Saving – Investment Gap in Emerging Markets and Developing Economies: An Exploratory Study

by

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Abstract

There is an ongoing unsatisfied need for development finance, which is recognised in a majority of emerging market and developing economies (EMDEs). International surveys have identified lack of adequate finance as a major barrier to investment in these countries and other potentially competitive investments. Caribbean nations, for example, have identified cultural industries as having developmental potential, as well as areas such as medical and educational 'tourism', and the exploration of new markets for the region's existing output. These are the sectors whose development needs are poorly served by the existing financial infrastructure. Using a sample of selected countries across the world in the period 1990-2015, the present exploratory study, which is part of a larger project, documents the inadequacy of private finance for developmental investment and explore ways of addressing that inadequacy. At the methodological level, the study resorts to secondary time series data to conduct descriptive analysis in order to help reach the goal of the study. The study reposes on two pillars. In the first instance, the study considers the identification of the problem of *developmental* investment. In the second instance, the study carefully examines the saving gaps in a number of chosen EMDEs. A great number of countries experience negative saving gaps. In addition, external/foreign finance does not fully eliminate the gaps. If we assume that those negative gaps are really detrimental to growth or development then apart from the regular means of finance, other types of finance and/or institutional environments need to be promoted and adopted.

Key words: development finance, development investment, saving-investment gap, saving**.**

JEL Classifications: E21, E22, O16

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1. Introduction

There are quite a number of stylized facts that can be pointed out concerning the key factors of countries' economic growth or development. Among others, there is the recognition of finance as one of the engines of economic growth/development. Authors like Goldsmith (1969), Levine (1997, 2003, 2004) and Caporale (2015) as well as international organizations such as the International Monetary Fund (IMF) and the World Bank acknowledge by and large the positive effect of finance on growth via investment. This does not, however, mean that full consensus has been reached. Indeed, there are still a handful of economists or authors who are skeptical about the positive link between financial development and economic growth. This is the case for Andersen *et al*. (2012) who underline some theoretical ambiguities surrounding the causal relation between both entities, as well as dubious empirics.

In fact, at present time, it can be noted an ongoing unsatisfied need for development finance, which is recognised in a majority of emerging market and developing economies (EMDEs). Indeed, research (Shinozaki 2014, World Bank 2013, Worrell 2012) and international surveys have identified lack of adequate finance as a major barrier to investment in these countries and other potentially competitive investments. For example, Shinozaki (2014, 1) points out "Given the global economic uncertainty, adequate and stable access to finance is crucial for small and medium enterprises (SMEs) to survive and grow. In Asia, however, most SMES have been suffering from poor access to finance, which is one of the core factors impeding SME development. There is a perceived supply-demand gap in SME finance." By the same token, Caribbean nations have identified cultural industries as having developmental

potential, as well as areas such as medical and educational 'tourism', and the exploration of new markets for the region's existing output. These are the sectors whose development needs are poorly served by the existing financial infrastructure. In other words, lack of adequate finance might turn out to be an impediment to economic growth at large.

The present exploratory study, part of a larger project on finance and development, empirically documents the inadequacy of (private) finance/saving for developmental investment and explores ways of addressing that inadequacy using a sample of essentially emerging market and developing countries over the period 1990-2015. The concept "inadequacy" is understood here as a gap or unbalance between (private) finance/saving and (development) investment. A negative gap meaning that the investment needs are not totally met by size of available finance. Another negative gap arises when the potential funds do not translate into investment as they are not available to finance some types of investment. Both types of negative gaps are contemplated here. We, however, acknowledge that empirically, in many instances, data availability may limit the prospect of disentangling the two types of gaps. Another remark is that although the larger project deals with the topic of finance and development, here the emphasis is on the link between finance in its saving form and investment assuming that investment opens the doors for economic growth and development. Summing up, the paper is definitely about examining the trend in the saving-investment gaps (current accounts) in EMDEs.

Essentially, the exploratory study reposes on two pillars. In the first instance, the study is devoted to the identification of the problem of *developmental* investment.[1] Development finance or development investment is basically fund made available to finance a certain type of investment which could not be otherwise funded under the regular channel for the reason that investment is perceived as not profitable or is in sectors that are deem not essential or new sectors. In the second instance, the study empirically derives and examines the saving-investment gaps[2] in a selected number of countries during the period 1990-2015. A look at the literature reveals that only a handful of authors have dealt with the saving-investment gap explicitly or implicitly. This set includes Freund and Warnok (2005), Knight and Scacciavillani (1998), Soyibo (1994), and Dean *et al.* (1989). Other authors concentrate on the Feldstein-Horioka puzzle (Blanchard and Giavazzi 2002, Mamingi 1997, Baxter and Crucini 1993, Feldstein and Horioka 1980, to name a few).

This study exploits secondary data of a sample of countries covering the period 1990-2015. Although the study targets EMDEs, a number of other types of countries are also included for robustness of results. At the methodological level, the study judiciously recourses to time series rather than panel and uses descriptive statistics including correlation measures. At this stage of research, the study does not emphasize formal causal relationships.

The study is a useful add-on to the literature on saving-investment gap. Indeed, it is a rare study which clearly shows using a sample of countries across the word that there is indeed gap between (development) finance (saving among others) and investment; gap not necessarily

[1] The rationale is similar to that for "infant industry" trade protection.
[2] Saving gap and saving-investment gap are used interchangeably.

meaning shortage in saving as it can stand for saving or/and likes being not ready to fund some types of investment.

The paper is organized as followed. Section 2 is concerned with the identification of the problem of *developmental* investment. Section 3 documents the existence of finance/saving - investment gaps in the context of the chosen sample of countries. A descriptive statistical analysis is conducted. Section 4 exposes and discusses the variety of views on the provision of development finance. Section 5 contains concluding remarks.

2. Identification of the problem of developmental investment.

In general, investment will follow international comparative advantage, and EMDEs will attract their share of global investment, based on the fact that investors will seek out those investment opportunities which offer a competitive return, wherever in the world they are located. However, in the real world of technological change, information costs and asymmetries, market access costs, sunk costs, unequal power relationships, and other market frictions, deliberate choices have to be made, in pursuit of economic development, and to maximise each country's potential comparative advantage and possible gains from international commerce. For note, development finance is understood here as the up-front investment which must be made to overcome these market frictions, on the way to realising internationally competitive investment projects. In the absence of such financing, potentially profitable investment will not take place, because the investor will not be able to recoup start-up costs and make a competitive market return on the initial investment within the investor’s preferred time horizon. Caribbean nations, for example, have identified cultural industries as having developmental potential, as well as areas such as medical and educational 'tourism', and the exploration of new markets for the region's existing output. These are the sectors whose development needs are poorly served by the existing financial infrastructure. In other words, another path (institutions, incentives) needs to be

created to satisfy the needs of these sectors. What are the challenges in transforming finance instruments into concrete instruments of economic development? The paper concentrates on the key issue of a contradictory phenomenon: idle fund in the banks and lack of funding for some types of investment. Most likely there are other contradictions that need to be pointed out. Inadequation, lending rate size, information or cost of acquiring information and pace of innovation, among others, have to be examined.

3. Saving - Investment Gaps: An Empirical Investigation

We study the issue of gap between finance or saving and investment in the period 1990-2015 using a sample of countries, which include: Botswana, Barbados, Belize, Jamaica, Trinidad and Tobago, Mexico, Brazil, Chile, Colombia, Costa Rica, Peru, Belgium, Luxembourg, Greece, Hungary, Malta, Poland, Turkey, China, India, Hong Kong, Malaysia, Philippines, Singapore, Thailand, and Bahrain.

A gap is defined as the difference between saving and investment. A negative gap means that finance (saving here) is short of investment and a positive one indicates it is above investment. While a negative saving gap means that one has to resource extra funds to finance investment, a positive gap might in some circumstances indicate a fund surplus that is not available for funding some activities deem not profitable or not useful to the backer.

The sources of data are in Table 1. The variables of interest are: gross national saving (in current US $ Billion), Total investment (in current US $ Billion), FDI, net (in current US $ Billion), Portfolio investment (in current US $ Billion), absolute Gap = Gap A = gross national saving – total investment, relative Gap = Gap R = gross national saving /GDP – investment/GDP in %.

The section proceeds as follows. 3.1 derives the absolute and relative saving gaps, the trend in the gaps, and computes some correlations between saving gap and investment. 3.2 examines the

question whether some external finance (FDI + Portfolio investment) help fill or alleviate the saving gaps.

3.1. *On the gaps between saving(S) and investment(I)*

Table 1[3] contains the gaps between saving and investment in absolute value (Gap A). As can be clearly seen, there is the predominance of negative saving gaps throughout the two dimensions: years and countries. Out of 26 countries, only Luxembourg and Singapore register positive absolute saving gaps throughout, followed by Bostwana with one miss. Table 2 considers the relative saving gap derived using each variable of interest deflated by GDP (in %) (Gap R). Table 2 results echo those just alluded to for Table 1.

To better understand the results of tables 1 and 2 we characterize the saving-investment trend owing to a simple regression and also derive the number of years in which the countries underwent negative gaps. The results of Table 3 related to the trend regression are not very instructive as quite a number of saving gaps do not seem to have a trend. It is better to examine the number of years that countries have been experiencing negative gaps. Table 4 delivers such statistics. As can be seen, the number of negative saving gap years using any definition of negative saving gap goes from 0 (Singapore and Luxembourg) to 26 (Belize, Greece, Costa Rica and Mexico) with most of the countries of Group 1 being in the 20 years out of 26 years.

To push further the statistical analysis, we compute different correlations reported in Table 5. Column 2 and column 3 results reveal that the correlations between saving and investment are positive and far bigger when used in current billion US$ than in % of GDP. Barbados and Chile which turn out to be negative are anomalous cases. In fact, they are statistically zero. If one believes the Feldstein-Horioka puzzle then mobility of capital takes place in Barbados, Botswana, Chile, Hungary,

[3] All tables and graphs are in Appendix.

Jamaica, and Malaysia. Column 4 and column 5 provide us with the results of correlations between investment and gap R as well as gap A, respectively. Starting with the results involving Gap A, the following countries register a negative correlation between total investment and the prime gap: Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Belgium, Greece, Hong Kong, Hungary, India, Jamaica, Mexico, Peru, Poland, and Turkey. That is, in these countries national saving is unable to meet the requirement needs of investment. In fact, the above negative correlations can be traced to the overwhelmingly negative saving gaps in those countries. Indeed, most countries underwent negative saving gaps in most of the years covering the period of study. Graph 1 capturing the gaps for Costa Rica is a typical one. Other countries register positive correlations between total investment and saving gap. These are Bahrain, Botswana, China, Luxembourg, Malaysia, the Philippines, Singapore, Thailand, and Trinidad and Tobago. The positivity of the relationship is mainly driven by the overwhelmingly positive saving gap in these countries. In the context of these countries, in principle saving is enough to satisfy investment. In fact, when we examine further the two sets of countries, we notice that the second set covers the Asian tigers (China, Thailand, the Philippines, and Singapore), Europe (Luxembourg), Middle East (Bahrain), Africa (Botswana) and the Caribbean (Trinidad and Tobago). There is no need to comment on the Asian tigers concerning the positive correlations. It is also the case for Luxembourg as a developed country. Bahrain and Trinidad and Tobago owe their good fortune to petroleum activities coupled with good management. Botswana owes her status to the good management of her diamond industry. However, the examination of the results involving relative gap (Gap R) reveals some troublesome features as some correlations uncovered above have changed signs. This is the case of the Asian tigers (China, Thailand, the Philippines, and Singapore), Bahrain, Botswana and Trinidad and Tobago whose correlations are now negative. Some graphs give us a hint as to why the changes in the signs of correlations (see Graph 2 and Graph 3 for Malaysia).

Malta, and Mexico undergo changes from negative correlations with absolute saving gap to positive correlations with relative saving gap. The behavior of GDP dictates what happens to the size and sign of correlation between relative saving gaps and Investment/GDP. This simple correlation behaves like a partial correlation with GDP as a control variable.

3.2 Does external finance reduce the gap?

We have acknowledged the existence of negative gaps in the majority of countries. The question is whether private external finance could be of some help in eliminating or closing saving gaps. Here, by private external finance, we mean FDI and Portfolio investment (PI). Thus we derive another finance gap which takes into account the regular saving gaps used above in addition to FDI and PI. We call Gap AI if current Billion US$ is used and GAP RI if in % of GDP. Table 5 which compares the different gaps (in absolute and relative terms) show that external finance do help in closing the negative saving investment gaps. Thus, for example, Colombia sees 15 negative saving gaps eliminated, Peru and Costa Rica eliminate each 12 negative gaps out of 26. All other countries of Group 1 experience the same phenomenon. In fact, even the countries of Group 2 with predominantly positive saving gaps undergo the same phenomenon of negative saving gaps decreasing with the exception of the countries with no negative saving gaps.

Summing up, this section has revealed that in a quite a number of countries private finance is unable to fully close the saving-investment gap. If we agree that negative saving gaps are detrimental to economic growth/development process[4] then there is a need to find other

[4] It is important to point out that not everybody believes that negative saving gap or current account deficit is necessarily bad for development. Aghion *et al.* (2016) for example show that in rich countries "domestic savings does not matter for growth." In a companion paper (Worrell, Mamingi and Walkes 2016) we show that in small very open economies with foreign exchange constraints, current account deficits are not necessary a curse; in fact, they are on the contrary the result of growth process. Blanchard and Giavazzi (2002) note the following talking about Greece and Portugal: " To the extent that they are the countries with higher expected rates of return, poor countries should see an increase in investment. And to the extent that they are the countries with better

types of finance and/or appropriate institutions for boosting investment and ultimately growth/development.

4. Views on the Provision of Development Finance

We have just shown the mismatch between finance and investment in many of the countries of our sample. The task of this section is to examine the *role for the state in the finance of development. Indeed, t*here is a role for direct state provision of finance, above and beyond the provision of support and incentives, for a certain number of reasons. Among others, the development of new producing sectors involves large up-front costs which the private investor may never recover, for the penetration of new markets, establishment of new brands, development of supporting infrastructure, development of support services (e.g., foreign language training), building business relationships, transportation links , etc.

There may also be external economies which first movers will not be able to recuperate, for example before the sector reaches a critical size to generate a pool of skills specialized to that activity, such as chefs and mixmasters; and diseconomies such as congestion.

Without active state promotion, in one form or another, the individual efforts of entrepreneurs may not coalesce to form a viable economic sector, except in cases of natural resources based sectors (in which I would include resort tourism). The state must often make a judgement as to the sectors and activities in which it has a potential comparative advantage, and encourage a clustering in those sectors to ensure that the sector grows to major size. A financing mechanism is usually an essential part of that promotion.

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prospects, they should also see a decrease in saving. Thus on both counts, poor countries should run larger account deficits, and, symmetrically, richer countries should run larger current account surpluses" (ibidem,148).

There is a time dimension, in that there is a mismatch between the time horizon of those with surplus funds, and the entrepreneurs who will produce the new goods and services. Typically financial surpluses accumulate in commercial banks, with short maturities, compared to large investment in new activity, which may eventually be very profitable, but which yields very little in the early years. Related to this in the risk profile mismatch, best illustrated by pension funds, which do have a long horizon, but which are constrained to invest in governments and sectors that are well established.

These arguments are one dimension of the issue at the heart of recent discussion of the "entrepreneurial state", which makes large investments in chosen innovations, thereby creating and shaping the markets of the future (Mazzucato, 2013).

In answer to the question of how to provide state funding, the spectrum ranges from state enterprise through to private markets where the state restricts its role to the provision of incentives, including for financial market development:

- State ownership of state-funded enterprise.
- State-owned development financial institutions are next along the continuum. These institutions provide funding and other support for private enterprises, with a bias towards sectors that government has identified as priority for development. In this case, the enterprise is subject to market discipline, with its incentive to remain competitive, and market success can be used as the criterion for continuing support for the entrepreneur.
- In many market oriented systems, sectoral development and technological change has been supported by government through the defence budget, the building of science parks, etc.

- The market model which advocates stock markets where funding is by way of private issues and trades, supported by junior markets and venture funds. This is the model which provides the rationale for the conventional view of finance for development.

We do not deal with infrastructure and the financing of pure public goods, which most agree is to be publicly funded in whole or in part, even if there is participation by the private sector. In the provision of public goods the responsibility of government is clear; the question we focus on is whether, in effecting the modernization of economies, and in taking advantage of the potential of new technologies, there is not an essential role for Government, including the provision of appropriate finance. This is what we refer to as the *development finance problem*. It concerns the role of the state as entrepreneur, over and beyond its role as provider of public services strictly defined.

6. Conclusion

This exploratory study attempts to document the existence of saving gaps in emerging market and developing countries. Using a sample of countries which in general fulfil the characteristics of EMDCs, the study finds that indeed there exist negative saving gaps in the majority of countries of the sample.

Assuming that negative saving gaps are a nuisance, measures should be taken to eliminate them or , at the very least, to reduce their impact. It is found that external/foreign finance is of some help in decreasing the magnitude of saving gaps. But overall, there is a need to rethink the type of government who can help in this matter. It is argued that the development state is perhaps the appropriate framework to develop.

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APPENDIX

Table 1: Gap A: Absolute Saving Gaps, 1990-2015

Country	Variable	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bahrain	Gap A	0.253	-0.184	-0.546	-0.239	-0.269	0.289	0.302	0.099	-0.618	-0.029	0.853	0.501	0.142	0.144	-0.579	0.265	0.970	1.621	1.180	0.591	2.294	4.524	5.053	5.712	5.227	0.642
Barbados	Gap A	-0.021	-0.032	0.152	0.080	0.139	0.058	0.088	-0.035	-0.085	-0.135	-0.112	-0.114	-0.162	-0.119	-0.361	-0.419	-0.348	-0.243	-0.485	-0.305	-0.254	-0.558	-0.400	-0.389	-0.432	-0.320
Belgium	Gap A	-3.712	-2.389	-1.296	3.375	6.578	11.024	9.516	9.431	9.025	15.448	5.315	3.335	11.568	10.770	11.408	7.689	7.541	7.035	-5.186	-5.209	8.530	-5.654	-0.269	-1.157	-1.142	-0.159
Belize	Gap A	-0.030	-0.050	-0.045	-0.060	-0.022	-0.010	-0.007	-0.023	-0.041	-0.073	-0.162	-0.190	-0.165	-0.184	-0.155	-0.151	-0.025	-0.052	-0.145	-0.065	-0.034	-0.016	-0.019	-0.074	-0.128	-0.173
Botswana	Gap A	0.276	0.544	0.477	0.532	0.155	0.264	0.735	0.717	0.203	0.618	0.545	0.677	0.285	0.683	0.351	1.593	1.949	1.645	-0.006	-0.757	-0.408	0.441	0.209	1.323	2.482	1.150
Brazil	Gap A	-6.962	-4.341	4.066	-2.474	-15.633	-35.566	-23.829	-30.841	-33.884	-25.870	-24.795	-23.695	-8.066	3.757	11.345	13.544	13.026	0.419	-30.627	-26.222	-75.831	-77.104	-74.238	-74.886	-104.175	-58.956
Chile	Gap A	-1.758	-0.754	-2.568	-3.284	-3.522	-2.480	-3.195	-3.775	-3.908	0.077	-0.932	-1.039	-0.653	-0.806	2.598	1.927	7.099	7.200	-6.456	3.525	3.803	-3.058	-9.381	-10.335	-3.382	-4.996
China	Gap A	14.413	11.756	-6.123	-9.265	12.493	15.021	21.848	36.688	31.250	20.961	20.272	17.252	35.057	42.519	68.078	130.059	228.128	348.399	416.322	240.272	236.815	135.538	212.725	145.965	272.027	321.321
Colombia	Gap A	-0.532	0.956	-0.404	-3.295	-6.176	-7.287	-7.356	-8.476	-7.214	-1.022	0.854	-1.037	-1.303	-0.947	-0.782	-1.892	-2.909	-6.007	-6.451	-4.646	-8.665	-9.707	-11.278	-12.352	-19.485	-18.754
Costa Rica	Gap A	-0.620	-0.218	-0.398	-0.673	-0.500	-0.364	-0.268	-0.448	-0.478	-0.676	-0.699	-0.588	-0.835	-0.858	-0.772	-0.956	-0.997	-1.605	-2.717	-0.562	-1.249	-2.172	-2.347	-2.468	-2.337	-2.022
Greece	Gap A	-3.534	-1.567	-2.136	-0.745	-0.146	-3.213	-5.093	-5.324	-3.790	-5.114	-7.714	-7.311	-10.510	-17.063	-18.544	-21.978	-31.393	-48.377	-53.559	-40.739	-34.081	-28.795	-9.412	-4.898	-4.961	-0.090
Hong Kong SAR	Gap A	6.519	5.983	5.306	9.589	2.924	-4.240	-0.465	-8.424	1.692	9.414	7.547	10.393	13.128	17.407	16.824	21.572	24.566	27.552	32.852	21.156	16.009	13.812	4.144	4.150	3.789	9.651
Hungary	Gap A	n/a	-0.460	-0.638	-5.283	-4.745	-2.325	-1.461	-1.910	-3.234	-3.554	-3.409	-3.077	-5.020	-7.129	-9.254	-7.876	-8.075	-9.880	-11.124	-1.046	0.364	1.048	2.252	5.348	2.825	5.293
India	Gap A	-9.622	-1.168	-4.915	-1.160	-3.370	-5.895	-4.498	-5.501	-4.039	-4.697	-2.669	3.398	6.345	14.086	-2.468	-9.902	-9.567	-15.744	-27.909	-38.435	-48.059	-77.864	-87.653	-32.252	-26.776	-22.083
Jamaica	Gap A	0.364	0.497	-0.050	-0.121	0.057	-0.133	-0.075	-0.204	-0.259	-0.282	-0.642	-0.774	-1.116	-0.799	-0.583	-1.335	-1.308	-1.422	-2.496	-0.975	-0.896	-1.870	-1.320	-1.300	-1.164	-0.402
Luxembourg	Gap A	1.253	1.289	2.069	2.078	2.206	2.449	2.337	1.785	1.578	2.205	2.680	1.768	2.204	1.915	4.094	4.103	4.200	4.955	4.230	3.703	3.549	3.628	3.398	3.505	3.574	3.187
Malaysia	Gap A	-3.001	-6.243	-5.499	-6.545	-9.290	-8.038	-4.155	-5.517	8.872	11.737	7.904	6.784	7.473	12.039	14.043	20.036	25.347	28.782	38.144	30.420	25.711	32.459	16.244	11.265	14.836	8.872
Malta	Gap A	0.389	0.478	0.530	0.319	0.297	-0.001	-0.114	0.160	0.154	0.303	-0.204	-0.061	0.043	-0.063	-0.310	-0.489	-0.596	-0.289	-0.090	-0.533	-0.380	-0.229	0.114	0.344	n/a	n/a
Mexico	Gap A	-6.649	-12.978	-21.540	-23.399	-29.662	-1.578	-2.508	-7.665	-15.994	-14.000	-18.752	-17.755	-14.876	-8.345	-7.017	-9.053	-7.500	-14.504	-20.374	-8.726	-5.224	-13.984	-16.956	-30.965	-26.242	-32.728
Peru	Gap A	0.163	-0.755	-1.929	-2.510	-2.932	-4.560	-3.615	-3.338	-3.313	-1.359	-1.517	-1.172	-1.041	-0.856	0.554	2.258	2.910	1.519	-5.284	-0.612	-3.541	-3.180	-5.124	-8.584	-8.195	-8.373
Philippines	Gap A	-2.433	-0.933	-0.903	-2.722	-2.662	-1.787	-3.568	-3.927	1.546	-2.875	-2.228	-1.749	-0.281	0.285	1.625	1.987	6.964	8.073	0.146	8.435	7.179	5.646	6.948	11.388	10.756	8.382
Poland	Gap A	1.054	-2.467	-1.311	-3.720	3.740	1.175	-2.870	-5.300	-6.413	-11.988	-9.852	-5.437	0.000	0.000	-13.820	-7.957	-13.875	-27.394	-35.814	-17.843	-25.884	-27.373	-18.583	-6.745	-11.129	-1.116
Singapore	Gap A	2.921	4.874	5.854	4.107	11.264	14.445	13.910	15.285	18.477	14.658	10.357	12.374	12.402	22.167	20.790	28.133	37.183	46.982	28.015	32.659	56.292	62.794	52.346	53.773	53.512	57.924
Thailand	Gap A	0.000	-7.163	-5.871	-6.126	-7.801	-13.234	-14.352	-3.110	14.292	12.467	9.818	5.831	5.149	5.005	3.650	-7.643	2.313	15.585	0.932	20.668	10.023	8.902	-1.498	-5.169	15.417	30.990
Trinidad and Tobago	Gap A	0.470	0.007	0.151	0.124	0.228	0.305	0.116	-0.601	-0.630	0.031	0.544	0.445	0.077	0.986	1.648	3.593	7.271	5.167	8.499	1.634	3.967	2.782	0.788	1.979	1.340	-1.500
Turkey	Gap A	-1.956	-0.056	-0.721	-5.771	0.371	-4.022	-1.809	-1.959	5.965	2.345	-6.438	6.525	2.281	-6.439	-13.377	-19.503	-29.173	-36.059	-36.064	-10.355	-43.709	-71.029	-44.113	-59.249	-39.692	-28.736

Source of data: International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates.

Note: Gap R=Saving –Investment (Billions $US

Table 2: Gap R: Relative Saving Gaps, 1990-2015

Country	Variable	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bahrain	Gap R	5.98	-3.996	-11.484	-4.592	-4.827	4.936	4.943	1.557	-9.999	-0.444	9.409	5.579	1.478	1.303	-4.4	1.658	5.242	7.46	4.59	2.575	8.92	15.576	16.43	17.362	15.441	1.994
Barbados	Gap R	-1.049	-1.573	7.791	3.9	6.474	2.559	3.65	-1.382	-2.968	-4.495	-3.581	-3.658	-5.103	-3.637	-10.284	-10.76	-8.082	-5.349	-10.554	-6.636	-5.722	-12.811	-9.278	-9.075	-9.916	-7.187
Belgium	Gap R	-1.798	-1.129	-0.549	1.494	2.672	3.807	3.382	3.701	3.463	5.937	2.234	1.402	4.469	3.376	3.076	1.985	1.84	1.491	-1	-1.075	1.764	-1.073	-0.054	-0.222	-0.215	-0.035
Belize	Gap R	-7.276	-11.244	-8.765	-10.737	-3.873	-1.587	-1.068	-3.47	-6.014	-9.94	-19.418	-21.835	-17.728	-18.608	-14.645	-13.572	-2.085	-4.036	-10.578	-4.859	-2.462	-1.067	-1.209	-4.582	-7.439	-9.8
Botswana	Gap R	7.287	13.801	11.497	12.799	3.647	5.572	15.171	14.283	4.248	11.275	9.421	12.326	5.231	9.093	3.919	16.044	19.25	15.042	-0.054	-7.37	-3.191	2.809	1.424	8.929	15.632	7.988
Brazil	Gap R	-1.507	-0.72	1.015	-0.565	-2.801	-4.527	-2.802	-3.492	-3.923	-4.316	-3.783	-4.236	-1.588	0.673	1.695	1.519	1.176	0.03	-1.806	-1.573	-3.433	-2.949	-3.017	-3.037	-4.31	-3.322
Chile	Gap R	-5.571	-2.069	-5.776	-6.885	-6.386	-3.476	-4.217	-4.559	-4.924	0.106	-1.175	-1.437	-0.92	-1.035	2.582	1.549	4.59	4.16	-3.594	2.05	1.748	-1.219	-3.537	-3.73	-1.307	-2.08
China	Gap R	4.015	3.082	-1.441	-2.092	2.222	2.052	2.538	3.829	3.048	1.924	1.682	1.295	2.398	2.577	3.506	5.733	8.357	9.889	9.133	4.749	3.921	1.809	2.514	1.538	2.628	2.957
Colombia	Gap R	-1.32	2.318	-0.82	-5.904	-7.559	-7.877	-7.571	-7.947	-7.328	-1.186	0.855	-1.056	-1.33	-1	-0.668	-1.291	-1.789	-2.896	-2.644	-1.987	-3.019	-2.894	-3.051	-3.249	-5.149	-6.421
Costa Rica	Gap R	-8.369	-3.045	-4.647	-6.981	-4.738	-3.104	-2.266	-3.491	-3.392	-4.28	-4.382	-3.583	-4.959	-4.897	-4.149	-4.79	-4.425	-6.097	-9.106	-1.911	-3.441	-5.268	-5.181	-5.013	-4.717	-3.957
Greece	Gap R	-3.61	-1.49	-1.838	-0.685	-0.125	-2.347	-3.492	-3.719	-2.624	-3.588	-5.928	-5.368	-6.832	-8.45	-7.71	-8.87	-11.486	-15.189	-15.11	-12.345	-11.384	-10.006	-3.831	-2.045	-2.106	-0.046
Hong Kong SAR	Gap R	8.474	6.725	5.089	7.967	2.153	-2.931	-0.291	-4.75	1.002	5.679	4.396	6.135	7.892	10.786	9.949	11.881	12.693	13.021	14.982	9.884	7.002	5.558	1.578	1.505	1.301	3.114
Hungary	Gap R	-1.634	-1.331	-1.656	-13.23	-11.047	-5.032	-3.143	-4.052	-6.652	-7.249	-7.227	-5.735	-7.435	-8.387	-8.929	-6.999	-7.038	-7.104	-7.081	-0.806	0.28	0.749	1.771	3.979	2.042	4.386
India	Gap R	-2.946	-0.425	-1.676	-0.408	-1.012	-1.608	-1.125	-1.3	-0.942	-1.006	-0.56	0.688	1.211	2.278	-0.342	-1.187	-1.008	-1.271	-2.28	-2.815	-2.813	-4.288	-4.803	-1.731	-1.311	-1.065
Jamaica	Gap R	7.934	12.198	-1.423	-2.493	1.159	-2.306	-1.149	-2.736	-2.971	-3.201	-7.189	-8.514	-11.508	-8.501	-5.748	-11.914	-10.987	-11.085	-18.244	-8.098	-6.789	-12.986	-8.948	-9.114	-8.359	-2.873
Luxembourg	Gap R	9.38	8.913	12.752	12.479	11.921	11.23	10.769	9.144	7.731	9.868	12.537	8.4	9.456	6.558	11.92	11.096	10.021	9.846	7.671	7.35	6.78	6.181	6.07	5.672	5.509	5.515
Malaysia	Gap R	-6.816	-12.703	-9.294	-9.784	-12.473	-9.061	-4.12	-5.517	12.293	14.829	8.427	7.312	7.41	10.924	11.257	13.959	15.58	14.871	16.526	15.04	10.082	10.894	5.166	3.484	4.388	2.995
Malta	Gap R	15.283	17.366	17.541	11.791	9.909	-0.028	-3.097	4.392	4.054	7.763	-5.161	-1.564	0.996	-1.232	-5.489	-8.164	-9.359	-3.87	-1.052	-6.578	-4.657	-2.462	1.289	3.564	3.393	9.86
Mexico	Gap R	-2.531	-4.127	-5.924	-4.643	-5.625	-0.459	-0.631	-1.595	-3.186	-2.416	-2.743	-2.45	-2.006	-1.17	-0.911	-1.045	-0.777	-1.39	-1.85	-0.975	-0.497	-1.194	-1.429	-2.454	-2.022	-2.86
Peru	Gap R	0.635	-2.238	-5.484	-7.335	-6.71	-8.77	-6.698	-5.874	-6.075	-2.754	-2.976	-2.272	-1.913	-1.45	0.831	3.013	3.312	1.487	-4.346	-0.505	-2.384	-1.864	-2.659	-4.249	-4.04	-4.359
Philippines	Gap R	-5.49	-2.055	-1.704	-5.007	-4.154	-2.411	-4.307	-4.769	2.141	-3.464	-2.75	-2.294	-0.346	0.34	1.778	1.928	5.698	5.405	0.084	5.011	3.597	2.519	2.778	4.188	3.777	2.871
Poland	Gap R	1.628	-2.942	-1.417	-3.949	3.441	0.843	-1.827	-3.364	-3.7	-7.126	-5.732	-2.854	0	0	-5.451	-2.614	-4.042	-6.389	-6.755	-4.088	-5.401	-5.177	-3.715	-1.287	-2.042	-0.235
Singapore	Gap R	8.079	10.718	11.224	6.772	15.268	16.435	14.429	15.26	21.558	16.988	10.807	13.859	13.489	22.852	18.207	22.079	25.158	26.104	14.574	16.974	23.81	22.816	18.096	17.907	17.468	19.787
Thailand	Gap R	0	-7.292	-5.268	-4.753	-5.318	-7.818	-7.841	-2.071	12.573	9.842	7.768	4.847	3.834	3.287	2.111	-4.037	1.043	5.927	0.32	7.34	2.94	2.402	-0.377	-1.231	3.813	7.84
Trinidad and Tobago	Gap R	9.268	0.138	2.839	2.703	4.606	5.714	2.017	-10.468	-10.429	0.451	6.671	5.038	0.851	8.72	12.409	22.481	39.582	23.873	30.494	8.52	18.859	11.397	3.205	7.26	4.642	-5.396
Turkey	Gap R	-1.298	-0.037	-0.455	-3.203	0.284	-2.373	-0.997	-1.032	2.215	0.939	-2.415	3.329	0.981	-2.125	-3.411	-4.038	-5.495	-5.572	-4.938	-1.685	-5.978	-9.168	-5.592	-7.197	-4.969	-4.001

Source of data: International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates.

Note: Gap R=Saving –Investment (deflated by GDP, in %)

Table 3: Trend in Relative Saving Gaps, 1990-2015

GAP R	Constant	Trend
	Coefficients	Coefficients
	Prob.	*Prob.*
Bahrain	-4.511	0.646
	(0.0716)	*(0.0015)*
Barbados	3.243	-0.594
	(0.085)	*(0.000)*
Belgium	2.375	-0.070
	(0.118)	*(0.415)*
Belize	-9.761	0.110
	(0.002)	*(0.480)*
Botswana	11.055	-0.220
	(0.000)	*(0.253)*
Brazil	-1.597	-0.031
	(0.099)	*(0.585)*
Chile	-4.412	0.208
	(0.000)	*(0.033)*
China	1.709	0.121
	(0.100)	*(0.188)*
Colombia	-3.241	0.005
	(0.125)	*(0.967)*
Costa Rica	-4.615	-0.001
	(0.000)	*(0.987)*
Greece	-2.680	-0.248
	(0.109)	*(0.202)*
Hong Kong SAR	4.476	0.106
	(0.089)	*(0.569)*
Hungary	-8.008	0.307
	(0.002)	*(0.075)*
India	-0.560	-0.059
	(0.337)	*(0.205)*
Jamaica	1.808	-0.593
	(0.459)	*(0.003)*
Luxembourg	11.806	-0.222
	(0.000)	*(0.000)*
Malaysia	-5.971	0.834
	(0.170)	*(0.014)*
Malta	8.741	-0.532
	(0.041)	*(0.090)*

Mexico	-3.399 *(0.000)*	0.097 *(0.071)*
Peru	-4.510 *(0.014)*	0.128 *(0.255)*
Philippines	-4.668 *(0.000)*	0.384 *(0.000)*
Poland	-1.485 *(0.206)*	-0.110 *(0.202)*
Singapore	11.631 *(0.000)*	0.426 *(0.001)*
Thailand	-2.895 *(0.305)*	0.324 *(0.034)*
Trinidad and Tobago	2.010 *(0.589)*	0.471 *(0.184)*
Turkey	0.714 *(0.447)*	-0.267 *(0.000)*

Note: Regression of saving gap on a constant and a linear trend.

Table 4: Negative Finance Gaps: number of years, 1990-2015

Countries	GAP A	GAP R	GAP AI	GAP RI
GROUP 1				
Barbados	21	21	16	16
Belgium	10	10	6	6
Belize	26	26	15	15
Brazil	20	20	7	7
Chile	19	19	3	3
Colombia	24	24	9	9
Costa Rica	26	26	14	14
Greece	26	26	21	21
Hong Kong SAR	3	3	3	3
Hungary	20	20	8	8
India	23	23	8	8
Jamaica	23	23	17	17
Malta	13	13	3	2
Mexico	26	26	6	6
Peru	21	21	9	9
Poland	21	21	13	13
Turkey	21	21	18	18
GROUP 2				
Bahrain	7	7	5	5
Botswana	3	3	2	2
China	2	2	0	0
Luxembourg	0	0	1	1
Malaysia	8	8	7	7
Philippines	12	12	10	10
Singapore	0	0	0	0
Thailand	10	10	6	6
Trinidad and T.	3	3	0	0

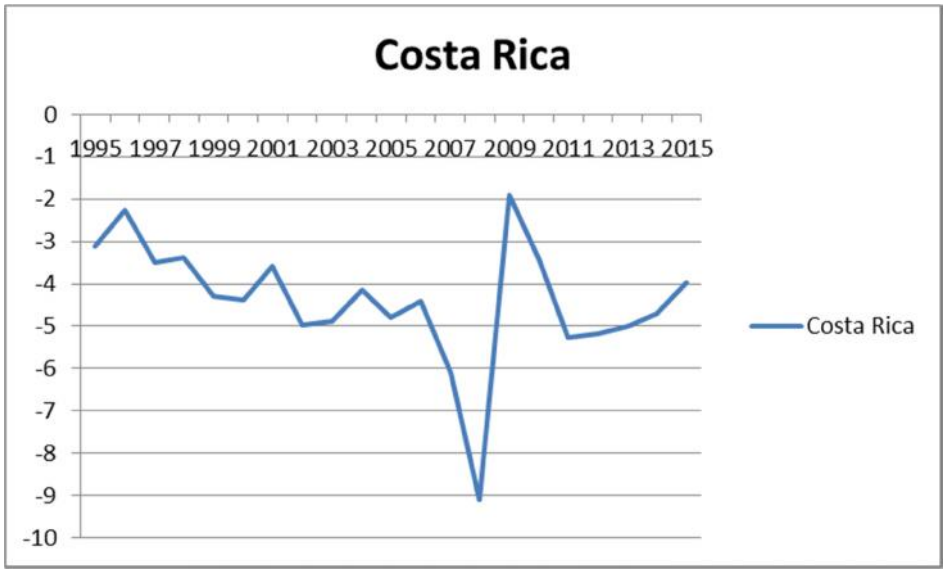
Note: Gap A: saving-investment in current US$; Gap AI= Gap A+FDI+PI; GAP R: saving/GDP-investment/GDP in %. GAP RI= gap R +FDI+PI deflated by GDP. Groups have been determined according the sign of correlation between saving and investment with Group 1 being negative and Group 2 positive.

Table 5: Correlation results, 1990-2015

Country	rrelation (Total Investment & Gross National Savir		Correlation(Domestic Gap & Total Investment)	
	% of GDP	Current US$	% of GDP	Current US$
Bahrain	0.409	0.920	-0.322	0.581
Barbados	-0.053	0.226	-0.615	-0.846
Belgium	0.017	0.978	-0.565	-0.437
Belize	0.819	0.635	-0.412	-0.629
Botswana	0.081	0.921	-0.644	0.131
Brazil	0.562	0.992	-0.298	-0.839
Chile	-0.008	0.975	-0.884	-0.345
China	0.868	0.999	0.051	0.700
Colombia	0.648	0.993	-0.745	-0.850
Costa Rica	0.880	0.993	-0.743	-0.940
Greece	0.665	0.605	-0.291	-0.932
Hong Kong SAR	0.009	0.753	-0.782	-0.217
Hungary	0.037	0.891	-0.599	-0.152
India	0.972	0.998	-0.570	-0.820
Jamaica	0.145	0.550	-0.440	-0.922
Luxembourg	0.832	0.989	0.444	0.814
Malaysia	0.024	0.897	-0.905	0.359
Malta	0.824	0.639	0.564	-0.507
Mexico	0.824	0.994	0.263	-0.345
Peru	0.712	0.990	-0.302	-0.699
Philippines	0.395	0.988	-0.772	0.796
Poland	0.553	0.978	-0.489	-0.800
Singapore	0.410	0.977	-0.741	0.885
Thailand	0.754	0.931	-0.896	0.008
Trinidad and Toba	0.189	0.716	-0.367	0.443
Turkey	0.522	0.982	-0.248	-0.958

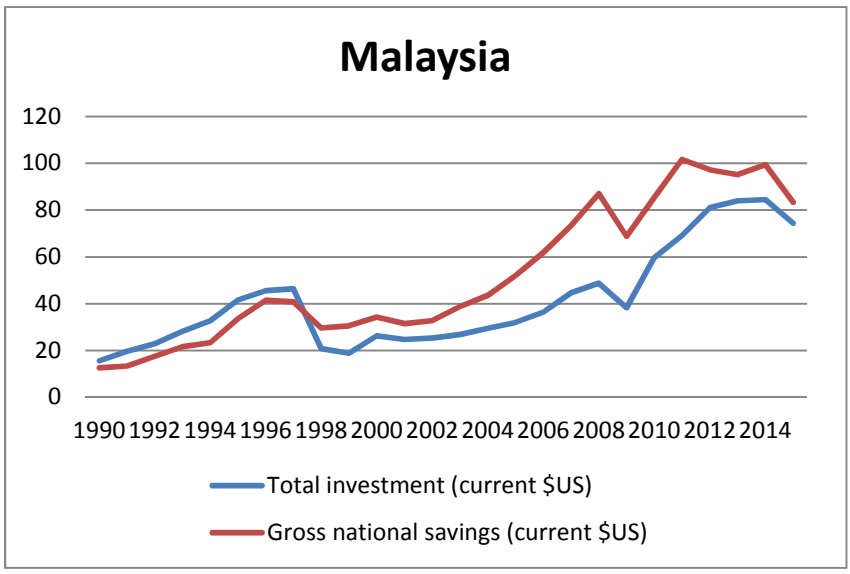
Note: Correlations are of interest. Their significance can be tested using the following formula $t\,\mathrm{X}r\sqrt{n\,\mathrm{Z}2}/\sqrt{1\mathrm{Z}r^{2}}$ where r is the coefficient of correlation and *n* the number of observations. If the associated p-value is smaller than the level of signification then one rejects the null hypothesis of lack of relationship between the two variables of interest; otherwise one does not reject.

Graph1: Absolute Saving Gap (Gap A) For Costa Rica, 1990-2015



Note: Vertical axis represents negative gap in Billion of US$.

Graph 2 : Saving and Investment (in Billion US$) Evolution for Malaysia, 1990 - 2015



Graph 3 : Saving and Investment (in % of GDP) Evolution for Malaysia, 1990 - 2015