aggregate income per capita progress from 1960 to 2005 and found that Latin American income per capita lost nearly 35% of its value relative to that of the United States. Before trying to identify which are the true causes middle income trap is so prevalent in Latin American region, one must understand this specific phenomenon has been present for many decades, despite it the fact that it has been "unearthed" quite recently. Therefore, one can find the roots of Middle Income Trap in the early stages of development as it mainly refers to factors that lie deeper in the economy. As such, capability gap and the

inability to link production with growth enhancing activities cannot be countered by momentary rapid growth. Gill & Kharas (2008) have set a major cornerstone into this analysis, being the first who referred to Middle Income trap by this name, and suggest that whenever rapid technological changes occurred, growth was buffed in the long term. Additionally, they claim that *"exploiting economies of scale offers a way out"*, but severely doubt the presence of such economies in middle income countries.

While middle income trap is a phenomenon that encloses great ambiguity, various definitions have been given, as well as, analogously numerous policy recommendations for avoidance. The aim of this thesis is not to provide an additional definition, but simply to investigate the phenomenon by comparing the two leading approaches, and proceed to investigate the Latin American case with respect to the neo-classical setup. Authors in this stream of thought, imply that rapid growth in middle income countries is not meant to last forever since growth slowdowns are very likely to occur, breaking down the upward growth trends and condemning middle income countries to stagnation. The main benefit of following this approach is the ability to adopt a multi-captive specification, allowing for aggregate and sectorial analysis of the economy. Ultimately, the methodology is enabling the research to draw solid conclusions and to propose several policies that can fit into the real economy.

The Thesis starts by introducing the middle income trap and provides a complete report of different perceptions of the phenomenon in literature. Then, continues with the description of the crucial first steps in development and related policy recommendations to avoid it. Chapter 3 presents the reasons the Latin American case is studied, Chapter 4 classifies and separates thoroughly the income groups and Chapter 5 concludes theoretically by splitting the main stream of thoughts. In Chapter 6, the methodological framework and the thesis contribution to it are reported, and Chapter 7 presents the determinants of growth slowdowns. Lastly, in Chapter 8 the empirical results accompanied by a few additional robustness checks are discussed with Chapter 9 stating some concluding remarks and making further research propositions.

2. THE MIDDLE INCOME TRAP PHENOMENON

2.1 - What is the MIT? Does it really exist?

As the phenomenon of the Middle Income Trap has gained significant popularity in empirical growth research over the past few years, various economists have tried to give a concrete and consistent definition of what exactly is. Unfortunately, as there is not a pure definition, the approaches from one to the other study are varying widely, resulting to the inability to determine a commonly accepted terminology for the middle income trap. Differences have not only occurred regarding the definition or the tittle of this phenomenon, while major arguments from each side have been developed concerning the most accurate approach to the matter. Consequently, there is no main stream of literature to ultimately say, whether the determinants and the crucial factors that drive a country into the trap come from the socio-political and the economical background of an economy, or, trade and its determinants.

To start with, Spence (2011) does not refer to the term "trap", but only to a Middle Income Transition that countries in the $5,000-10,000 income per capita range go through, in order to specialize their industry and acquire the know-how of the next income group before entering. In Pritchett & Summers (2014) an aspect of this phenomenon in Asian Countries is attributed to the fact that rapid growth never lasts forever. So "if" the MIT exists and indeed it's posing a threat to the rapid growth of the Asian economies, it is simply nothing more than a matter of misjudgment, as in fact a regression to mean growth levels is in fact the case. Therefore, countries that are growing will continue to do so and a moderate or a much more intense slowdown, are just the convergence of growth to its equilibrium. Finally they conclude that income level is not a strong predictor for growth slowdowns, while rapid growth is a much more valuable proxy for the likelihood of an income deceleration.

Others, such as Chen & Dai (2014) make a leap forward and try to provide new definitions for the trap, from the perspective that could fit into political economy. In their paper they argue that the governments of developing countries and their incumbents have incentives to distort the funds and resources allocation in the economy. Thus, the conditions that could create a healthy environment for the economy, which has all the potential to flourish and boom are jeopardized but instead, an anemic sibling of rapid growth survives under a corrupted and bureaucratic political regime. To evolve their theory, Chen & Dai set the branching deregulation of US banking sector from the 70's to 90's as a benchmark case. The main

channel for those shock-slowdowns in their model is Lobbying, which is responsible for the blockage of branching deregulation and a plumb for growth which slows down, leaving the economy to stagnate.

Never the less, the first authors who mentioned Middle Income Trap in literature are Gill & Kharas (2007). In their study "*An East Asian Renaissance, Ideas for Economic Growth*" as in a follow-up paper by Kharas & Kohli (2011) they refer to Middle Income Trap and how it can be avoided. In both studies they point out three important transitions-transformations which can be distinguished as: (i) diversification to slow down and let specialization to meet the industrial needs in employment and production, (ii) investment in/with foreign technology to be casted aside and innovation to take up arms, (iii) decentralization. The latter specifically refers to the development of better and more efficient capital markets, thus better management in the financial sector. In a few words these can be summed up as, Trade, Innovation and Finance and Communication. Later on, the second point will be examined more thoroughly, as the leap from imported technology to domestic innovation has been pointed out by many economists concerning the explanation of the bliss point before a country is trapped or not.

The present study concentrates on Latin American countries making it worth noting that Kharas & Kohli (2011) in their paper "*What is the Middle Income Trap, Why do Countries Fall into it, and How Can it be Avoided*" mention differences of GDP per capita growth between Asian and Latin American countries. As they initially recognize a common income level where all the economies were in the eaves of the 20th century, they highlight latter, that Latin American countries unlike the Asian ones – such as the four Asian Tigers – could not find their way into a sustainable environment for growth. Thus, Latin American countries failed to graduate to higher income ranks.

2.2 - Perception of the MIT in literature.

In contrast with the Poverty trap, where certain steps have to be followed in order to be avoided or escaped, the middle income theory has no commonly agreed and consistent policy recommendations. Instead, in many cases the definition from each study provides an abstract concept which turns up to be conveniently in line with the reasons that cause the middle income trap, resulting to a blend between the definition provided and the methodology that has been followed. Due to this lack of widely acceptable terminology, Robertson & Ye (2013) try to

compose a statistical definition, setting as the most important factor the survival from the Unit Root tests. Specifically they test for the presence of middle income trap through repeated Augmented Dickey Fuller tests in order to identify Structural Breaks, or breaks in growth patterns, and consequently identify the points in time where growth slowed down leading to a middle income trap. Robertson and Ye (2013) methodology proves that Middle Income Trap is a robust phenomenon and indeed, it can fit into theory and models.

In order to avoid confusion, this study acknowledges Kharas & Kohli (2011) since they provide one of the most parsimonious and stark definitions. In their paper they perceive Middle income trap as a state where countries follow rapid bursts of growth followed by stagnation and ultimately "*left unable to compete with low-wage producers*" in exporting of manufactured goods and high skilled advanced economies. Therefore trapped countries in the middle income are being squeezed between those who possess the technological background, capital stock, managerial know-how and innovative production technics and those who produce and export their way to growth, counting on the low-wage and unskilled labor force environment.

2.3 - Taking the first step into development

Counting on this definition, it is crucial to explain how the early stages of development matter later on in time, and specifically when income comes across the challenge of leaping from middle to high income ranks. The graduation in High – or even from Lower Middle to Upper Middle – Income ranks may be successful but also must be long lasting and indefinite. Many cases have been recorded where a country managed to reach high income per capita but quickly fell back again due to a crisis, or, simply because the transition reflected a momentary effect – such as an upward price shock – resulting to a temporarily movement rather than an actual attainment of higher income. Typical examples of such case are Antigua and Barbuda, Aruba, Barbados, South Korea, Hungary and Saudi Arabia who moved for a single or more years but could not keep their place among higher income earners.

Nowadays, most developing countries rely on investment in order to boost growth by providing wider employment opportunities, incentivize knowledge and link the workforce with particular skills in order to cover the domestic needs of employment. Higher domestic investment leads also the workforce towards a transitory state where the services and the manufacturing sectors are extracting labor from the agricultural and the economy is shifting gradually from the first

raw-material extracting sector to the second and third. As evolution calls for this shift, it also demands for structural change and capability convergence in order to create stable and reliable conditions that enable the economy to be prosperous in the long term. In order to create such terms, educational reform is considered as a crucial transition that has to follow, as the domestic need for highly skilled personnel rises.

High growth clearly cannot be sustained by itself indefinitely, but, human capital being the cornerstone of every knowledge-based economy, may instead be a very reliable factor to provide the suitable supplies for it. Agenor and Canuto (2012) using a two stages overlapping generations model, find among other, that misallocation of talent often results to low-growth equilibrium, or, a differently perceived definition of middle income trap. Experience has verifies this statement, as East Asian countries that improved significantly secondary and tertiary education have proven to be more efficient in escaping middle income trap. Latin American countries on the opposite failed to follow this example and stagnated for a longer period of time.

Finally, a demographic transition is crucial for building the future blocks of the economy and supporting rapid growth. Lowering the dependency, while at the same time, educational attainment rises from a generation to the next, can significantly change the economic structure of a developing country. Simultaneously women participation in labor increases, resulting to greater labor force and later child-birth. Aiyar & Mody (2011) find that the changes in the age structure along with higher labor participation account for a substantial amount for growth acceleration. Bloom & Williamson (1998) specifically attribute East Asian Miracle largely in this successful transition and "reconstruction" of the demographic dividend, which, alongside with trade, became the two main reasons economies grew rapidly and flourished.

2.4 - Avoiding the Trap

After high growth is attained and the primary phase of early development has started, investment driven growth could lead to danger of domestic overheating. Middle income trap, or, a regression to mean, according to Pritchett and Summers (2014), is becoming very real. Either way, the ability to shift more labor from agriculture to manufacturing declines as the capacity of the manufacturing sector reaches its limits and marginal productivity is squeezed. Ohno (2009), states that catching up with global industrialization though continuous and higher

investment is not enough, as now the target should be the support of domestic industry. Imported technology cannot replace the domestic indefinitely and the need for upgrading the technological factor of the economy is urgent.

In line with Ohno(2009), Kharas & Kholi (2011) define three important conditions in order for this transition to be successful. First, specialization or "Internal Innovation" refers to high quality new products based on the productive advantages of firms. In contrast with countries in the early stages of development that rely in diversification of production, firms in rapid developing countries must adjust their production in order to prepare for their entrance into global markets. Else stated, firms must be able to compete with high skilled producers and low-wage exporters.

Second, the significance of education-based growth with respect to advancing the technological factor of the economy is highlighted. Eichengreen et al. (2011, 2013) find that growth slowdowns in rapid growing economies are almost always coinciding with a deceleration in TFP - or TFP slowdowns as they refer to it. Better education and higher shares of the GDP on education expenditures, become necessary prerequisites for a critical transition of labor which is now responsible for producing domestic innovation. TFP slowdowns may be largely associated with depreciation of human capital, as the dynamics of labor force are lasting for a strictly defined period expressed in terms of a generation. Therefore, the lack of re-investment in education is putting obstacles also in domestic innovation and domestic technological advancement. Kharas and Kholi (2011) emphasize that knowledge-based growth and constant re-construction of the educational system are essential in order to compete with high skilled producers, and ultimately reap the benefits from education powered innovation.

Lastly, decentralization of policy institutions and governmental power is considered to be an important factor for capability convergence and the advancement of managerial skills. Aiyar et al. (2012), in order to proxy for decentralization and other information cost effects, test three infrastructural indicators, but fail to observe any significant results.

In conclusion, a part of literature is suggesting that a more attractive domestic environment for foreign investors can significantly improve the value added from foreign direct investment. In the opposition, Paus (2005) in Costa Rican study argues that FDI spillovers are only a matter of absorptive capacity of indigenous firms. However, all the above requirements and recommendations for avoiding the trap, are calling for the adoption of different mindsets in order for structural change to work its way into bailing out a country of the trap.

In a completely different spectrum, Hausmann et al (2006) found that one of the prevalent reasons for a collapse in growth may possibly originate externally, as social and political crises may cause large economic instabilities. A typical example of that is Colombia, where Dube & Vargas (2012) find reverse causality between income shocks and armed conflict.

3. WHY LATIN AMERICA? MOTIVES AND CHALLENGES

After obtaining more complex knowledge and complete information on the Middle Income Trap phenomenon, this study moves towards using a more specific group of countries, focusing on Latin American & Caribbean countries. Therefore the aim of this thesis is to investigate and understand the regional attributes that make Latin American countries more likely to experience growth slowdowns.

Starting with a simple example, Brazil has been for many decades now one the world's largest developing economies as regionally accounts for almost 40% of Latin American Gross Domestic Product (GDP). However Brazil is still struggling to climb to high income ranks and have been stagnating as it continuously experienced sudden stops and starts in its growth trend. The aftermath of these collapses and slowdowns shows that Brazil has spent almost three decades with no clear improvements in its average income per capita, reflecting a socio-economic stagnation which is harmful in the long term.

In the literature Latin America has been compared and contrasted with the Asian region, as both regions have been characterized by rapid growth and slowdowns, making them the two best candidates for studies concerning middle income trap. Kohli (2009) examines 8 Latin American and 10 Asian countries and tracks their GDP per capita performance across the 20th century. He outlines the long lasting stagnation of all Latin American countries and contrasts them to 5 out of 10 Asian countries that have achieved high income and graduated successfully to the top rank. However the comparison with the rest Asian developing countries – referring to China, Malaysia, India, Indonesia and Thailand – which have very good prospects to escape the trap, is wildly more interesting. That is, as the 5 developing Asian economies have shown an outstanding performance, that is most certainly an stronf indication that they will manage to avoid the trap. Specifically, many studies have been devoted in order to estimate if China is going to avoid the middle income trap. One of the most profound investigations from the World

Bank, states a sound and positive answer, but only if it faces the challenges to adopt of future policies that will enable it to address forthcoming difficulties successfully.

Aiyar et al. (2012) do a regional comparison between MENA[1], Latin American and Asian developing countries, and conclude that irrespectively of the higher likelihood that slowdowns may occur in the Asia ones, they ultimately compare favorably to the Latin American. Adding to that, they claim that in many sectors, including trade, regional integration and supply chains even the relatively worst Asian performers are still above the average of their sample, leaving behind Latin America. Finally, they draw a summarizing event occurrence table, and locate the majority of slowdowns in Latin American countries.

The research question to be investigated in this thesis is: Which are the specific characteristics that tend to make Latin American countries more vulnerable to slowdowns and thus render Middle Income Trap more likely to pose a threat in this particular region?

4. **COUNTRY CLASSIFICATION**

Most Latin American countries today remain in the middle income ranks suffering from long lasting stagnation, while few have managed to move up the ladder and place themselves among the high income ranks only recently: Antigua & Aruba since 2012, Argentina since 2014, Barbados 2006, Chile 2012, Puerto Rico since 2002, Saint Kitts and Nevis since 2012, Trinidad & Tobago since 2006, Uruguay since 2012 and Venezuela since 2014.

When one is interested in identifying a phenomenon concerning middle income countries, the way of classification in different income ranks between Low, Lower-Middle, Upper-Middle and High income ranks, must be dealt with caution and find the appropriate criteria in order to do so. Among the many, the most popular and scientifically verified classification that stands out is the one provided by the World Bank. The World Bank classification is done with respect to countries' Gross Domestic Product (GNI) per capita with the most recently revised version of 2014. The grouping of the four categories is defined by 3 thresholds of: low income at, $1,010 or less, lower-middle income: $1,011- $4,050, upper-middle income: $4,051 - $11,760 and high income $11,761 and higher. The World Bank classification is done according to the Atlas Method, a summarized indicator of WDI which embodies various indicators concerning

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[1] Middle Eastern & Northern African countries.

social economic and environmental factors that measure the well-being of the country and its people.

Felipe et al. (2012) provide a different country classification as they focus their research on a year-based analysis, reaching an alternative specification for trapped and non-trapped countries in middle income. The average years for graduating from a rank to the other are calculated. Whenever a country has spent more years than the average in lower or upper middle income group it is considered to be in the Middle Income Trap. Accordingly they calculate the average annual growth rate which is needed to transition to the next income rank. The criterion they use for grouping up countries follows the GDP per capita in 1990 PPP thresholds. However, the thresholds used in Felipe et al. (2012) are not drawn from the World Bank since the latter exist only since 1987. Three wide sets of income are defined and divided by intervals of $250 in order to proximate the most suitable and intuitive specification only to end up with 10,080 sets of thresholds. In order to sort these out and pick out the most significant, the pairwise correlation of each threshold with the World Banks one is calculated and ultimately the set of t_0 = $2,000, t_1 = $7,250 and t_2 = $11,750 is picked out.

Later on, in Chapter 6, this study leaves aside the income thresholds as the slowdown identification methodology commands to. This is due to erasing the methodological constraints in order to allow the author to investigate all the possible occurring slowdowns in Latin American countries. A separate specification that examines growth slowdowns episodes taking place only in middle income is provided. However, regarding the classification of Latin American countries, the last year of the sample places every country except Haiti above low income. The majority of the countries belong in middle income ranks as far as the sample goes, but, those that actually managed to escape, have done so very recently. As also explained in Chapter 6, the first and last 7 years of the sample are dropped out due to technical reasons, meaning that even if a country has graduated to high income ranks after 2003 will not affect the model.

5. THE TWO LEADING APPROACHES

Different perceptions of Middle Income Trap may lead to ambiguous results and arbitrary conclusions. A first step for sorting out differences in middle income trap literature, comes through the identification and tracking of various approaches. Starting from the theoretical

background, the definition, the determinants and the policy implications in order to avoid the trap, writers from each approach tend to give working definitions that serve their empirical or theoretical analysis and almost all policy implications seem to make sense in the specific framework Middle Income Trap is defined and examined. Never the less, a statement from Kharas & Kholi (2011), regarding the "*squeezed in between low-wage exports and high tech producers*" is commonly accepted.

The current study is dividing the two approaches with respect to Paus (2014) work, as the classification of the differences serves the reasoning of the author. In her study Paus distinguishes two separate groups of writers. The first group, highlights the need for structural change in middle income countries, and productive capabilities gap is considered as a prerequisite in order to achieve a long lasting and reliable growth pattern. Paus (2014) states that productive capabilities can significantly contribute to sustain a strong comparative advantage of a country's industrial sector, and ultimately help it avoid the trap even if rapid growth slows down. In Sutton (2001, 2005) as in Hausman & Hidalgo (2009), capabilities are defined as quality-productivity combination which embodies, human and physical capital, the legal system and the institutional quality that concern the production process. Additionally, know-how along with managerial and organizational abilities, are considered as essential skills for the individuals that participate in leading roles of the economic environment, such as managers and policy makers.

Felipe et al. (2012) study productive capability gap proxying it through the products exported by middle income countries. The null hypothesis examined, is whether these products are the same for a trapped and a non-trapped country. They do so by testing the average values of eight indicators of structural transformation and trade, formed by the authors or taken from literature, and check if there are difference between the trapped and the non-trapped countries. The results of Felipe et al. (2012) are straightforward, as they find clear patterns separating trapped and non-trapped countries for all eight indicators. They compare the average of Lower middle countries that have been trapped to those that successfully graduated to Upper Middle and respectively, the Upper Middle Income Countries that have been trapped with those that graduated to high income rank.

Later on, Paus (2014) merges the first group with a small subgroup of authors, who call out for the need of middle income countries to meet the global economic standards and follow current globalization paths through innovation and market-wise competition. In other words, Structural

change approach absorbed the globalization process rhetoric concerning the policy recommendations, as more and more writers have called for more "*pro-active and growth-targeted policies*" in order for structural change to be achieved. Never the less, no study has been dedicated to MIT exclusively from the globalization aspect.

The second approach, and more importantly the one this study is following, is called growth slowdown (performance) and its theoretical framework is following the neoclassical model. Therefore the growth slowdown approach tends to examine slowdown determinants such as institutional setup, trade terms, free markets, polity and education policy, and to recommend policies for its solution built up according to the aforementioned sectors. The main authors representing the second group are Aiyar et al. (2013), Eichengreen et al. (2011, 2013) and Robertson & Ye (2013). Overall, growth slowdown approach aims at connecting the growth of a neoclassical model economy with correlated slowdowns that occur in specific moments in time and jeopardize the growth or long-term convergence path.

Aiyar et al. (2013) follow a Solow model utilizing its theoretical predictions[2] even though conditional convergence is not entirely true in reality, as the saving rates tend to vary widely across countries and especially for the middle income ones, which growth pattern is significantly more vulnerable to breakdowns. They identify growth slowdowns employing a pair of criteria that take the difference between actual and estimated growth. After this procedure is replicated for each country, the ones that belong in the bottom 20th percentile for at least 10 years – the authors use 5-year intervals – are classified as countries that experience a slowdown in this period. Consequently the authors identify 123 slowdowns over a 45-year period from 1955 to 2010 for all GDP per capita levels.

Overall, in Aiyar et al. (2013), an innovative approach is adopted compared to other studies, invalidating the argument about the existence of the trap. According to their estimations, Aiyar et al. (2012) form several specifications with no upper or lower boundaries to address the trap. In line with World Bank classification of GNI per capita, they define various income per capita thresholds in order to prove that whatever are they, the concept of middle trap is consistent with the theory. Indeed the authors demonstrate graphically the frequency of growth slowdowns proving that they are most likely to be found among middle income countries. One can say that Aiyar et al. (2012) define their model in a very robust way and submit a major contribution in

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[2] The Solow Swan model predicts that the income levels of poor economies converges in time with the income of richer countries, as both should have similar saving rates for human and physical capital. This statement is also known as conditional convergence.

literature, validating the theory of middle income trap using an alternative reasoning and starting point.

On the other hand, Eichengreen et al. (2011, 2013) follow a more complex method which was firstly introduced in empirical growth literature from Hausman et al. (2005). Hausman et al. (2005) classify growth accelerations using three criteria. Whenever those are satisfied, a binary variable, used as the dependent, takes the value of one, and an acceleration is considered to occur in time t. Eichengreen et al. (2011, 2013) follow the aforementioned method to identify growth slowdowns. They do so by reversing the basic criteria in order to put growth slowdowns instead of accelerations under investigation, while they enrich the model with a GDP per capita lower boundary to create an entry condition. In the upcoming Chapter 6 the extra condition will be discussed and revisited thoroughly.

Although Aiyar et al. (2012) and Eichengreen (2011, 2013) treat the slowdown classification employing different methods and criteria, they both investigate the likelihood of several determinants and their impact on the dependent variable in a very similar way. Specifically, in both studies a probit model is employed in order to link growth slowdowns with several variables, examined as possible determinants. Strangely though, the two studies exhibit major differences in the slowdown episodes identified. Paus (2014) argues, that differences of such extent are casting serious doubt on the overall value of the slowdown approach due to the inability to present a comprehensive policy recommendation. A primarily reason this occurs, is largely associated with the different handling and processing of the explanatory and dependent variables. Another fact which is extremely suspicious for this lack of alignment in the two studies' results, is most probably the country samples included. Finally Paus (2014) focuses her main critique on the lack of clear propositions regarding the impact of globalization on middle income countries.

Summarizing, Structural Change approach compared to Growth Slowdown is somehow weaker when it calls for prediction accuracy. In the latter approach, several authors have assessed the neo-classical model – either explicitly or implicitly – and equated the growth slowdowns directly with the middle income trap. This allowed the growth slowdown theorists, to define precisely when a country experienced a growth slowdown fell into the trap.

Finally, returning to Paus (2014) and to the most inspiring summary of the different approaches, many points in her study argue against growth slowdown approach. Specifically Paus (2014) criticizes the fact that, Eichengreen et al (2011, 2013) regard several countries that

today have graduated in high income. Yet, there is no sharply defined or intuitive reason provided. Although Paus (2014) disagrees openly with the Growth slowdown approach due to its general and abstract character concerning the policy implications, she underlines the importance in understanding the various approaches of middle income trap can make a difference on how one recommends policies to avoid in the end. Hence, she argues in favor of the Structural Change approach, referring to the capability gap (convergence). Paus (2014) shows that income convergence might come together with capability convergence, but they may also come apart or reversely, as capability divergence was in fact the case for some European countries after the 2000s even though their income was converging to higher levels.

6. DATA & METHODOLOGY

6.1 - Data

Before presenting the methodology and going in detail about the technicalities that have occurred in the process of growth slowdowns identification in the Latin American region, it is necessary to set the time period and data dimension, as well as the terms GDP per capita is assessed.

The current thesis is employing a panel data setting in order to investigate the effects of growth slowdowns on the aggregate, and draw conclusions that can fit into a regional analysis. The time span the data cover is 51 years, starting from 1960, the earliest date the World Bank database (WDI) provides, and ends in 2010. The country sample concerns Latin American & Caribbean countries with some of the latter, remaining still under governmental and judicial rule of the US and Netherlands. However, their omission would not be scientifically valid as they exist as distinct countries in socio-economic sense. In total, World Bank considers 41 Latin American and Caribbean countries, but in reality sufficient data for economic research can be found for less than this number. Therefore this thesis settles down in 35 countries, excluding Cayman Islands, Curacao, Turks and Caicos Islands, Saint Martin (both Dutch and French sides) and Virgin Islands. Despite the fact that Virgin Islands and Puerto Rico are incorporated by the US, Virgin Islands are the only of the two excluded as data are scarce throughout every database. On the contrary, Aruba is included, since it only recently became an

independent state and separated itself from the Netherlands[3]. Finally, the ultimate criterion, that every Caribbean Islands or state has been put through, was whether data across various factors and indicators where available. In total, the specification of data allows for 1785 observations, covering 51 years for 35 countries.

This section describes only the prerequisite variables for defining the methodological framework and identification of Growth Slowdowns. The main variables used in the following section are GDP, GDP per capita and GDP Growth as derived directly from author's calculations or the database of World Bank. The following part uses the dataset provided by PWT 6.3 as encouraged by the main literature references of Eichengreen et al (2011, 2013), Hausmann et al (2005), Aiyar et al (2013). Thus, GDP, per capita GDP data are measured in Purchasing Power Parity and expressed as US$ in 2005 constant prices (chain series). Similarly, GDP Investment shares and Trade Openness which are pulled from PWT 7.1 & 8.0 are also in 2005 constant prices. Finally, the current research is putting into test a large number of explanatories and additional controls altogether, with indicators that check for robustness of both model specification and data. Their definition and extensive description can be found in Chapter 7.

6.2 - Methodological Framework

The present study is assessing Middle Income Trap with respect to Growth Slowdown approach and specifically following Eichengreen et al. (2011, 2013) methodology.

Eichengreen et al. (2011, 2013) employ empirically a very strong model, capable to estimate the exact dates that growth slowdowns occurred and specify, through the usage of structural break tests, when exactly a country fell into the trap. This additionally enables one to investigate the internal relationship of growth slowdowns with the endogenous components of growth. However, there are many reasonable questions that emerge concerning the criteria Eichengreen et al. (2011, 2013) used to derive the slowdowns episodes. Consequently this study is devoting a lot of effort trying to follow the methodological framework, but also to "correct" the flaws and allow countries that belong in regions such as the Latin American to enter the research. The preset study is not working only to provide a wide picture of the

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[3] Aruba is still a part of the Kingdom of Netherlands

dynamics of Eichengreen methodological problems, but to improve a very fruitful analysis for the middle income trap literature.

Starting with the methodology, the analysis in Eichengreen et al (2011, 2013) on growth slowdowns follows Hausmann et al. (2005).The first employ the criteria in Hausman et al. (2005) study in order to reverse the intuition behind them in order to identify growth slowdowns instead of accelerations. Eichengreen methodological contribution follows three criteria to identify and classify a valid slowdown, presented as such:

(1) $g_{t,t-n} \geq 3.5\%$ *Growth was rapid*

(2) $g_{t,t-n} - g_{t,t+n} \geq 2\%$ *Growth slowed down*

(3) $y_t > 10,000$ *Lower Entrance Boundary*

Where $g_{t,t-n}$ and $g_{t,t+n}$ represent the average growth between time t and t+n as well as t and t-n. This study follows explicitly the two preceding and the same interval of n=7 is taken. Finally y is the GDP per capita in 2005 constant prices as taken from Penn World Tables version 7.1.

The seven years average in the first condition serves the analysis in the sense that preceding growth must be larger than 3.5% in the average, signifying that a country should have at least a significant amount of growth before-hand in order for the slowdown to be classified as such. The second condition denoting the difference between the seven-year period before and after a given point in time tells us, that a slowdown episode should be at least higher than the rate of 2%. This criterion is granting us that a slowdown is non-negligible, and not merely a decline in average growth. The first two conditions are directly reversing Hausmann et al. (2005) criteria for growth accelerations, enabling slowdowns to fit the model. The third point is most importantly where this study stands to, as several authors have severely criticized it as well.

The methodology followed in the current thesis, forces the author to leave out the third condition for a set of reason that will be explained so forth. First, literature and a wide set of definitions present middle income trap as a phenomenon concerning developing countries. On the contrary, the focus of Eichengreen et al. (2011, 2013) lies mostly in currently developed countries, since by introducing the third condition they explain: *"to rule out growth crises in not yet successfully developed countries".*

Second, following the definition of World Bank concerning the GNI per capita, this criterion is ruling out a large number of Middle Income Countries as the threshold for high income

countries is at 12,735. Therefore the interval between the 10,000 lower boundary and the high income threshold, is allowing only for the highest ranked upper middle ruling out the majority of middle income countries. In 2005 especially the threshold between middle income and high income rank was 10,725. Since Eichegreen et al. apply their research with 2005 constant GDP they almost exclude each and every middle income country of today. So, as others have wondered before, what is the intuition behind a 10,000 lower-entrance-boundary if it only allows the inclusion of countries that mostly belong in high income nowadays, and have graduated long ago?

Specifically most of the Latin American & Caribbean countries that graduated in high income ranks have managed to do so only recently. Typical cases of this are Argentina, Venezuela, Uruguay, Saint Kitts & Davis, Saint Martin, Trinidad & Tobago and Antigua & Barbuda. Overall, most of the aforementioned countries made it to high income ranks after 2010. However this study is still able to take these countries into consideration, as the time span of this study extends up to 2010, but as it will be explained onwards in this chapter, the actual time span is somewhat lessened. Exceptions to this rule are Bahamas and Aruba who climbed up in 1987 and 1994 respectively. Therefore, since almost every Latin American country ranks into the middle income, a condition such as the 3rd one would render the research almost impossible and unrealistic to take place in a Latin American level.

For the reasons stated above this thesis will go on, leaving aside the last condition of Eichengreen et al. (2011, 2013) and finally the slowdown classification conditions are determined by the two remaining conditions:

(1) $g_{t,t-n} \geq 3.5\%$ *Growth was rapid*

(2) $g_{t,t-n} - g_{t,t+n} \geq 2\%$ *Growth slowed down*

The output of these two conditions is a dummy variable that takes the value of one, if the criteria are satisfied, or remains zero if at least one of them is not. In the first case, this particular country at the given point in time is experiencing a slowdown. A disadvantage this methodology had to overcome according to both Hausmann et al. (2005) & Eichengreen et al. (2011, 2013), was the fact that a single year of very high growth could leave its mark to the seven years that will follow. The "mark" is in fact as an upward – or downward – bias that would be present in every growth average for seven years before in t-7 or after in t+7, thus affecting the slowdown identification greatly.

Apart from that, the sample suffered also from another problem. Creating the dummy variable for slowdowns in STATA, an outstanding number of ones showed up. When inspecting these 400 and so cases of ones, half of them turned up to be cases where the 2nd condition couldn't be identified by the program due to a gap in the data. This gap was caused by two reasons. First, the sample forces us to drop the first and the last seven years of data, or else, an average would be formed with less than seven observations, causing some, to suffer from great biases, as the average was being pulled to converge to a number of 6 or even less observations. On the other hand, while going through databases, one realizes that data for Latin American countries are rarely found complete. This case forced for the search of alternative solutions, as in many cases, GDP growth data were not available or the dataset had been filled by calculation of the author. However, the incompleteness of the data has seriously affected the empirical estimation that follow in Chapter 8.

Concerning the second problem there were not many actions to be taken under consideration, since data holes cannot be dealt with further measures than already did. Additionally, the issue of smaller averages, demands for dropping the first and the last seven years of the dataset out of the sample as the 2nd condition cannot be examined in such cases. Differently, if the average of t-7 & t+7 would be computed instead with less yearly observations it would could severe bias on the averages, and might even create non-existing slowdowns. One could argue that the average of lesser years could be considered as an option, but since no author has tried to work differently with this set of criteria, this study gives the benefit of the doubt to Hausmann et al. (2005) and follows strictly their set of rules.

However, the specification's drawback was significantly more complex to overcome as single years of very high growth indeed left their "mark" on a consecutive series of seven years onwards. This resulted to have series of consecutive years which was classified as slowdowns, leaving up to 10 observations in a row taking the value of one. Again following Eichengreen et al. (2011, 2013), a series of Structural Breakpoint Chow Tests was run in order to identify and point out a single and most significant year[4] out of the consecutive string. That procedure also includes finding the potential structural break and presenting this point in time where growth breaks down and converges to different equilibrium.

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[4] Always with respect to the higher F statistic, as in many cases, pointing out the Structural break is not a matter of the most significant point in time.

The possession of these single years, responsible for a slowdown episode, enables the analysis to examine two different dependent dummies and run separate probit regressions. The first, or the consecutive dummy, is the one that is formed directly after the criteria test and before the Chow structural break tests. The second reports only the most significant years of each consecutive string. Differently stated, the Chow Breakpoint test dummy reports a one only for the specific year of the slowdown series where a structural break is present. In case there was no structural break in a particular series of slowdowns, still the Chow-test pointed out the most significant and best candidate for this to happen, which was finally put into use. One may wonder, what is the benefit of regressing two dependent dummy variables that are so closely related? By regressing the same explanatories and controls simultaneously, the study aims to identify effects that may be hidden in one or the other case and ultimately re-assure that the definition of a strictly determined, or, a more abstract series of slowdowns, are able to produce robust results for various specifications. Finally, both dummies are putted into test for robustness and model specification and proved to be capable predictors, as it is presented in Chapter 8 that follows.

6.3 - Further remarks on the benchmark methodology

Trying to mimic the methodology of Hausmann et al (2005) exactly, years $t - 1$, t and $t + 1$ (if t any single slowdown pointed out from chow test) were marked with a unit and all other points with zero. By placing this study in between Eichengreen and Hausmann, the author turns to critically revisit each and every point, rather than blindly adopting previous methodologies.

Therefore, adapting the methodology in order to verify its suitability when reversed from accelerations to slowdowns, a single but not less significant objection has been formed. Hausmann et al. (2005) place a growth event at least five years apart from the following, thus, dropping from the dataset a growth event which occurs in less than five years from the preceding one. In the author's dataset, this occurs a few times, but still enough to significantly affect the dependent binary variable. More precisely, Argentina experienced a slowdown in 1971 and another one in 1975. Following Hasuman et al. (2005), the latter should be dropped out and marked with a zero. However, this is not the case since Eichengreen et al (2011) site that slowdowns do occur in steps and depending on their determinants may come gradual. Else,

if this statement is refuted, this study may originate a lot closer to the one of Hausmann Wagner and Rodriguez (2006) concerning growth collapses instead of slowdowns.

The above statement is strictly connected with the fact that slowdowns are not to be treated exactly as accelerations, since a slowdown is a phenomenon that may come in waves. A typical example of this, make the two Argentinian slowdowns that are placed in 1971 and 1975. Before, explaining the example however, it should be highlighted that Eichengreen et al. (2011) admit that slowdowns are strongly related with deep determinants of growth and specifically TFP, which accounts largely for slowdown episodes likelihood. In *Table A.2* in the Appendix section, all identified slowdowns are associated with deeper components of growth. *Table A.2* mainly verifies the above statement, and enables one to examine the internal causality of growth with its determinants.

Therefore, in the Argentinian case, in 1971 Total factor productivity growth and GDP per capita growth for Argentina saw a simultaneous downward movement, with next year's TFP declining furthermore 1.5%. During the next four years between 1971 and 1975, the productivity of TFP in Argentinian economy rose again back to positive growth in 1974, only to plummet again in 1975. 1976, the year after the second in turn slowdown, found TFP growth close to all times low while the rest of the components stayed relatively intact. This, along with Eichengreen statement, cast serious doubt in whether the suggestion of Hausmann et al. (2005) should be followed strictly in the case of slowdowns, and the secondary shock that is placed in less than five years should be out.

7. **SLOWDOWN DETERMINANTS**

After characterizing what a growth slowdown looks like, the research focuses on the growth slowdown determinants. This study sets itself in between of Eichengreen et al. and Aiyar et al. as it classifies various determinants in several distinct groups, representing each sector. The intuition behind the selection of each one of the six sectors, lies in the understanding of how growth moves in developing countries, which are their main drawbacks and what are the critical transitions they have to make in order to escape the trap.

7.1 - Endogenous & Exogenous Growth Components

The analysis distinguishes between shallow and deep determinants of economic growth as separated in Rodrik (2002).The aim of specifying the determinants of growth slowdowns in separate groups, is to identify the effect of each component, as well as the aggregate effect, and finally reach a baseline specification including explanatories from each sub-group. The probit is useful for pointing out the single most consistent variable from each sub-group from six sets of determinants. The rest of the explanatories are not casted aside, but they are exploited thoroughly in the same probit analysis and studied in order to solve the causality of growth slowdowns episodes as well as the likelihood to happen.

First, shallow determinants of growth – or endogenous determinants of growth –concerning the factor endowments in an economy such as Labor input, Capital Stock, Physical Capital and TFP. In line with the slowdowns identified by the structural break chow tests, every slowdown is aligned with the growth rates of each of the four endogenous growth determinants in order to identify their internal relationship and clarify which the one most responsible for GDP per capita breakdowns. This comparative analysis is done with respect to the previous (t-1) and the fore-coming (t+1) year of a single slowdown, and aims to point out endogenous variations that may be related with endogenous growth components.

More specifically, in Eichengreen et al (2011) several deep determinant slowdowns have been found extremely suspicious, as the coincidence between TFP breakdowns and growth slowdowns episodes results almost certain. Thus, Eichengreen et al. (2011) reach the conclusion that TFP slowdowns are largely responsible for the likelihood of growth slowdowns. This study, tries to examine if there is indeed a similar relationship for Latin American growth slowdowns and the deep determinants of growth. *Table A.2* in the Appendix section presents the results. Indeed, in several cases where the growth rate of the technological factor is severely diminished, growth simultaneously, or, in the next period slows down. Additionally, the two year interval used in *Table A.2*, is capable to highlight the ongoing decline of the deep determinants. Overall, as in Eichengreen et al. (2011) TFP slowdowns are again found largely responsible for growth slowdown episodes, verifying once again the instability of the technological component of growth.

Turning now to the exogenous or partly endogenous growth determinants, this thesis is grouping up several variables in 6 categories: (i) Institutional - Political Regime, (ii) Trade

Related, (iii) Macroeconomic Environment, (iv) Demographic, (v) Labor Transitions and (vi) Educational, as also a Baseline specification is defined using factors from all the above.

7.2 - Institutions & Polity

Acemoglu et al. (2001) argue that Institutional quality is strongly associated with preceding institutions that were set up in a country during the period between the 18th and the 19th century, as they represent the heritage of previous generations. Therefore, using a complex definition of institutions which includes several indicators and factors that define strictly institutional quality nowadays, they measure current institutional quality by Instrumenting for colonization. Different colonization policies, according to Accemoglu et al. (2001) are prime factors that set economic growth prerequisites of developing countries today.

Although the majority of Latin American countries have managed to integrate to an institutional setup very close to that of the western societies, they still struggle to correct for the imperfections caused by fast-track integration. Never the less, the inability to define a solid institutional setup that enhances economic activity and attracts foreign investment is a significant drawback for any country, but could be even more critical for a developing one. Therefore, institutional and political regime stability, as well as their quality, are key factors for growth. In the effort to identify the proper measures that will provide the most replete view of the legal and institutional environment of Latin American & Caribbean countries a number of indicators and indexes from Economic Freedom of the World are employed. First and more importantly, the *Rule of Law* is combining indexes of property rights protection, restrictions of regulation concerning real properties, as it grades several rights of individuals of judicial independence. Second, *Regulatory* actions is a concentrating index of other sub-indexes which focuses on labor, business and market regulations, and laws protecting the free market. It reflects the set of laws and regulations, such as market entering costs, licensing costs, taxes subtracted from wages, public insurance, workers or employer protection and other factors that define the context of labor market and business.

Next, *Size of the Government* Index is used to capture the extent of Government involvement into the market, gauging the level of government interference through taxes, subsidies and funds allocated domestically – or even the extent to which a government is buying corporate bonds from domestic enterprises aiming to boost liquidity or investment. For better

understanding, Government Size index is used as an attempt to follow Chen & Dai (2014) work which aligns middle income trap with the lack of deregulation in a country. Chen & Dai (2014) work their way towards a different explanation of the trap, attributing it to the fact that governments fail to improve and favor the interests of the free market. They examine several measures to identify the importance of deregulation in a developing economy and the level of government interference. They assume that one of prime factors responsible for trapping countries, is the exaggerated government control which ultimately results to the misallocation of funds and to benefit domestic monopolies. They do not define deregulation as the opposite of the Government Size index, but more as a complex set of actions governments owe to follow in order to prevent lobbies taking in control of crucial political influence and bureaucracy blocking growth advancing policies.

Finally a fourth measure of Institutional control is Freedom to Trade Internationally which encompasses trade regulatory measures such as tariffs, capital controls, presence of a black market and regulatory trade barriers. This specific factor however, is not employed in trade regressions, as it has been found to fit more properly in the Trade specification. Never the less its nature is closer to polity than trade. All four indexes are drawn from Aiyar et al (2012). Institutional analysis as the current paper aims at this point to investigate whether institutional quality defined as such can fit into a similar model as well as, segmented in order to serve newly specified classification. The fifth variable related to institutions is also closely following Aiyar et al. and refers to financial openness. Here, Chinn – Ito index (KAOPEN) of financial openness is employed as an additional control which captures the ease of foreign direct investment or capital movement is subject to. More specifically Chin - Ito index captures the capital account openness using binary variables that codify restrictions on international financial transactions.

Ayiar et al. (2012) employ the aforementioned measures to proxy the political state and the level of government interference against growth. Overall, almost every author takes into consideration the inclusion of property rights measures or indexes as relative to institution variables can be key determinants for slowdown identification.

On the other hand this study follows the example of Eichengreen et al. as well, who take under consideration several variables that reflect the level of change, towards or not, to the democratization of a country. Specifically Political Regime Characteristics and Transitions, or *Polity IV Project* identifies every political transition from the 1800 to 2013. The Polity index

characterizes movements on the political spectrum and classifies the political condition in the scale from minus ten to plus ten, denoting total autocracy and total democracy, respectively. Three dummy variables have been extracted from this database, denoting (i) Positive Political change, (ii) Negative Political change, (iii) Political change either positive or negative. The dummies take the value of 1 whenever a strong enough change in the political regime occurs, exceeding three points: (i) positively, (ii) negatively, or (iii) in any direction. A transition would also mean that 5 consecutive years onwards should be marked also with a unit. Other than controlling with dummy variables, an essential Index is provided in by the Freedom House rating the political rights of a country in a scale of one-to-seven, with seven being the lowest and one the highest respectively.

7.3 - Trade Related

Concerning Trade several indicators are put into test in order to examine various effects originating from one of the most important sector of developing economies. Trade has been always one of the most ambiguous factors concerning growth and its contribution to it. This study encounters trade by employing a set of factors such as: *Trade Openness, Export Value* and *Volume, High tech export ratio, Export Collapse* and the index of *Freedom to Trade Internationally* "borrowed" from the Polity group since it captures significant commercial effects related with the political environment.

In Middle Income Trap literature, a large number of writers who develop the Structural Change approach devote a large part of their studies on export and trade. The most representative study is from Felipe et al. (2012), in which the authors evaluate and compare the average of eight trade related indicators such as export diversification, sophistication, standardness etc. However in growth slowdown approach more simple and inclusive trade measures are employed in order to capture the overall effect of trade in the economy.

The first and probably the most significant measure used, is Trade openness. Trade Openness is not merely the components of its calculation, meaning exports plus imports divided by the country's GDP, but a measure referring to the extent a country is inward or outward oriented. Experience has showed in many cases, that growth is driven upwards since the trade dividend was enlarged. A typical example of such case, are the Four Asian Tigers who *"exported their*

way to growth". Finally, trade openness indicator is drawn from PWT 7.1 and it's measured in constant 2005 PPP.

Export Volume and Export Value are the two main trade indexes provided by WDI database setting 2000 as the reference year. Both indexes are derived from UNCTAD volume and value indexes and stand for the ratios of export value and export volume indexes with analogous unit value indexes. The measures are used in order to proxy for the real volume and values and serve as complementary variables along with High-Tech ratio. The latter indicated the ratio of high technological export as a percentage of the total manufactured exports. High tech exports ratio – also drawn from WDI database – constitutes an interesting control added to trade related regressions as it also measures for product complexity and progress of domestic Research and Development actions or Product Specialization as Kharas & Kohli (2011) mentioned.

Hausmann Rodriguez and Wagner (2006) in a Growth Collapses study define as a crucial factor for examination Export Collapses. Export Collapses measures sudden and large stops on merchandise exports, and aims to cover the trade dividend of sudden stops or complete collapses in growth, due to any possible reason that can be propagated via trade. However it may be related, Growth Collapses are not the same phenomenon with growth slowdowns since they tend to be momentary and vastly more distractive, while they can also originate from phenomena as natural disasters that cannot fit in business cycles analysis. Export Collapses is a constructed by the author, taking the difference of five years apart log-exports. Following Hausmann et al. (2006), this study aims to shed some light in the field of trade responsible slowdowns.

7.4 - Macroeconomic Environment

Macroeconomic environment determinants are closely related with a developing country's economic growth as they reflect sudden moves in growth through capital inflows, domestic investment and total debt fluctuations. The main explanatory variables employed in this group, are *Gross Capital Formation* and relatively close to it *Investment Share of GDP, Debt to GDP ratio and Foreign Direct Investment* accompanied by the *Chin Ito Index (KAOPEN)*. Additional controls are accounted for, such as *Real Exchange rate variability, Inflation variability* and several dummies to restrict for *Oil exporters* and six types of *Crises* considering also the aftermath effects of them.

First, an FDI-to-GDP measure is employed in order to verify that middle income countries are driven largely by foreign investment and rely heavily on capital inflows. Hausmann Rodriguez and Wagner (2006), emphasize that sudden stops in foreign capital flows are largely responsible for growth stops and are indeed positively correlated with growth declines. Next, Investment share and Capital formation depict the rate of domestic investment from the government as ratios of GDP. All indicators are drawn from WDI with the exception of Investment share of GDP which was pulled from PWT 8.0 and is reports in constant 2005 PPP values.

Debt-to-GDP ratio and Inflation rate is drawn from Reinhart and Rogoff database, with the latter calculated accordingly by the author to construct the Inflation variability measure as such: $Inflation\ Variablity = Log(10 + Infaltion)$. Analogously to Inflation variability, the Real Exchange Rate variability is constructed. Overall, the three indicators measure macroeconomic instability that reveal a weak economy with mediocre or bad performance. In Chapter 8 further investigation concerning the probability of slowdowns and the corresponding from the latter variables is explained thoroughly.

7.5 - Demographic

In other sectors of the economy, demographic changes and characteristics of each specific country are able to withhold growth dynamics from a country, as well as, to boost it if properly reconstructed. Bloom and Williamson (1998) in their study state that demographic reformation has driven the Asia Tigers upward in growth as the demographic dividend accounts for a large part of their current advanced state.

Typical factors found in many akin studies are, Fertility Rate, capturing the growth of domestic workforce, and Gender Ratio with respect to gender equality, measuring economic activity of the members of the society, since factor such as female participation in labor has a very profound role in economics of development. A very important demographic variable examined in both Aiyar et al. (2012) and Eichengreen et al.(2011, 2013) is age dependency ratio. It reflects the percentile of the population under the age of 15 and over 64 that is financially dependent. Age dependency ratio accounts as a transformation of the working age ratio, while, it offers the option to be split into two measures, for young and old ages respectively. All three

indicators constituting the demographic group are drawn from the database of World Development Indicators (WDI) provided by the World Bank.

Other studies such as Hausmann Wagner and Rodriguez (2006) take a step forward and incorporate the Age Dependency Ratio inside the GDP per capita by calculating the GDPW. In their study, they directly refer to GDPW, an indicator which is actually the GDP per capita but for the working age population. This way, Hausmann et al. (2006) manage to omit indirectly additional factors such as Age Dependency Ratio in their regressions and input it directly through GDP per capita. In the current thesis, age dependency ratio is included directly as for two reasons. First, GDP per capita is necessary to be added in the regressions with its true form and not partly deducted. Second this study includes age dependency ratio as it also allows for segmentation in distinct age groups. This way the demographic analysis can conclude which of the two is more important, hence, which part of the non-participating into labor population, is more costly, or else stated, the inactive part of society that government has not accounted for.

7.6 - Labor Transitions

Inspired by Aiyar et al (2012) this study mimic one of their regressions hoping to investigate effects that may arise using a different methodology for slowdowns classification and to verify the statement: "the economy cannot any longer shift employment from agriculture to manufacturing". Regressing employment shares, this study aims to identify the inevitable shift that Kurznets (1966) outlined. In Aiyar et al. (2012) however, this relationship is examined omitting the Manufacturing employment share and instead including Agricultural and Services, hoping for, the two shares to tell the story of the third one. On the other hand Eichengreen et al. (2011, 2013) regress directly manufacturing employment share inputting it to the baseline specification. Ultimately Aiyar et al (2012) specification turns out to be significantly more valuable and intuitive. Therefore, the current study mimics the better approach, hoping to reach the same conclusions regarding the minimization of agricultural employment share. All employment shares were drawn from WDI database.

7.7 - Education

Barro & Lee (2010) and Psacharopoulos (2004) have pointed out the role of human capital and the importance of education in order to establish a strong economy which is supporting growth by enhancing its endowments. Relying on the human factor to drive growth has been proven in many cases successful. This study tries captures similar effects by imputing into the specification several educational variables. The educational output, as mentioned by Kharas & Kohli (2011), is reflected thtought the skilled workers who fill the employment gaps, where in place was imported knowledge – managerial place covered by international employees. Along with education, innovation and crucial managerial skills are upgraded. Never the less, educational restructuring is costly and few governments tend to give bigger slices off their budget to it. However, literature points out that in the long term education can do a difference, but, undoubtedly the depreciation rate of education remains within a generation – from the aging perspective of 30 years per generation – boundaries and needs to be "refueled" systematically in order to sustain its high levels.

In order to proxy the educational impact on economic growth and especially the educations importance for developing countries, two measures are employed from the Index of educational attainment, as proposed and constructed by Barro & Lee. The first refers to Average Years of Total Schooling as the other averages only the years of Secondary and Tertiary. Average years of schooling is considered as a measure of literacy/illiteracy and the second one is a more specific index of educational attainment concerning higher technical skills, hence, the part of the population that is deeply involved in driving growth upwards. The third educational measure used, of education expenditures as a ratio of GDP, is pulled from World Bank database and stand for the ratio of *educational expenditures* in percentage of GDP.

8. RESULTS

8.1 - Comments

This section presents the results of the Probit regressions for both Chow-Points and Consecutive dependent binary variables. The main results are presented in seven sections, one for each variable group, for both Structural Break Chow-test Points and Consecutive Points. As

specified in the *Chapter 6*, the first dummy variable is formed after several Chow Breakpoint Tests which highlight the single and most significant point in a series of consecutive slowdowns. After the Chow-tests years t, $t-1$ and $t+1$ are marked with a unit. The methodology gives 70 distinct slowdowns that took place from 1967 to 2003 – first and last seven years dropped out of the sample – in 35 Latin American and Caribbean countries. In total the database of the author concerns 1785 observations. The number of ones in Chow-Points reaches 209, while the Consecutive Points give 291, pointing out that identified slowdowns are most of the time long lasting if taken under consideration that whenever a slowdown occurred, at least three years – one before and one after – were marked with a one. *Table A.1* in the Appendix Section is presenting all slowdowns as found after the Chow tests.

An important measure concerning the overall value of the model is the addition of *GDP per capita* and *lagged growth* as the main explanatories in several regressions. This occurs since some variable groups – such the Demographic one – would present a negligible explanatory power. Therefore, introducing the two aforementioned variables as explanatories, the determinant-group indicators were used as additional controls to proxy for the specific sectorial effects.

Moving into the variable specification, this study followed Aiyar et al. (2012) regarding the treatment of two explanatory variables. Therefore, Investment Share and Trade Openness were used in differential forms. This approach is followed for two reasons. First, some variables would furnish interpretative meaning if not used in differentials, and secondly this is allowing to reduce drastically endogeneity that else would produce biased estimations due to reverse causality or omitted variable issues. The technic is also enabling the author to include variables that otherwise would have been left out.

After regressing every determinant variable group on both Chow-Points and Consecutive, this study tries to reach a baseline specification by employing the most influential determinant from each category in a common regression. The Baseline Specification is also enriched with additional Time-Dummies that have been added to capture the decade specific effects. Therefore four time dummies[5], for the 60s, 70s, 80s and 90s are regressed as additional controls.

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[5] The 2000s dummy is omitted due to multicollinearity issues

Turning now to the aim of the empirical part, through the usage of probit regression the author tries to investigate Middle Income Trap following the methodological approach of Growth Slowdowns. The following regressions aim at suggesting clear cut conclusions concerning the sectors of the economy and the specific determinants that account for slowdowns and leave Latin American countries facing the danger of the Middle Income Trap. After defining all the sectors and economic factors under examination, the results section turns towards the explanation regarding when and where a slowdown episode occurred and which were the specific factors that broke down the rapid growth of a country. Yet, a slowdown does not mean in any case that this country instantly fell in the trap. The methodology employed is simply identifying which are the main determinants that Latin American countries are more vulnerable to. In addition, this study does not attempt to propose new or innovative policy recommendations to drive countries out of the Middle Income Trap, but to verify long-existing statements regarding developing countries who struggle to survive in a competitive globalized economy, and to assess the causal relationships in the Latin American case.

Finally, the coefficients reported in the tables presented below stand as a probabilistic measure for a slowdown to occur, as the numbers reported are not in any way meaning that a marginal change of one point in the explanatories would coincide with a relative change of the dependent. Unfortunately in the binary models this is not the case, and the coefficients are not that straightforward as in linear models or logit models. A coefficient in Probit is simply expressing the predicted probability, given all else equal, that a unit change in the explanatory of interest would raise the likelihood of the dependent variable to become one. Adding to that, every coefficient is reported as percentage, so as, the numbers may seem negligible, but given the aforementioned attributes of Probit model, even very small numbers can make a significant difference in reality. The formula for calculating the predicted probability change is:

$$F(\ constant + Variable1 * Coefficient1 + Variable2 * Coefficient2 ....) = ...$$

However, in this thesis the interpretation of signs for analyzing the slowdown episodes tends to be a more intuitive tool, with the coefficient is gauging the magnitude of effect, but not the absolute impact on the probability the dependent binary to take the value of one.

8.2 – Probit Regressions

This section presents the tables of probit regressions concerning the main dependent binary derived from the Structural Breakpoint test, or Chow-Points dummy. The outputs given are contrasted and compared with the ones in the Appendix Section where the Consecutive Points dummy is used instead.

Institutional – Political Regime

The Probit regressions in this section display the output of the examination of several Institutional variables and Indexes. Here Chow-Points and Consecutive points output are displayed together as the main interest lies in the comparison between the Columns (1)-(2) and (3)-(4). They are grouped in pairs as the first represent the output from Chow-Points and Consecutive Points respectively. It is clear that Institutional measures are significantly more sensitive in the Consecutive Points specification, as Columns (3) and (4) are the only cases where they appear to be significant.

Table 1: Institutional – Political Regime

	(1)	(2)	(3)	(4)
VARIABLES	Chow Points	Chow Points	Consecutive	Consecutive
Rule of Law	0.146	-0.0435	0.248***	0.200*
	(0.0969)	(0.125)	(0.0926)	(0.109)
Political Rights	0.0656	0.0797	0.171*	0.165
	(0.101)	(0.110)	(0.0937)	(0.101)
Government Size	0.0510	0.00798	-0.0727	-0.146
	(0.0944)	(0.110)	(0.0860)	(0.0932)
Regulation	-0.0218	-0.150	-0.130	-0.126
	(0.119)	(0.150)	(0.117)	(0.131)
Pos. Pol. Change		0.354		0.707**
		(0.360)		(0.313)
Neg. Pol. Change		-0.235		-0.281
		(0.560)		(0.576)
Constant	-2.672***	-0.976	-1.844*	-1.339
	(0.994)	(1.122)	(0.960)	(1.080)
Pseudo R^2	0.0176	0.0426	0.0659	0.1417
Observations	352	313	352	313

Responsible for arising differences between the Consecutive Points and the Chow case, may simply be the larger number of incidents of slowdowns, making the institutional specification more suitable to present the true causal relation with Consecutive dummy.

Never the less, by reviewing Columns (3) and (4) one cannot draw very clear conclusions regarding the political and Institutional setup and how is it related with growth slowdowns. That is, as the only significant variables are not displaying the expected signs. In fact Rule of Law, Political Rights Index and Positive Political Change display the exact opposite sign making the results almost impossible to read and assign intuitive meaning. When analysing their impact on growth slowdowns likelihood, Rule of Law which turns out to be significant in Columns (3) and (4) in 1% and 10% levels respectively, shows a large predicted probability of at least 20% in both cases. Positive Political change in Column (4) reports the largest significant predicted probability reaching 70%, but unfortunately it is also signed ambiguously as a change towards democracy is expected to lower the probability of a slowdown to occur and contribute towards sustaining high growth.

However, one could argue that depending on the size of the change, a political destabilization could probably jeopardize rapid growth. Eichengreen et al. (2011, 2013) using the same dummy variables to control for political change, reach similar conclusions. They argue that a political change may be enough of destabilization factor by itself, to change and relocate the means of production and act as a negative influence in the short term. Specifically, Park (2007) shows that the Korean case was in fact following this example where the transition towards a more democratic regime reduced significantly Korean growth.

In contrast with Rule of Law and Political Rights wrong signs, Government Size and Regulation do display correct signs and indeed push towards reducing the probability of slowdown episodes, but remain insignificant. Here the results are clear-cut as one can easily assume that a more liberal government who is lifting barriers off the market, trade and reducing the bureaucratic costs is largely supportive to rapid growth. Bussiere and Fratzscher (2008) explain this relationship in terms of different time horizons stating that over the shorter one, a more liberal political regime is able to successfully boost growth.

Trade Related

In *Table 2* the Trade related regression only for Chow Points are presented. The corresponding results for Consecutive points are located in the Appendix Section, in *Table A.3*. Here, GDP per capita, lagged growth and Trade Openness are inputted into the model as the main explanatories and the rest are considered as additional controls. Column (1) is considered as baseline specification, and displays a relatively expected output, with Trade Openness being a factor that works in the opposite way of slowdowns, lowering their probability. Adding to that, Export Value and a larger percentage of High-Tech exports signify that greater value of exports and more specialized products can actually contribute significantly towards avoiding a growth slowdown and sustain rapid growth patterns.

On the contrary, Export Volume indicates that growth slowdowns are more likely to occur. The specific output is surprisingly wrong signed, but running a pairwise correlation test between Export Volume and Export Value, their between correlation turns out to be 0.6, large enough to bias the results when regressed together.

In Column (3) and (4) the new measure of Export Collapses is introduced in Middle Income theory, as replicated from Hausman, Rodriguez &Wagner (2006). Export Collapses is significant in 1% level, indicating that sudden stops in commercial trading is a major problem for Latin American countries, capable enough to plumb growth as it affects the predicted probability to an extraordinary extent. Overall, in Column (4) Export Volume is left out of the specification due to high pairwise correlation – and most certainly high endogeneity– with Export Value. The results presented above verify Kharas and Kohli (2011) statement for which, a more specialized and contemporary export portfolio can make a big difference for sustaining rapid growth of developing countries, as it may account largely for driving them out of the trap and middle income rank, to the high one.

Table 2: Trade Related, Dependent Variable: Chow Points

	(1)	(2)	(3)	(4)
VARIABLES	Chow points	Chow points	Chow points	Chow points
GDP per capita (ln)	0.133**	0.302**	0.656***	0.247
	(0.0539)	(0.134)	(0.181)	(0.264)
Lagged Growth	0.0329***	0.0494*	-0.00297	-0.00609
	(0.00942)	(0.0254)	(0.0333)	(0.0576)

Trade Openness (dif)	-0.0114**	-0.00222	-0.0377*	-0.0709*
	(0.00493)	(0.00717)	(0.0220)	(0.0417)
Export Value		-0.0144***	-0.0162***	-0.0117**
		(0.00548)	(0.00619)	(0.00548)
High-Tech ratio		-0.0796***	-0.119***	-0.144*
		(0.0277)	(0.0384)	(0.0837)
Export Volume		0.0125**	0.0157**	
		(0.00637)	(0.00719)	
Export Collapses			5.590***	7.878**
			(1.668)	(3.505)
Freedom to Trade				-0.346*
				(0.179)
Constant	-2.368***	-3.410***	-6.812***	-0.441
	(0.446)	(1.210)	(1.642)	(2.826)
Pseudo R^2	0.0225	0.1607	0.2523	0.4162
Observations	1,433	468	364	233

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*

Macroeconomic Environment

The estimates of probit regression for Chow Points are displayed below in *Table 3*, while the corresponding Consecutive Points can be found in Appendix Section in *Table A.4* Column (1) is the baseline specification while Column (2) is trying to give an alternative definition of the previous, by replacing Capital Formation with FDI, a similar variable to measure for domestic investment. The effect of both is positive as expected, and moderately associated with higher predicted probability for growth slowdowns, however, the Domestic Investment specification – as expressed by Foreign Direct Investment (FDI) – does not appear to be significant. Therefore, the regressions in Columns (3)-(5) are adding complementary controls for macroeconomic instability upon the one in Column (1).

Following Column (1) as the benchmark specification of Macroeconomic Variable Group, it is worth noting the signs and the attributes for each one of its components, with every variable

in Column (1) being highly significant except Financial Openness – which is significant only in 10% level. The overall intuition is quite simple and straightforward, with Investment share of GDP is entering the regression with a negative sign, meaning that the higher the percentage of GDP produced in Latin American countries the lower is the probability to experience a slowdown. This is consistent with literature, although, Aiyar et al. (2012) warn that in many case that may result in domestic overheating, warning to be cautious for similar phenomena such as the one in Asia during the 1990s.

Debt-to-GDP ratio seems to be consistently significant and enter with a negative sign all specifications, however by a very small degree. Never the less, the fact that it persistently remains significant in every Column is convincing that Debt-to-GDP effect, is indeed related with reduced probabilities for slowdowns. Lastly concerning the main explanatories the Chin-Ito Index remains negative in all five regressions, but significant only in the benchmark and the alternative in Columns (1) & (2).

Adding more controls to enrich the model, in Column (3) Inflationary and Exchange Rate effects are added, in order to proxy for macroeconomic instabilities that may reveal a soft or generally unreliable domestic currency. Strangely though, only Exchange Rate Variability is reported significant in 10% level, but wrongly signed, leaving no room for deriving intuitive results.

Concerning Column (4) and (5), two kinds of dummy variables are added to control for Oil exporting and six kinds of different crises as recorded by Reinhart & Rogoff. The Oil dummy is drawn from Michael L. Ross database of Harvard University for Oil and Gas export data. Due to the nature of the study, an Oil dummy variable was preferred, as the alternative was to isolate oil exporting countries and examine them as a separate group. A second reason in favor of the dummy is the fact that Oil exporting is not continuous for many Latin American countries as it suddenly stops and starts after an unreasonable number of years. Therefore, in order to avoid confusion the author preferred a more specific and reliable dummy variable to control for Oil Exports.

Table 3: Macroeconomic Environment. Dependent variable: Chow Points

Standard errors in parentheses

VARIABLES	(1) Chow points	(2) Chow points	(3) Chow points	(4) Chow points	(5) Chow points
Capital Formation (%GDP)	0.0372***		0.0357***	0.0302***	0.0598***
	(0.00855)		(0.00872)	(0.00880)	(0.0140)
Investment share (dif)	-0.0646***	-0.0489***	-0.0632***	-0.0605***	-0.0947***
	(0.0164)	(0.0158)	(0.0164)	(0.0167)	(0.0215)
Debt-to-GDP ratio	-0.00690***	-0.00637***	-0.00721***	-0.00699***	-0.00830***
	(0.00189)	(0.00184)	(0.00191)	(0.00187)	(0.00254)
Financial Openness	-0.0646*	-0.0695*	-0.0631	-0.0583	-0.0526
	(0.0378)	(0.0371)	(0.0393)	(0.0381)	(0.0494)
Inflation Variability			-0.0316		
			(0.157)		
RER Variability			-0.176*		
			(0.102)		
FDI (dif)		0.0108			
		(0.0186)			
Oil Exports dummy				-0.514***	
				(0.157)	
Crises dummy (t)					0.215
					(0.215)
Crises dummy (t-1)					-0.00381
					(0.239)
Crises dummy (t-2)					-0.131
					(0.210)
Constant	-1.718***	-0.875***	-1.388***	-1.443***	-2.188***
	(0.205)	(0.103)	(0.373)	(0.218)	(0.335)
Pseudo R^2	0.0693	0.0475	0.0744	0.0879	0.1086
Observations	883	870	882	883	653

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

In Column (4) the Oil Dummy is found significant with a negative sign, meaning that oil exports in a particular year reduce largely the probability a country experience a slowdown. It should be noted though that oil exporting countries are likely to go through major slowdowns or even collapses, if oil price shocks occur. Finally, Column (5) controls for any one of Currency, Inflation, Stock Market, Debt and Banking crises in the time t, t-1 and t-2. The first and the second lagged dummies are being tested in order to measure for the aftermath of a crisis that may still be present in the real economy long ago after a crisis has faded.

Demographic

In this section the output of Demographic category for both Chow and Consecutive Points is reported in Column (1)-(2) and Column (3)-(4) respectively. The aim of this determinant group is to clarify which demographic variables are capable to contribute to lower the likelihood of growth slowdown, in order for demographic reconstruction in developing countries to be successful. GDP per capita and lagged growth, are also used as the main explanatories.

As mentioned in the Determinants of Slowdowns Section, higher female participation in labor can significantly change the societal structure and lead towards sustainment of higher growth. The demographic category aims to proxy for population and societal change which allows growth enhancing conditions to be set up.

The main effects of demographic group are highly intuitive and supported by literature. Starting with Fertility Rate which constitutes an exogenous measure – and proxies for the endogenous Labor as a given endowment – the below regressions report a significant and negative effect that pushes towards lowering the probability of a growth slowdown. Gender ratio is used also in order to gauge for Labor participation, since it is created measured with respect to Gender Equality. Therefore, female participation in labor can play a major role in the transition from Middle Income to High Income ranks, already proven by the Asian Tigers as mentioned in the Determinants of Slowdown Section. Both demographic measures reduce consistently, in all specifications, the probability of growth slowdowns to occur.

Age dependency ratio behaves also very consistently across all four specifications. In Columns (1) and (3) Age Dependency Ratio is taken in total level, where in Columns (2) and (4) it is segmented to its components. The latter specification aims to identify different causal relationships that may occur by the segmentation. However, breaking down the total age dependency ratio in young and old age groups, is not allowing for further intuition as both report significantly, with the second only in lower levels – 10% and 5% in Column (2) and (4) respectively. Overall, the impact of Age Dependency Ratio for Old ages seems to increase the predicted probability more than its counterpart as the size of both is biased upwards compared to initial specification, of total dependency.

Table 4: Demographic, Dependent: Chow Points & Consecutive Points

VARIABLES	(1) Chow points	(2) Chow points	(3) Consecutive	(4) Consecutive
GDP per capita (ln)	0.369***	0.370***	0.452***	0.453***
	(0.0716)	(0.0720)	(0.0686)	(0.0688)
Lagged Growth	0.0263***	0.0261***	0.0689***	0.0687***
	(0.00960)	(0.00961)	(0.00989)	(0.00989)
Gender Ratio	-0.115**	-0.134**	-0.164***	-0.180***
	(0.0571)	(0.0644)	(0.0548)	(0.0614)
Fertility Rate	-0.127*	-0.117	-0.163**	-0.154**
	(0.0755)	(0.0771)	(0.0718)	(0.0736)
Adr young (-15)		0.0239***		0.0303***
		(0.00649)		(0.00628)
Adr old (64+)		0.0358*		0.0407**
		(0.0199)		(0.0191)
Adr total (-15, 64+)	0.0237***		0.0302***	
	(0.00648)		(0.00628)	
Constant	0.214	0.981	1.654	2.304
	(2.731)	(2.988)	(2.607)	(2.842)
Pseudo R^2	0.0435	0.0439	0.0999	0.1002
Observations	1,418	1,418	1,418	1,418

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Labor Transitions

This section follows Aiyar et al (2012) approach regarding the labor force ongoing transitions in the process of the development of Middle Income Countries. Similarly with the previous, this study reaches the same results. The results however are drawn indirectly, as the main purpose is to examine the counterpart of Agricultural and Services share. The remaining component in the below probit regressions is Manufacturing Employment share, that the author hopes to interpret indirectly. This specific measure is omitted in order to avoid multicollinearity issues, using instead Agriculture and Services shares effects derive an intuition.

Table 5: Labor Transitions, Dependent: Chow & Consecutive Points

VARIABLES	(1) chow_points	(2) chow_points	(3) consecutive	(4) consecutive
GDP per capita (ln)	0.341***	0.385***	0.289**	0.323***
	(0.118)	(0.116)	(0.113)	(0.109)
Lagged Ggrowth	0.0335*	0.0348*	0.0804***	0.0869***
	(0.0174)	(0.0178)	(0.0190)	(0.0194)
Agricultural share	-0.00609		-0.0136	
	(0.0135)		(0.0134)	
Services share	-0.0205		-0.0315**	
	(0.0151)		(0.0151)	
Agricultural (ln)		-0.176**		-0.278***
		(0.0839)		(0.0808)
Services (ln)		-1.717***		-2.304***
		(0.543)		(0.524)
Constant	-2.977**	2.698	-1.878	5.721***
	(1.341)	(2.040)	(1.340)	(1.992)
Pseudo R^2	0.0351	0.0509	0.0736	0.1024
Observations	635	621	635	621

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Finally, in all four specifications using Chow or Consecutive Points, both Agricultural and Services shares are reported significant when used in marginals – the natural logarithm is proxying the differences used in Aiyar – and negatively signed. The intuition behind Columns (2) and (4) verifies the statement that labor is experiencing an important transition in a country's development process, beginning to shift from agricultural and services to manufacturing sector of employment. Again, Gill & Kharas (2007) warn that, *"The point in development process where is no longer possible to boost productivity by shifting any more labor from agriculture to manufacture, coincide with the trap".*

Educational

Table 6 below is reporting the output for educational determinants group. The analogous results for Consecutive points are located in the *Appendix section* in *Table A.5*. Average years of schooling are drawn from Barro & Lee database for Educational Attainment and Human Capital.

In this specification the probit regressions try to explain and verify the importance of Human Capital as perceived and measured from schooling and education. Here the educational attainment variables, proxied by the average years of schooling and, average years of secondary and tertiary schooling, are regressed separately in Columns (1) and (2). That is, because they are simultaneously defined, as the one considering secondary and tertiary is merely a part of the total one. Therefore, in contrast with Eichengreen et al. (2011, 2013) who regress the two variables together, this thesis is analysing their effects one at the time. The main reason justifying this segmentation is the presence of correlation between the two variables, strong enough to bias the coefficients and render the first one insignificant. Finally, controlling for education expenditures allows one to see the effect of educations costs on the probability on growth slowdowns.

Table 6: Educational, Dependent: Chow Points

	(1)	(2)	(3)	(4)
VARIABLES	Chow points	Chow points	Chow points	Chow points
GDP per capita (ln)	0.153*	0.201**	0.417**	0.571***
	(0.0799)	(0.0804)	(0.166)	(0.181)
Lagged Growth	0.0379***	0.0359***	0.0511**	0.0588**
	(0.0120)	(0.0121)	(0.0219)	(0.0228)
Average Years of Total Schooling	-0.0504*		-0.197***	
	(0.0273)		(0.0576)	
Average Years of Sec. & Tert. Schooling		-0.202***		-0.734***
		(0.0633)		(0.146)
Education Expenditures (%GDP)			-0.0422	0.00856
			(0.0571)	(0.0641)
Constant	-2.277***	-2.607***	-3.258***	-4.563***

	(0.583)	(0.603)	(1.232)	(1.380)
Pseudo R^2	0.0209	0.0301	0.0864	0.1613
Observations	1,122	1,122	374	374

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Both in *Table 6* and *Table A.5*, educational attainment has a significant and negative effect on the probability a slowdown occurs. More interestingly though, the number of graduated from secondary and tertiary levels of education has wildly larger effects on slowdowns, for every specification. On the other hand, Expenditure on education as a percentage of GDP report insignificant and ambiguously singed. This disables one from deriving intuitive conclusions. Never the less, both Column (3) and (4) report coefficients of negligible size, which makes one think there may be further unresolved econometric issues – such as endogeneity – behind education expenditures ratio. On the contrary, Column (3) and (4) in *Table A.5* have an agreement in sign and the intuition of Consecutive points regressions clarifies Education Expenditures effect on growth slowdown episodes likelihood to occur.

Baseline Model

Lastly, a baseline model is constructed in order to gather the variables-cornerstones of growth slowdown analysis and put them into test altogether. The aim of this baseline specification is to help the author and the reader acquire a rounded perspective about the determinants of slowdowns and their effects concerning the probability to drive a Latin American country into the trap. Also *Table A.6* is the baseline model with respect to Consecutive Points in the Appendix Section.

Before referring to the Baseline model and its components individually, it is crucial to state that in order to specify the regressions in *Table 7* forward induction technic was employed, in order to conduct as many trials as possible combining almost all variables before reaching the final specification. Ultimately the starkest and most complete regressions were reached. Unfortunately though, not many determinants survived the forward induction process, and the overall value of the model is reported fairly low by the Pseudo R squared.

Table 7: Baseline Model, Dependent: Chow Points

VARIABLES	(1) Chow points	(2) Chow points	(3) Chow points	(4) Chow points	(5) Chow points
GDP per capita (ln)	0.331***	0.845***	0.275***	0.364***	0.289***
	(0.0958)	(0.224)	(0.101)	(0.0968)	(0.102)
Lagged Growth	0.0256**	0.0374*	0.0328**	0.0228**	0.0264**
	(0.0113)	(0.0226)	(0.0135)	(0.0113)	(0.0116)
Trade Openness (dif)	-0.0118	-0.0154	-0.0150	-0.0112	-0.0115
	(0.00758)	(0.0124)	(0.00943)	(0.00767)	(0.00780)
Adr total	0.0152***	0.0569***	0.00649	0.0118***	0.00607
	(0.00372)	(0.0112)	(0.00601)	(0.00381)	(0.00487)
Investement share (dif)	-0.0316**	-0.0315	-0.0465***	-0.0317**	-0.0341**
	(0.0139)	(0.0272)	(0.0160)	(0.0141)	(0.0143)
Political change	-0.254*	-0.514*	-0.228*	-0.248*	-0.357***
	(0.130)	(0.296)	(0.134)	(0.132)	(0.134)
60s' Dummy					0.566**
					(0.262)
70s' Dummy					1.144***
					(0.225)
80s' Dummy					0.932***
					(0.209)
90s' Dummy					0.942***
					(0.197)
Manufacturing Share (ln)		0.486			
		(0.517)			
Avearage Years of Sec. &Tert. Schooling			-0.146		
			(0.0981)		
Oil Exports Dummy				-0.531***	
				(0.153)	
Constant	-5.066***	-13.83***	-3.742***	-4.954***	-4.804***
	(0.953)	(2.527)	(1.164)	(0.955)	(1.040)
Pseudo R^2	0.0495	0.1488	0.0557	0.0655	0.1015
Observations	1,153	527	1,014	1,153	1,153

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Assessing the baseline model, it is firstly important to note that all explanatory variables used in the separate sub-groups contain their original signs, staying consistent with the theory and the already drawn conclusions. However, some unexpected effects have occurred while regressing determinants from different sub-groups altogether. Firstly, Trade Openness failed to report significant results, as through the many trials it seemed unable to reach a specification that it would. Age dependency ratio (total) seemed to be highly and negatively correlated with GDP per capita. Intuitively this could be explained by the studies of Mody et al. (2011) and Bloom and Williamson (1998) that regard the demographic dividend being closely associated with the output of a given economy. One can speculate, since the only factor proxying for the output in the above regressions is GDP per capita, that this high correlation is reasonable and expected.

Second, when called to test for the Employment transitions in the baseline specification, inputting the two counterparts of Manufacturing Employment share was not a consistent option with the pre-assumption of a parsimonious specification. Therefore, Manufacturing employment share was regressed directly, being unable to display any significant effect. Never the less the sign is in line with the theory, stating that larger employment shares in manufacturing for trapped, are not compatible with further output, since the marginal productivity is squeezed to its minimum. However, *Table A.6* in the Appendix Section is reporting in Column (2) a significant effect in the 10% level of the Manufacturing employment share. The fact that consecutive points concern a wider definition of years before or after the exact date of the slowdown episode might push towards this particular misalignment. Therefore, one may say that a few years before or exactly after the slowdown, employment shifts may still be a feasible option as the full capacity has not been reached yet. This goes in line with the theory, suggesting that a country is trapped, exactly when this shift cannot any longer boost productivity.

Political regime determinant-group enters with the aggregate Political Change dummy, controlling for any political transition either towards democratization or autocracy. Aggregate political transitions are found to be significant in 10% level with a negative effect on slowdown probability. This implies that a change in the polity of the country leads to lower probability for slowdown episodes. However, examining the database of Polity IV most countries seem to follow a common path towards democratization. In this convergence towards the democratic equilibrium, some have yet to cover a long way, while others have already reached the top

grade (+10) in the index[6] from early on. However, the converging trends towards democratization, along with the fact that aggregate political change dummy has a negative effect on slowdown probability, suggests that political transition are consistent with the theory, and indeed on the aggregate point towards democracy, reducing the likelihood of slowdown episodes. In contrast with *Table 1,* political transitions enter the Baseline Model with significantly more respectful to the theory and the initial expectations of the author.

In Column (3) average years of secondary and higher schooling are inputted into the baseline specification unsuccessfully, as the education factor fails to prove of any significance. Columns (4) and (5) report similar results with Column (1), but also include oil export and decade dummies – to proxy for the time period, following Aiyar et al. (2012). Oil dummy remains consistent with the results reported in *Table 3*. The time dummies fail to provide any intuitive interpretation, such the one in Aiyar et al. (2012), as they all have significant effects making it difficult to say if any specific decade had a decisive role for growth slowdowns and consecutively middle income trap. This statement is also verified when investigating *Table A.1* which presents all the slowdown episodes, as there is no clear indication for a significantly higher frequency in any of the three decades of the sample – referring to 70s, 80s and 90s, as the other two are not examined as whole.

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[6] The grading system is from -10 to +10, denoting total autocracy and total democracy respectively. Therefore moving upwards, the authors of the database consider that a country is converging to the western-type political system.
Note: almost all developed countries are above +6

8.3 - Robustness Checks

Running some simple robustness checks two approaches are followed. First, Pearson goodness-of-fit, or, the Hosmer – Lemeshow is reported. Pearson goodness-of-fit tests for the fitted model by comparing the observed number of responses against the expected one. The Null Hypothesis states that the model fits well as the Alternative that not the proper specification. The Pearson test is run for the specification of the Baseline model for both Chow-Points and Consecutive and proven in both cases to be highly insignificant, leaving one unable to reject the Null Hypothesis ,thus meaning that the specifications fits sufficiently the model, or, that the model is correctly specified. Below are presented both tests:

1) Probit model for chow points, goodness-of-fit test

Number of observations = 1153
Number of covariate patterns = 1153
Pearson chi-squared (1146) = 1098.39
Prob > chi2 = 0.8400

2) Probit model for consecutive points, goodness-of-fit test

Number of observations = 1153
Number of covariate patterns = 1153
Pearson chi-squared (1146) = 1118.72
Prob > chi2 = 0.7124

Additionally, as the current thesis analyses growth slowdowns for all Latin American countries disregarding if they belong to the middle income or not, the methodology owes to prove valid if employed only for the middle income ones. Thus, the slowdown episodes outside Middle Income Ranks are excluded from the sample, and an additional Dependent Binary is formed to test for the if the methodology is applicable, for growth slowdowns occurring exclusively in middle income. In the cumulative Slowdown Table A.1 in the Appendix, slowdowns episodes for non-Middle Income countries are colored, with red, for those in Low-Income, and yellow the ones in the High-Income respectively.

The Baseline specification is then run again for the MIC-Chow. The results reported in *Table A.8* in the Appendix Section are validating the initial estimations and proving that Middle Income Trap phenomenon as examined by the Growth Slowdown approach is robust and concerns mainly Middle Income Countries as specified for Latin America. Although only minor differences are noticed, Trade Openness is an exception, reporting negative and significant effect in any given regression. This enables one to see the true causal relationship between trade and growth in middle income countries, as they are indeed deeply associated.

9. CONCLSION

This study attempts to identify the Middle Income Trap phenomenon and its impact on developing countries that belong in middle income ranks. The specific target is Latin American and Caribbean countries as several studies throughout the literature have pointed out the differences between the Asian and Latin American middle income countries, with the first being drastically more competitive and ultimately more capable to avoid or escape the trap. Based on that, the current thesis focuses its interest on the weaker group of the two, disregarding the income ranking and employing an aggregate regional research, in order to investigate the drawbacks that specifically render Latin American countries more likely to experience growth slowdowns.

Following the growth slowdown approach, this thesis examines a set of determinants grouped in several indicative categories, highlighting their attributes and their impact on the likelihood of a growth slowdown episode to occur. Variables characterizing Trade, Macroeconomic Environment, Labor Transitions, Political Regime, Educational setup and Demographic factors constitute a wide spectrum of growth slowdown related determinants in order to eventually unveil if Middle Income Trap is a consistent phenomenon with the neo-classical growth related analysis. Growth slowdowns are also aligned with growths deeper components in the effort to identify further causal relationships, and identify which account for the largest dividend of the slowdowns.

Perceived in a strictly regional setting, Middle Income Trap has been puzzling numerous Latin American countries for decades, bringing out on surface their weaknesses and inability to mimic the Asian example. The challenge of graduating into high income ranks is not simply concerning high growth rates, since rapid growth is often translated as unstable or momentary. In the long run Latin American countries have been incapable to create long-lasting conditions to sustain growth and manage to sustain high growth. Investing however on crucial factors such as Human capital through higher educational standards, trade competitiveness, re-establishment of the social and political environment and adopting the proper strategic fiscal policies, are essential maneuvers for ultimately ranking among the high income countries. In the bottom line, apart from the aforementioned sectors which render developing economies vulnerable, growth slowdowns are found to significantly coincide with large TFP depreciations.

After such research several questions come in mind, with the most obvious one concerning living standards and what does is it really mean for a country to rank itself among the high income ones. In many instances, it has been proved that higher income per capita does not necessarily leads to upgraded living conditions since equality and fair income distribution are not strictly following growth . Therefore, income per capita might be only a relative perception of well-being meant to exist among economic models and statistical margins.

Proposing for further research, growth related studies owe to focus on middle class minimization as more and more people nowadays are driven into poverty while others enjoy the benefits of the so-called high income economies. Indicators for Inequality such as GINI coefficient and their interaction with growth should be of great importance when speaking of development economics. A most promising and fruitful idea would be a comparative investigation of countries which escaped the trap or not, such as the one in Felipe et al.(2012), but with respect to inequality and happiness measures.

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APPENDIX

Table A.1: Growth Slowdown Episodes

Country	Year	Growth Before: t-7	Growth After: t+7	Difference	GDP per capita
Antigua and Barbuda	1974	6.46	2.42	4.04	
Antigua and Barbuda	1990	7.14	3.07	4.07	9676.493637
Argentina	1971	5.80	2.00	3.80	4884.984546
Argentina	1975	4.14	0.51	3.63	5033.941752
Argentina	1996	3.64	0.86	2.79	5321.72873
Aruba	1998	5.91	1.59	4.33	23896.33702
Bahamas, The	1970	7.73	-2.15	9.88	19011.5764
Bahamas, The	1986	6.81	0.57	6.25	21686.84559
Bahamas, The	1990	4.35	0.56	3.79	22387.34682
Bahamas, The	2002	4.00	0.40	3.60	24212.39305
Barbados	1971	7.37	2.04	5.33	9252.117335
Belize	1981	6.94	3.37	3.57	2051.507404
Belize	1994	9.14	4.54	4.60	3152.122649
Belize	2003	6.25	3.69	2.56	4017.694384
Bolivia	1967	5.41	2.38	3.03	1078.703839
Bolivia	1978	5.08	-1.10	6.18	1106.857874
Brazil	1981	5.42	2.18	3.24	3938.644025
Chile	1967	4.58	2.34	2.24	2864.916365
Chile	1998	7.60	3.50	4.10	6477.886043
Colombia	1979	5.65	3.32	2.33	2420.801912
Colombia	1996	4.03	1.80	2.23	3165.840112
Costa Rica	1979	6.15	1.50	4.64	3327.711307
Cuba	1972	6.71	5.07	1.64	2130.409123
Cuba	1985	5.80	-2.69	8.49	3855.768857
Dominica	1973	7.55	4.68	2.87	
Dominica	1978	7.01	4.15	2.86	2435.78522
Dominica	1989	4.56	1.92	2.63	3774.382631
Dominica	1993	4.06	1.91	2.16	4149.420049
Dominican Republic	1977	9.41	3.94	5.48	2003.796853
Dominican Republic	1983	4.62	2.31	2.31	2229.633196
Ecuador	1977	7.91	2.91	5.01	2493.459137
El Salvador	1979	4.03	-3.63	7.66	2494.518714
El Salvador	1999	5.06	2.66	2.40	2512.872977
Grenada	1991	6.16	2.48	3.68	4342.982751
Grenada	2003	4.75	2.26	2.50	6035.89953

Guatemala	1980	5.47	0.23	5.24	2050.663144
Guyana	1971	5.85	1.79	4.06	861.2673271
Guyana	1975	3.69	-0.78	4.47	960.0251173
Guyana	1997	5.83	1.46	4.36	1086.79335
Haiti	1971	6.28	4.00	2.28	
Haiti	1981	3.95	-0.17	4.12	
Honduras	1980	5.62	2.02	3.60	1207.097829
Jamaica	1973	5.74	-3.26	9.00	
Jamaica	1996	3.90	-0.05	3.95	
Mexico	1982	6.20	0.62	5.58	6914.404257
Nicaragua	1968	7.60	4.36	3.23	1766.30574
Nicaragua	1978	3.97	-3.27	7.24	1885.795653
Panama	1972	7.66	3.88	3.78	3159.566388
Panama	1983	3.53	0.15	3.38	3434.522531
Paraguay	1982	8.66	3.54	5.12	1331.653143
Paraguay	1996	4.36	0.71	3.65	1609.659132
Peru	1976	4.58	1.19	3.40	2574.288925
Peru	1981	4.10	1.29	2.81	2724.440866
Puerto Rico	1974	6.50	4.34	2.16	9918.753937
Puerto Rico	1976	5.77	3.57	2.20	10109.40658
Puerto Rico	1980	4.99	2.66	2.33	12231.92869
Puerto Rico	2002	4.01	-0.38	4.39	21191.40125
St. Kitts and Nevis	1990	6.89	4.34	2.55	7482.415946
St. Lucia	1979	6.22	1.62	4.60	
St. Lucia	1993	9.23	3.28	5.95	4818.269155
St. Vincent and the Grenadines	1973	3.54	0.37	3.17	1762.471391
St. Vincent and the Grenadines	1993	5.21	2.69	2.52	3346.504951
St. Vincent and the Grenadines	2003	4.89	2.69	2.20	4761.438926
Trinidad and Tobago	1967	5.26	3.23	2.03	5809.683674
Trinidad and Tobago	1983	4.87	-3.77	8.64	8732.390792
Uruguay	1980	4.01	0.56	3.45	4234.191563
Uruguay	1997	4.30	0.43	3.87	5233.716843
Venezuela, RB	1978	3.90	-0.73	4.63	7057.286009
Venezuela, RB	1993	3.73	0.76	2.98	5753.083895

Country	Year	TFP Growth t-1	TFP Growth t+1	Capita Stock Growth t-1	Capita Stock Growth t+1	Labor Input Growth t-1	Labor Input Growth t+1	Human Capital t-1	Human Capital t+1
Venezuela, RB	1997			3.79		1.18	2.61	5698.778127	

TableA.2: Deep Determinants of Growth for Slowdown Episodes

Country	Year	TFP Growth t-1	TFP Growth t+1	Capita Stock Growth t-1	Capita Stock Growth t+1	Labor Input Growth t-1	Labor Input Growth t+1	Human Capital t-1	Human Capital t+1
Antigua and Barbuda	1974			5.95	4.03	0.76	0.81		
Antigua and Barbuda	1990			8.56	6.46	-1.03	0.22		
Argentina	1971	-1.40	-1.10	4.41	4.34	0.01	-0.12	0.73	1.11
Argentina	1975	2.77	-4.98	3.37	3.66	-0.19	-0.49	1.11	0.92
Argentina	1996	-5.17	6.57	1.60	2.56	0.38	0.25	0.35	0.18
Aruba	1998					-0.18	-0.03		
Bahamas, The	1970					0.37	1.18		
Bahamas, The	1986			6.17	5.56	0.71	0.91		
Bahamas, The	1990			5.00	3.21	0.93	0.64		
Bahamas, The	2002			5.28	4.18	0.97	0.77		
Barbados	1971	5.29	2.04	5.06	4.40	0.46	1.80	3.21	-0.87
Belize	1981			2.94	1.29	0.61	0.84	0.66	0.42
Belize	1994			7.51	4.17	0.05	0.26	0.14	0.14
Belize	2003			4.55	2.24	0.74	0.88	0.50	0.50
Bolivia	1967	4.04	-18.92	1.92	1.52	-0.08	0.39	1.09	1.09
Bolivia	1978	0.95	-2.95	3.05	3.09	-0.09	0.02	1.79	1.79
Brazil	1981	5.42	-5.78	8.73	5.36	0.66	0.40	0.53	2.70
Chile	1967	3.92	-1.40	9.80	7.29	-0.04	0.25	0.87	0.87
Chile	1998	0.65	-4.49	8.61	5.06	0.23	0.32	0.37	0.37
Colombia	1979	2.09	-1.70	4.88	5.19	0.84	1.07	1.11	1.11
Colombia	1996	3.86	1.04	6.55	5.13	0.71	0.79	0.97	0.88
Costa Rica	1979	-0.41	-4.60	8.14	7.02	0.98	0.91	2.07	2.07
Cuba	1972					-0.10	-0.76		
Cuba	1985					1.17	0.95		
Dominica	1973			6.02	0.29				
Dominica	1978			2.84	3.08				
Dominica	1989			5.63	7.10				
Dominica	1993			2.67	2.04				
Dominican Republic	1977	0.74	-3.53	7.07	6.95	0.93	0.95	1.25	1.25
Dominica	1983	-2.23	-3.15	3.46	4.50	0.69	0.59	1.04	1.04

n Republic									
Ecuador	1977	2.82	-0.78	6.06	7.78	0.39	0.54	2.51	2.51
El Salvador	1979			7.62	1.27	0.31	0.34	0.93	0.93
El Salvador	1999			5.08	4.67	0.26	0.26	1.97	1.97
Grenada	1991			8.56	4.04	-1.51	-0.12		
Grenada	2003			1.12	2.83	1.79	1.80		
Guatemala	1980	-0.93	-3.27	5.36	4.33	-0.20	-0.38	2.28	0.81
Guyana	1971					0.31	0.99		
Guyana	1975					0.43	0.31		
Guyana	1997					0.69	-0.12		
Haiti	1971					-0.04	0.15		
Haiti	1981					-0.05	-0.43		
Honduras	1980	0.70	-1.04	5.87	3.11	0.23	0.14	2.49	2.42
Jamaica	1973	4.64	-8.06	4.00	2.15	0.34	0.98	1.04	1.04
Jamaica	1996	-2.79	-2.12	1.90	1.68	0.42	0.34	1.64	1.28
Mexico	1982	1.23	-6.01	8.94	1.52	0.96	0.78	1.70	1.70
Nicaragua	1968					0.31	0.65		
Nicaragua	1978					-0.02	-0.04		
Panama	1972	1.90	-1.64	10.72	9.83	0.23	0.38	1.38	1.38
Panama	1983	-1.20	-6.45	6.22	2.71	0.76	0.77	1.40	1.40
Paraguay	1982	-7.71	-3.08	8.79	5.52	0.40	0.30	1.22	1.22
Paraguay	1996	0.64	-1.03	4.69	3.85	0.49	0.60	0.30	-0.06
Peru	1976	-1.82	-3.82	6.08	4.38	0.45	0.32	1.80	1.48
Peru	1981	-0.25	-5.62	5.08	5.26	0.65	0.67	1.48	0.91
Puerto Rico	1974					1.09	0.87		
Puerto Rico	1976					0.87	0.09		
Puerto Rico	1980					0.13	0.28		
Puerto Rico	2002					0.16	0.14		
St. Kitts and Nevis	1990			11.88	5.44				
St. Lucia	1979			11.66	10.24	1.05	1.07		
St. Lucia	1993			7.82	9.15	0.51	0.36		
St. Vincent and the Grenadines	1973			6.91	4.33	0.58	0.79		

St. Vincent and the Grenadines	1993			3.20	3.74	1.09	1.01		
St. Vincent and the Grenadines	2003			3.23	3.86	0.87	0.80		
Trinidad and Tobago	1967					-0.58	0.05		
Trinidad and Tobago	1983			4.30	1.07	1.71	1.03		
Uruguay	1980	3.25	-0.47	12.74	8.05	0.56	0.28	1.10	0.49
Uruguay	1997	4.51	5.14	3.35	3.97	-0.09	-0.10	0.97	0.97
Venezuela, RB	1978	-3.80	-5.63	10.46	9.62	1.02	1.01	1.81	1.81
Venezuela, RB	1993	2.41	-5.04	3.18	1.45	0.43	0.57	0.71	0.71
Venezuela, RB	1997	3.59	-2.65	2.16	2.29	0.53	0.53	0.78	0.78

Table A.3: Trade Related, Dependent Variable: Consecutive Points

VARIABLES	(1) consecutive	(2) consecutive	(3) consecutive	(4) consecutive
GDP per capita (ln)	0.0997*	0.0497	0.590***	0.272
	(0.0515)	(0.131)	(0.186)	(0.304)
Lagged Growth	0.0768***	0.0751***	0.0402	-0.000216
	(0.00977)	(0.0269)	(0.0356)	(0.0663)
Trade Openness (ln)	-0.00530	0.00239	-0.0479**	-0.0718
	(0.00444)	(0.00737)	(0.0236)	(0.0510)
Export Value		-0.0138**	-0.0180***	-0.0123*
		(0.00571)	(0.00664)	(0.00693)
High-Tech Ratio		-0.0616**	-0.0979***	-0.0752
		(0.0258)	(0.0367)	(0.0801)
Export Volume		0.00913	0.0148*	
		(0.00667)	(0.00858)	
Export Collapses			7.339***	5.310
			(1.793)	(3.997)
Freedom to trade internationally (index)				-0.346*
				(0.210)
Constant	-2.109***	-1.242	-6.570***	-0.827
	(0.426)	(1.167)	(1.749)	(3.323)
Pseudo R^2	0.0574	0.1529	0.2923	0.3675
Observations	1,433	468	364	233

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.4: Macroeconomic Environment, Dependent variable: Consecutive Points

VARIABLES	(1) consecutive	(2) consecutive	(3) consecutive	(4) consecutive	(5) consecutive
Capital formation	0.0402***		0.0386***	0.0294***	0.0782***
	(0.00829)		(0.00845)	(0.00855)	(0.0134)
Investment Share (dif)	-0.0376**	-0.0213	-0.0378**	-0.0304*	-0.0691***
	(0.0158)	(0.0148)	(0.0158)	(0.0163)	(0.0213)
Debt-to-GDP ratio	-0.0105***	-0.00837***	-0.0106***	-0.0105***	-0.0107***
	(0.00188)	(0.00180)	(0.00189)	(0.00186)	(0.00254)
Financial openness	-0.0134	-0.00761	-0.0141	-0.00494	-0.127***
	(0.0342)	(0.0342)	(0.0358)	(0.0350)	(0.0462)
Inflation Variability			-0.0660		
			(0.156)		
RER Variability			-0.114		
			(0.0866)		
FDI (dif)		-0.000895			
		(0.0186)			
Oil exports dummy				-0.824***	
				(0.157)	
Crises dummy (t)					-0.155
					(0.187)
Crises dummy (t-1)					-0.235
					(0.206)
Crises dummy (t-2)					-0.0580
					(0.183)
Constant	-1.413***	-0.629***	-1.131***	-1.004***	-1.877***
	(0.194)	(0.0979)	(0.354)	(0.206)	(0.310)
Pseudo R^2	0.0757	0.0420	0.0781	0.1183	0.1410
Observations	883	870	882	883	653

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A.5: Educational, Dependent Variable: Consecutive Points

VARIABLES	(1) consecutive	(2) consecutive	(3) consecutive	(4) consecutive
GDP per capita (ln)	0.231***	0.256***	0.373**	0.395***
	(0.0753)	(0.0757)	(0.152)	(0.152)
Lagged Growth	0.0815***	0.0790***	0.0983***	0.104***
	(0.0122)	(0.0122)	(0.0250)	(0.0249)
Average years of Schooling	-0.0920***		-0.215***	
	(0.0251)		(0.0568)	
Average years of Secondary & Tertiary Schooling		-0.253***		-0.555***
		(0.0580)		(0.125)
Education expenditures (%GDP)			0.0773	0.114**
			(0.0471)	(0.0510)
Constant	-2.638***	-2.935***	-3.354***	-3.980***
	(0.552)	(0.568)	(1.151)	(1.204)
Pseudo R^2	0.0731	0.0794	0.1174	0.1447
Observations	1,122	1,122	374	374

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*

Table A.6: Baseline Model, Dependent: Consecutive Points

VARIABLES	(1) consecutive	(2) consecutive	(3) consecutive	(4) consecutive	(5) consecutive
GDP per capita (ln)	0.388***	0.707***	0.354***	0.432***	0.329***
	(0.0891)	(0.203)	(0.0922)	(0.0904)	(0.0976)
Lagged growth	0.0714***	0.101***	0.0742***	0.0668***	0.0751***
	(0.0115)	(0.0245)	(0.0132)	(0.0115)	(0.0122)

Trade Openness	-0.00851	-0.00616	-0.0134	-0.00818	-0.00862
	(0.00691)	(0.0109)	(0.00854)	(0.00706)	(0.00724)
Adr total	0.0192***	0.0571***	0.0148***	0.0149***	0.00799*
	(0.00346)	(0.0105)	(0.00568)	(0.00356)	(0.00477)
Investment Share (dif)	-0.0124	-0.0373	-0.0162	-0.0114	-0.0167
	(0.0138)	(0.0261)	(0.0160)	(0.0141)	(0.0144)
Political change	-0.0709	-0.425*	-0.0647	-0.0543	-0.188
	(0.115)	(0.252)	(0.118)	(0.117)	(0.120)
60 Dummy					0.590**
					(0.289)
70s Dummy					1.705***
					(0.247)
80s Dummy					1.351***
					(0.234)
90s Dummy					1.343***
					(0.223)
Manufacturing Share (ln)		0.812*			
		(0.488)			
Average Secondary & Tertiary Schooling			-0.0794		
			(0.0911)		
Oil exports dummy				-0.677***	
				(0.149)	
Constant	-5.846***	-13.86***	-5.094***	-5.723***	-5.674***
	(0.885)	(2.375)	(1.076)	(0.888)	(1.003)
Pseudo R^2	0.0924	0.1778	0.0900	0.1151	0.1949
Observations	1,153	527	1,014	1,153	1,153

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*

Table A.7: Pairwise Correlation of Baseline Model Determinants

	GDPpc	Lagged Growth	Trade Open	Adr Total	Invest. Share	Polit. Change	Manuf. Share	2ndary Schooling
GDPpc	1.000							
Lagged Growth	0.0194	1.000						
Trade Open	-0.0276	0.0113	1.000					
Adr Total	-0.6086	0.0776	-0.0038	1.000				
Invest. Share	-0.0033	0.0369	0.2359	-0.0016	1.000			
Polit. Change	-0.1433	-0.0608	0.0440	0.0626	0.0190	1.000		
Manuf. Share	0.0550	0.0845	0.0012	-0.0623	-0.0384	-0.1413	1.000	
2ndary Schooling	0.4253	-0.0931	0.0136	-0.7790	0.0047	-0.0979	-0.0550	1.000

Table A.8: Baseline Model, for Slowdowns episodes only in Middle Income

	(1)	(2)	(3)	(4)	(5)
VARIABLES	MIC chow	MIC chow	MIC chow	MIC chow	MIC chow
GDP per capita (ln)	0.454***	0.845***	0.399***	0.491***	0.442***
	(0.101)	(0.224)	(0.106)	(0.102)	(0.108)
Lagged growth	0.0236**	0.0374*	0.0306**	0.0207*	0.0260**

	(0.0114)	(0.0226)	(0.0137)	(0.0115)	(0.0118)
Trade Openness (dif)	-0.0145*	-0.0154	-0.0195**	-0.0139*	-0.0140*
	(0.00774)	(0.0124)	(0.00978)	(0.00785)	(0.00797)
Adr total	0.0150***	0.0569***	0.00432	0.0114***	0.00815
	(0.00378)	(0.0112)	(0.00608)	(0.00388)	(0.00501)
Investment Share (dif)	-0.0337**	-0.0315	-0.0493***	-0.0339**	-0.0364**
	(0.0140)	(0.0272)	(0.0162)	(0.0142)	(0.0145)
Political change	-0.178	-0.514*	-0.143	-0.170	-0.277**
	(0.131)	(0.296)	(0.136)	(0.133)	(0.136)
60s Dummy					0.407
					(0.278)
70s Dummy					1.062***
					(0.230)
80s Dummy					0.936***
					(0.212)
90s Dummy					0.960***
					(0.200)
Manufacturing Share (ln)		0.486			
		(0.517)			
Average Years of Secondary & Tertiary Schooling			-0.179*		
			(0.0997)		
Oil exports dummy				-0.543***	
				(0.155)	
Constant	-6.078***	-13.83***	-4.565***	-5.986***	-6.220***
	(0.998)	(2.527)	(1.200)	(1.001)	(1.100)
Pseudo R^2	0.0569	0.1488	0.0665	0.0741	0.1118
Observations	1,153	527	1,014	1,153	1,153

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1