Growth Accelerations: the Role of Official Development Assistance and Foreign Direct Investment

BY

LU LIU
B.S., Hefei University of Technology, 2001
M.A., Zhejiang University, 2004
M.A., University of Illinois at Chicago, 2008

THESIS

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Defense Committee:

George Karras, Chair and Advisor
Paul Pieper
Joseph Persky
Helen Roberts
Jin Man Lee, Depaul University

To my family,

the source of my love and strength.

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LIST OF ABBREVIATIONS

BMG	Broad Money Growth
DAC	Development Assistance Committee
DC	Developed Countries
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNI	Gross National Income
HPR	Hausmann, Pritchett and Rodrik
IMF	International Monetary Fund
LDC	Less Developed Countries
OECD	Organization for Economic Cooperation and Development
ODA	Official Development Assistance
PWT	Penn World Table
RNC	Workers' Remittances and Compensation of Employees
TOT	Terms of Trade
UNCTAD	United Nations Conference on Trade and Development
WDI	World Development Index

SUMMARY

Following the seminal paper by Hausmann, Pritchett and Rodrik (2005; henceforth HPR, 2005) on the identification of growth acceleration episodes and exploration of possible triggers, research on the predictability of such episodes has grown in recent years. Unlike most papers in the literature, my research focuses on the magnitude of growth acceleration episodes.

In this paper, I apply the filter of identifying growth acceleration episodes, proposed by HPR (2005), using updated versions of widely used datasets: the Penn World Table 8.0, 7.1 and the Maddison Dataset. 349 growth acceleration episodes are identified in PWT 8.0 for 167 economies over the time horizon 1950-2011, 280 growth acceleration episodes are identified in PWT 7.1 for 187 economies over 1950-2010, and 221 episodes emanating from the Maddison Dataset in a comparable panel dataset of 146 economies over the 1950-2008 period. Consistent with HPR (2005), I find that growth accelerations are "a fairly common occurrence". In addition, my results show that 221 out of 349 growth accelerations identified in PWT 8.0 can find their counterparts in PWT 7.1. And, approximately 70% of the identified growth accelerations in PWT 7.1 can also be found in the Maddison dataset. I consider these to be robust growth acceleration episodes.

When investigating the effects of foreign direct investment (FDI) and official development assistance (ODA) on the magnitude of growth acceleration episodes, I find that ODA tends to have positive, statistically significant and more sizable effects on accelerating economies than on non-accelerating economies for the least developed and low income countries. For the lower middle and upper middle income countries, FDI plays a positive, significant and more sizable role in promoting the magnitude of growth acceleration episodes.

1. INTRODUCTION

Recent trends in the methodology of economic growth studies have shifted from averaging long-run growth data to focusing on the turning points of the boom and bust cycles of an economy. Hausmann, Pritchett and Rodrik (2005), hereinafter referred to as HPR (2005), pointed out the limitations of the traditional cross-country growth analyses, which impose narrow assumptions that a single linear model applying for "all countries in all states".[1] A host of macroeconomists have confirmed that a more typical growth pattern of an economy is that it undergoes repeatedly varying cycles of growth acceleration, stagnation, and deceleration instead of experiencing consistently constant growth rates over long periods (Easterly et al., 1993; Jong-A-Pin and De Hann, 2008). HPR (2005) stated that turning points of a country's growth performance are "the most telling source of variation" in analyzing a country's growth trend.

In this paper, I follow the methodology of identifying growth accelerations, proposed by HPR (2005) and apply it to updated versions of two widely used datasets: the Penn World Table 8.0, 7.1 and the Maddison Dataset. 349 growth acceleration episodes are identified in PWT 8.0 for 167 economies over the 62 years' time horizon 1950-2011, 280 growth accelerations identified in PWT 7.1 for 187 economies from 1950-2010, and 221 episodes emanating from the Maddison Dataset in a comparable panel dataset of 146 economies over the 1950-2008 periods. Consistent with HPR (2005), I find that growth accelerations are "a fairly common occurrence". In addition, my results show that

[1] HPR (2005) also discussed models characterizing different "states" of a country in a solo model, which show the nonlinear relationship between factors and growth outcomes, such as the models depicting "poverty traps".

approximately 70% of the identified growth accelerations in PWT 7.1 can also be found in the Maddison Dataset. 221 out of 349 identified growth accelerations in PWT 8.0 can find their counterparts in PWT 7.1. I consider these to be robust growth acceleration episodes and the filter developed by HPR (2005) satisfying.

Following HPR (2005), research on the predictability of growth episodes has grown in recent years. Unlike most papers in the literature, my research focuses on the growth rate and magnitude of growth acceleration episodes. I examine possible factors that have effects on the HPR growth rate and HPR growth difference for growth acceleration episodes.[2] I find that among all the possible factors, foreign direct investment (FDI) and official development assistance (ODA) have more consistent, sizable and significant effects on the magnitude of growth accelerations, even though they play different roles in each group. In particular, ODA shows significant and positive effects on the HPR growth difference for accelerating economies for the least developed and low income countries. FDI is a significant and positive predictor to both the HPR growth rate and HPR growth difference for accelerating lower middle income economies. For the upper middle income countries, FDI plays positive and significant role in promoting HPR growth difference for accelerating economies. These results are robust to a number of different empirical specifications.

I make the following contributions: first, I apply the filter of identifying growth acceleration episodes, proposed by HPR (2005), using three updated versions of two widely used datasets: the Penn World Table 8.0, 7.1 and the Maddison Dataset. Consistent with HPR (2005), I find that growth accelerations are "a fairly common occurrence"; second, I do not solely rely on only one dataset, but

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[2] I provided the definitions of HPR growth rate and HPR growth difference in Chapter 3 & 4.

also compare my results produced by three datasets. The comparison shows that approximately 70% of the identified growth accelerations in PWT 7.1 can also be found in the Maddison dataset. And, 221 out of 349 identified growth accelerations in PWT 8.0 can find their counterparts in PWT 7.1. I consider these to be robust growth acceleration episodes; third, unlike most papers in the literature, my research focuses on the growth rate and magnitude of growth acceleration episodes.

The paper proceeds as follows. Chapter 2 reviews a number of literatures from the perspectives related to the ODA-growth nexus, and the relationship between FDI and growth. Chapter 3 details the methodology to identify growth accelerations, proposed by HPR (2005) and applies it to the updated versions of two widely used datasets. Chapter 4 analyzes the effects of ODA and FDI on the HPR growth rate and magnitude of growth acceleration instances. Chapter 5 concludes.

2. LITERATURE REVIEW

2.1 The Effects of Official Development Assistance on Economic Growth

Official Development Assistance, commonly abbreviated to ODA, consists of official and concessional resource flows to multilateral development institutions and recipients on the DAC (Development Assistance Committee) List[3]. It is a term, measuring aid, invented by the DAC of the OECD (Organization for Economic Cooperation and Development).[4] It includes resource transfers provided by the official agencies, in the form of grants and loans, to the developing countries. Its main objective is to foster the economic development and welfare of developing countries.[5] Tarp (2011) discussed the historically evolution of foreign aid[6] for the past four decades, including its origin, predecessor (the Marshall Plan), and its development nowadays.

Figure 1 illustrates DAC members' total ODA flows to developing countries from 1960 to 2013.[7] This figure directly shows that the total ODA flows increase substantially during the past 53 years period, especially after 2000. Figure 2 shows the change of official development assistance (by percentage of GNI) for the whole world over 50 years (from 1960 to 2010).[8]

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[3] See Appendix D for a detailed DAC list of ODA recipients, or you can also find it at http://www.oecd.org/dac/stats/daclist.htm.

[4] See the definition listed on the Wikipedia: http://en.wikipedia.org/wiki/Official_development_assistance.

[5] The definition of ODA can be found at the website of the DAC of the OECD, http://www.oecd.org/dac/stats/officialdevelopmentassistancedefinitionandcoverage.htm

[6] ODA is commonly known as foreign aid.

[7] Figure 1 is based on the data drawn from the complete databases available via OECD's iLibrary, OECD.StatExtracts, http://stats.oecd.org/Index.aspx?DataSetCode=DACGEO

[7] The data depicting Figure 2, Figure 3, Figure 4, and Figure 5 are drawn from World Banks' World Development Index. The least developed countries are based on classification of United Nations.

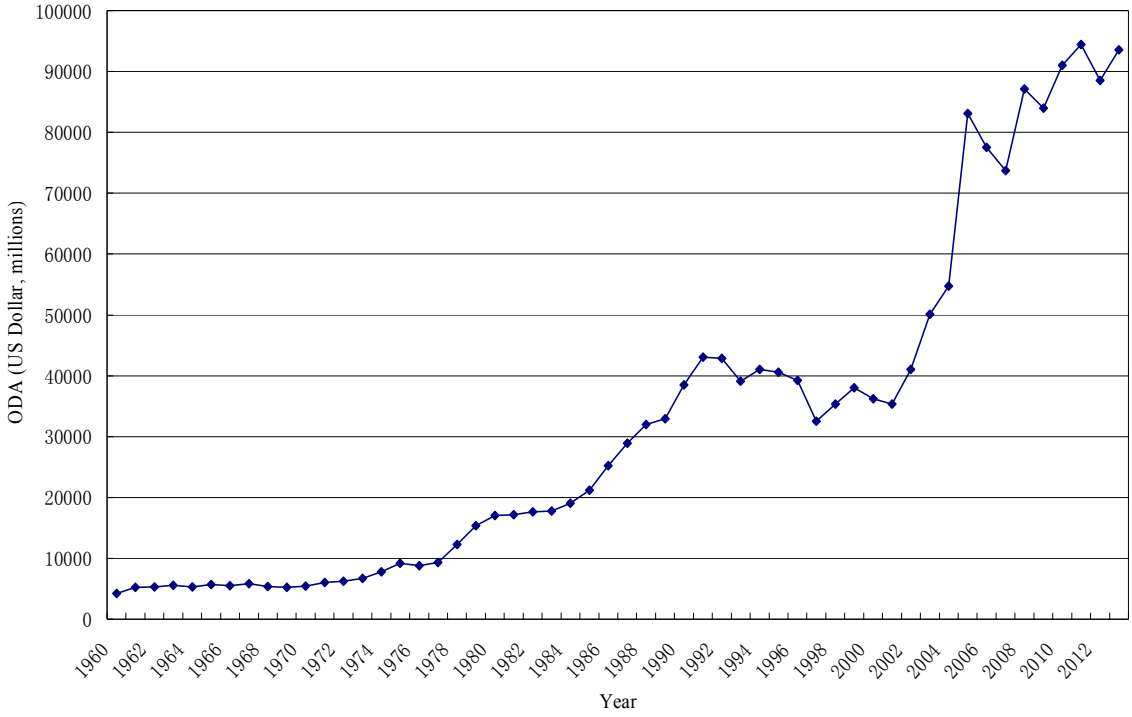

Figure 1. DAC members' ODA flows to developing countries from 1960 to 2013

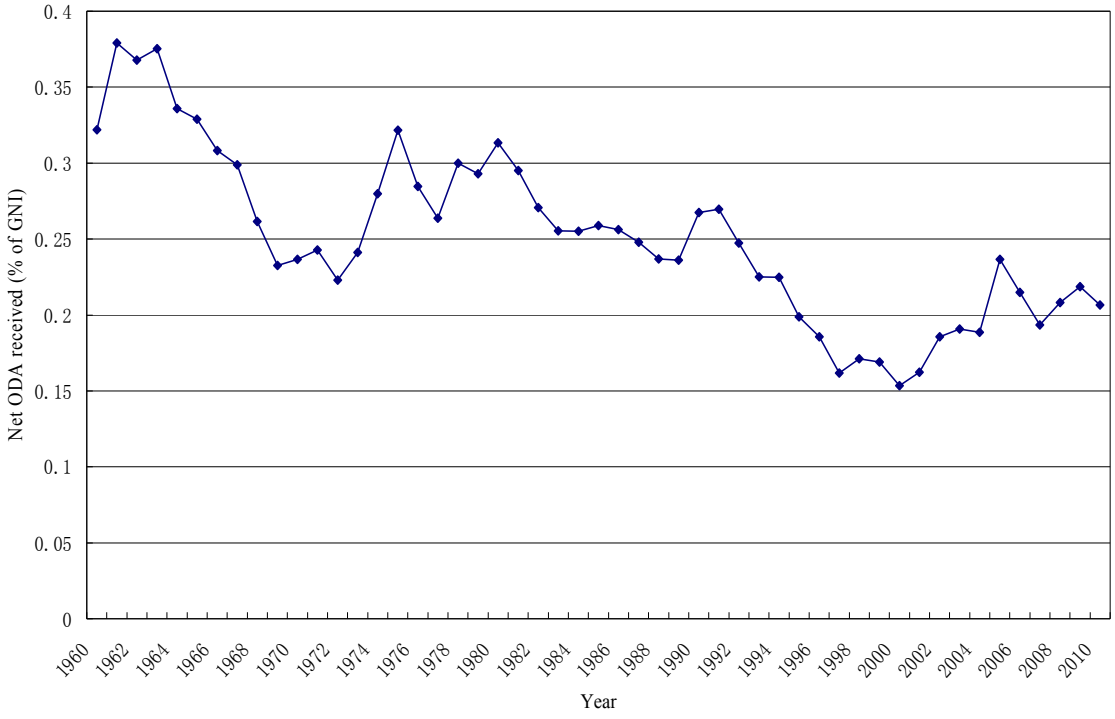

Figure 2. Net ODA received by world from 1960 to 2010

Figure 3 shows the change in ODA (by % of GNI) from 1973 to 2010 for the least developed countries. There is an obviously sharp decrease in ODA during 1990s.[9] The ODA growth during the past 40 years (from 1970 to 2010) for the lower middle income countries (Figure 4) is highly fluctuating. Not surprisingly, the change in ODA for the upper middle income countries from 1960 to 2010 experienced a downward sloping trend (shown by Figure 5).

Since ODA aims at providing incentives for private sector development and allows investment in infrastructure and human capital, it has been widely and intuitively acknowledged that ODA is among the most essential factors in laying the foundation for economic growth and poverty reduction. However, the econometric estimations of the aid effectiveness have many controversial, even polarized results, which cause the debates for decades and currently still "with little resolution" (Ferro and Wilson, 2011). In practice, an obvious fact is that the infusion of billions of dollars of aid to the world's poorest country over the long run have rarely enabled the recipient growing at satisfying pace (Bandow and Vasquez 1994; Tirmizi 2010).

Since 1960s, under the prevalence of "capital bottleneck theory" and "dependency theory", aid gradually comes to the center of development discussions. Economists and researchers have drawn attention to the effectiveness of aid for decades. Extensive literature is aimed to answer the question: does aid promote economic growth and reduce poverty?[10] A host of them investigate the effects of Official Development Assistance (ODA) on growth, that is, the ODA effectiveness.

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[9] A Detailed list of the 29 countries which experienced decreases in bilateral ODA can be found at Table 2 of "FDI in Least Developed Countries at a Glance" (United Nations, 2001).

[10] Based on Dovern and Nunnenkamp (2006), if a country launches long spell of growth because of receiving aid inflows, we consider the aid effective.

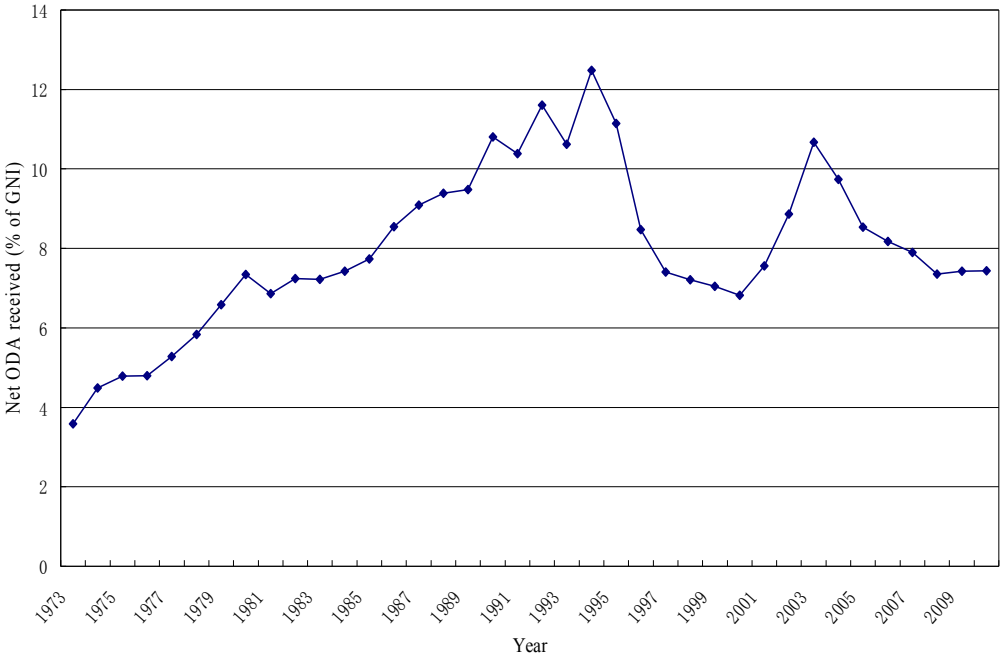

Figure 3. ODA received by least developed countries from 1973 to 2010

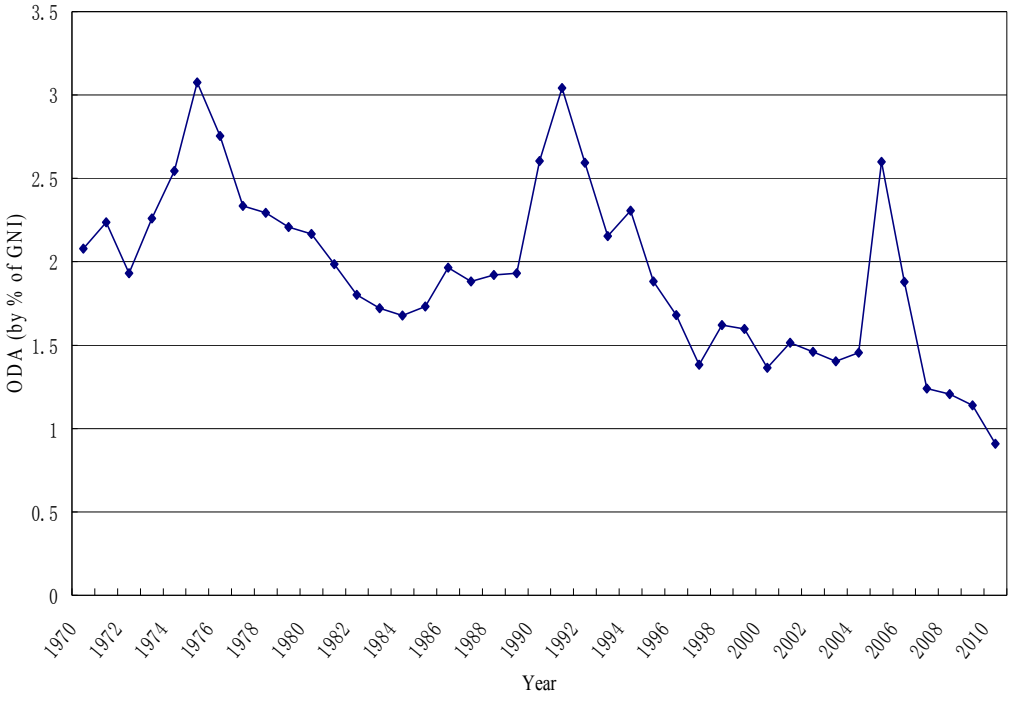

Figure 4. ODA received by lower middle income countries from 1970 to 2010

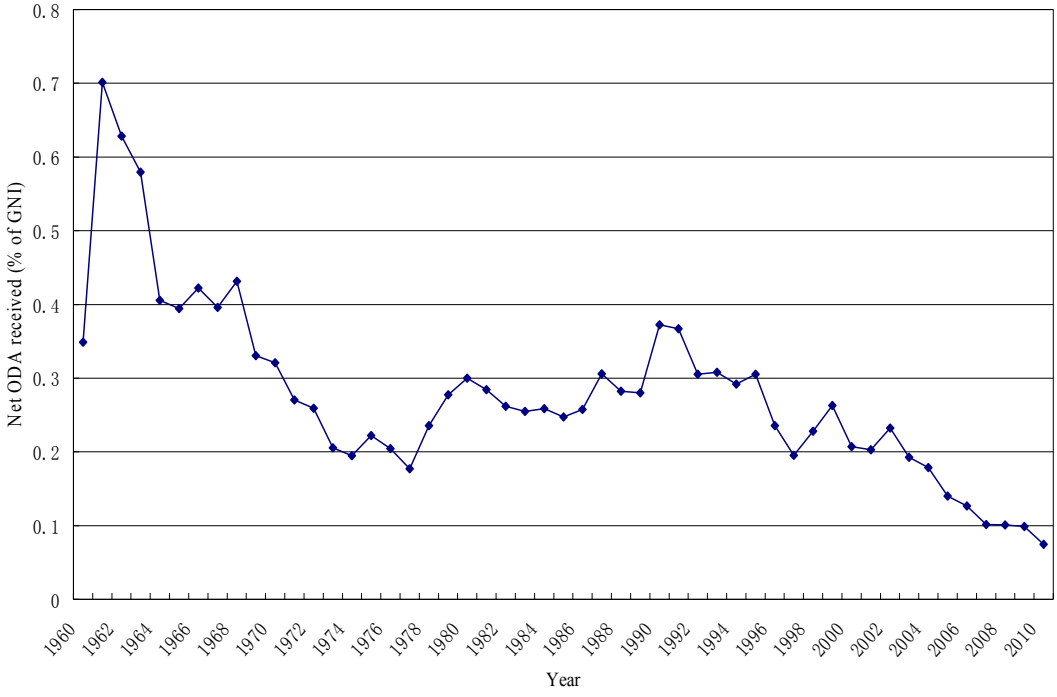

Figure 5. ODA received by upper middle income countries from 1960 to 2010

Economists hold diametrically different views. Some argue that aid can be beneficial to a country's economic growth (Lesink and White, 2001), in particular, aid can help developing countries to escape from "poverty traps" (Hansen and Tarp 2000; Sachs et al 2004). Others (Boone 1996, Easterly 2006a, 2007) contend that aid is ineffective to growth. Still a neutral position is that aid effectiveness is conditioned on good institutional and policy environment of the recipient country (Burnside and Dollar 2000).

2.1.1 Positive Views

The function of foreign aids aims to relieve three types of constraints, which are considered to be the main stumbling block to economic growth. The three types of constraints, or we call it "gaps", characterized by developing countries are savings constraint, foreign exchange constraint and fiscal constraint. Some economists (Meier and Stiglitz, 2001) suggest that filling the three gaps through financing by foreign aid can break the vicious circle in poverty trap for developing countries (Mercieca, 2010).

Minoiu and Reddy (2009) distinguished between the effects of developmental and non-developmental aids. They defined developmental aid as aid expected to promote development and all other kinds of aid are non-developmental. They found that developmental aid has a positive long-run effect on developing countries' average growth.

McGillivray (2003) discussed that more pressure and attention from the aid donor countries have focused on the perceived quality of recipient country political regimes, which accounts for more effectiveness of aid than before.

Dovern and Nunnenkamp (2006) divide the aid into three categories (grants, loans and short-impact aid) instead of treating the aggregate aid data as a whole and find that short-impact aid is the most effective among the three, followed by loans.

2.1.2 Ineffective Views

In the early 1990s, the persistence of economic crises in developing countries aroused skepticism about the effectiveness of aid. Bandow and Vasquez (1994) argued that decisions regarding the flow and allocation of public foreign aid were not made by market mechanism. Instead, they were based on the plan of governments or multilateral lending institutions. This might be one of the reasons why aid did not perform effectively on economic growth. Tarp (2011) pointed out that the economic and political conditions and requirements tied to ODA, suggested by the multilateral development finance institutions (such as IMF and World Bank), may reduce aid effectiveness. These institutions require that the aid recipient countries seek political or economic reforms in the aim of economic promotion, however, the reforms may cause economic and social chaos and decline rather than growth.

Tirmizi (2010) stated that no country in the world that has jumped from being a developing country to a developed country relied heavily on aid. He attributed the ineffectiveness of aid to his so-called “the dependency syndrome”: aid was generating undesirable dependency relationships which cause aid less likely utilized efficiently.

2.1.3 Conditional Views

Based on Ferro and Wilson (2011), the main empirical results of recent aid effectiveness studies are showing the ambiguous and fragile relationship between aid and development outcomes (Rajan and Subramanian, 2008; Easterly, Levine and Roodman, 2004).

Karras (2006) points out that in theory, foreign aid can promote growth and facilitate convergence, however, if taking account of negative effects of corruption and other growth-retarding policies, the effects of foreign aid are ambiguous. Modeling in the context of complicated background can only deepen the effects ambiguities.

The study of Burnside and Dollar (2000) shows that positive growth impacts of aid to developing countries are conditioned on good fiscal, monetary and trade policies of the recipient countries.

Previous research focuses on the issue whether aid promotes growth. Later, economists such as the World Bank's 1998 study, strive to find conditions under which aid is effective. The World Bank (1998) suggests favorable conditions: countries with sound economic policies and institutions. A detailed overview of the historical path of research in aid effectiveness can be found in McGillivray et al. (2005)

Ferro and Wilson (2011) pointed out that "the direct objective of most aid flows is not economic growth, and in some cases it is not the objective at all." The more direct and short run objectives of aid include: improve political systems, enhance border safety, etc. Even though these measures utilizing aid can promote economic growth in the long run, but not in short run. Ferro and Wilson (2011) conclude that evaluating aid effectiveness only in terms of economic growth does not match the "ex-ante objectives for aid".

Tarp (2009) and Mercieca (2010) provide a thorough literature review on aid effectiveness and allocation, which facilitates comprehension the relationship between aid, poverty and economic growth. Nkusu (2004) conducted a brief review of the past literature and highlighted differences in

findings. Overall, the field in measuring aid effectiveness is full of debates, disputes and controversial results.

2.2 The Effects of Foreign Direct Investment on Economic Growth

Although the ODA have grown very slowly, even have fallen at some time during the past decade, the total capital inflows to developing countries grow steadily. This is due to the greater volume of foreign direct investment (FDI) and other type of private flows such as remittances. While ODA plays a vital role in funding the world's poorest countries, FDI became more and more significant in fostering growth for the rest developing world. (Busse and Groizard, 2005; Tarp, 2011)

Based on OECD factbook 2013, FDI is defined as "cross-border investment by a resident entity in one economy with the objective of obtaining a lasting interest in an enterprise resident in another economy." According to World Bank 2013, FDI is defined as "the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor." Along with aggressive tax incentives and subsidies in most developing countries, the volume of FDI to emerging economies soared since 1990s. (Carkovic and Levine, 2006) Looking at the historical FDI statistics[11], the world level of FDI inflows arrived its peak at 2007 ($2 trillion) and the peak for the developing economies is $73 billion at 2011.

Figure 6 shows the change of FDI (% of GDP) for the whole world from 1970 to 2010. There is an obvious acceleration of FDI growth after late 1990s. However it fluctuated to a large degree within the range of 1.7 (% of GDP) to 4.3 (% of GDP). Figure 7, Figure 8 and Figure 9 show the trend

[11] I refer to UNCTAD's FDI database (Inward and Outward foreign direct investment flows, annual, 1970 – 2012) for the historical data about levels of FDI.

of FDI growth during the past 40 years (from 1970 to 2010) for the least developed, the lower middle income, the upper middle income countries respectively. A common feature for these three graphs is that the FDI growth pattern for each country group experienced a continuously 10-year sharp increase but initiating at different time. The upper middle income countries have the earliest FDI acceleration starting from 1987 (0.437% of GDP) to 1999 (3.706% of GDP), followed by the least developed countries starting from 1994 (0.799% of GDP) to 2003 (4.687% of GDP). The FDI takeoff for the lower middle income countries initiated at 2000 (0.868% of GDP), arriving its peak at 2008 (3.726% of GDP).

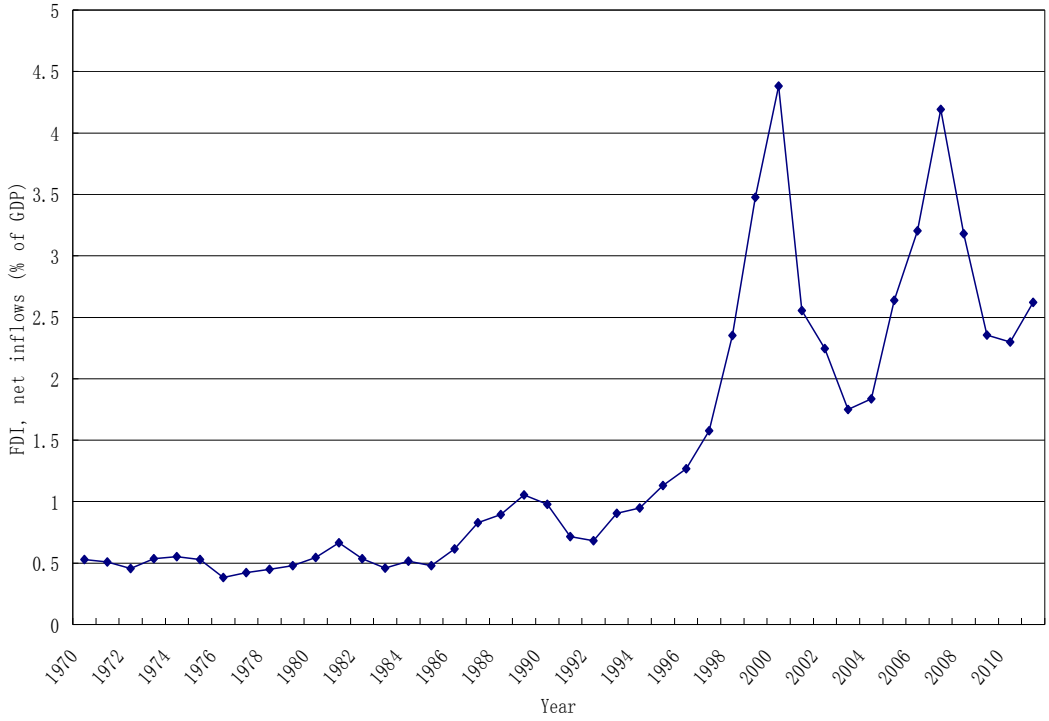

Figure 6. FDI net inflows for the whole world from 1970 to 2010

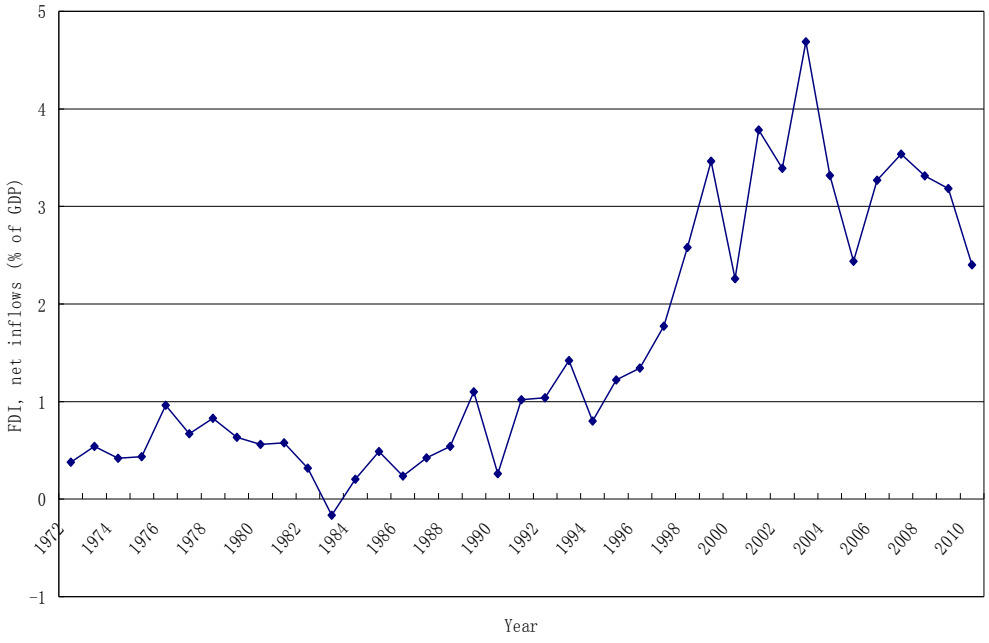

Figure 7. FDI net inflows for least developed and low income countries from 1972 to 2010

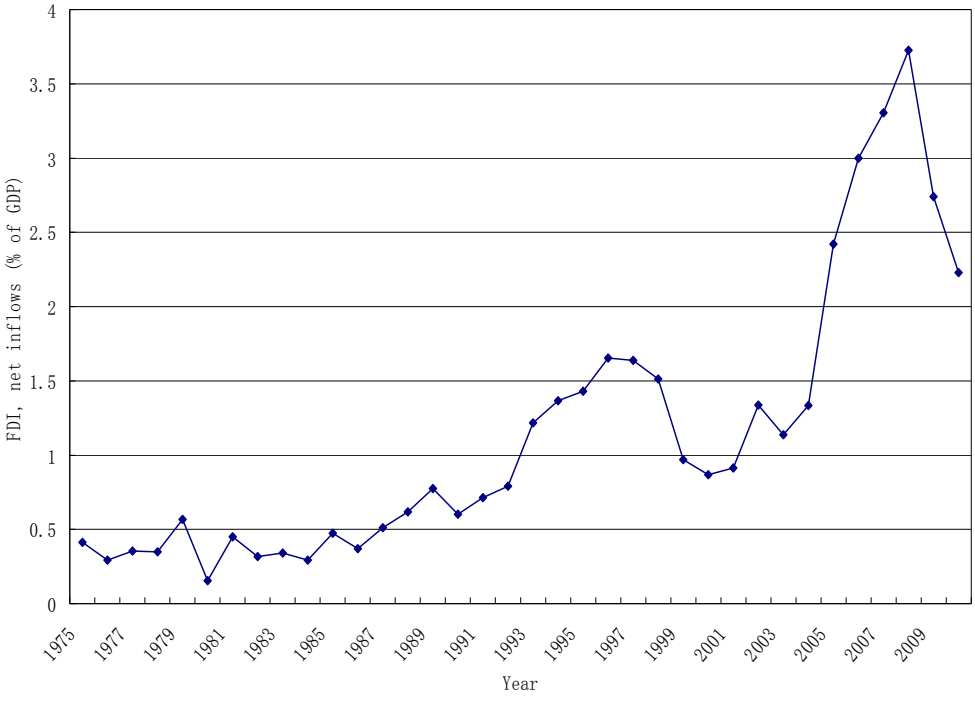

Figure 8. FDI net inflows for lower middle income countries from 1975 to 2010

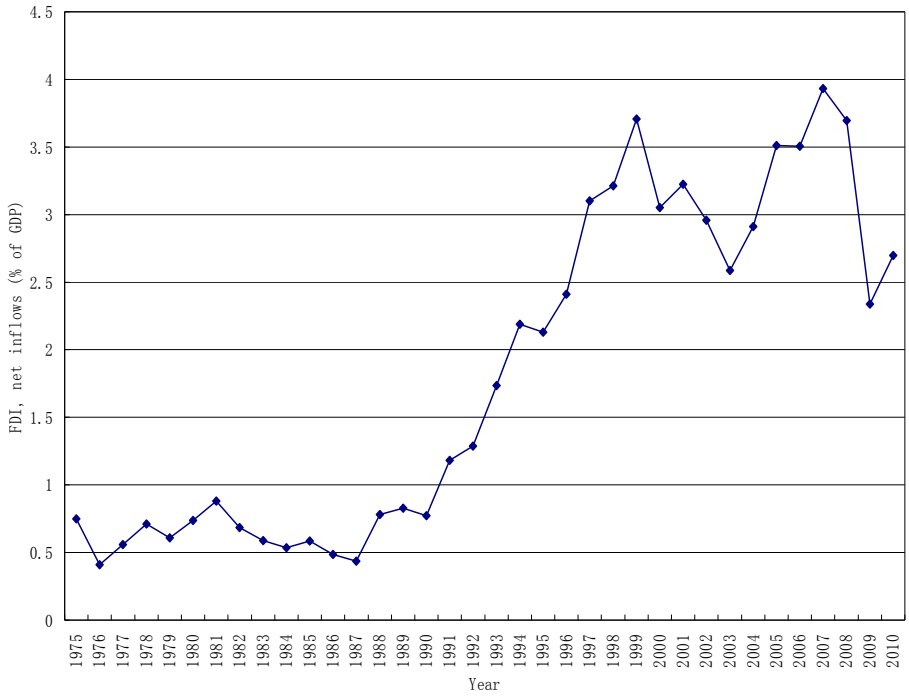

Figure 9. FDI net inflows for upper middle income countries from 1972 to 2010

While the relationship between FDI and economic growth has been extensively examined in the literature during the last decades, economists have different views on how FDI affect a country's economy. Like ODA effectiveness, some scholars hold positive views on the effects of FDI while others are pessimistic. Lund (2010) surveyed the theoretical foundations and empirical works on the causal relationship between FDI and economic growth. He pointed out that theory always supports a positive FDI-growth nexus, while the empirical findings are mixed.

2.2.1 Positive Views

A host of economists reach a consensus that the host country economies can benefit greatly from technology transfers and spillovers, contributed by FDI (See, for example, Romer, 1993; Rappaport, 2000; De Gregorio, 2003). Borensztein et al. (1998) conducted a cross-country regression analysis and found that FDI contributes more than domestic investment.

In the review conducted by Ozturk (2007), factors such as free trade zones, financial market regulations, infrastructure quality, and economic/political stability are identified as catalysts for FDI that has a positive impact on the entire economy.

2.2.2 Ineffective Views

Firm-level studies of particular countries do not find microeconomic evidence that FDI promotes overall economic growth. (For example, Aitken and Harrison, 1999) According to Ozturk (2007), the less developed countries (LDC's) witnessed a clear positive link between FDI and economic growth, while developed countries (DC's) found no growth benefit from FDI inflows.

2.2.3 Conditional Views

Borensztein et al. (1998) argued that a minimum threshold stock of human capital in the host country is a prerequisite for positive growth effect and higher productivity of FDI. Some other

economists find that growth through FDI is conditioned on sufficient wealth and trade openness of the recipient country (Blomstrom et al., 1994; Balasubramanyam et al., 1996). According to Busse and Groizard (2008), sound business environment, in the form of good government regulations, ensures the host country benefit from FDI. They also found that in the most regulated economies, the excessive regulations restrict the growth effect of FDI.

A lot of economists argue that the contribution of FDI to economic growth in host countries depend on the absorptive capacity in the host countries. Absorptive Capacity is determined by a number of factors, such as the country's openness to trade, investment in basic infrastructure, the quality of human capital, financial structure and technological development, etc. (UNCTAD, 2001; Hermes and Lensink, 2003).

3. IDENTIFYING GROWTH ACCELERATIONS

This research makes use of the work of Hausmann, Pritchett and Rodrik (2005), hereinafter referred to as HPR (2005). HPR (2005) developed a filter to identify the initiation (t) of growth acceleration episodes. In this chapter, I apply the filter, designed by HPR (2005), to three updated datasets: PWT 7.1, PWT 8.0 and the Maddison dataset. Consistent with HPR (2005), I find that, even for the least developed countries, growth accelerations are "a fairly common occurrence".

3.1 Methods

The seminal paper HPR (2005) provides us with a reasonable and feasible filter to identify the initiation (t) of growth acceleration episodes. In this section, I implement the empirical method of identifying growth acceleration episodes, proposed by HPR (2005), using updated version of three widely used datasets: PWT 7.1, PWT 8.0 and the Maddison Dataset. I check the robustness of the filter by comparing the estimates of the identified growth acceleration episodes based on each of the above three datasets.

According to HPR (2005), a growth acceleration episode must satisfy the following criteria[12]:

$g_{t,t+n} \geq 3.5\%$, growth is rapid (1)

$\Delta g_{t,n} \geq 2.0\%$, growth accelerates at time t over horizon n (2)

[12] I exclude the third criterion ($y_{t+n} \geq \max\{y_i\}$, $i \leq t$) set by HPR (2005) for identifying the growth accelerations. The logic behind this criterion is to rule out cases of pure recovery, that is, the post-episode GDP per capita must exceed pre-acceleration peak. As for my research, I identify not only pure accelerations but also recoveries and then examine their empirical evidence.

$g_{t,t+n}$ denotes the ordinary least squares growth rate. It measures the average growth rate of GDP per capita (y) at time t over time horizon n. $g_{t,t+n}$ is estimated by running the following equation:

$$\ln(y_{t+i}) = c + g_{t,t+n} * i \qquad i = 0, \ldots, n. \tag{3}$$

As in HPR (2005), I set n=7. Since PWT 8.0 covers the series of GDP per capita from 1950 to 2011 for most of the economies, the earliest and latest possible $g_{t,t+n}$ can be calculated for each country is $g_{1950,1957}$ and $g_{2004,2011}$, respectively. The earliest calculated $g_{t,t+n}$ is $g_{1950,1957}$ for both of PWT 7.1 and the Maddison Dataset. The latest are $g_{2003,2010}$ for PWT 7.1 and $g_{2001,2008}$ for the Maddison Dataset.

Δg_t is the change in the least squares growth rate at time t:

$$\Delta g_t = g_{t,t+n} - g_{t-n,t} \tag{4}$$

It is defined as the difference between the least squares growth rate during time horizon n following and proceeding time t. Considering n=7, the earliest and latest year in PWT 8.0 for Δg_t is 1957 and 2004.

If a number of consecutive years satisfy the above conditions, HPR (2005) propose that the initiation of the growth acceleration episode should be chosen by looking for the year that has the maximum F-statistic of the above trend line regression, $\ln(y_{t+i}) = c + g_{t,t+7} * i$, i = 0, …,7. For example, the year of 1991, 1992 and 1993 all satisfy the above criteria (1) & (2) for Albania, however only 1991 is recorded as the initiation year of an acceleration episode for Albania since the F-statistic

of the trend line regression listed in criterion (1) is the highest for 1991 (the F-statistic are 22.56, 20.45, and 17.87 for the three years respectively).

Moreover, HPR (2005) set the rule that countries can have more than one growth acceleration episodes if the initiation for each episode is at least 5 years apart. For examples, China accelerated from 3.70% to 6.66% at 1976 and then accelerated by 4.91% at 1981. Year 1976 and 1981 are recognized as the initiation of two distinct growth acceleration episodes for China.

Similar to HPR (2005), I use Penn World Table dataset as my baseline data source.[13] In order check the robustness of the filter designed by HPR (2005) for identifying growth accelerations, I apply exactly the same empirical methods to two additional different series of GDP per capita, the Maddison dataset and the PWT 8.0. I define a growth acceleration episode as a "robust" one if it can be recognized in at least two of the datasets with the dates of initiation differing by 2 years or less.

3.2 Growth Accelerations and Robustness Checks

I filtered a surprisingly large number of growth accelerations out each of the three datasets. 280 growth acceleration episodes are identified in PWT 7.1 for 189 economies over the 47 years' time horizon 1950-2010 and after implementing the same procedures, 221 episodes emanate from the Maddison Dataset in a comparable panel dataset of 146 economies over the 1950-2008period (See TABLE I). I also identified 349 growth acceleration episodes in PWT 8.0 for 167 countries from 1950 to 2011 (See TABLE II).

[13] In this chapter, I use PWT 7.1 as my baseline data to test the robustness of the filter designed by HPR (2005) for identifying growth accelerations. The reason is that the latest data year in PWT 7.1 is 2010, which lies in between the latest year of PWT 8.0, 2011, and the Madison Dataset, 2008. However, as for exploring empirical evidence of growth accelerations in Chapter 4, I always reply on the growth accelerations identified in the most updated dataset, PWT 8.0.

TABLE I and TABLE II show all of these growth acceleration episodes identified in each different dataset with the standard three-letter country abbreviation[14], the year of initiation and the magnitude of each acceleration episode. Consistent with HPR (2005), I find that growth accelerations are "a fairly common occurrence".

When comparing the episodes identified in each of the dataset, my results show that approximately 70% of the identified growth accelerations in PWT 7.1 can also be found in the Maddison dataset. And, 221 out of 349 identified growth accelerations in PWT 8.0 can find their counterparts in PWT 7.1. I consider these to be robust growth acceleration episodes and highlight them in bold (See TABLE I and TABLE II). In particular, sixty three growth accelerations (22% by percentage) identified in PWT 7.1 and the Maddison dataset with the exactly same initiation, seventy seven (27% by percentage) identified in PWT 7.1 found their counterparts in the Maddison dataset with the initiation differing by one or two years. I take the robustness of the HPR filter encouraging and satisfying.

[14] The detailed list of the three-letter country code for each country included in all of the three datasets is shown in APPENDIX A.

TABLE I

EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
Sub-Saharan Africa	1950s/60s	NGA	1957	1.38%	3.60%	2.22%			not identified	
		MUS		not identified			1957	0.64%	4.76%	4.12%
		LSO		not identified			1958	2.23%	5.39%	3.16%
		MRT		data not available			1959	2.55%	6.51%	3.96%
		NAM		data not available			1959	1.47%	6.46%	4.99%
		GNQ		not identified			1959	2.48%	10.09%	7.61%
		AGO		data not available			1960	2.01%	4.44%	2.43%
		ZMB	1962	0.90%	5.98%	5.08%			not identified	
		MWI	1962	1.48%	5.71%	4.23%			not identified	
		BWA		not identified			1964	1.47%	7.90%	6.43%
		RWA		not identified			1964	-1.51%	4.64%	6.15%
		MOZ		data not available			1965	0.60%	5.02%	4.42%
		SYC		data insufficient			1966	1.36%	4.40%	3.04%
		NGA	**1967**	-2.56%	8.23%	10.79%	**1967**	-0.15%	10.04%	10.19%
		BWA	**1967**	4.26%	14.74%	10.48%	**1969**	5.46%	12.89%	7.43%
		ZWE	1967	-0.62%	7.38%	8.00%	1963	0.39%	3.83%	3.44%
		COG	**1967**	0.11%	7.70%	7.59%	**1968**	1.66%	4.56%	2.90%
		GHA	1967	-1.31%	5.35%	6.66%			not identified	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		CPV	1967	-1.24%	4.72%	5.96%			not identified	
		MWI	**1967**	4.23%	6.45%	2.22%	**1968**	2.09%	4.84%	2.76%
		MUS	**1968**	-1.79%	4.54%	6.33%	**1967**	0.68%	3.74%	3.06%
		GAB	1969	3.70%	12.90%	9.20%	1966	2.83%	5.68%	2.85%
	1970s	GNQ	**1970**	2.40%	12.03%	9.62%	**1972**	-2.82%	6.79%	9.61%
		SYC	**1970**	1.84%	5.33%	3.49%	**1971**	1.72%	4.37%	2.65%
		SDN			data not available		1971	-0.74%	4.35%	5.09%
		LSO	**1971**	-0.49%	8.21%	8.70%	**1971**	-0.61%	8.14%	8.75%
		MUS	**1973**	0.16%	4.99%	4.83%	**1972**	-0.33%	5.78%	6.11%
		MLI	**1973**	1.16%	4.24%	3.08%	**1973**	0.76%	4.91%	4.15%
		RWA	**1974**	-0.05%	3.67%	3.72%	**1976**	1.85%	5.06%	3.21%
		CPV	**1976**	-0.59%	4.01%	4.60%	**1974**	-2.58%	8.29%	10.88%
		COG	**1977**	1.77%	10.10%	8.33%	**1977**	2.66%	7.96%	5.30%
		BEN	**1977**	-0.29%	4.53%	4.82%	**1975**	-0.78%	3.50%	4.26%
		SLE	1979	0.02%	4.37%	4.35%			not identified	
	1980s	TCD	**1981**	-7.09%	4.06%	11.15%	**1981**	-7.15%	4.07%	11.22%
		CPV	**1981**	0.34%	3.82%	3.48%	**1979**	1.67%	6.70%	5.03%
		MUS	**1981**	3.19%	5.36%	2.17%	**1981**	1.92%	5.35%	3.43%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		SWZ	1982	-1.73%	5.45%	7.18%			not identified	
		TZA	1984	-2.91%	4.98%	7.89%			not identified	
		LSO	**1984**	-3.60%	3.52%	7.12%	**1985**	-1.36%	4.31%	5.67%
		BWA	1984	5.59%	8.33%	2.74%			not identified	
		SYC	**1986**	0.85%	5.33%	4.48%	**1986**	-0.73%	4.05%	4.78%
		MUS	**1986**	1.93%	4.94%	3.01%	**1986**	2.38%	5.21%	2.83%
		UGA	1987	-0.48%	3.81%	4.29%			not identified	
		LBR			not identified		1987	-3.08%	4.66%	7.74%
	1990s	CPV	1991	2.25%	4.39%	2.14%	1994	0.48%	5.91%	5.43%
		GNQ	1992	-2.99%	31.56%	34.55%	1988	0.67%	3.66%	2.99%
		ZMB	1992	-2.64%	3.84%	6.48%			not identified	
		UGA	**1992**	1.76%	4.77%	3.01%	**1992**	0.77%	4.30%	3.53%
		AGO	**1993**	-0.64%	5.51%	6.15%	**1993**	-0.94%	4.64%	5.58%
		LBR	1994	26.98%	20.56%	47.54%			not identified	
		SDN	**1994**	-0.58%	4.02%	4.60%	**1993**	-0.34%	3.57%	3.91%
		MOZ	**1995**	-0.25%	6.19%	6.44%	**1993**	1.81%	3.96%	2.15%
		BWA	**1995**	1.59%	4.69%	3.10%	**1996**	0.66%	3.72%	3.06%
		TCD	**1997**	-0.34%	5.76%	6.10%	**1999**	0.12%	8.70%	8.58%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		NGA	1997	-0.89%	4.90%	5.79%			not identified	
		RWA	**1997**	-5.03%	4.43%	9.46%	**1997**	-5.01%	3.61%	8.62%
		TZA	1997	-1.99%	3.81%	5.80%			not identified	
		SLE	**1998**	-7.48%	6.37%	13.85%	**1999**	-12.75%	7.33%	20.08%
		SDN	**1999**	1.93%	4.57%	2.64%	**1998**	1.82%	4.40%	2.58%
	2000s	MOZ	**2000**	4.42%	6.51%	2.09%	**1998**	1.78%	5.19%	3.41%
		NAM	2001	0.53%	4.09%	3.56%			data not available	
		AGO	**2002**	1.26%	12.42%	11.16%	**2001**	4.25%	11.24%	6.99%
		TCD	2002	0.77%	5.18%	4.41%			data not available	
		MRT	2002	0.24%	3.94%	3.70%			data not available	
		NGA	**2002**	2.09%	5.07%	2.98%	**2001**	0.62%	4.61%	3.39%
		RWA	2002	2.29%	4.53%	2.24%			data not available	
		STP	2002	-1.55%	3.96%	5.51%			data not available	
		TZA	**2002**	2.41%	5.14%	2.73%	**2000**	0.10%	4.13%	4.03%
		ZAR	2003	-4.88%	3.76%	8.64%			data not available	
		ETH	2003	0%	7.64%	7.64%			not identified	
		MWI	2003	-1.49%	5.56%	7.05%			data not available	
		SYC	2003	-0.38%	5.26%	5.64%			data not available	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		SLE	2003	1.93%	4.94%	3.01%			data not available	
		ZMB	**2003**	1.05%	6.39%	5.34%	**2001**	-0.08%	3.76%	3.84%
Southern Asia	1950s/60s	PAK	**1958**	-0.05%	3.74%	3.79%	**1959**	0.64%	3.59%	2.95%
		PAK	1963	1.44%	3.72%	2.28%			not identified	
		AFG			not identified		1977	0.70%	3.97%	3.27%
	1970s	MDV	1977	-1.25%	8.49%	9.74%			not identified	
		BTN	1977	-0.85%	3.74%	4.58%			data not available	
	1990s	BTN	1991	2.35%	6.30%	3.95%			data not available	
		AFG			not identified		1993	-7.10%	3.51%	10.61%
		IND	1994	1.92%	3.99%	2.07%			not identified	
		BTN	1996	4.35%	6.97%	2.62%			data not available	
		MDV	1997	3.80%	5.92%	2.12%			data not available	
		AFG	1998	-8.66%	8.64%	17.30%			not identified	
		PAK	**2001**	0.77%	3.79%	3.02%	**2001**	0.44%	3.64%	3.20%
		AFG	**2003**	1.92%	6.20%	4.28%	**2001**	2.35%	7.19%	4.84%
		IND	**2003**	3.88%	6.67%	2.79%	**2001**	4.04%	6.29%	2.25%
Central Asia	1970s	MNG	1977	2.57%	4.58%	2.01%			not identified	
	1990s	UZB	1998	-3.20%	3.66%	6.86%			not identified	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
	2000s	KAZ	**2000**	-2.48%	11.35%	13.83%	**2000**	0.21%	9.25%	9.04%
		TJK	**2000**	-6.23%	6.56%	12.79%	**1999**	-10.92%	7.00%	17.92%
		MNG	2001	2.03%	6.38%	4.35%			not identified	
		TKM	2003	2.94%	8.60%	5.66%			data not available	
		UZB	**2003**	2.70%	6.71%	4.01%	**2001**	1.94%	5.78%	3.84%
Eastern Asia	1950s/60s	SGP			data not available		1960	-0.47%	3.80%	4.27%
		THA	**1959**	0.31%	4.75%	4.44%	**1961**	2.71%	5.07%	2.36%
		TWN	**1961**	3.49%	6.91%	3.42%	**1961**	2.81%	6.66%	3.85%
		KOR	**1962**	0.40%	6.24%	5.84%	**1960**	1.97%	4.39%	2.42%
		CHN	**1962**	0.36%	3.60%	3.24%	**1961**	1.25%	4.09%	2.84%
		TWN	**1961**	3.49%	6.91%	3.42%	**1961**	2.81%	6.66%	3.85%
		IDN	**1967**	-0.68%	8.13%	8.81%	**1965**	0.09%	4.92%	4.83%
		SGP	**1967**	2.29%	9.92%	7.63%	**1966**	3.44%	10.60%	7.16%
		MYS	**1967**	3.52%	8.29%	4.77%	**1967**	2.76%	5.38%	2.62%
		KOR	**1962**	0.40%	6.24%	5.84%	**1960**	1.97%	4.39%	2.42%
	1970s	CHN	1967	2.45%	4.72%	2.27%			not identified	
		PHL	1970	1.40%	4.24%	2.84%			not identified	
		IDN			not identified		1970	2.12%	4.95%	2.83%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		MYS		not identified			1972	3.47%	5.48%	2.01%
		CHN	**1976**	3.70%	6.66%	2.96%	**1976**	2.40%	5.40%	3.00%
		LKA		not identified			1977	1.18%	3.87%	2.69%
		LAO	1978	2.07%	4.99%	2.92%			not identified	
	1980s	CHN	**1981**	5.57%	10.48%	4.91%	**1981**	4.36%	7.39%	3.03%
		KOR	1981	6.16%	8.25%	2.09%			not identified	
		THA	**1983**	4.17%	6.72%	2.55%	**1983**	4.11%	7.07%	2.96%
		IDN		not identified			1984	2.10%	4.32%	2.22%
		TWN	1985	4.70%	7.28%	2.58%			not identified	
		MYS	1985	3.57%	5.82%	2.25%	1988	1.67%	6.74%	5.07%
		KOR	**1986**	5.91%	8.15%	2.24%	**1984**	4.45%	8.21%	3.76%
		THA	**1988**	4.35%	7.79%	3.44%	**1988**	4.76%	7.50%	2.74%
		IDN	**1988**	3.24%	5.83%	2.59%	**1989**	3.25%	6.02%	2.77%
		VNM	1988	3.16%	5.37%	2.21%	1991	2.39%	6.57%	4.18%
		SGP	**1989**	3.24%	5.81%	2.57%	**1987**	3.46%	5.65%	2.19%
		LKA	1989	2.24%	4.73%	2.49%			not identified	
	1990s	MYS	**1990**	2.55%	7.31%	4.76%	**1988**	1.67%	6.74%	5.07%
		CHN	1993	5.65%	8.02%	2.37%			not identified	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		MAC	1998	0.73%	7.62%	6.89%			data not available	
		THA	**2000**	-0.35%	4.34%	4.69%	**2000**	0.67%	4.47%	3.80%
		HKG	2001	0.50%	4.82%	4.33%			data not available	
		CHN	2002	7.50%	10.12%	2.62%	1999	5.48%	9.61%	4.13%
		IDN	**2002**	-1.05%	3.81%	4.86%	**2001**	-0.33%	3.97%	4.30%
		LKA	2002	2.74%	4.97%	2.23%			data not available	
		LAO	**2003**	3.05%	8.35%	5.30%	**2001**	2.30%	4.32%	2.02%
		MAC	2003	1.13%	7.63%	6.50%			data not available	
		SGP	2003	1.44%	5.56%	4.12%			data not available	
Europe	1950s/60s	ISL	1960	2.84%	5.92%	3.08%			data not available	
		ROM		data not available			1960	3.62%	5.80%	2.18%
		LUX	1967	1.85%	4.68%	2.83%			data not available	
	1970s	ISL	1969	3.09%	5.15%	2.06%			data not available	
	1980s	ROM	1970	6.76%	9.36%	2.60%			not identified	
		LUX	1981	0.85%	5.11%	4.26%			data not available	
		MLT	1985	2.77%	5.22%	2.45%			data not available	
		LUX	1986	3.05%	5.70%	2.65%			data not available	
	1990s	ALB	**1991**	-3.82%	4.80%	8.62%	**1992**	-5.03%	5.84%	10.87%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		SVK	1994	-4.45%	3.77%	8.22%		data not available		
		BGR	**1996**	-2.13%	3.78%	5.91%	**1996**	-2.50%	4.27%	6.77%
		ALB	**1996**	-1.39%	3.58%	4.97%	**1997**	1.18%	6.37%	5.19%
		ROM	1997	-0.29%	4.57%	4.86%		not identified		
		AZE		data not available			1997	-14.97%	9.20%	24.17%
		RUS	**1997**	-7.17%	5.96%	13.13%	**1998**	-6.70%	6.92%	13.62%
		SRB	1998	-4.43%	3.75%	8.18%		data not available		
		MDA	**1999**	-4.95%	6.67%	11.62%	**1999**	-7.62%	6.45%	14.07%
		MNE	**1999**	2.47%	4.79%	2.32%	**1999**	-0.54%	5.03%	5.57%
	2000s	ARM	**2000**	6.02%	11.19%	5.17%	**2000**	5.91%	12.50%	6.59%
		LVA	2000	5.04%	8.88%	3.84%		data not available		
		UKR	**2000**	-4.51%	9.16%	13.67%	**1999**	-9.44%	8.21%	17.65%
		ALB	2001	3.08%	9.24%	6.16%		not identified		
		BGR	**2001**	0.61%	6.41%	5.80%	**2001**	1.13%	6.63%	5.50%
		LTU	**2001**	3.98%	7.63%	3.65%	**2000**	3.43%	7.90%	4.47%
		SVK	**2001**	3.77%	6.14%	2.37%	**2001**	3.46%	6.31%	2.85%
		AZE	2002	8.27%	16.77%	8.50%		data not available		
		MKD	**2002**	1.34%	4.10%	2.76%	**2001**	1.34%	3.68%	2.34%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		MNE	2002	3.67%	5.69%	2.02%			data not available	
		ROM	**2002**	1.80%	6.22%	4.42%	**2001**	-0.20%	6.25%	6.45%
		RUS	2002	2.71%	6.61%	3.90%			data not available	
		SRB	2003	1.67%	4.65%	2.98%			data not available	
Latin	1950s/60s	NIC	**1960**	-0.22%	5.61%	5.83%	**1960**	0.49%	5.49%	5.00%
America and		PAN	1960	0.45%	4.73%	4.28%			not identified	
Caribbean		PER	**1960**	1.05%	4.18%	3.13%	**1960**	1.48%	3.61%	2.13%
		MEX	1962	1.89%	4.17%	2.28%			not identified	
		GTM	1962	1.56%	3.67%	2.11%			not identified	
		ARG	**1963**	1.05%	3.59%	2.54%	**1963**	0.67%	3.58%	2.91%
		DOM	**1965**	2.95%	4.95%	2.00%	**1965**	0.97%	4.81%	3.84%
		ECU	1966	1.13%	4.08%	2.94%			not identified	
		BRA	**1967**	3.04%	7.88%	4.85%	**1967**	0.88%	6.90%	6.02%
		COL	**1967**	1.43%	3.84%	2.41%	**1967**	1.54%	3.82%	2.28%
		GTM	1967	2.34%	4.43%	2.09%			not identified	
	1970s	PRY	**1969**	1.13%	3.73%	2.60%	**1969**	1.34%	3.54%	2.20%
		DOM	**1970**	0.34%	5.15%	4.81%	**1970**	0.81%	5.17%	4.36%
		ECU	1971	1.74%	6.87%	5.13%			not identified	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		HTI	1973	-0.64%	4.16%	4.80%			data not available	
		URY	**1973**	1.20%	5.22%	4.02%	**1973**	0.60%	3.75%	3.15%
		TTO	1973	3.81%	6.46%	2.65%			data not available	
		PRY	**1974**	2.77%	7.35%	4.58%	**1974**	2.63%	7.41%	4.77%
		CHL	**1975**	-1.72%	4.34%	6.06%	**1975**	-1.96%	3.97%	5.93%
		PAN	**1975**	2.15%	6.29%	4.14%	**1976**	1.78%	4.32%	2.54%
		VCT	1977	-1.23%	3.96%	5.19%			data not available	
		ATG	1977	1.48%	6.44%	4.96%			data not available	
		CUB	1977	3.60%	5.64%	2.04%	1971	-0.25%	3.63%	3.88%
		BHS	1978	-4.29%	3.74%	8.03%			data not available	
	1980s	PRI	**1982**	1.21%	5.64%	4.43%	**1983**	1.29%	4.40%	3.11%
		ATG	1982	4.45%	7.36%	2.91%			data not available	
		LCA	1983	1.31%	7.88%	6.57%			data not available	
		KNA	1983	4.83%	8.48%	3.65%			data not available	
		VCT	1984	3.96%	7.22%	3.26%			data not available	
		BLZ	1983	1.77%	5.16%	3.39%			data not available	
		GRD	1983	3.80%	6.82%	3.02%			data not available	
		VCT	1984	3.96%	7.22%	3.26%			data not available	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		CHL	**1985**	-1.54%	5.98%	7.52%	**1985**	-1.14%	5.55%	6.69%
		JAM	**1986**	-0.81%	4.50%	5.31%	**1985**	-1.28%	3.83%	5.11%
		GUY	1988	-4.05%	3.70%	7.75%			data not available	
		BLZ	1988	0.82%	3.92%	3.10%			data not available	
		ARG	**1989**	-0.86%	3.51%	4.37%	**1989**	-1.15%	3.99%	5.14%
	1990s	SLV	1990	0.39%	4.07%	3.68%			not identified	
		DOM	**1990**	0.64%	4.15%	3.51%	**1991**	1.05%	3.65%	2.60%
		CHL	**1990**	4.58%	7.05%	2.47%	**1990**	4.28%	6.42%	2.14%
		URY	1990	2.82%	5.01%	2.19%			not identified	
		PER	**1991**	-3.48%	3.95%	7.43%	**1991**	-3.65%	4.20%	7.85%
		TTO	1993	-1.27%	4.48%	5.75%			data not available	
		BRB	1993	-1.48%	3.72%	5.20%			data not available	
		BHS	1993	-1.19%	3.89%	5.08%			data not available	
		GRD	1993	3.32%	8.31%	4.99%			data not available	
		GUY	1993	-0.76%	3.72%	4.48%			data not available	
		DOM	**1995**	2.29%	4.42%	2.12%	**1996**	1.36%	4.31%	2.95%
		PRI	1995	2.31%	4.35%	2.04%			not identified	
		CUB	1997	-3.67%	3.66%	7.33%	1994	-7.99%	4.04%	12.03%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		BLZ	1998	1.53%	3.73%	2.20%			data not available	
	2000s	BMU	2000	1.69%	5.42%	3.73%			data not available	
		KNA	2000	2.52%	4.53%	2.01%			data not available	
		SUR	2000	1.51%	7.19%	5.68%			data not available	
		COL	**2001**	-0.83%	3.59%	4.42%	**2001**	-0.89%	3.59%	4.48%
		CRI	2001	1.88%	3.90%	2.02%			not identified	
		LCA	2001	1.26%	3.71%	2.45%			data not available	
		TTO	2001	4.44%	10.31%	5.86%			data not available	
		ARG	**2002**	-0.62%	5.81%	6.43%	**2001**	0.40%	5.62%	5.22%
		CUB	**2002**	3.14%	6.15%	3.01%	**2001**	4.04%	6.73%	2.69%
		VEN	**2002**	-1.28%	4.34%	5.62%	**2001**	-0.60%	4.68%	5.28%
		DMA	2003	1.59%	3.60%	2.01%			data not available	
		DOM	2003	3.19%	5.80%	2.61%			data not available	
		GUY	2003	1.30%	4.40%	3.10%			data not available	
		PAN	2003	1.25%	6.79%	5.54%			data not available	
		PER	**2003**	0.94%	5.68%	4.74%	**2001**	1.39%	5.02%	3.63%
		URY	**2003**	-1.90%	5.99%	7.89%	**2001**	0.61%	4.97%	4.36%

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
Middle East	1950s/60s	IRN		not identified			1958	1.60%	4.74%	3.14%
		EGY		not identified			1958	0.58%	3.66%	3.08%
		SAU		data not available			1958	4.41%	7.61%	3.20%
		CYP	1960	1.31%	5.29%	3.98%			not identified	
		OMN		data not available			1960	4.01%	6.02%	2.01%
		QAT		data not available			1964	-2.59%	4.71%	7.30%
		CYP	1965	2.77%	6.10%	3.33%			not identified	
		TUR	**1965**	1.03%	3.64%	2.61%	**1965**	1.96%	4.04%	2.08%
		OMN		data not available			1965	3.47%	21.35%	17.88%
		IRN	**1966**	5.80%	10.69%	4.89%	**1964**	4.82%	8.59%	3.77%
		ISR	**1966**	4.75%	7.86%	3.11%	**1967**	4.37%	6.67%	2.30%
		SYR	**1968**	0.38%	4.28%	3.90%	**1966**	1.55%	4.35%	2.80%
	1970s	EGY		not identified			1970	0.87%	4.58%	3.71%
		JOR		not identified			1970	-1.92%	4.36%	6.28%
		SYR	**1973**	2.30%	4.51%	2.21%	**1971**	1.01%	6.84%	5.83%
		IRQ		data not available			1972	0.80%	9.53%	8.73%
		JOR	**1975**	-4.21%	9.54%	13.75%	**1975**	-0.90%	8.40%	9.30%

TABLE I (continued)

EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		EGY	1975	0.10%	5.20%	5.10%	1975	2.45%	5.87%	3.42%
		OMN		data not available			1977	2.85%	4.90%	2.05%
		CYP	1978	0.85%	4.23%	3.38%			not identified	
		LBN	1980	-9.60%	8.83%	18.43%			not identified	
		EGY	1981	4.52%	6.54%	2.02%			not identified	
		OMN		not identified			1982	0.60%	4.50%	3.90%
		IRN	**1987**	-1.78%	3.81%	5.59%	**1988**	-2.39%	3.63%	6.02%
		LBN	**1989**	4.04%	9.90%	5.86%	**1991**	-6.34%	4.17%	10.51%
	1990s	SYR	**1990**	-2.51%	4.86%	7.37%	**1989**	-2.55%	4.63%	7.18%
		IRQ	**1994**	-14.15%	14.06%	28.21%	**1995**	-16.98%	5.21%	22.19%
		QAT	**1994**	0.90%	6.23%	5.33%	**1994**	-1.52%	5.52%	7.04%
		JOR	**1999**	0.55%	3.72%	3.17%	**2001**	0.14%	4.61%	4.47%
	2000s	IRN	**2000**	1.68%	4.16%	2.48%	**2001**	2.81%	6.12%	3.31%
		GEO	**2001**	5.90%	8.07%	2.17%	**2001**	6.27%	8.51%	2.24%
		KWT	**2001**	-3.07%	5.86%	8.93%	**2001**	-4.14%	4.45%	8.59%
		SAU	2001	-0.43%	3.76%	4.19%			not identified	
		TUR	**2001**	1.91%	4.90%	2.99%	**2001**	1.25%	4.96%	3.71%
		IRQ	2003	2.41%	6.83%	4.42%			data not available	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		LBN	2003	0.28%	4.73%	4.45%			data not available	
		OMN	2003	1.35%	3.90%	2.55%			data not available	
		QAT	**2003**	3.62%	12.05%	8.43%	**2001**	5.52%	8.26%	2.74%
North Africa	1950s/60s	MAR	1957	-3.09%	9.13%	12.22%			not identified	
		LBY		data not available			1958	6.81%	19.93%	13.12%
		TUN		not identified			1959	0.00%	4.30%	4.30%
		LBY		data not available			1963	12.56%	14.70%	2.14%
		TUN	**1968**	2.84%	5.24%	2.40%	**1967**	3.00%	5.65%	2.65%
		LBY		data not available			1973	1.06%	3.68%	2.62%
		LBY	**2001**	-1.48%	4.23%	5.71%	**2001**	-0.13%	3.80%	3.93%
		MAR	2001	1.84%	3.93%	2.09%			not identified	
Oceania	1950s/60s	FJI	1967	0.79%	5.93%	5.14%			data not available	
	1970s	TON	1977	1.33%	8.95%	7.62%			not identified	
	1980s	VUT	1980	1.23%	3.70%	2.47%			data not available	
		PLW	1982	-0.11%	3.70%	3.81%			data not available	
		PNG	1989	0.63%	5.73%	5.10%			data not available	
		FSM	1989	1.51%	3.90%	2.39%			data not available	
	1990s	WSM	1998	1.68%	4.17%	2.49%			data not available	

TABLE I (continued)
EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
	2000s	SLB	2001	-6.01%	6.11%	12.12%			data not available	
		VUT	2003	-1.82%	4.03%	5.85%			data not available	
OECD	1950s/60s	JPN	**1957**	6.36%	8.74%	2.38%	**1957**	6.69%	8.76%	2.07%
		IRL	**1957**	1.26%	4.41%	3.15%	**1958**	1.34%	3.93%	2.59%
		DNK	**1957**	1.96%	4.93%	2.97%	**1957**	1.79%	3.94%	2.15%
		BEL	**1958**	2.31%	4.61%	2.30%	**1958**	2.16%	4.25%	2.08%
		NZL	1958	1.83%	4.01%	2.18%			not identified	
		FIN	1958	2.76%	4.91%	2.15%			not identified	
		PRT	**1958**	3.60%	5.74%	2.14%	**1959**	3.45%	5.80%	2.35%
		ESP	1959	4.31%	8.03%	3.72%			not identified	
		NOR	1960	2.02%	4.02%	2.00%			not identified	
		USA	**1961**	0.68%	3.95%	3.27%	**1961**	1.10%	3.88%	2.78%
		CAN	**1962**	0.74	3.59%	2.85%	**1962**	1.23%	3.59%	2.36%
		AUS	1962	1.72%	3.74%	2.02%			not identified	
		GRC	1963	4.98%	7.47%	2.49%	1960	4.74%	6.78%	2.04%
		PRT	1966	5.55%	7.91%	2.36%			not identified	
	1980s	GBR	**1982**	1.35%	4.51%	3.16%	**1982**	1.23%	3.52%	2.29%
		PRT	**1984**	1.43%	5.90%	4.47%	**1984**	1.96%	5.10%	3.14%

TABLE I (continued)

EPISODES OF GROWTH SPURTS, BY REGION, DECADE AND MAGNITUDE (PWT 7.1 AND MADDISON DATASET)

			PWT 7.1				Maddison			
Region	Decade	Country	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration	Year (t)	growth before g(t-7,t)	growth after g(t,t+7)	magnitude of acceleration
		ESP	**1984**	0.26%	4.18%	3.92%	**1984**	1.05%	3.97%	2.92%
		IRL	**1985**	-0.02%	4.18%	4.20%	**1985**	1.57%	4.61%	3.04%
	1990s	POL	**1990**	1.00%	4.05%	3.05%	**1991**	-2.12%	5.21%	7.33%
		IRL	**1991**	3.96%	6.65%	2.69%	**1993**	4.58%	7.94%	3.36%
		NOR	**1991**	1.61%	4.20%	2.59%	**1991**	1.62%	3.64%	2.02%
		FIN	**1993**	-0.73%	4.80%	5.53%	**1994**	-1.08%	4.28%	5.36%
		GBR	1993	1.54%	3.82%	2.28%			not identified	
		HUN			not identified		1993	-3.71%	3.65%	7.36%
		POL	**1995**	-0.20%	4.15%	4.35%	**1996**	1.37%	3.64%	2.27%
		IRL	1996	4.20%	6.62%	2.42%			not identified	
		GRC	**1997**	0.96%	3.95%	2.99%	**1998**	1.42%	3.96%	2.54%
		EST	**1999**	5.35%	7.86%	2.50%	**1999**	4.47%	7.89%	3.42%
		HUN	**1999**	1.80%	4.31%	2.51%	**1998**	1.93%	4.60%	2.67%
	2000s	CZE	**2001**	2.14%	5.02%	2.87%	**2001**	1.82%	4.90%	3.08%

TABLE Ⅱ
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (PWT 8.0)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
Sub-Saharan Africa	1950s / 60s	NGA	**1957**	3.665	6.416	2.751
		UGA	1958	1.888	4.853	2.965
		KEN	1961	2.296	5.801	3.505
		ZAF	1961	4.098	6.137	2.039
		MWI	**1962**	3.591	9.145	5.554
		ZMB	**1962**	3.258	8.665	5.407
		UGA	1963	2.899	5.322	2.423
		ZWE	**1964**	3.557	6.988	3.431
		COD	1967	1.893	4.696	2.803
		COG	**1967**	3.322	8.884	5.562
		CPV	**1967**	3.440	5.557	2.117
		MWI	**1967**	6.971	10.222	3.251
		NGA	**1967**	-0.761	10.377	11.138
		RWA	1967	-1.942	3.625	5.567
		CMR	1967	2.314	4.692	2.378
		GAB	**1968**	8.355	13.950	5.595
		MUS	**1968**	0.978	5.808	4.830
		BWA	1969	6.653	15.633	8.980
		MLI	**1969**	0.183	4.176	3.993
		ZWE	**1969**	2.437	5.412	2.975
		GNQ	**1970**	2.160	4.261	2.101
		LSO	**1971**	2.045	10.738	8.693
		GNB	1971	-3.917	3.734	7.651
		MUS	**1972**	0.228	8.023	7.795
		CMR	**1972**	2.221	8.346	6.125
		NER	1973	-1.361	4.896	6.257
		RWA	**1974**	3.625	8.318	4.693
		COM	1974	2.710	4.804	2.094
		KEN	1975	3.355	5.624	2.269
	1970s	CPV	**1976**	0.278	5.036	4.758
		COG	**1977**	3.872	12.947	9.075
		ZWE	1977	2.376	4.923	2.547
		BEN	**1978**	2.020	5.757	3.737
		TCD	**1979**	0.502	6.164	5.662
	1980s	CPV	**1981**	1.567	5.367	3.800
		AGO	1982	-1.417	4.400	5.817

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		GHA	1982	-0.034	4.680	4.714
		SWZ	**1984**	2.564	8.601	6.037
		GNB	1983	-1.605	4.004	5.609
		MLI	1983	2.400	4.711	2.311
		MUS	**1983**	1.480	7.225	5.745
		TGO	1983	-0.144	3.865	4.009
		SDN	1984	-0.519	4.470	4.989
		TCD	**1984**	-1.223	4.282	5.505
		GIN	1984	1.568	4.016	2.448
		TZA	**1986**	1.212	4.326	3.114
		UGA	**1986**	1.806	6.097	4.291
		GHA	1987	1.425	4.354	2.929
		LSO	**1987**	3.071	5.247	2.176
		NGA	1987	-3.467	3.977	7.444
		BEN	1989	2.519	4.532	2.013
		SDN	1989	2.813	4.853	2.040
		ETH	1990	2.005	4.052	2.047
		NAM	1990	2.085	4.236	2.151
		GAB	1991	1.313	3.628	2.315
		CPV	**1991**	4.162	6.712	2.550
		UGA	**1991**	5.224	7.509	2.285
	1990s	AGO	**1992**	1.829	5.095	3.266
		GNQ	**1992**	1.735	25.686	23.951
		LBR	**1992**	-17.366	12.922	30.288
		MOZ	**1992**	3.205	8.719	5.514
		NER	1992	0.497	3.857	3.360
		CIV	1992	2.289	4.592	2.303
		TGO	1993	1.055	3.935	2.880
		BEN	1994	2.970	5.258	2.288
		MDG	1994	0.660	3.791	3.131
		RWA	**1994**	-6.403	10.985	17.388
		SEN	1994	1.123	4.675	3.552
		ETH	1995	-0.378	4.066	4.444
		CPV	1996	4.905	7.286	2.381
		BWA	**1996**	4.585	7.296	2.711

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		SDN	**1996**	4.853	7.153	2.300
		TCD	**1996**	3.178	5.483	2.305
		AGO	1997	0.126	5.345	5.219
		GNQ	**1997**	16.934	23.995	7.061
		LBR	**1997**	-12.381	4.814	17.195
		MOZ	**1997**	5.510	7.660	2.150
		NGA	**1997**	1.423	8.296	6.873
		SLE	**1997**	-9.047	8.531	17.578
		CMR	1997	0.485	4.108	3.623
		GMR	1997	2.308	4.520	2.212
		ZMB	1998	0.153	4.188	4.035
		COG	1999	0.803	4.279	3.476
		RWA	**1999**	1.659	7.307	5.648
		STP	**1999**	1.775	4.255	2.480
		COD	2001	-3.405	6.002	9.407
		MRT	**2001**	2.273	6.773	4.500
		NAM	**2001**	3.320	5.841	2.521
		TCD	**2001**	3.429	9.301	5.872
		TZA	**2001**	4.258	6.976	2.718
		KEN	**2002**	2.123	4.792	2.669
		MDG	**2002**	2.786	4.960	2.174
		NGA	**2002**	4.959	7.021	2.062
		SLE	**2002**	-1.906	5.577	7.483
	2000s	COG	**2003**	2.770	4.878	2.108
		ZMB	**2003**	2.728	5.927	3.199
		ETH	**2004**	3.964	10.367	6.403
		GHA	**2004**	4.581	6.700	2.119
		LBR	**2004**	4.814	8.188	3.374
		MWI	**2004**	0.854	6.908	6.054
		STP	**2004**	2.867	5.917	3.050
Southern Asia	1950s / 60s	PAK	**1958**	2.764	5.678	2.914
		PAK	**1963**	3.893	6.793	2.900
	1970s	BTN	**1977**	2.862	6.199	3.337
		MDV	**1977**	1.593	11.345	9.752
		PAK	**1977**	3.977	6.557	2.580
		IND	**1982**	3.474	5.683	2.209

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
	1980s	BTN	1983	6.291	11.864	5.573
		NPL	1983	2.543	5.046	2.503
		BTN	**1998**	5.274	7.516	2.242
		PAK	**2001**	3.141	5.609	2.468
	2000s	AGO	**2002**	4.994	14.136	9.142
		IND	**2004**	5.615	7.672	2.057
Central Asia	1990s	MNG	**1997**	-0.593	4.118	4.711
		TJK	**1997**	-18.113	8.263	26.376
		UZB	**1997**	-2.667	4.481	7.148
		KAZ	**1997**	-7.364	8.015	15.379
		KGZ	**1997**	-9.317	4.156	13.473
		TKM	**1998**	-5.953	5.132	11.085
	2000s	MNG	**2002**	2.965	7.674	4.709
		TJK	**2002**	3.902	7.361	3.459
		KAZ	**2002**	4.716	7.670	2.954
		TKM	**2004**	5.426	10.622	5.196
		UZB	**2004**	4.481	8.053	3.572
Eastern Asia	1950s / 60s	LKA	**1957**	1.246	5.618	4.372
		THA	**1959**	3.542	7.792	4.250
		KOR	**1961**	3.954	7.097	3.143
		TWN	**1961**	6.725	9.524	2.799
		LKA	**1962**	3.675	5.706	2.031
		THA	**1965**	7.912	11.799	3.887
		CHN	**1966**	2.741	5.506	2.765
		IDN	**1967**	2.302	6.973	5.461
		KOR	**1967**	6.352	9.932	3.580
		MYS	**1967**	6.054	10.080	4.026
		SGP	**1967**	6.258	11.629	5.371
		IDN	**1972**	4.739	7.165	2.426
	1970s	CHN	**1976**	5.468	7.942	2.474
		LKA	**1976**	3.470	5.787	2.317
		LAO	**1979**	2.530	7.266	4.736
		KHM	**1980**	-6.113	4.668	10.781
	1980s	CHN	**1981**	6.688	11.094	4.406
		KOR	**1982**	7.276	9.973	2.697
		THA	**1983**	6.242	8.560	2.318

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		PHL	1985	1.066	3.676	2.610
		KHM	**1985**	-0.128	7.544	7.672
		MYS	**1988**	4.123	8.939	4.816
		SGP	**1988**	5.704	8.565	2.861
		THA	**1988**	6.375	8.839	2.464
		IDN	**1989**	5.572	7.573	2.001
	1990s	CHN	**1991**	8.238	10.749	2.511
		LAO	1991	4.097	6.436	2.339
		VNM	**1991**	4.335	8.229	3.894
		KHM	**1996**	5.635	7.753	2.118
		MAC	**1999**	0.598	11.199	10.601
		THA	**2000**	1.799	5.402	3.603
	2000s	CHN	**2002**	8.121	10.772	2.651
		HKG	**2001**	2.058	5.616	3.558
		KHM	**2001**	6.892	9.580	2.688
		LKA	**2003**	3.835	6.050	2.215
		SGP	**2003**	3.843	6.170	2.327
		IDN	**2004**	2.341	5.625	3.284
		MAC	**2004**	6.010	10.927	4.917
Europe	1950s / 60s	ISL	**1960**	4.962	7.029	2.067
		MLT	1962	2.247	6.513	4.266
		LUX	**1967**	2.994	5.203	2.209
		MLT	1967	2.888	7.407	4.519
		ROU	1969	7.942	10.477	2.535
	1970s	ISL	**1971**	2.952	5.282	2.330
		MLT	1972	7.648	12.722	5.074
		LUX	**1980**	1.231	3.958	2.727
		LUX	**1985**	2.041	6.838	4.797
		MLT	**1988**	2.683	5.564	2.881
		ISL	1994	0.063	4.342	4.279
	1990s	ALB	**1997**	1.869	7.126	5.257
		ARM	**1997**	-7.134	9.020	16.154
		AZE	1997	-14.174	9.599	23.773
		BGR	**1997**	-3.118	4.543	7.661
		RUS	**1997**	-8.036	5.488	13.524
		SVN	1997	1.544	3.769	2.225

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		UKR	1997	-14.035	5.695	19.730
		MDA	**1998**	-11.309	5.272	16.581
		ROU	1998	1.128	4.580	3.452
		LTU	**2000**	3.361	7.779	4.418
		LVA	**2000**	4.307	8.509	4.202
		SRB	**2000**	2.028	5.058	3.030
		SVK	**2001**	3.507	6.471	2.964
	2000s	ARM	**2002**	6.315	9.186	2.871
		AZE	**2002**	8.031	18.280	10.249
		BGR	**2002**	1.447	5.186	3.739
		MKD	**2002**	1.909	4.252	2.343
		RUS	**2002**	2.887	5.688	2.801
		UKR	**2002**	1.013	4.591	3.578
		MDA	2003	1.628	4.059	2.431
		MNE	**2003**	2.875	4.909	2.034
		ROU	2003	1.631	3.937	2.306
Latin America and Caribbean	1950s / 60s	CHL	1959	2.747	4.890	2.143
		PAN	**1959**	5.373	7.569	2.196
		PER	**1959**	4.346	6.601	2.255
		BOL	1959	-0.186	4.992	5.178
		SLV	1960	3.782	6.575	2.793
		MEX	**1962**	5.174	7.234	2.060
		HND	1963	2.608	4.999	2.391
		VEN	1963	3.646	5.670	2.024
		ARG	**1964**	2.479	4.541	2.062
		DOM	**1965**	6.157	8.193	2.036
		PAN	1965	7.513	9.696	2.183
		BRA	**1967**	5.933	10.205	4.272
		COL	**1967**	4.406	6.466	2.060
		ECU	**1967**	4.309	9.084	4.775
		PRY	**1969**	3.940	6.898	2.958
		DOM	**1970**	3.921	7.788	3.867
		BOL	1970	1.443	5.364	3.921
		ECU	**1972**	5.402	7.896	2.494
		HND	1974	3.702	6.300	2.598
		PRY	**1974**	5.822	9.645	3.823

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		URY	**1974**	1.760	4.276	2.516
		CHL	**1975**	-0.124	5.566	5.690
		TTO	**1975**	2.924	6.858	3.934
	1970s	ATG	**1977**	1.952	5.443	3.491
		PAN	**1977**	3.413	6.197	2.784
		BHS	**1979**	1.484	4.161	2.677
	1980s	DMA	1980	2.838	4.843	2.005
		VCT	**1980**	2.715	5.636	2.921
		ATG	**1982**	4.671	7.535	2.864
		LCA	**1982**	4.068	8.626	4.558
		BLZ	**1983**	2.929	7.364	4.435
		CRI	1983	1.329	4.275	2.946
		GRD	**1983**	3.165	6.306	3.141
		KNA	1983	4.759	6.772	2.013
		CHL	**1984**	1.770	6.375	4.605
		GTM	1986	-0.725	3.746	4.471
		HND	1986	1.391	3.763	2.372
		JAM	1986	-0.176	4.942	5.118
		SLV	1986	-2.135	3.532	5.667
		ECU	1987	1.445	3.631	2.186
		MEX	1987	0.585	3.633	3.048
		BLZ	**1988**	3.267	5.938	2.671
		CRI	1988	3.196	5.283	2.087
		URY	**1988**	1.005	3.798	2.793
		BOL	1988	-1.157	3.964	5.121
		CHL	**1989**	4.950	7.782	2.832
		DOM	**1990**	2.819	5.751	2.932
	1990s	ARG	**1991**	-0.203	4.536	4.739
		PAN	**1991**	1.672	4.228	2.556
		PER	**1991**	-1.537	5.694	7.231
		SLV	**1991**	1.989	5.054	3.065
		BHS	**1993**	0.133	4.864	4.731
		BMU	**1994**	-0.323	4.057	4.380
		GRD	**1994**	2.882	5.829	2.947
		DOM	**1995**	3.683	5.830	2.147
		TTO	**1995**	0.863	6.900	6.037

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		BLZ	**1997**	3.868	7.127	3.259
		SUR	**1998**	0.811	3.937	3.126
		TTO	**2000**	6.526	8.532	2.006
	2000s	ATG	2001	3.364	6.719	3.355
		COL	**2001**	1.207	4.960	3.753
		ECU	2001	1.552	5.014	3.462
		LCA	**2001**	2.061	4.146	2.085
		PRY	2001	0.555	3.960	3.405
		DMA	**2002**	1.309	3.833	2.524
		VEN	**2002**	0.096	7.235	7.139
		BRA	2003	1.833	4.183	2.350
		SUR	2003	2.563	4.625	2.062
		URY	**2003**	-1.471	5.648	7.119
		ARG	**2004**	-1.307	6.732	8.039
		DOM	**2004**	3.894	6.653	2.759
		PAN	**2004**	3.313	8.188	4.875
		PER	**2004**	2.479	6.810	4.331
		BOL	2004	2.391	4.551	2.160
Middle East	1950s / 60s	EGY	1957	2.040	5.732	3.692
		CYP	**1960**	4.110	6.429	2.319
		ISR	**1963**	8.178	12.012	3.834
		CYP	**1965**	3.118	7.871	4.753
		TUR	**1965**	3.489	5.912	2.423
		ISR	**1968**	7.137	10.775	3.638
		SYR	**1968**	3.671	8.685	5.014
		IRN	1970	6.112	8.906	2.794
		JOR	**1973**	0.128	9.788	9.660
		SYR	**1973**	6.108	8.909	2.801
	1970s	CYP	1974	4.639	7.376	2.737
		EGY	**1974**	6.273	8.451	2.178
		JOR	1978	3.967	7.185	3.218
		CYP	**1979**	1.399	5.462	4.063
		LBN	**1980**	-7.473	8.328	15.801
		TUR	1981	2.811	5.616	2.805
		KWT	1982	-4.175	3.958	8.133
		QAT	1985	-0.775	3.868	4.643

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
	1980s	IRN	**1987**	2.967	4.971	2.004
		SAU	1987	-3.931	4.623	8.554
		SYR	1987	1.011	4.180	3.169
		ISR	1989	3.578	6.213	2.635
	1990s	IRQ	1991	-5.824	15.377	21.201
		KWT	1991	-4.440	9.473	13.913
		LBN	**1991**	-6.548	4.712	11.260
		QAT	**1992**	3.868	7.884	4.016
		SYR	**1992**	1.458	5.925	4.467
		JOR	1993	0.886	3.605	2.719
		IRQ	**1996**	-4.219	5.115	9.334
		QAT	1997	4.646	6.818	2.172
		GEO	1997	-15.873	4.803	20.676
	2000s	IRN	**2000**	3.753	6.037	2.284
		KWT	2001	1.197	8.814	7.617
		SAU	**2001**	2.072	4.197	2.125
		TUR	**2001**	3.258	6.263	3.005
		JOR	**2002**	3.747	7.239	3.492
		GEO	**2002**	4.845	7.115	2.271
		QAT	**2003**	7.904	15.605	7.701
		SYR	2003	2.623	5.232	2.609
		IRQ	**2004**	2.077	5.712	3.635
		LBN	**2004**	2.940	5.799	2.859
		OMN	**2004**	2.672	6.318	3.646
North Africa	1950s / 60s	MAR	**1957**	0.795	10.224	9.429
		TUN	**1967**	4.142	11.296	7.154
	1970s	MAR	1970	3.441	5.802	2.361
	1990s	MAR	1997	1.911	4.209	2.298
Oceania	1950s / 60s	FJI	**1967**	3.418	7.416	3.998
	1980s	FJI	1987	0.852	3.985	3.133
OECD	1950s/60s	DNK	**1957**	2.690	5.449	2.759
		IRL	**1957**	0.891	4.097	3.206
		BEL	**1958**	2.884	4.962	2.078
		NZL	**1958**	4.075	6.106	2.031
		ESP	**1959**	5.167	8.836	3.669
		JPN	**1960**	6.672	9.019	2.347

TABLE Ⅱ (continued)
EPISODES OF RAPID GROWTH, BY REGION, DECADE
AND MAGNITUDE OF ACCELERATION (**PWT 8.0**)

Region	Decade	Country	Year	Growth Before	Growth After	Difference in Growth
		USA	**1961**	2.820	5.169	2.349
		IRL	1962	1.985	4.193	2.208
		GRC	**1963**	5.507	7.903	2.396
		JPN	1965	9.452	13.664	4.212
		FIN	1968	3.501	5.511	2.010
		GBR	**1982**	1.267	3.740	2.473
		POL	1982	0.259	3.599	3.340
	1980s	DEU	1985	1.426	3.550	2.124
		ESP	**1984**	1.111	4.141	3.030
		PRT	**1984**	2.316	5.315	2.999
		IRL	**1986**	1.592	4.094	2.502
		IRL	**1991**	3.595	7.236	3.641
		NOR	**1991**	1.987	4.201	2.214
		NZL	**1991**	0.831	3.688	2.857
		POL	**1991**	-0.324	5.396	5.720
		FIN	**1993**	0.314	4.484	4.170
	1990s	CAN	**1995**	1.345	3.871	2.526
		ESP	**1995**	1.926	4.022	2.096
		GRC	**1995**	1.157	3.587	2.430
		IRL	**1996**	4.989	7.948	2.959
		POL	**1996**	1.466	3.584	2.118
		EST	**1999**	3.286	7.334	4.048
		HUN	**1999**	2.044	4.083	2.039
	2000s	CZE	**2001**	2.077	5.040	2.963
		DJI	**2003**	1.962	5.751	3.789

3.3 Descriptive Statistics

My basic results on the descriptive statistics of the identified growth accelerations are as follows. First, the average magnitude of the growth accelerations highly exceeds the 2 percentage point threshold. The average magnitude is 5.19 ppa for all of the accelerations identified in PWT 7.1 and their median is 4.0 ppa. For the Maddison Dataset, the 187 identified growth accelerations have almost the exactly same average magnitude 5.0 ppa and negligibly lower median 3.8 ppa. For PWT 8.0, the average magnitude is 4.559 ppa and the median is 3.169 ppa. The average magnitudes and medians produced from the above three updated datasets are highly consistent with what are listed in HPR (2005), 4.7 ppa as the average magnitude and 4.0 ppa as the median (PWT 6.1 is used as the baseline data source in their paper).

Secondly, consistent with HPR (2005), I find that growth accelerations are "a fairly common occurrence", or even more frequent. When evaluating the unconditional probability of a growth acceleration episode, I obtain 5319 country-years in PWT 7.1 that a growth acceleration episode could have occurred. To calculate the probability of growth acceleration in PWT 7.1, 281 identified growth accelerations will be divided by the number of possible occasions, that is, 5319 country-years in the dataset. We get 5.28 percent per year as the average probability of a growth acceleration episode in our dataset, PWT 7.1. The average probability here is almost double the one obtained by HPR (2005), 2.8 percent per year. The reason that the average probability of a growth acceleration episode is so much higher in PWT 7.1 is because of the higher frequency of growth acceleration episodes identified over the extended 1993-2003 duration (121 growth accelerations versus 1651 possible country-year). The average probability of an acceleration episode over 1993-2003 in PWT 7.1 is 7.33 percent per year.

There are 187 economies in PWT 7.1 and the time horizon is from 1950 to 2010. After applying the filter of HPR (2005), we only have 41 economies (or 21.9 percent) which have no growth accelerations identified. In other words, 146 economies (or 78.1 percent) have at least one growth acceleration episode identified. For PWT 8.0, only 13 countries (7.78 percent)[15] have no growth accelerations and 154 countries (92.22 percent) have at least one growth acceleration episode. The above facts fully demonstrate that the growth acceleration is not a rare occasion.

TABLE III shows the descriptive statistics of magnitude of identified growth acceleration episodes (Δg_t) in different regions (PWT 8.0)[16]. A striking fact is that the growth acceleration episode with the highest magnitude (30.288%) is in Africa (Liberia, 1992). The maximum magnitude of growth acceleration in the other four regions are 26.376% (Tajikistan, 1997) in Asia, 23.773% (Azerbaijan, 1997) in Europe, 8.039% (Argentina, 2004) in Latin America and Caribbean, 21.201% (Iraq, 1991) in Middle East, and 5.720% (Poland, 1991) in OECD. Europe, among all the regions, has the highest mean of the magnitude of growth accelerations (5.718%). OECD has the lowest mean, 2.881%.

TABLE IV shows the descriptive analysis of Δg_t in different decades (PWT 8.0). There are some noteworthy facts: 1. OECD countries have no initiation of the growth acceleration episodes identified in 1970s; 2. the magnitude of growth accelerations identified in 1990s have the highest

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[15] The 13 countries which have no growth accelerations identified in PWT 8.0 are: Australia, Austria, Bosnia and Herzegovina, Barbados, Brunei, Central African Republic, Switzerland, France, Croatia, Italy, Netherlands, Sweden, Yemen.

[16] There are 5 regions listed in Table 3.1. They are Africa, Asia, Europe, Latin America and Caribbean, Middle East and OECD. Compared with the region division in Appendix A, the region Africa includes Sub-Saharan Africa and North Africa. Asia includes Central Asia, Eastern Asia and Southern Asia. The Oceania country, Fiji, is counted in Europe.

mean (6.639%) and the highest standard deviation (6.551%); 3. the magnitude of the 74 growth acceleration episodes identified during 1957-1969 have the lowest mean (3.612%) and the lowest standard deviation (1.777%).

TABLE III
DESCRIPTIVE STATISTICS OF MAGNITUDE OF IDENTIFIED GROWTH ACCELERATION EPISODES IN DIFFERENT REGIONS (PWT 8.0)

Region	Number of Growth Accelerations	Mean	Median	Standard Deviation	Maximum	Minimum
Africa	105	4.981%	3.505%	4.355%	30.288%	2.013%
Asia	61	4.733%	3.337%	4.063%	26.376%	2.001%
Europe	35	5.718%	3.578%	5.488%	23.773%	2.034%
Latin America and Caribbean	75	3.442%	2.946%	1.421%	8.039%	2.005%
Middle East	42	5.521%	3.627%	4.777%	21.201%	2.004%
OECD	31	2.881%	2.526%	0.860%	5.720%	2.010%
Total	349	4.559%	3.169%	3.932%	30.288%	2.001%

TABLE IV

DESCRIPTIVE STATISTICS OF MAGNITUDE OF IDENTIFIED GROWTH ACCELERATION EPISODES IN DIFFERENT DECADES (PWT 8.0)

Decade	Mean	Median	Standard Deviation	Max	Min	Number of Episodes	Africa	Asia	Europe	Latin America[a]	Middle East	OECD
1950s/ 60s	3.612%	2.970%	1.777%	11.138%	2.010%	74	22	13	6	15	7	11
1970s	4.193%	3.414%	2.228%	9.752%	2.094%	42	15	7	2	11	7	0
1980s	3.964%	3.030%	2.311%	15.801%	2.001%	69	18	13	4	20	8	6
1990s	6.639%	3.623%	6.551%	30.288%	2.039%	89	34	12	10	12	9	12
2000s	3.779%	3.050%	1.945%	10.249%	2.006%	75	16	16	13	17	11	2
Total	4.559%	3.169%	3.932%	30.288%	2.001%	349	105	61	35	75	42	31

[a] Here, “Latin America” is short for “Latin America and Caribbean”.

4. EMPIRICAL EVIDENCE OF GROWTH ACCELERATIONS

Our results in the preceding chapter are consistent with HPR (2005)'s conclusion, "growth accelerations are a fairly common occurrence". Of the 167 countries included in PWT 8.0, 154 have had at least one acceleration episode (a ratio of 92%). In addition, there are between 7 and 8 growth acceleration episodes, initiated in any given year, around the world (349 growth acceleration episodes identified in 48 years' period).

Following HPR (2005), research on the predictability of growth acceleration episodes has grown in recent years. Unlike most papers in the literature, I convert the binary data of a growth acceleration occurrence (0 or 1) into continuous data on growth rates. I focus on the least squares average growth rate during the post-7-year period, $g_{t,t+7}$, for every year t. In this chapter, I ask: what variables have effects on the subsequent 7-year average growth rate. I concentrate on five explanatory variables, relating to a country's (a) current account, and (b) domestic policy. I divide the countries into three different groups (the least developed, the lower middle income and the upper middle income) based on their income level and estimate the effectiveness of explanatory variables for each group.[17]

As we shall see, the HPR growth rate in different country groups has somewhat different triggers. One noteworthy point is among all the possible factors, foreign direct investment (FDI) and official development assistance (ODA) have more consistent, sizable and significant effects on the

[17] From the results of Chapter 3, we know that most of the advanced economies fulfilled their growth acceleration episodes before 1970s. However for most explanatory variables in this chapter, their data availabilities are usually after 1970s. Therefore, I exclude the advanced economies and only consider three groups of countries in this chapter: the least developed countries, the lower middle income countries and the upper middle income countries. For a full list of the above 3 country group, refer to Appendix D.

HPR growth rate, even though they play different roles in each group. These results are robust to a number of different empirical specifications.

4.1 The Model and Data

In this section, I use panel data fixed effects and random effects model [18] to estimate the effects of explanatory variables on the subsequent 7-year least squares average growth rate. The general specifications for all of the models are:

$$g^{HPR}_{it,t+7} = \alpha + \beta_1 ODA_{it} + \beta_2 FDI_{it} + \sum_{j=1}^{4} \gamma_j Z_{jit} + \sigma_1 D_{it} + \sigma_2 D_{it} ODA_{it}$$

$$+ \sigma_3 D_{it} FDI_{it} + \sum_{j=1}^{4} \lambda_j D_{it} Z_{jit} + \varepsilon_{it} \qquad (5)$$

Or,

$$\Delta g^{HPR}_{it} = \alpha + \beta_1 ODA_{it} + \beta_2 FDI_{it} + \sum_{j=1}^{4} \gamma_j Z_{jit} + \sigma_1 D_{it} + \sigma_2 D_{it} ODA_{it}$$

$$+ \sigma_3 D_{it} FDI_{it} + \sum_{j=1}^{4} \lambda_j D_{it} Z_{jit} + \varepsilon_{it} \qquad (6)$$

The dependent variable $g^{HPR}_{it,t+7}$ is the least squares average growth rate from year t to t+7 for country i, which can be produced from the regression (3) in Chapter 3. $g^{HPR}_{it,t+7}$ can also be called HPR growth rate henceforth. The dependent variable of equation (6), Δg^{HPR}_{it}, is the difference between the post-7-year and pre-7-year HPR growth rate ($\Delta g^{HPR}_{it} = g^{HPR}_{it,t+7} - g^{HPR}_{it-7,t}$). It can be calculated from equation (4) in Chapter 3. ODA_{it} and FDI_{it} are explanatory variables. Z_{jit} denote four control variables (here, j=4): initial level of real GDP per capita (denoted by rgdp0), Terms of Trade (Net

[18] I use the Hausman Test to determine whether the fixed or random effects model should be chosen.

barter terms of trade index, 2000=100, denoted by TOT), Workers' remittances and compensation of employees (received, % of GDP, denoted by RNC) and Broad Money Growth (annual %, denoted by BMG). All of the above explanatory and control variables are from World Development Indicators (WDI), which is the main database collected by the World Bank. D_{it} is a dummy variable. If $D_{it} = 1$, it represents that a growth acceleration is initiated at that year t for country i. To decrease the discrepancies of the identification of the initiation of growth accelerations, I allow D_{it} = 1 if t lies in the 5-year window centered on the identified initiation year (t) of an acceleration episode. The baseline specification only contains ODA, FDI and rgdp0. I conduct alternative specification strategies including the three additional control variables to estimate the effects of ODA and FDI and check their robustness.[19]

Generally, I allow for up to 5 years' lag for all the right-hand-side variables (except rgdp0 and FDI) to test the relationship between the changes in explanatory variables and the HPR growth rate. Unless otherwise noted, FDI is counted as the average level of 5-year window centered on time t.

4.2 Results and Robustness Checks

4.2.1 Least Developed and Low Income Countries

Eleven countries in the group of least developed and low income countries are included in the empirical analysis of this chapter. They are: Bangladesh, Benin, Burkina Faso, Kenya, Madagascar, Mali, Niger, Rwanda, Senegal, Sudan and Togo.[20]

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[19] As mentioned in Chapter 3, I use the growth accelerations identified in PWT 8.0 for the empirical analysis in this chapter.

[20] The eleven countries are chosen based on the data availability of the right-hand-side variables of equation (5).

TABLE V presents the descriptive statistics for growth as well as explanatory and control variables. The mean of the HPR growth rate (the dependent variable, $g_{it,t+7}^{HPR}$) is 3.762%. The lowest is -8.288% (Rwanda, 1988) and the highest is 10.985% (Rwanda, 1994). The average level of pre-5-year ODA is 12.132 (Net ODA received, % of GNI), with 1.821 (Sudan, 2002) at a minimum and 43.547 (Rwanda, 1997) at a maximum. The mean of FDI is 0.911 (% of GDP), ranging from -0.199 (Niger, 1995) to 7.489 (Sudan, 2004). The mean of the dummy variable D is 0.305, that is, the proportion of growth acceleration observations is 30.5% in this group.

TABLE VI shows the empirical results of the predictors' effectiveness on the HPR growth rate for the least developed and low income countries. The column (1) shows the baseline specification, which includes only ODA, FDI, rgdp0 and their corresponding dummies. ODA enters with statistically significant and positive coefficient 0.228, while DODA has a significantly negative coefficient -0.135. That is, raising the average level of net ODA by 1% of GNI during the pre-5-year period results in an increase in the HPR growth rate for the non-accelerating economies by approximately 0.228%. However, for the accelerating economies, ODA has a smaller but still positive marginal effect (0.228 vs. -0.135), 0.093% per unit change of ODA. In the next four columns we enter three more control variables: (1) terms of trade, (2) worker's remittances and compensation of employees, and (3) broad money growth. The results show that ODA is still statistically significant and positive for HPR growth rate in either accelerating or non-accelerating occasions, although it plays a less important role for acceleration episodes. The control variable TOT has a similar impact as ODA on HPR growth rate for different occasions. The coefficient of TOT is significantly positive for all economies, but larger for non-accelerating economies (shown by column 2, 5, 6). Compared with ODA, FDI has no convincing results shown by TABLE VI.

TABLE VII reports the empirical results of the effects of ODA and FDI on the HPR growth difference (Δg_{it}^{HPR}) for the least developed and low income countries. Compared with TABLE VI, ODA become insignificant albeit positive for non-accelerating economies, however its effect on the HPR magnitude of the accelerating episodes is significant and positive. If ODA is raised by 1% of GNI, the HPR magnitude for accelerating economies will increase by 0.237% (Column 6). Unlike the coefficient shown in TABLE VI, Terms of Trade become insignificant albeit positive for non-accelerating economies. As in TABLE VI, foreign direct investment (FDI) shows no convincing results.

TABLE V

DESCRIPTIVE STATISTICS FOR THE LEAST DEVELOPED AND LOW INCOME COUNTRIES

	HPR Growth Rate	ODA	FDI	TOT	RNC	BMG	D
Mean	3.762	12.132	0.911	110.479	2.489	15.032	0.305
Standard Error	0.164	0.444	0.079	2.126	0.125	0.976	0.031
Median	4.105	12.141	0.452	102.46	2.423	12.609	0
Standard Deviation	2.433	6.583	1.171	31.528	1.861	14.478	0.461
Sample Variance	5.919	43.33	1.371	994.045	3.462	209.623	0.213
Minimum	-8.288	1.821	-0.199	49.700	0.043	-7.179	0
Maximum	10.985	43.547	7.489	228.650	7.633	87.023	1
Sum	827.573	2669.045	200.375	24305.36	547.513	3307.024	67
Count	220	220	220	220	220	220	220

TABLE VI

PREDICING HPR GROWTH RATE ($g_{it,t+7}^{HPR}$) FOR THE LEAST DEVELOPED AND LOW INCOME COUNTRIES (PWT 8.0)

Dependent variable is the HPR growth rate, $g_{it,t+7}^{HPR}$.

The independent variable FDI is the average level between (t-2, t+2); other right-hand-side variables are average level between (t-5, t-1).

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	0.228	0.166	0.232	0.230	0.173	0.173
	(4.717)***	(3.381)***	(4.703)***	(4.737)***	(3.475)***	(3.480)***
FDI	-0.067	-0.129	-0.088	-0.009	-0.174	-0.151
	(0.449)	(0.893)	(0.557)	(0.061)	(1.134)	(0.962)
rgdp0	-6.598	-7.130	-6.458	-6.722	-6.910	-7.208
	(6.616)***	(6.991)***	(6.225)***	(6.730)***	(6.607)***	(6.902)***
TOT		0.020			0.021	0.023
		(3.803)***			(3.896)***	(4.229)***
RNC			0.053		0.104	0.152
			(0.503)		(1.005)	(1.458)
BMG				0.000		-0.014
				(0.017)		(0.795)
D	17.154	19.135	17.418	20.775	19.644	24.722
	(4.280)***	(4.795)***	(4.282)***	(4.560)***	(4.867)***	(5.399)***
DODA	-0.135	-0.099	-0.140	-0.148	-0.108	-0.126
	(2.561)**	(1.919)*	(2.599)**	(2.762)***	(2.059)**	(2.346)**
DFDI	0.246	0.285	0.277	0.145	0.344	0.250
	(0.915)	(1.095)	(0.994)	(0.522)	(1.269)	(0.891)
Drgdp0	-1.651	-1.750	-1.668	-2.054	-1.788	-2.432
	(4.191)***	(4.585)***	(4.165)***	(4.398)***	(4.619)***	(5.126)***
DTOT		-0.015			-0.015	-0.012
		(2.390)**			(2.382)**	(1.926)*
DRNC			-0.034		-0.049	0.009
			(0.269)		(0.407)	(0.073)
DBMG				0.022		0.040
				(1.243)		(2.117)**
Observations	220	220	220	220	220	220
Adjusted R^2	0.715	0.735	0.712	0.716	0.733	0.738

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

TABLE VII

PREDICING HPR GROWTH DIFFERENCE (Δg_{it}^{HPR}) FOR THE LEAST DEVELOPED AND LOW INCOME COUNTRIES (PWT 8.0)

Dependent variable is the HPR magnitude, that is $\Delta g_{it}^{HPR} = g_{it,t+7}^{HPR} - g_{it-7,t}^{HPR}$

The independent variable FDI is the average level between (t-2, t+2); other right-hand-side variables are average level between (t-5, t-1).

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	0.101	0.030	0.115	0.109	0.038	0.051
	(1.375)	(0.417)	(1.544)	(1.470)	(0.534)	(0.706)
FDI	0.532	0.401	0.427	0.560	0.310	0.353
	(2.118)**	(1.688)*	(1.607)	(2.157)**	(1.230)	(1.383)
rgdp0	-3.503	-2.843	-3.387	-3.653	-2.721	-3.023
	(3.659)***	(3.098)***	(3.487)***	(3.761)***	(2.914)***	(3.213)***
TOT		0.009			0.012	0.008
		(1.122)			(1.385)	(0.947)
RNC			0.250		0.225	0.152
			(1.421)		(1.327)	(0.880)
BMG				0.033		0.054
				(1.132)		(1.921)*
D	-4.338	5.962	-2.814	-6.227	7.321	2.543
	(0.721)	(0.996)	(0.462)	(0.902)	(1.211)	(0.372)
DODA	0.206	0.262	0.183	0.196	0.243	0.237
	(2.425)**	(3.234)***	(2.126)**	(2.263)**	(2.960)***	(2.867)***
DFDI	-0.343	-0.410	-0.152	-0.372	-0.221	-0.238
	(0.756)	(0.959)	(0.325)	(0.799)	(0.500)	(0.526)
Drgdp0	0.516	0.010	0.422	0.793	-0.070	0.624
	(0.865)	(0.017)	(0.700)	(1.101)	(0.121)	(0.885)
DTOT		-0.055			-0.055	-0.059
		(5.220)***			(5.238)***	(5.541)***
DRNC			-0.251		-0.255	-0.275
			(1.198)		(1.286)	(1.376)
DBMG				-0.030		-0.062
				(0.983)		(2.055)**
Observations		220	220	220	220	220
Adjusted R^2	0.440	0.504	0.441	0.438	0.506	0.512

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

4.2.2 Lower Middle Income Countries

Seventeen lower middle income countries are considered here: Bolivia, Cameroon, Republic of Congo, Cote d`Ivoire, Egypt, El Salvador, Ghana, Guatemala, Honduras, India, Indonesia, Morocco, Nigeria, Pakistan, Paraguay, Philippines and Sri Lanka. TABLE VIII reports the descriptive statistics of the factors included in the 17 countries panel dataset from 1985 to 2004. The average level of the HPR growth rate $g_{it,t+7}^{HPR}$ is 3.842%, ranging from -3.483% (Cameroon, 1985) to 9.964% (Nigeria, 1999). Compared with $g_{it,t+7}^{HPR}$ of the least developed country group, the lower middle income countries have a much higher lowest growth rate (-3.483% vs. -8.288%), but slightly lower highest growth rate (9.964% vs. 10.985%). The mean of pre-5-year ODA is 4.368 (Net ODA received, % of GNI), much lower than that of the least developed country group, 12.132. The average level of FDI is 1.684 (% of GDP), slightly higher than that of the least developed country group, 0.911. The proportion of the growth acceleration observations among the whole dataset is 30.6% ($\overline{D}$ = 0.306).

TABLE IX shows the effects of the explanatory variables on the HPR growth rate for the lower middle income countries. Generally speaking, FDI has a positive and significant marginal effect on the HPR growth rate for growth acceleration episodes (Column 1,2,3,4 & 6). However, unlike in the least developed country group, ODA plays an overall insignificant but still positive role for all the economies. Column (1), (2), and (3) show the effectiveness of the current account variables on the HPR growth rate. Workers' remittances and compensation of employees exhibits significant and positive impacts on the HPR growth rate for the non-accelerating economies, raising it by 1% of GDP could contribute to average HPR growth by 0.122% (Column 6). However terms-of-trade tend to lower the HPR growth rate for accelerating economies by 0.006% (0.008% vs. -0.014% shown in Column 6).

TABLE X presents the empirical evidences of the roles played by ODA and FDI on the HPR growth difference for the lower middle income countries. As in TABLE IX, FDI has a significant and positive coefficient on the accelerating economies. However when considering its negative and significance for all the occasions, their positive effects on accelerating economies are offset. A puzzling result shown by TABLE X is the negative and significant effects of FDI on HPR growth difference for all the non-accelerating economies. Combined with the negative (albeit insignificant) coefficients of FDI shown in TABLE IX, it supports the negative relationship between FDI and economic growth for non-accelerating economies for lower middle income countries.

Kumar and Pradhan (2002) investigated the effects of FDI on economic growth for 83 developing economies and found 29 host countries have FDI crowding out impacts. Of the 17 lower middle income countries included in TABLE IX & TABLE X, 8 are on the Kumar and Pradhan (2002)'s list of FDI crowding out effects.[21] After excluding those 8 countries, I found a positive relationship between FDI and HPR growth rate for all economies, shown by the positive coefficients of FDI and DFDI in TABLE XI. It supports the findings of Kumar and Pradhan (2002) and explains the negative coefficients of FDI in TABLE IX & TABLE X.

[21] The eight countries are: Bolivia, Cote d'Ivoire, El Salvador, India, Morocco, Nigeria, Paraguay, and Philippines.

TABLE VIII

DESCRIPTIVE STATISTICS FOR LOWER MIDDLE INCOME COUNTRIES

	HPR Growth Rate	ODA	FDI	TOT	RNC	BMG	D
Mean	3.842	4.368	1.684	103.54	2.943	44.007	0.306
Standard Error	0.100	0.196	0.099	1.558	0.176	11.156	0.025
Median	3.952	2.900	1.171	98.23	1.559	16.611	0
Standard Deviation	1.851	3.606	1.825	28.73	3.254	205.70	0.461
Sample Variance	3.427	13.000	3.331	825.56	10.586	42313.59	0.213
Minimum	-3.483	0.090	-1.225	54.52	0.020	-4.782	0
Maximum	9.964	17.427	10.198	229.753	13.255	1800.866	1
Sum	1306.377	1484.984	572.62	35204.84	1000.567	14962.29	104
Count	340	340	340	340	340	340	340

TABLE IX

PREDICING HPR GROWTH RATE (g_{it}^{HPR}) FOR LOWER MIDDLE INCOME COUNTRIES (PWT 8.0)

Dependent variable is the HPR growth rate.
The independent variable FDI is the average level between (t-2, t+2); other right-hand-side variables are average level between (t-5, t-1).

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	0.073	0.088	0.071	0.066	0.076	0.075
	(1.780)*	(1.907)*	(1.734)*	(1.588)	(1.641)	(1.622)
FDI	-0.108	-0.107	-0.108	-0.131	-0.108	-0.132
	(1.586)	(1.586)	(1.597)	(1.830)*	(1.619)	(1.872)*
rgdp0	0.454	0.671	0.167	0.425	0.381	0.386
	(1.208)	(1.657)*	(0.425)	(1.124)	(0.891)	(0.901)
TOT		0.010			0.007	0.008
		(2.296)**			(1.491)	(1.676)*
RNC			0.127		0.123	0.122
			(2.771)***		(2.599)***	(2.551)**
BMG				-0.002		-0.004
				(0.585)		(1.036)
D	0.034	2.237	0.292	0.002	2.617	2.560
	(0.022)	(1.308)	(0.178)	(0.001)	(1.384)	(1.352)
DODA	-0.020	-0.033	-0.006	-0.015	-0.022	-0.020
	(0.334)	(0.548)	(0.104)	(0.242)	(0.373)	(0.328)
DFDI	0.268	0.196	0.223	0.276	0.153	0.167
	(2.830)***	(2.022)**	(2.344)**	(2.887)***	(1.538)	(1.659)*
Drgdp0	0.117	0.071	0.083	0.115	0.031	0.027
	(0.894)	(0.545)	(0.616)	(0.879)	(0.227)	(0.203)
DTOT		-0.015			-0.014	-0.014
		(2.739)***			(2.395)**	(2.332)**
DRNC			0.083		0.023	0.023
			(1.268)		(0.328)	(0.322)
DBMG				0.002		0.003
				(0.477)		(0.959)
Observations	340	340	340	340	340	340
Adjusted R^2	0.532	0.542	0.544	0.531	0.550	0.549

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

TABLE X

PREDICING HPR GROWTH DIFFERENCE (Δg_{it}^{HPR}) FOR LOWER MIDDLE INCOME COUNTRIES (PWT 8.0)

Dependent variable is the HPR magnitude, that is $\Delta g_{it}^{HPR} = g_{it,t+7}^{HPR} - g_{it-7,t}^{HPR}$

The independent variable FDI is the average level between (t-2, t+2); other right-hand-side variables are average level between (t-5, t-1).

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	0.003	-0.065	-0.000	0.003	-0.051	-0.047
	(0.051)	(0.846)	(0.000)	(0.046)	(0.664)	(0.617)
FDI	-0.372	-0.374	-0.371	-0.377	-0.374	-0.362
	(3.297)***	(3.329)***	(3.300)***	(3.168)***	(3.334)***	(3.044)***
rgdp0	-0.846	-1.308	-0.641	0.860	-0.913	-0.918
	(1.362)	(1.939)*	(0.978)	(1.375)	(1.272)	(1.277)
TOT		0.009			-0.006	-0.005
		(1.248)			(0.734)	(0.651)
RNC			-0.147		-0.114	-0.120
			(1.938)*		(1.427)	(1.493)
BMG				-0.002		-0.002
				(0.361)		(0.306)
D	4.872	5.291	4.110	4.786	5.693	5.700
	(1.895)*	(1.859)*	(1.505)	(1.849)*	(1.799)*	(1.796)*
DODA	-0.086	-0.068	-0.091	-0.085	-0.087	-0.092
	(0.865)	(0.683)	(0.916)	(0.858)	(0.868)	(0.909)
DFDI	0.353	0.321	0.411	0.360	0.344	0.344
	(2.261)**	(1.984)**	(2.579)**	(2.281)**	(2.056)**	(2.039)**
Drgdp0	-0.178	-0.141	-0.113	-0.176	-0.131	-0.122
	(0.823)	(0.646)	(0.505)	(0.810)	(0.581)	(0.538)
DTOT		-0.007			-0.011	-0.012
		(0.812)			(1.068)	(1.203)
DRNC			-0.030		-0.091	-0.084
			(0.275)		(0.774)	(0.708)
DBMG				0.002		0.002
				(0.370)		(0.380)
Observations	340	340	340	340	340	340
Adjusted R^2	0.396	0.400	0.400	0.393	0.401	0.399

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

TABLE XI

PREDICING HPR GROWTH RATE (g_{it}^{HPR}) FOR LOWER MIDDLE INCOME COUNTRIES (PWT 8.0)

EXCLUDING COUNTRIES WITH FDI CROWDING OUT EFFECTS

Dependent variable is the HPR growth rate.
The independent variable FDI is the average level between (t-2, t+2); other right-hand-side variables are average level between (t-5, t-1).

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	0.074	(0.126)	0.077	0.0564	0.130	0.213
	(1.203)	(1.743)*	(1.198)	(0.812)	(1.712)*	(2.608)***
FDI	0.082	0.030	0.070	0.119	0.033	0.039
	(0.672)	(0.247)	(0.563)	(0.988)	(0.263)	(0.333)
rgdp0	-0.833	0.024	-0.840	-0.993	0.021	0.673
	(1.725)*	(0.038)	(1.620)	(1.995)**	(0.030)	(0.990)
TOT		0.018			0.019	0.031
		(2.639)***			(2.471)**	(3.951)***
RNC			0.040		-0.012	-0.003
			(0.596)		(0.176)	(0.045)
BMG				-0.050		-0.085
				(2.758)***		(4.463)***
D	-3.302	-0.245	-3.127	-3.987	-0.192	2.189
	(1.225)	(0.085)	(1.148)	(1.450)	(0.066)	(0.654)
DODA	-0.016	-0.072	-0.020	-0.003	-0.073	-0.163
	(0.205)	(0.883)	(0.253)	(0.029)	(0.885)	(1.679)*
DFDI	0.222	0.201	0.217	0.267	0.199	0.261
	(1.519)	(1.383)	(1.459)	(1.849)*	(1.341)	(1.836)*
Drgdp0	0.429	0.318	0.413	0.464	0.312	0.113
	(1.939)*	(1.389)	(1.836)*	(1.995)**	(1.343)	(0.468)
DTOT		-0.015			-0.016	-0.023
		(1.405)			(1.401)	(1.683)*
DRNC			0.032		0.009	0.028
			(0.305)		(0.091)	(0.285)
DBMG				0.002		0.038
				(0.103)		(1.537)
Observations	180	180	180	180	180	180
Adjusted R^2	0.527	0.543	0.523	0.546	0.538	0.585

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

4.2.3 Upper Middle Income Countries

I include 17 countries in the upper middle income country group for the empirical analysis of this chapter. They are: Argentina, Botswana, Brazil, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Gabon, Jordan, Malaysia, Mexico, Panama, Thailand, Tunisia, Turkey, and Venezuela.[22] TABLE XII presents the descriptive statistics of the panel dataset for the 17 countries from 1985 to 2004. The mean of the HPR growth rate (the dependent variable, $g_{it,t+7}^{HPR}$) is 4.397%. The lowest is -1.324% (Argentina, 1996) and the highest is 11.748% (Botswana, 1985). Compared with $g_{it,t+7}^{HPR}$ of the least developed countries, the upper middle income countries obviously have higher level of the minimum growth rate (-1.324% vs. -3.483%) and the maximum growth rate (11.748% vs. 9.964%). The average level of pre-5-year ODA is 1.644 (% of GNI), ranging from -0.072 (Malaysia, 1998) to 23.164 (Jordan, 1985). The mean of FDI is 2.164 (% of GDP), substantially higher than that of the least developed countries (0.911%) and the lower middle income countries (1.684%). The mean of the dummy variable D is 0.332, that is, the proportion of growth acceleration observations is 33.2% in this group.

TABLE XIII shows the empirical results of the factors' effectiveness on the HPR growth rate for upper middle income countries. Generally speaking, the economic growth of upper middle income countries is not triggered by ODA. To the contrary, even the level of ODA becomes smaller the growth rate of the economies still increase. This might explain the significant and negative estimates of ODA on the HPR growth rate (shown by TABLE XIII). However, FDI is a significant and positive trigger

[22] The seventeen countries are chosen based on the data availability of the right-hand-side variables of equation (5).

for the upper middle income countries, no matter it is accompanied by a growth acceleration episode or not. Among the control variables, Workers' remittances and compensation of employees has a positive and significant effect on HPR growth rate for all economies. However, terms of trade lower the economic growth of accelerating economies by 0.017% points (Column 6).

TABLE XIV reports the empirical results of ODA and FDI effectiveness on HPR growth difference for the upper middle income country group.[23] The ODA coefficient remains significantly negative, as in TABLE XIII. However, FDI has a larger and significantly positive effect on HPR growth difference for the accelerating economies, shown by the coefficient of DFDI in TABLE XIV. Workers' remittances and compensation of employees turns up a smaller albeit positive impact on accelerating economies.

[23] Note that FDI is calculated as its average level between (t-5, t-1) in this specification, instead of the average level between (t-2, t+2) in the previous specifications. Therefore, the coefficient of FDI in TABLE XIV shows a comparably preceding effect on growth.

TABLE XII

DESCRIPTIVE STATISTICS FOR UPPER MIDDLE INCOME COUNTRIES

	HPR Growth Rate	ODA	FDI	TOT	RNC	BMG	D
Mean	4.397	1.644	2.164	104.725	2.375	77.214	0.332
Standard Error	0.132	0.164	0.111	1.633	0.248	12.408	0.026
Median	4.186	0.558	2.017	99.539	0.949	19.579	0
Standard Deviation	2.431	3.028	2.049	30.114	4.564	228.800	0.472
Sample Variance	5.908	9.167	4.199	906.869	20.826	52349.42	0.223
Minimum	-1.324	-0.072	-5.150	60.700	0.002	-13.447	0
Maximum	11.748	23.164	11.072	320.938	22.693	1615.482	1
Sum	1494.84	559.08	735.881	35606.62	807.334	26252.65	113
Count	340	340	340	340	340	340	340

TABLE XIII

PREDICING HPR GROWTH RATE (g_{it}^{HPR}) FOR UPPER MIDDLE INCOME COUNTRIES (PWT 8.0)

Dependent variable is the HPR growth rate.
The independent variable FDI is the average level between (t-2, t+2); other right-hand-side variables are average level between (t-5, t-1).

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	-0.223 (3.845)***	-0.232 (3.975)***	-0.297 (4.499)***	-0.225 (3.879)***	-0.289 (4.381)***	-0.289 (4.408)***
FDI	0.151 (3.056)***	0.164 (3.330)***	0.133 (2.737)***	0.156 (3.143)***	0.141 (2.901)***	0.150 (3.080)***
rgdp0	-2.526 (7.685)***	-2.623 (7.850)***	-2.5783 (8.028)***	-2.560 (7.778)***	-2.598 (7.943)***	-2.658 (8.133)***
TOT		0.003 (0.756)			0.005 (1.419)	0.005 (1.464)
RNC			0.384 (4.207)***		0.365 (3.939)***	0.3528 (3.820)***
BMG				0.000 (0.685)		0.000 (0.859)
D	-0.414 (0.305)	1.229 (0.822)	-1.982 (1.441)	-0.644 (0.470)	-0.178 (0.118)	-0.221 (0.147)
DODA	-0.075 (1.213)	-0.081 (1.309)	0.178 (1.649)	-0.080 (1.283)	0.147 (1.372)	0.130 (1.206)
DFDI	0.148 (1.746)*	0.092 (1.065)	0.110 (1.181)	0.132 (1.544)	0.060 (0.639)	0.028 (0.297)
Drgdp0	0.183 (1.645)	0.200 (1.789)*	0.306 (2.734)***	0.214 (1.893)*	0.299 (2.676)***	0.341 (3.003)***
DTOT		-0.016 (3.025)***			-0.015 (2.901)***	-0.017 (3.267)***
DRNC			-0.079 (1.382)		-0.067 (1.174)	-0.061 (1.073)
DBMG				-0.002 (1.608)		-0.002 (2.172)**
Observations	340	340	340	340	340	340
Adjusted R^2	0.710	0.717	0.725	0.710	0.730	0.732

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

TABLE XIV

PREDICING HPR GROWTH DIFFERENCE (Δg_{it}^{HPR}) FOR UPPER MIDDLE INCOME COUNTRIES (PWT 8.0)

Dependent variable is the HPR growth difference (Δg_{it}^{HPR}).

All the right-hand-side variables **including FDI** are calculated as their average level between **(t-5, t-1)**.

	(1)	(2)	(3)	(4)	(5)	(6)
ODA	-0.298	-0.312	-0.378	-0.300	-0.379	-0.383
	(5.519)***	(5.746)***	(6.059)***	(5.560)***	(6.075)***	(6.170)***
FDI	0.252	0.288	0.226	0.266	0.252	0.275
	(4.332)***	(4.905)***	(3.957)***	(4.523)***	(4.302)***	(4.637)***
rgdp0	-2.910	-3.075	2.969	-2.939	-3.055	-3.116
	(9.410)***	(9.780)***	(9.807)***	(9.495)***	(9.867)***	(10.065)***
TOT		0.001			0.003	0.004
		(0.417)			(1.054)	(1.070)
RNC			0.366		0.333	0.322
			(4.270)***		(3.833)***	(3.708)***
BMG				0.001		0.001
				(1.312)		(1.557)
D	0.616	2.210	-0.934	0.333	0.851	0.707
	(0.482)	(1.592)	(0.719)	(0.258)	(0.605)	(0.503)
DODA	-0.070	-0.072	0.207	-0.072	0.183	0.173
	(1.195)	(1.250)	(2.112)**	(1.240)	(1.885)*	(1.783)*
DFDI	0.222	0.161	0.232	0.201	0.191	0.155
	(2.483)**	(1.794)*	(2.625)***	(2.222)**	(2.137)**	(1.699)*
Drgdp0	0.085	0.113	0.200	0.120	0.199	0.246
	(0.802)	(1.070)	(1.883)*	(1.119)	(1.883)*	(2.293)**
DTOT		-0.017			-0.016	-0.017
		(3.452)***			(3.258)***	(3.593)***
DRNC			-0.108	-0.001	-0.104	-0.104
			(2.153)**	(1.424)	(2.103)**	(2.109)**
DBMG						-0.002
						(2.076)**
Observations	340	340	340	340	340	340
Adjusted R^2	0.745	0.755	0.758	0.745	0.764	0.767

Notes: According to Hausman Test, all the above regressions are estimated by panel data fixed effects model.

Numbers in paranthesis are robust t-statistics. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

CHAPTER 5

CONCLUSION

Following the seminal paper by Hausmann, Pritchett and Rodrik (2005; henceforth HPR, 2005) on the identification of growth acceleration episodes and exploration of possible triggers, research on the predictability of such episodes has grown in recent years. Unlike most papers in the literature, my research focuses on the magnitude of growth acceleration episodes.

In this paper, I make three contributions: first, I apply the filter of identifying growth acceleration episodes, proposed by HPR (2005), using three updated versions of two widely used datasets: the Penn World Table 8.0, the Penn World Table 7.1 and the Maddison Dataset. 280 growth acceleration episodes are identified in PWT 7.1 for 189 economies over the 60 years' time horizon 1950-2010 and after implementing the same procedures, 221 episodes emanate from the Maddison Dataset in a comparable panel dataset of 146 economies over the 1950-2008 period. I also identified 349 growth acceleration episodes in PWT 8.0 for 167 countries from 1950 to 2011. Consistent with HPR (2005), I find that growth accelerations are "a fairly common occurrence".

Second, I do not solely rely on only one dataset, but also compare my results produced by three datasets. The comparison shows that approximately 70% of the identified growth accelerations in PWT 7.1 can also be found in the Maddison dataset. And, 221 out of 349 identified growth accelerations in PWT 8.0 can find their counterparts in PWT 7.1. I consider these to be robust growth acceleration episodes and the filter developed by HPR (2005) satisfying.

Third, unlike most papers in the literature, my research focuses on the growth rate and magnitude of growth acceleration episodes. I examine possible factors that have effects on the HPR growth rate and HPR growth difference for growth acceleration episodes. Among all the possible

factors, foreign direct investment (FDI) and official development assistance (ODA) have more consistent, sizable and significant effects on the magnitude of growth accelerations, even though they play different roles in each group. In particular, ODA tends to have positive, statistically significant and more sizable effects on accelerating economies than on non-accelerating economies for the least developed and low income countries. For the lower middle and upper middle income countries, FDI plays a positive, significant and more sizable role in promoting the magnitude of growth acceleration episodes. These results are robust to a number of different empirical specifications.

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APPENDICES

APPENDIX A

ISO COUNTRY CODE [24]

Country Code	Country
AFG	Afghanistan
ALB	Albania
DZA	Algeria
AGO	Angola
ATG	Antigua and Barbuda
ARG	Argentina
ARM	Armenia
AUS	Australia
AUT	Austria
AZE	Azerbaijan
BHS	Bahamas
BHR	Bahrain
BGD	Bangladesh
BRB	Barbados
BLR	Belarus
BEL	Belgium
BLZ	Belize
BEN	Benin
BMU	Bermuda
BTN	Bhutan
BOL	Bolivia
BIH	Bosnia and Herzegovina
BWA	Botswana
BRA	Brazil
BRN	Brunei
BGR	Bulgaria
BFA	Burkina Faso
BDI	Burundi
KHM	Cambodia
CMR	Cameroon
CAN	Canada
CPV	Cape Verde
CAF	Central African Republic
TCD	Chad
CHL	Chile
CH2	China Version 2

[24] This appendix shows the ISO 3166-1 alpha-3 codes published by the International Organization for Standardization (ISO). These three-letter country codes defined in ISO 3166 standard to represent countries and territories. (http://en.wikipedia.org/wiki/ISO_3166-1_alpha-3#cite_note-4)

APPENDIX A (continued)

ISO COUNTRY CODE

Country Code	Country
COL	Colombia
COM	Comoros
ZAR	Congo, Dem. Rep.
COG	Congo, Republic of
CRI	Costa Rica
CIV	Cote d`Ivoire
HRV	Croatia
CUB	Cuba
CYP	Cyprus
CZE	Czech Republic
DNK	Denmark
DJI	Djibouti
DMA	Dominica
DOM	Dominican Republic
ECU	Ecuador
EGY	Egypt
SLV	El Salvador
GNQ	Equatorial Guinea
ERI	Eritrea
EST	Estonia
ETH	Ethiopia
FJI	Fiji
FIN	Finland
FRA	France
FRA	France
GAB	Gabon
GMB	Gambia, The
GEO	Georgia
GER	Germany
GHA	Ghana
GRC	Greece
GRD	Grenada
GTM	Guatemala
GIN	Guinea
GNB	Guinea-Bissau
GUY	Guyana
HTI	Haiti
HND	Honduras

APPENDIX A (continued)

ISO COUNTRY CODE

Country Code	Country
HKG	Hong Kong
HUN	Hungary
ISL	Iceland
IND	India
IDN	Indonesia
IRN	Iran
IRQ	Iraq
IRL	Ireland
ISR	Israel
ITA	Italy
JAM	Jamaica
JPN	Japan
JOR	Jordan
KAZ	Kazakhstan
KEN	Kenya
KEN	Kenya
KIR	Kiribati
KOR	Korea, Republic of
KWT	Kuwait
KGZ	Kyrgyzstan
LAO	Laos
LVA	Latvia
LBN	Lebanon
LSO	Lesotho
LBR	Liberia
LBY	Libya
LTU	Lithuania
LUX	Luxembourg
MAC	Macao
MKD	Macedonia
MDG	Madagascar
MWI	Malawi
MYS	Malaysia
MDV	Maldives
MLI	Mali
MLT	Malta
MHL	Marshall Islands
MRT	Mauritania
MUS	Mauritius

APPENDIX A (continued)

ISO COUNTRY CODE

Country Code	Country
MEX	Mexico
FSM	Micronesia, Fed. Sts.
MDA	Moldova
MNG	Mongolia
MNE	Montenegro
MAR	Morocco
MOZ	Mozambique
NAM	Namibia
NPL	Nepal
NLD	Netherlands
NZL	New Zealand
NIC	Nicaragua
NER	Niger
NGA	Nigeria
NOR	Norway
OMN	Oman
PAK	Pakistan
PLW	Palau
PAN	Panama
PNG	Papua New Guinea
PRY	Paraguay
PER	Peru
PHL	Philippines
POL	Poland
PRT	Portugal
PRI	Puerto Rico
QAT	Qatar
ROM	Romania
RUS	Russia
RWA	Rwanda
WSM	Samoa
STP	Sao Tome and Principe
SAU	Saudi Arabia
SEN	Senegal
SRB	Serbia
SYC	Seychelles
SLE	Sierra Leone
SVK	Slovak Republic
SVN	Slovenia

APPENDIX A (continued)

ISO COUNTRY CODE

Country Code	Country
SLB	Solomon Islands
SOM	Somalia
ZAF	South Africa
ESP	Spain
LKA	Sri Lanka
KNA	St. Kitts & Nevis
LCA	St. Lucia
VCT	St.Vincent & Grenadines
SDN	Sudan
SUR	Suriname
SWZ	Swaziland
SWE	Sweden
CHE	Switzerland
SYR	Syria
TWN	Taiwan
TJK	Tajikistan
TZA	Tanzania
THA	Thailand
TLS	Timor-Leste
TGO	Togo
TON	Tonga
TTO	Trinidad &Tobago
TUN	Tunisia
TUR	Turkey
TKM	Turkmenistan
UGA	Uganda
UKR	Ukraine
ARE	United Arab Emirates
GBR	United Kingdom
USA	United States
URY	Uruguay
UZB	Uzbekistan
VUT	Vanuatu
VEN	Venezuela
VNM	Vietnam
YEM	Yemen
ZMB	Zambia

APPENDIX B

DAC LIST OF ODA RECIPIENTS [25]

(Effective for reporting on 2012 and 2013 flows)

Least Developed and Low Income Countries (per capita GNI <= $1,005 in 2010)	Lower Middle Income Countries (per capita GNI $1,006 - $3,975 in 2010)	Upper Middle Income Countries (per capita GNI $3,976 - $12,275 in 2010)
Afghanistan	Armenia	Albania
Angola	Belize	Algeria
Bangladesh	Bolivia	*Anguilla
Benin	Cameroon	Antigua and Barbuda
Bhutan	Cape Verde	Argentina
Burkina Faso	Congo, Rep.	Azerbaijan
Burundi	Cote d'Ivoire	Belarus
Cambodia	Egypt	Bosnia and Herzegovina
Central African Rep.	El Salvador	Botswana
Chad	Fiji	Brazil
Comoros	Georgia	Chile
Congo, Dem. Rep.	Ghana	China
Djibouti	Guatemala	Colombia
Equatorial Guinea	Guyana	Cook Islands
Eritrea	Honduras	Costa Rica
Ethiopia	India	Cuba
Gambia	Indonesia	Dominica
Guinea	Iraq	Dominican Republic
Guinea-Bissau	Kosovo[26]	Ecuador
Haiti	Marshall Islands	Macedonia, FYR

*Territory.

[25] Source: http://www.oecd.org/dac/stats/49483614.pdf

[26] This is without prejudice to the status of Kosovo under international law.

APPENDIX B (continued)

DAC LIST OF ODA RECIPIENTS

Least Developed and Low Income Countries (per capita GNI <= $1,005 in 2010)	Lower Middle Income Countries (per capita GNI $1,006 - $3,975 in 2010)	Upper Middle Income Countries (per capita GNI $3,976 - $12,275 in 2010)
Kenya	Micronesia, Federated States	Gabon
Kiribati	Moldova	Grenada
Korea, Dem. Rep.	Mongolia	Iran
Kyrgyz Rep.	Morocco	Jamaica
Laos	Nicaragua	Jordan
Lesotho	Nigeria	Kazakhstan
Liberia	Pakistan	Lebanon
Madagascar	Papua New Guinea	Libya
Malawi	Paraguay	Malaysia
Mali	Philippines	Maldives
Mauritania	Sri Lanka	Mauritius
Mozambique	Swaziland	Mexico
Myanmar	Syria	Montenegro
Nepal	Tokelau	*Montserrat
Niger	Tonga	Namibia
Rwanda	Turkmenistan	Nauru
Samoa	Ukraine	Niue
Sao Tome and Principe	Uzbekistan	Palau
Senegal	Vietnam	Panama
Sierra Leone	West Bank and Gaza Strip	Peru
Solomon Islands		Serbia
Somalia		Seychelles

*Territory.

APPENDIX B (continued)

DAC LIST OF ODA RECIPIENTS

Least Developed and Low Income Countries (per capita GNI <= $1,005 in 2010)	Lower Middle Income Countries (per capita GNI $1,006 - $3,975 in 2010)	Upper Middle Income Countries (per capita GNI $3,976 - $12,275 in 2010)
South Sudan		South Africa
Sudan		*St. Helena
Tajikistan		St. Kitts-Nevis
Tanzania		St. Lucia
Timor-Leste		St. Vincent and Grenadines
Togo		Suriname
Tuvalu		Thailand
Uganda		Tunisia
Vanuatu		Turkey
Yemen		Uruguay
Zambia		Venezuela
Zimbabwe		*Wallis and Futuna

*Territory.

APPENDIX C

Description of Right-Hand-Side Variables and Data Source

Variable Name	Description	Source
ODA	Official Development Assistance, Net ODA received (% of GNI)	World Bank Index
FDI	Foreign Direct Investment, net inflows (% of GDP)	World Bank Index
TOT	Net barter Terms of Trade index (2000 = 100)	World Bank Index
RNC	Workers' Remittances and Compensation of Employees, received (% of GDP)	World Bank Index
BMG	Broad Money Growth (annual %)	World Bank Index

VITA

NAME Lu Liu

EDUCATION
B.S., Management Science, Hefei University of Technology, China, 2001
M.A., Finance, Zhejiang University, China, 2004
M.A., Economics, University of Illinois at Chicago, United States, 2008
Ph.D., Economics, University of Illinois at Chicago, United States, 2015

FIELDS Macroeconomics, International Economics, Econometrics

RESEARCH
Liu, L.: Empirical Evidence on Growth Accelerations: The Role of ODA and FDI, accepted and presented at *78th Midwest Economics Association Annual Meeting 2014*, accepted by *44th Illinois Economics Association Annual Meeting* 2014.

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Liu, L: Research on the Construction of China's Credit Reporting System, *Master Thesis*, Zhejiang University, China, 2004.

TEACHING
Department of Economics, University of Illinois at Chicago, 2007-2013
Instructor: Principles of Economics, Principles of Macroeconomics, Econometrics
Teaching Assistant: Graduate level Econometrics, Macroeconomics, Microeconomics, Money and Banking, etc.

:

HONORS	The Elizabeth Bass Award, University of Illinois at Chicago, 2011
	University Fellowship, University of Illinois at Chicago, 2011
	University Fellowship, University of Illinois at Chicago, 2007
	Honors Graduate, Hefei University of Technology, 2001
	Outstanding Student Award of Anhui Province, China, 2000
	Zhongda Scholarship, Hefei University of Technology, 2000
PROFESSIONAL	American Economic Association
MEMBERSHIP	Midwest Economic Association
	Illinois Economic Association