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# **Trends in Private Investment in Developing Countries**

*Statistics for 1970-2000*

**and**

**the Impact on Private Investment of  
Corruption and the  
Quality of Public Investment**

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## ***Foreword***

This twelfth annual edition of *Trends in Private Investment in Developing Countries* presents annual data on private and public investment for 63 developing countries. The report attempts to fill a gap in data collection and analysis. Information on the breakdown of total investment into its public and private components is not readily available from standard national account statistics. Where it may be available, the concept of public investment is not always precise. Most standard measures classify capital expenditures of state-owned enterprises as private investment. In contrast, the definition used here counts all investment undertaken by the public sector—including through state enterprises—as public sector investment. It is based on data compiled by the World Bank and IMF.

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## ***Abstract***

The 2001 edition of *Trends in Private Investment in Developing Countries* continues the investigation of the relationship between public and private investment. The focus this year is on the quality of public investment, its interaction with corruption, and the resulting impact on private investment.

The first chapter provides descriptive statistics, reporting trends in private and public fixed investment in 63 developing countries. This year, coverage of the Eastern Europe and Central Asia Region has been substantially expanded. In addition, a few smaller economies have been added to the Latin America and the Caribbean sample.

On average, the ratio of private investment to GDP declined in 1999 from 15 percent to 14.1 percent of GDP compared to 1998, and from 16.2 percent to 15.7 percent in weighted average terms. Public investment increased from 7.3 percent to 7.5 percent of GDP in simple average terms, and remained at the 1998 level in weighted average terms. The 1999 decline brings investment ratios back to their 1995 level. Preliminary and incomplete estimates for the year 2000 suggest that private investment may be poised for a return to growth.

The second chapter examines whether higher levels of public investment are associated with higher or lower levels of private investment, the impact of corruption on this relationship, and the long-run implications for growth and sustainable development. The paper provides evidence consistent with the hypothesis that corruption lowers the quality of public investment and that this reduced quality of public investment is associated with lower private investment. These findings have important implications for policymakers and private investors. Policymakers have further evidence to justify anti-corruption campaigns in their countries. Private investors may use these findings to determine where the best opportunities are today—and as the business climate in emerging markets changes, where to invest tomorrow.

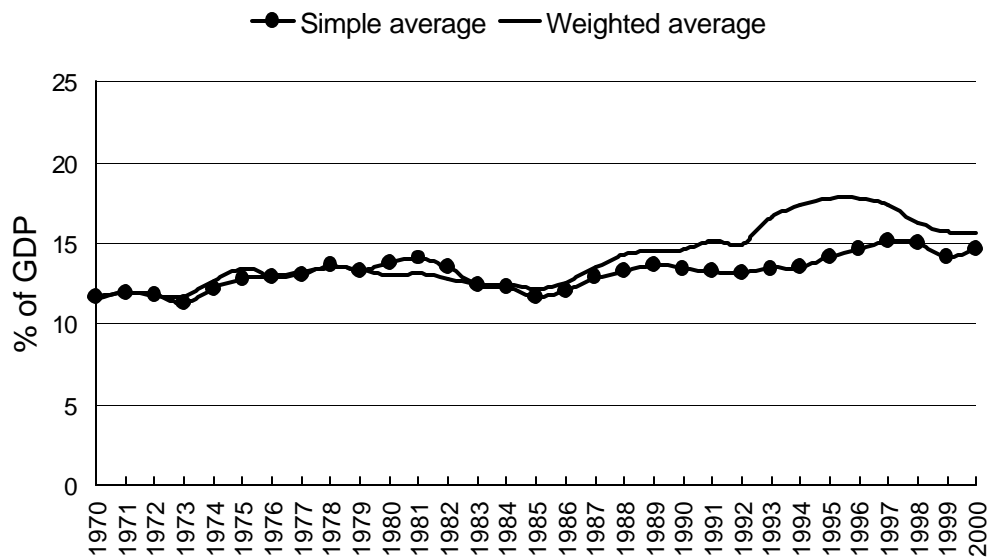




## Chapter 1. Trends in Private and Public Investment

In 1999, the latest year for which national accounts data exist, private investment in the 60 countries included in the data set fell slightly below the 1998 level, in both average and in GDP weighted terms.<sup>1</sup> (For a discussion of the definitions, methods, and sources used in this publication, see appendix B.) Meanwhile, public investment increased slightly on average, but remained level in GDP weighted terms.<sup>2</sup> The ratio of average private investment to GDP fell to 14.1 percent (15.7 percent in GDP weighted terms) in 1999 (see figure 1.1). Public investment, on the other hand, increased on average to 7.5 percent of GDP from 7.3 percent in 1998 but remained at 8.2 percent of GDP in 1998-99 in GDP weighted terms (see figure 1.2).

Figure 1.1. Private Investment in Developing Countries, 1970-2000

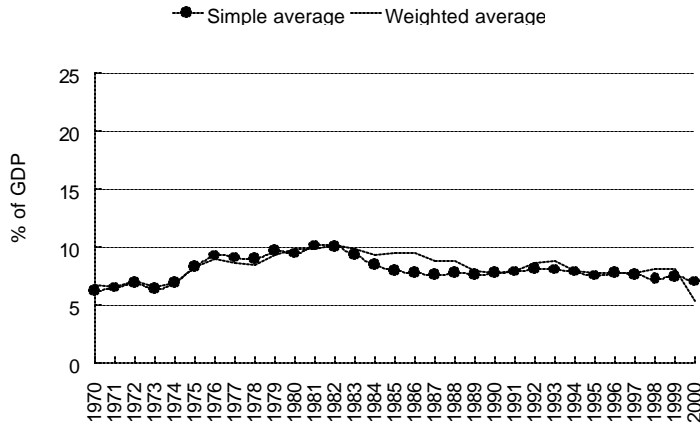


*Note:* This volume reports 2000 projections for about half the sample, which represents 50 percent of GDP of the full sample. These projections should be considered very preliminary and should be treated with caution. This document focuses on 1999 results.

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<sup>2</sup> Investment refers to gross domestic fixed investment, and encompasses both national and foreign from whatever finance source investment.

Figure 1.2. Public Investment in Developing Countries, 1970-2000



Note: This volume reports 2000 projections for about half the sample, which represents 50 percent of GDP of the full sample. These projections should be considered very preliminary and should be treated with caution. This document focuses on 1999 results.

## Regional Trends

Regional trends mirrored the overall figures, with the exception of the Sub-Saharan Africa and Middle East and North Africa regions, as shown in figures 1.3 through 1.6. Most notably, it appears that East Asia is still suffering the aftershocks of the financial crisis which erupted in 1997, with private investment continuing to decline in 1999, both in average and GDP weighted terms and public investment declining as well in 1999. In Latin America and the Caribbean, South Asia, and Europe and Central Asia, private investment fell and public investment rose slightly in 1999.

Figure 1.3. Private Investment by Developing Region, 1970-2000 (weighted averages)

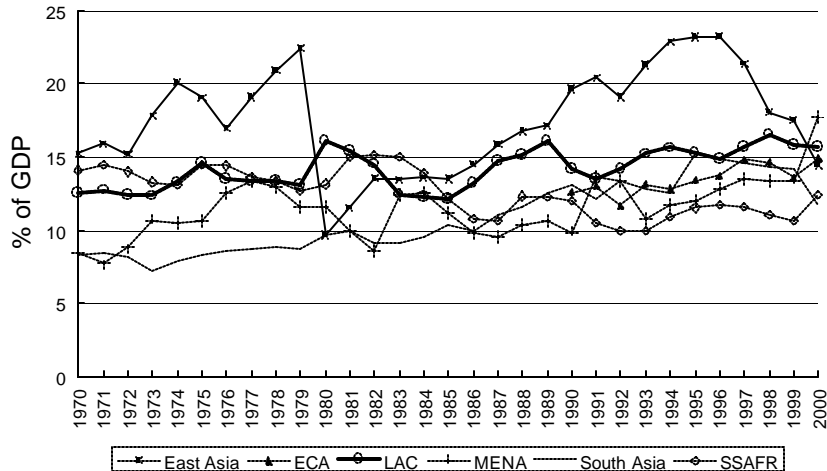
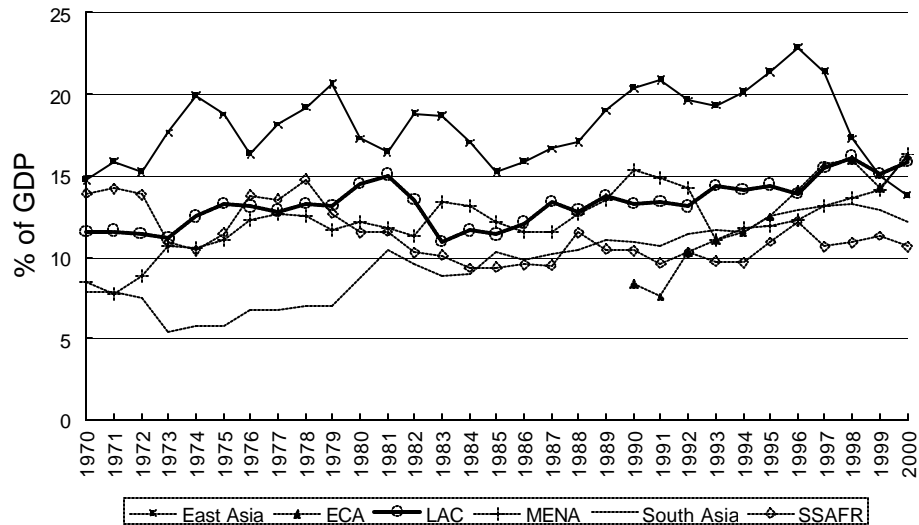


Figure 1.4. Private Investment by Developing Region, 1970-2000  
(simple averages)



**Latin America and the Caribbean (LAC).** In 1998, Latin America and the Caribbean led all other regions in private investment growth. However, in 1999 the ratio of private investment to GDP fell by one percentage point, to 15.1 percent of GDP on average. The ratio of public investment to GDP went up by a half percentage point on average, and reached 7.2 percent of GDP in 1999. In GDP weighted terms, LAC's public investment figures were the lowest of all the regions in 1999, at 3.3 percent of GDP, down by almost half a percentage point from 1998. The largest LAC economies in the sample reported declining private investment to GDP ratios. In Argentina, private investment as a share of GDP decreased by almost two percentage points, in Brazil by less than a half percentage point, in Chile and Colombia by more than four percentage points, and in Republica Bolivariana de Venezuela, by almost two percentage points. Mexico recorded an increase of more than half a percentage point. The balance of the LAC countries in the sample recorded modest increases in private investment as a share of GDP.

Figure 1.5. Public Investment by Developing Region, 1970-2000  
(weighted averages)

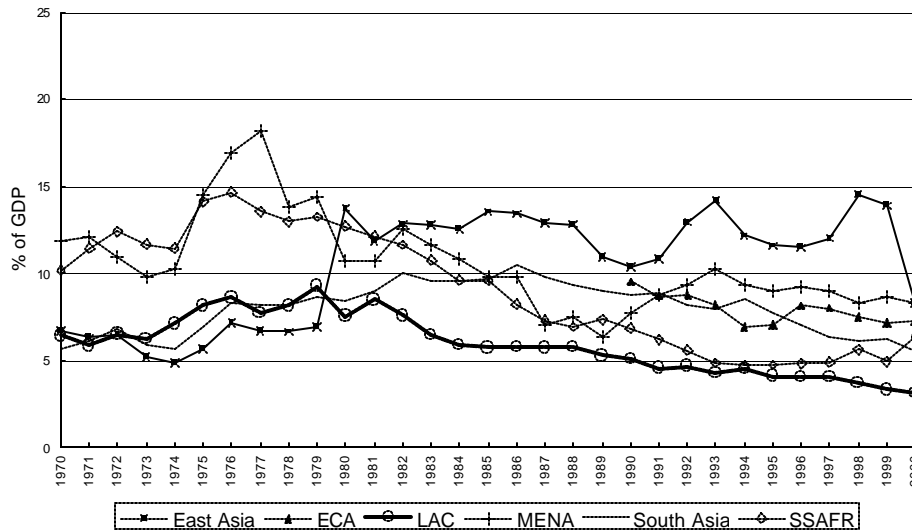
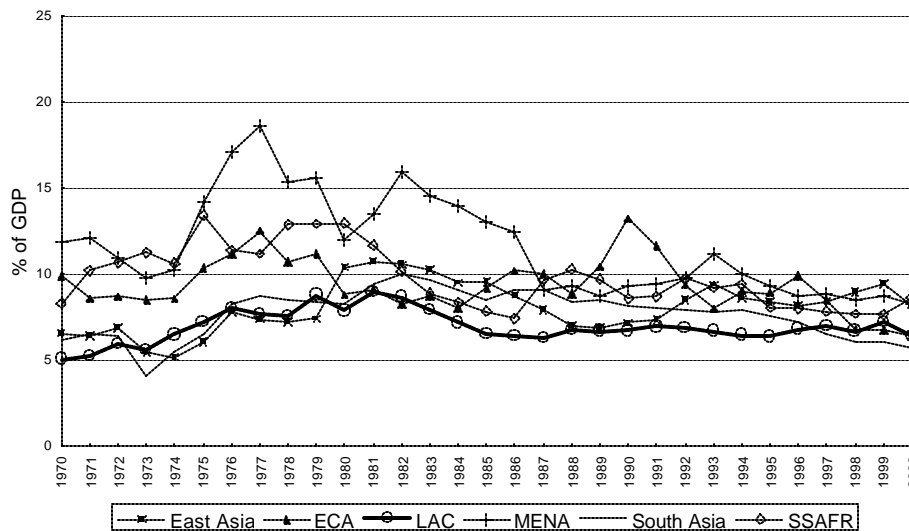


Figure 1.6. Public Investment by Developing Region, 1970-2000  
(simple averages)



**Sub-Saharan Africa.** Private investment on average continued its moderate increasing trend for the third year in a row in 1999, reaching 11.3 percent of GDP. In GDP weighted terms, however, private investment declined slightly in 1999 to 10.6 percent of GDP from 11.1 percent in 1998. Public investment in Africa remained level in simple average terms and declined by almost one percentage point in weighted average terms. Private investment increased in Cote d'Ivoire and Mauritius, but remained flat or nearly flat in Benin, Guinea-Bissau, Madagascar and Seychelles. The remaining African countries covered in the data set recorded declines in private investment to GDP ratios.

**South Asia.** Private investment fell as a proportion of GDP in 1999, both in average and GDP weighted terms, but minimally. Nevertheless, private investment is expected to keep increasing in importance in this region, as it has done for more than 25 years. Private investment increased in Bangladesh, declined in India, and remained nearly flat in Pakistan. Public investment on average and in GDP weighted terms followed a declining trend as well, and remained at a level of about half of private investment.

**East Asia.** The region's average private investment ratio declined in 1999 for the third year in a row to a level last recorded in 1985. The fall, however, was not as dramatic in GDP weighted terms. Not surprisingly, the most prominent declines in private investment were registered in the crisis countries: Indonesia, Republic of Korea, Malaysia, and the Philippines. Private investment increased in Cambodia but remained flat in China (although at a high level) and Thailand. Public investment increased only slightly on average and in GDP weighted terms. In 1999, East Asia had the highest average level of public investment to GDP among the regions, exceeding the global average by almost 2 percentage points.

**Eastern Europe and Central Asia (ECA).** Private investment in 1999 declined on average to 14.3 percent of GDP from the high of 15.9 percent in 1998, declining in GDP weighted terms as well. The largest declines were recorded in Azerbaijan, Estonia, Turkey, and Uzbekistan. Bulgaria, Poland, and Romania reported increasing private investment to GDP ratios. Public investment in this region remained flat on average in 1999, at a level of 6.8 percent of GDP, declining slightly in GDP weighted terms.

**The Middle East and North Africa (MENA).** Private investment increased slightly in 1999 to 14.1 percent of GDP on average. In GDP weighted terms, investment remained flat over 1998-99 period. Egypt and Morocco recorded increases in the private investment to GDP ratios, while Iran and Tunisia remained virtually flat. Public investment went up on average (in GDP weighted terms as well), to 8.8 percent of GDP.

Individual country trends are shown in appendix C, along with the statistics. Table 1.1 lists private investment ratios by country, listing them in descending order as of 1999 and comparing them to 1980 and 1990 (when data are available). Ratios for 2000 are also presented; as noted, these should be considered very preliminary and thus treated with caution.

<b>Table 1.1. Private Investment in 1980, 1990, 1999 and 2000 (percent of GDP)</b>				
	<b>1980</b>	<b>1990</b>	<b>1999</b>	<b>2000</b>
Grenada	6.9	25.8	28.8	28.8
Azerbaijan			28.2	23.6
Panama		7.4	26.3	26.4
Seychelles		14.8	24.8	17.3
Nicaragua		11.2	22.0	19.0
Korea, Republic of	25.5	32.2	22.0	
Mauritius	14.9	19.2	21.8	18.6
Estonia			21.4	23.1
Thailand	18.9	34.2	19.4	18.5
Dominican Republic	16.3	18.2	18.9	17.5
Mexico	13.9	13.6	18.9	18.6
St. Vincent		18.1	18.8	
Dominica		20.8	18.7	21.6
Morocco	11.8	16.4	17.3	16.0
China	3.7	8.3	17.0	
St. Lucia	25.1	13.8	16.9	15.8
Peru		12.9	16.8	17.0
Brazil	17.0	17.6	16.3	
Turkey	13.3	15.8	16.1	17.0
Argentina	19.2	9.4	16.1	15.4
Bangladesh	8.2	9.8	15.5	15.7
India	10.1	13.9	14.9	
Guatemala	10.5	10.4	14.8	14.0
Chile	11.2	18.4	14.5	16.4
Lithuania			14.3	
Paraguay	25.7	19.2	14.2	14.2
Trinidad & Tobago		10.7	14.2	16.3
Kazakhstan			14.0	
Tunisia	13.3	19.7	13.1	
Barbados	18.5	15.5	13.1	12.9
Egypt		16.7	13.0	14.0
El Salvador	6.4	11.2	13.0	13.0
Iran	11.4	8.5	13.0	19.0
Indonesia		19.5	12.9	
Philippines	18.8	18.9	12.9	12.2
Namibia	11.4	13.1	12.9	
Poland		8.5	12.7	12.8
Guyana		14.4	12.6	12.5
Belize	11.1	11.4	12.5	
Cote d'Ivoire		4.9	12.1	12.9
Bolivia		5.0	12.0	11.5
Yugoslavia, Federal R			11.4	13.1
Malaysia	19.5	20.9	11.3	10.8
Uruguay	11.9	8.3	10.6	12.1
Benin		6.0	10.6	11.3
South Africa	13.3	12.9	10.3	
Kenya	13.3	11.3	10.1	
Uzbekistan			9.7	7.5
Cambodia		8.8	9.6	
Venezuela, Rep.Boliv		4.9	8.8	8.4
Pakistan	7.7	8.9	8.3	8.6
Bulgaria		0.8	8.0	
Comoros		6.7	7.4	7.4
Romania			6.9	
Ecuador	14.1	12.4	6.9	15.4
Madagascar		6.9	6.8	8.2
Haiti		7.0	5.7	
Colombia	9.8	10.2	5.5	6.9
Guinea-Bissau		8.4	5.2	5.3
Malawi	4.7	8.6	2.2	4.1
Papua New Guinea		20.0		
Costa Rica	14.7	17.7		

## ***Chapter 2. Private Investment: the Impact of Corruption and the Quality of Public Investment***

This chapter focuses on the effects of corruption on public and private investment and their long-term implications for economic growth. Specifically, it raises the question whether corruption affects the quality of public investment and the level of private investment. Three fundamental questions are raised:

- is public investment associated with higher or lower private investment?
- does corruption influence this relationship? and
- what may be the long-term implications of these interactions for economic growth?

The chapter first reviews the literature exploring the impact of corruption on private investment. Section two explores the interaction effect between corruption and public investment, section three examines the linkages between private and public investment, section four presents our empirical analysis, and section five concludes.

### ***I. The Nature of Corruption and Its Effects on Private Investment***

Corruption is a pervasive and universal phenomenon. As witnessed throughout history, corruption can affect democratic and non-democratic countries, rich and poor countries, alike. In very recent times, corruption, or allegations of corruption of some sort, was instrumental in the reorganization of the political system in several countries.

There are many types of public corruption, including accepting bribes to shorten processing time, obtain monopoly power, or secure government procurement and contracts. Tanzi (1998) offers a common definition of corruption: the abuse of public power for private benefit.<sup>3</sup>

Research on corruption has expanded in recent years, yet work investigating its impact on *private* investment is still in its infancy. Mauro (1995) finds that an aggregate institutional indicator, a “corruption indicator,” is negatively associated with aggregate investment in his sample of countries. Brunetti, Kisunko and Weder (1997) present results from a survey of entrepreneurs that suggest that perceived unreliability of the judiciary, government instability, and corruption negatively influence cross-country differences in aggregate investment. Brunetti and Weder (1997) find that among institutional factors, lack of rule of law, high corruption and real exchange rate distortions are the most detrimental for investment.

A number of recent studies have examined the impact of the business environment on investment. Pfeffermann, Kisunko, and Sumlinski (1999) investigated in a limited number of countries the link between private investment and perceived business obstacles in developing countries, obstacles such as corruption, unpredictability of the judiciary,

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<sup>3</sup> Theobald (1990) provides a number of definitions of corruption.

onerous regulations for starting a business, tax and labor regulations, and others. Countries where these obstacles were perceived to be fewer had higher levels of private investment.

One reason why corruption seems to depress investment is that it acts as a tax on private investment.<sup>4</sup> A “corruption tax” is particularly burdensome for activities such as investment projects that by nature involve a long time horizon and a multiplicity of logistic, administrative and legal steps. Each of these steps is liable to incur corruption taxes, each cascading over the other. The result is an increase in the cost of capital, hence a reduction in anticipated profitability, as well as a relative incentive toward investments involving fewer administrative steps: that is, the tax is distorting, too.

Investigating the impact of corruption on private enterprise and public finance is not a new concept, yet quantifying the impact remains elusive.<sup>5</sup> A recent IMF note reports a survey by a resident representative in a CIS country suggesting that almost 40 percent of a new enterprise’s expenses in the first year are “informal payments.”<sup>6</sup> Forty percent is likely an extreme case, but table 2.1 below presents some results from a recent OECD/World Bank report that provides estimates of social losses for three eastern European countries.<sup>7</sup>

**TABLE 2.1. CORRUPTION AND LOST REVENUE (PERCENT)**

INDICATOR	ALBANIA	GEORGIA	LATVIA
Enterprises willing to pay higher taxes if corruption were eliminated	53	71	30
Additional taxes as a share of revenue that enterprises would be willing to pay if corruption were eliminated	11	22	15
Bribes typically paid as a share of firms’ revenue	7	15	7

*Source:* Kaufmann, Pradhan, and Ryterman, (1998). Based on 1998 World Bank Surveys of 438 enterprise managers in Latvia (with Latvia Facts), 350 enterprise managers in Georgia (with GORBI), and 356 enterprise managers in Albania (with ACER).

One implication is that less corruption might translate into more resources available for private investment. In addition, strengthened public revenues as a result of less “leakage” due to corruption could translate into more public services and/or reduced taxes. Most important might be the impact on incentives: with high corruption, investment simply might not occur.

## ***II. Public Investment and Corruption: Is There an Interaction Effect?***

Tanzi and Davoodi (1997) investigate the impact of corruption on public investment, using infrastructure investment as their proxy for public investment and the

<sup>4</sup> See Shleifer and Vishny (1993) and Wei (1997).

<sup>5</sup> See Jain (2001) for a review.

<sup>6</sup> “Improving Governance and Fighting Corruption in the Baltic and CIS Countries,” IMF Economic Issues Series, No. 21, 2000.

<sup>7</sup> These countries do not represent the extreme in commonly used index measures of corruption. Albania and Latvia are in the “moderate” range of the ICRG corruption index. Georgia is not rated.



Political Risk Service's *International Country Risk Guide* index as their measure of corruption. They find that corruption tends to increase the number of projects undertaken and to expand their size. Corruption increases the share of public investment to GDP, and also lowers the quality of public investment put in place.

The logic behind these findings is straightforward. Infrastructure projects can be large and the implementation is often carried out by private firms. The incentive for the private enterprise to pay a "commission" to secure the contract is strong, particularly when the contract is large. When the approval of investment projects is influenced by corrupt public officials, rates of return and cost-benefit analyses become mere exercises.

The firm paying the "commission" is unlikely to bear the cost of the bribe. It is more likely this cost will be recouped in some inefficient way. Perhaps project costs will be pared by adhering poorly to plan specifications or by using poor quality materials or workmanship. Perhaps an "understanding" will be reached with the bribed official that the initial low estimate will be revised upward as the project progresses. Or the bid may be padded initially. In the more rare instances of cost-plus contracting, the firm can hide the bribe expense through overpricing. All of these work to make the public investment in infrastructure more costly and less likely to meet specifications.<sup>8</sup>

We investigate the effect on private investment of possible interaction between corruption and public investment empirically in section four.

### ***III. The Link Between Private and Public Investment***

There is a growing consensus that private investment is more efficient and productive than public investment, yet the number of studies on the respective roles of private and public investment in *developing* economies is somewhat limited. Using relatively small sample sizes and limited time series, a number of studies have concluded that private investment has a larger positive impact on growth than public investment, among them, Khan and Reinhart (1990), Coutinho and Gallo (1991), and Serven and Solimano (1990).

Khan and Kumar (1997) expand the country coverage over previous works and examine a relatively long time period, 1970-1990. The authors find private and public investment both have a statistically significant positive association with growth. The magnitude differs considerably, however, with private investment having an estimated coefficient almost one-and-a-half times as large as that of public investment.

Bouton and Sumlinski (2000) confirmed Khan and Kumar's results and found for a longer period an even larger coefficient on private investment and smaller coefficient on public investment. Thus, the degree of association of private investment with sustainable development and growth appears well established in the economics literature.

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<sup>8</sup> Corruption appears to be particularly problematic in infrastructure investment, see Wade (1982) and Rose-Ackerman (1996).

A more difficult relationship to discern is that between public and private investment. Crowding-in of private investment by public investment is defined to occur when increased public investment is associated with increased private investment. This may arise because public infrastructure provision affects returns on private investment positively, hence enhancing the incentive to carry out such private investment. Crowding out occurs when the opposite is the case. A vast literature covers this subject, some recent works are presented in table 2.2 below. The table suggests that not only is there no consensus on the topic, but there are contradictory results, even for the same regions and countries.

**TABLE 2.2. SELECTED LITERATURE REVIEW, CROWDING IN – CROWDING OUT**

CITATION	SAMPLE COUNTRIES	FINDINGS
Oshikoya (1994)	African	For most countries in this sample, public investment in infrastructure is complementary to private sector investment
de Oliveira Cruz and Teixeira (1999)	Brazil	Private investment is crowded out by public investment in the short term, but in the long term these two variables are complements
Clements and Levy (1994)	Caribbean	Crowding out
Blejer and Khan (1984)	Developing	Government investment in infrastructure is complementary to private investment, other types of government investment are not
Balassa (1988)	Developing	Crowding out
Greene and Villanueva (1991)	Developing	Crowding in
Heng (1997)	Developing	Shows that public capital can crowd in private capital by raising the marginal productivity of labor and savings
Ghura and Goodwin (2000)	Developing	- Overall sample suggests crowding in - Public investment crowds in private investment in SSAFR, but crowds out in Asia and LAC
Shafik (1992)	Egypt	Effects of government policy on private investment are mixed, evidence of crowding out in credit markets and crowding in as a result of government investment in infrastructure
Sobhee (1999)	Mauritius	Empirics suggest expenditures on health and infrastructure stimulate private investment, expenditure on education does not
Nazmi and Ramirez (1997)	Mexico	Crowding out
Musalem (1989)	Mexico	Crowding in
Looney and Frederiken (1997)	Pakistan	Crowding in
Sakr (1993)	Pakistan	When government investment is disaggregated into infrastructure and non-infrastructure components, the latter crowds out private investment
Ahmed and Miller (2000)	OECD and Developing	- Government expenditure crowds out for both samples, plus pooled sample - For developing countries, government expenditure on transport and communication crowds in
Argimon, Gonzalez-Paramo, Alegre (1997)	OECD	Crowding in effect of private investment by public investment through the positive impact of infrastructure on private investment productivity
Monadjemi and Huh (1998)	OECD (Australia, UK, USA)	Empirics provide limited support for crowding out effects of government investment on private investment
Pereira and Flores de Frutos (1999)	USA	Crowding in
Pereira (2000)	USA	Crowding in
Pereira (2001)	USA	- At the aggregate level, public investment crowds in private investment - Disaggregating private investment shows that the crowding in effect of public investment is strong for equipment and only marginal for structures - Public investment marginally crowds out private investment in information equipment

A simple investigation of the relationship between public and private investment is presented in table 2.3 below, where the within-country correlations between public and private investment for all 63 countries in our sample are presented.<sup>9</sup>

The table shows that there is sometimes crowding out and sometimes crowding in, with an almost even split between the two. This may explain the contradictory findings in the literature (the studies summarized in table 2.2). And it is also important to note that in addition to the axiom “correlation does not prove causation,” its corollary is “partial correlations are not necessarily preserved in a multi-variable framework.” More rigorous testing is therefore presented in the next section.

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<sup>9</sup> Periods for the correlations vary by country, ranging from the entire sample period of 1970-2000, to as brief as 1995-2000.

**TABLE 2.3. INVESTMENT CORRELATIONS** \*denotes significance at 5% level

Region	Income	Country	Private vs. Public	
ECA	Lower middle	Bulgaria	-88%	*
ECA	Lower middle	Lithuania	-83%	
SSAFR	Low	Mauritania	-77%	*
ECA	Upper middle	Turkey	-76%	*
LAC	Lower middle	Bolivia	-74%	*
ECA	Low	Azerbaijan	-70%	
ECA	Upper middle	Poland	-70%	*
LAC	Upper middle	Grenada	-68%	*
LAC	Lower middle	St. Vincent	-66%	*
East Asia	Low	Indonesia	-62%	*
East Asia	Low	Cambodia	-61%	*
LAC	Upper middle	Mexico	-57%	*
ECA	Lower middle	Romania	-55%	
LAC	Upper middle	Chile	-55%	*
SSAFR	Low	Benin	-40%	
LAC	Lower middle	Belize	-39%	*
South Asia	Low	Pakistan	-36%	*
MENA	Lower middle	Morocco	-35%	
LAC	Lower middle	Paraguay	-34%	
ECA	Upper middle	Estonia	-32%	
LAC	Upper middle	Argentina	-31%	
SSAFR	Upper middle	Seychelles	-25%	
LAC	Upper middle	Dominica	-24%	
LAC	Upper middle	St. Lucia	-23%	
SSAFR	Lower middle	Namibia	-22%	
LAC	Upper middle	Brazil	-21%	
LAC	Lower middle	Colombia	-17%	
SSAFR	Low	Comoros	-17%	
LAC	Upper middle	Barbados	-17%	
LAC	Upper middle	Venezuela, R. B.	-15%	
LAC	Lower middle	Costa Rica	-14%	
LAC	Lower middle	Dominican Republic	-12%	
ECA	Lower middle	Kazakhstan	-5%	
SSAFR	Low	Madagascar	-4%	
South Asia	Low	India	-2%	
LAC	Lower middle	Ecuador	-2%	
LAC	Lower middle	El Salvador	1%	
MENA	Lower middle	Tunisia	4%	
East Asia	Upper middle	Korea, Rep. of	6%	
LAC	Upper middle	Uruguay	6%	
SSAFR	Low	Cote d'Ivoire	8%	
LAC	Lower middle	Guatemala	9%	
East Asia	Lower middle	Thailand	9%	
East Asia	Lower middle	Papua New Guinea	11%	
ECA	Low	Uzbekistan	15%	
MENA	Lower middle	Egypt	17%	
LAC	Upper middle	Trinidad & Tobago	20%	
LAC	Lower middle	Peru	23%	
East Asia	Lower middle	Philippines	24%	
SSAFR	Upper middle	Mauritius	25%	
East Asia	Upper middle	Malaysia	27%	
LAC	Lower middle	Guyana	37%	
SSAFR	Low	Kenya	38%	*
SSAFR	Low	Malawi	50%	*
LAC	Low	Haiti	51%	*
MENA	Lower middle	Iran	52%	*
SSAFR	Low	Guinea-Bissau	56%	*
East Asia	Low	China	59%	*
South Asia	Low	Bangladesh	64%	*
LAC	Lower middle	Panama	64%	*
LAC	Low	Nicaragua	67%	*
SSAFR	Upper middle	South Africa	78%	*
ECA	Lower middle	Yugoslavia, Fed. Rep.	97%	

#### ***IV. Econometric Analysis***

This section presents the econometric investigation of the questions of interest for the study. First, we investigate the impact of corruption on public investment; then we continue our investigation of the “crowding-in vs. crowding-out” debate, focusing on the impact of corruption; we conclude this section with the possible long-run implications of the empirical findings of the first two subsections.

##### ***a) Impact of corruption on public investment***

Following Tanzi and Davoodi (1997), we investigate the impact of corruption on public investment by tracing the impact of corruption on the quality of public infrastructure. We measure infrastructure quality through three proxies: paved roads in good condition as a percentage of total roads; electric power system losses as a percentage of total power output; and telephone faults per 100 mainlines per year.<sup>10</sup> A priori, if corruption leads to lower quality public investment, then in more corrupt countries we expect the percentage of paved roads to be lower, and the number of telephone faults and electrical system losses to be higher. The first two measures are available in the World Bank Development Indicators database. Telecommunications faults are from the International Telecommunications Union data base.

Our measure of corruption is from the Political Risk Service’s *International Country Risk Guide*. This publication attempts to measure the phenomenon by investigating whether high ranking government officials are likely to demand special payments and if officials in lower levels of government generally expect illegal payments in the form of bribes connected with import-export licenses, exchange controls, tax assessment, police protection, or loans. The *ICRG* provides a numeric, time-series measure of corruption ranging from zero to six, with higher values indicating less corruption. Studies of corruption using this measure include Knack and Keefer (1995), Svensson (1998), and Tanzi and Davoodi (1997, 2000).

Regressing the corruption index on each of the proxies for quality of public investment yields econometric results consistent with Tanzi and Davoodi (1997). We are, however, using only *developing* country economies and cover a longer time period, 1970-1999. Our results are presented in table 2.4 below.<sup>11</sup> As expected, more corrupt countries have more telephone faults per 100 lines, more electrical system losses as a percentage of output, and a lower percentage of paved roads.

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<sup>10</sup> These proxies are not perfect but they do provide some measure of the quality of public investment, further, a review of the literature reveals few alternative measures available for large numbers of developing countries.

<sup>11</sup> Tanzi and Davoodi also control for per capita GDP and find, unsurprisingly, that countries with higher per capita GDP tend to have better quality infrastructure. They present a number of other specifications and control variables, with mixed results.

**TABLE 2.4. THE EFFECT OF CORRUPTION ON QUALITY OF INFRASTRUCTURE**

<b>Dependent variable</b>	Telephone faults per 100 main lines	Roads, paved (% of all roads)	Electric power transmission and distribution losses (% of output)
Constant	129.6	20.2	19.8
	16.2	4.7	24.6
Corruption <sup>a</sup>	-17.1	4.8	-1.7
	-3.4	3.4	-6.7

Note: Shaded cells are t-statistics.

<sup>a</sup> Higher index indicates less corruption.

***b) Crowding-in vs. crowding-out and the impact of corruption***

In specifying a model to investigate the impact of public investment and corruption on private investment, a survey of the literature provided an array of techniques, possible control variables, and specifications.<sup>12</sup> After investigating of a number of specifications, the following model was selected:

	<u>Concept</u>
$I_p / GDP =$	
$(I_p / GDP)_{-1}$	<i>lagged private investment to GDP</i>
Broad Money/GDP	<i>financial deepness, availability of credit</i>
External Debt/GDP	<i>debt overhang</i>
CAB/GDP	<i>external balance</i>
$(I_g / GDP) * \text{Corruption}$	<i>interaction between corruption index, public investment</i>
$I_g / GDP$	<i>public investment to GDP: crowding in/out</i>
constant	<i>all other effects</i>

Lagged private investment is undoubtedly a significant component in current private investment, hence it is an obvious choice for the model. The next three variables: broad money to GDP, external debt to GDP, and the current account balance to GDP, are

<sup>12</sup> Considerable debate exists in the econometrics literature about the proper unbalanced panel data technique. As our interest lies more with the economics than the econometrics of the investigation, we have chosen to present the standard OLS, or pooled least squares estimates, as well as the random effects results (which are virtually the same). Hausman (1978) and Wu (1973) tests suggest random effects specification is indicated over fixed effects. The results of the Breusch—Pagan (1980) test for choice between OLS and random effects indicated OLS is the proper specification. For a review of issues in panel data estimation, see Arellano and Bover (1995), Ahmed and Miller (2000), Baltagi (1995), Bhargava and Sargan (1983), Boehmer and Megginson (1990), Cashel-Cordo and Craig (1990), Chang (1979), and Pesaran and Smith (1995).

included as control variables.<sup>13</sup> The variables of interest for our research are the interaction term between on one hand, public investment to GDP and the corruption index, and on the other, public investment to GDP. The full sample results are presented in table 2.5 below.

As one would expect, lagged private investment is highly significant. Its steadiness over time as a share of GDP virtually assures the significance. Broad money, our measure of the financial depth of the economy, is also significant. The debt overhang is also significant, with the expected negative sign. The significant negative coefficient on the current account balance is consistent with our expectations. A higher level of private investment is associated with an increased current account deficit (or a reduced surplus). Note that private FDI typically finances a large portion of the current account in emerging economies.

**TABLE 2.5. PRIVATE INVESTMENT, CORRUPTION, AND CROWDING OUT : FULL SAMPLE RESULTS**

Independent variable	Means	RE	PLS
Constant		1.548	1.704
		5.1	5.3
Private investment/GDP lagged	13.5	0.899	0.886
		54.0	50.0
Broad money/GDP	42.2	0.019	0.020
		3.3	3.4
External debt/GNP	81.8	-0.006	-0.006
		-4.7	-4.7
Current account balance/GDP	-4.5	-0.131	-0.137
		-6.1	-6.3
(Public inv./GDP)*Corruption <sup>a</sup>	7.8; 3.0	0.023	0.022
		2.2	2.0
Public investment/GDP	7.8	-0.156	-0.160
		-4.0	-3.9

RE – random effects estimation, PLS – pooled least squares estimation.

Note: Shaded cells are t-statistics.

<sup>a</sup> Higher index indicates less corruption.

The primary relationships of interest for this research, the interaction between public investment and corruption, and the measure of crowding-out vs. crowding in, are also significant and of the “correct” sign. The explanation is as follows:

We know from Tanzi and Davoodi (1997) that corruption is associated with poor quality public investment, consistent with our own results, summarized in table 2.4, and that it also inflates public investment levels. These effects are captured in our model by two variables. First, controlling for the other variables in the model above, a higher level of public investment is associated with a lower

<sup>13</sup> A review of the literature reveals numerous possible determinants of investment and possible control variables. Some authors have used institutional factors such as education or civil unrest as control variables but we have chosen to limit the variables to those we consider most germane for the questions of interest. Useful references include Bier (1992), Blejer and Kahn (1984), Bouton and Sumlinski (2000), Brunetti and Weder (1997), Cardoso (1993), Fischer (1991, 1993), Ghura and Goodwin (2000), Greene and Villanueva (1991), Larrain and Vergara (1993), Oshikoya (1994), Ozler and Rodrik (1992), Sakr (1993), Serven and Solimano (1992), and Solimano (1989).



level of private investment, i.e., crowding out. The negative relationship is statistically significant. Second, the interaction between the corruption index and the level of public investment captures the indirect effect of corruption via its impact on the quality of public investment. The coefficient on the (Public inv./GDP)\*Corruption variable is positive and statistically significant. A larger value for the corruption index signifies less corruption, which implies that any given level of public investment will be of higher quality than it would be with higher corruption (a lower index). Less corruption leads to higher quality public investment, and this is associated with a higher level of private investment.

In summary, the evidence comes out in favor of the crowding out hypothesis, with the crowding out stronger in the presence of corruption. It is important to note, however, that due to data limitations, we were only able to work with figures for total public investment. Numerous studies<sup>14</sup> have shown that certain types of infrastructure and public investment facilitate both growth and private investment.

Table 2.6 below presents regional results. With the exception of Africa, all conclusions are similar to the overall sample discussion presented above. The positive coefficient on the interaction term for all regions *except* Africa suggests that public investment typically has a negative influence on private investment. Why then should African public investment be associated with a higher level of private investment (i.e., crowds-in)? One possible explanation is that the low initial endowment of capital means that the addition of any investment, regardless of quality, yields high returns.

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<sup>14</sup> Easterly and Rebelo (1993) find that public investment in communication and transport infrastructure has a strong positive effect on growth. Infrastructure such as paved roads, telephone density per worker and adequate electricity generation have been found to have a strong effect on subsequent growth (Easterly and Levine 1997, Canning 1999, Canning and Bennathan 2000). Odedokun (1997) shows that in developing countries, public investment in infrastructure facilitates private investment and growth, whereas non-infrastructure public investment has the opposite effect.

**TABLE 2.6. PRIVATE INVESTMENT, CORRUPTION, AND CROWDING OUT : REGIONAL RESULTS**

Independent variable	Full Sample	LAC	ASIA	SSAFR	ECA	MENA
Constant	1.704	2.680	4.451	3.944	3.953	2.989
	5.3	4.7	4.6	1.2	1.7	1.4
Private investment/GDP lagged	0.886	0.807	0.886	0.098	0.865	0.694
	50.0	25.5	26.4	0.6	10.2	6.3
Broad money/GDP	0.020	0.023	0.022	0.165	-0.021	-0.002
	3.4	2.4	1.5	2.8	-0.6	-0.1
External debt/GNP	-0.006	-0.008	-0.034	-0.016	0.001	0.019
	-4.7	-4.4	-4.0	-2.0	0.1	1.5
Current account balance/GDP	-0.137	-0.183	-0.138	-0.061	0.089	-0.006
	-6.3	-5.7	-3.2	-0.9	0.8	-0.1
(Public inv./GDP)*Corruption	0.022	0.042	0.033	-0.190	0.022	0.018
	2.0	2.1	1.7	-1.8	0.5	0.2
Public investment/GDP	-0.160	-0.260	-0.323	0.695	-0.204	-0.069
	-3.9	-3.5	-3.0	2.6	-1.0	-0.3

Note: Shaded cells are t-statistics. Method of estimation: pooled least squares.

### c) Long-run implications of the empirical findings

Of particular interest to policymakers and private investors are the long run consequences of their investment decisions. We find that in the full sample, public investment tends to crowd out private investment in the short-run analyses presented in tables 2.5 and 2.6. If the ‘crowding-out in the presence of corruption’ finding is correct, then estimates of the long-run *negative* impact of any increase in *public* investment on the level of *total* investment would provide additional ammunition for policy-makers intent on combating corruption.

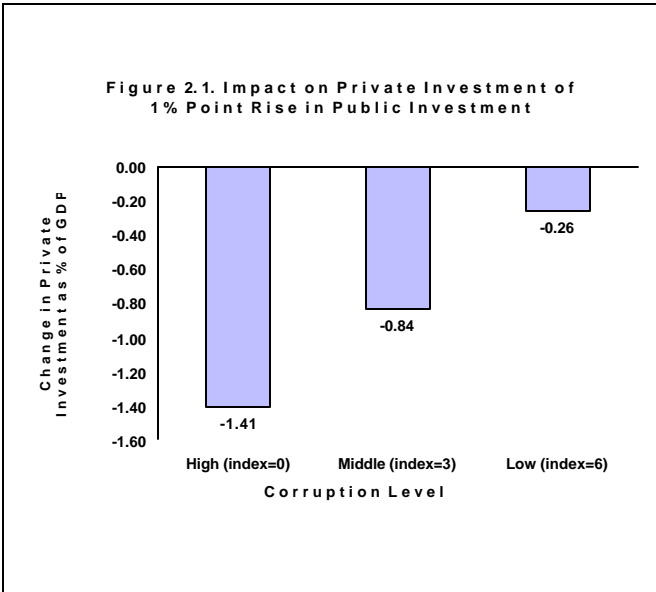
We solve for long-run effects by performing a Koyck<sup>15</sup> transformation on equation (1) above, the details are provided in appendix A. This transformation changes the short-run effects of table 2.6 into the long-run effects presented in table 2.7 below. In table 2.7 the short-run effects of each variable from table 2.6 (full sample results) are presented above the Koyck-transformed, long-run effects.

<sup>15</sup> See Koyck (1954) and Evans (1969).

Independent Variable		Full Sample
Constant		1.704
Private investment/GDP lagged		0.886
Broad money/GDP	SR	0.020
	LR	0.178
External debt/GNP	SR	-0.006
	LR	-0.055
Current account balance/GDP	SR	-0.137
	LR	-1.203
(Public Inv./GDP)*Corruption	SR	0.022
	LR	0.191
Public investment/GDP	SR	-0.160
	LR	-1.408

	Direct effect	Indirect Effect via Interaction Term	Total Effect
Long-Run Coefficient	-1.408	0.191	
Level of Corruption			
High (index=0)	-1.41	0.00	-1.41
Middle (index=3)	-1.41	0.57	-0.84
Low (index=6)	-1.41	1.14	-0.26

Table 2.8 and figure 2.1 present the long-run impact on private investment of a 1 percentage point rise in public investment. With high corruption, a 1 percentage point increase in public investment leads to a 1.41 percent decline in private investment, resulting in a 0.41 percent decline in *total* investment. When corruption is low, crowding out still occurs but the decline in private investment is only 0.26 percent of GDP. This value is, however, not statistically different from zero. Thus in an environment of low corruption, there may well be no crowding out.



## V. Conclusions

This paper provides evidence consistent with the hypothesis that corruption lowers the quality of public investment, and this poor quality public investment is associated with lower private investment. The result is that if a highly corrupt country raises the level of public investment, the productivity of the new public investment put in place is low, and private investment falls. It also appears from the data that as this poor

quality public investment is put in place, private investors are able to discern the difference and react by reducing their investment.

These findings have important implications for policymakers and private investors. Policymakers have further evidence to justify anti-corruption campaigns in their countries, as long-term growth depends on the flow of private investment, as well as on the flow of good quality public investment. Private investors may use these findings to determine where the better opportunities are today—and as the business climate changes in emerging markets, where to invest tomorrow.

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## ***Appendix A. Inter-Temporal Dynamics: Private Investment/GDP***

The long-run consequences of investment decisions are of particular interest to policymakers and private investors. We can solve for long-run effects by adding a lagged dependent variable to the explanatory variables in our model via a Koyck transformation.<sup>16</sup> This allows for an investigation of the short- and long-run impact of independent variables. Assume that the long-run equilibrium level of our dependent variable is determined as in equation (1) below:

$$Y^* = a + bX_t, \quad (1)$$

where

$b$  is a vector of long-run effects.

Assume further that the adjustment process is described by equation (2) below. Investment levels change between periods but do not equilibrate in a single period, changing only by some proportion,  $d$ , of the gap between the previous period's output and the equilibrium level,  $Y^*$ :

$$Y_t - Y_{t-1} = (1-d)(Y_t^* - Y_{t-1}) + e_t \quad (2)$$

where

$d$  is the inter-temporal adjustment coefficient, and

$e_t$  is the error term

Substituting (1) into (2) and collecting terms yields:

$$Y_t = (1-d)a + (1-d)bX_t + dY_{t-1} + e_t \quad (3)$$

where

$(1-d)b$  is the vector of short-run effects.

Then, using an estimate of the inter-temporal adjustment coefficient  $d$ , which is equal to a coefficient on the lagged dependent variable, and estimates of  $(1 - d)a$  and  $(1 - d)b$ , which are equal to the respective estimates of a constant and coefficients on independent variables, we solve for long run effects. Estimates of long run effects are reported in table A1 below.

---

<sup>16</sup> See Koyck (1954), Evans (1969).

**TABLE A1. PRIVATE INVESTMENT DYNAMICS: LONG- AND SHORT-RUN EFFECTS**

Independent variable		Full Sample	LAC	ASIA	SSAFR	ECA	MENA
Constant		1.704	2.680	4.451	3.944	3.953	2.989
Private investment/GDP lagged		0.886	0.807	0.886	0.098	0.865	0.694
Broad money/GDP	SR	0.020	0.023	0.022	0.165	-0.021	-0.002
	LR	0.178	0.122	0.192	0.183	-0.152	-0.007
External debt/GNP	SR	-0.006	-0.008	-0.034	-0.016	0.001	0.019
	LR	-0.055	-0.039	-0.297	-0.018	0.011	0.062
Current account balance/GDP	SR	-0.137	-0.183	-0.138	-0.061	0.089	-0.006
	LR	-1.203	-0.947	-1.215	-0.067	0.658	-0.020
(Public inv./GDP)*Corruption	SR	0.022	0.042	0.033	-0.190	0.022	0.018
	LR	0.191	0.217	0.286	-0.211	0.161	0.059
Public investment/GDP	SR	-0.160	-0.260	-0.323	0.695	-0.204	-0.069
	LR	-1.408	-1.346	-2.844	0.771	-1.505	-0.226

## *Appendix B. Methods and Sources*

### *Fixed Investment Data*

National accounts normally do not break down gross domestic investment into its private and public sector components. When they do, “private” investment often includes investment by state-owned enterprises such as state steel mills and so on. In this publication, we attempt to determine total public investment, inclusive of public investment undertaken by any state-owned enterprises. Private investment is then defined as the difference between total gross domestic investment (from national accounts) and consolidated public investment. Consolidated public investment data for each country were compiled mainly from World Bank Country Economic Memoranda, Public Investment Reviews, Public Expenditure Reviews, and other World Bank country reports. They reflect efforts by World Bank missions to compile public sector data. Where World Bank data were not available, country data were used.

The countries included in this edition represent all the developing countries for which the relevant data are available. Minor changes were made in the last two or three years for most countries because of revisions in their national accounts data. Updates are not available for Costa Rica, Mauritania, and Papua New Guinea.

Appendix C presents figures for each country in the sample displaying patterns of private fixed investment (PRIVATE I/GDP) and public fixed investment (Public I/GDP) from 1970 to 2000. The underlying data for these figures appears in table C.1, along with ratios on total fixed investment (GDFI/GDP). The ratios are computed using local currency units at current prices.



## *Appendix C. Country Charts*





## **Sub-Saharan Africa**

Benin

Comoros

Côte d'Ivoire

Guinea-Bissau

Kenya

Madagascar

Malawi

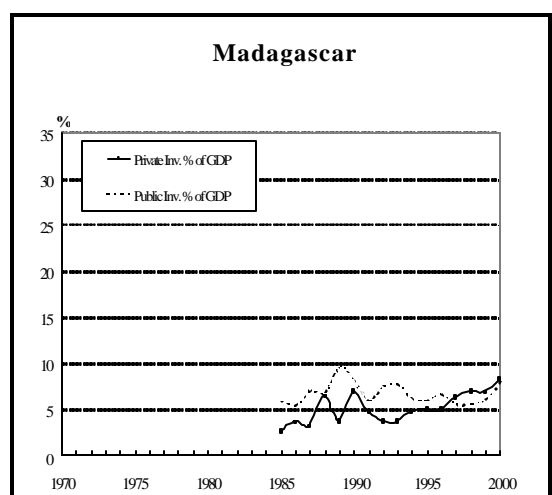
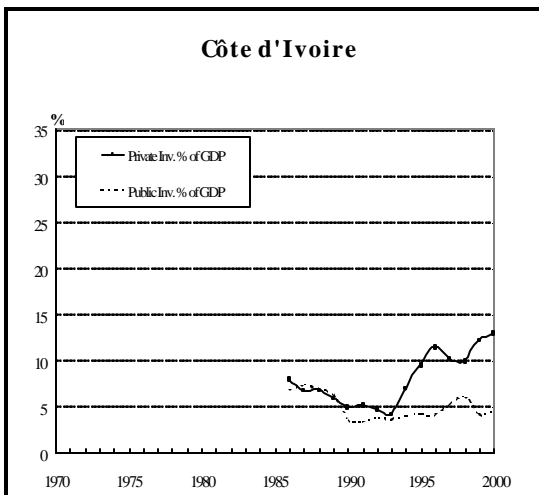
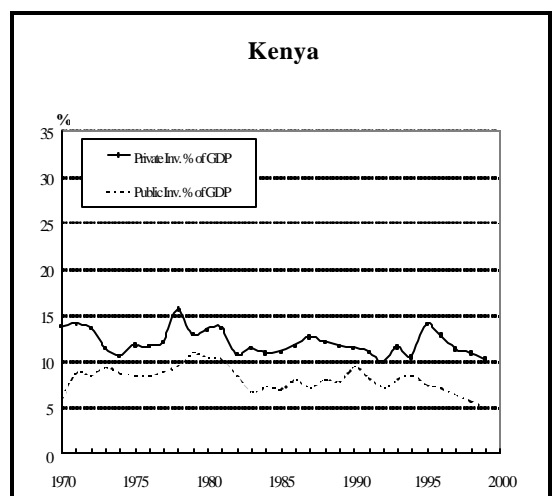
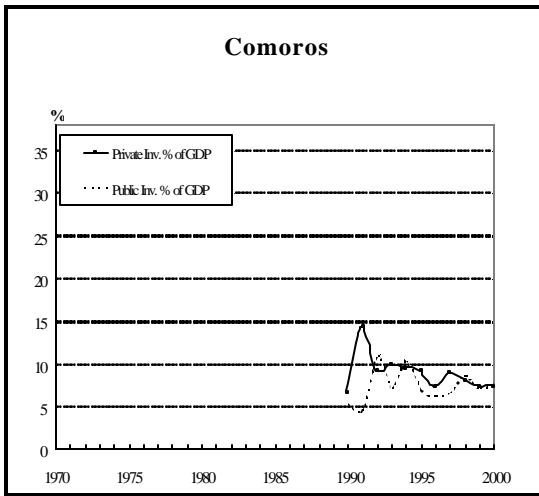
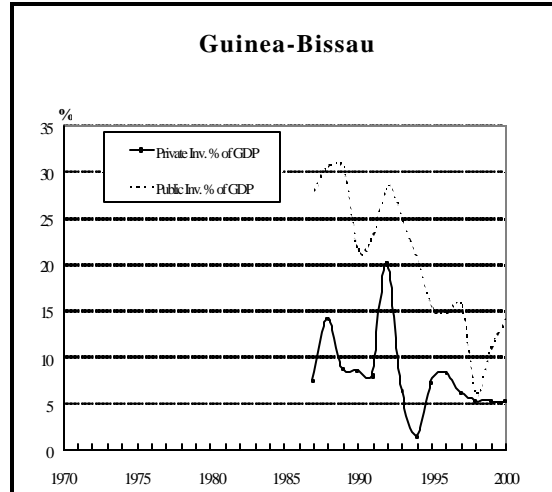
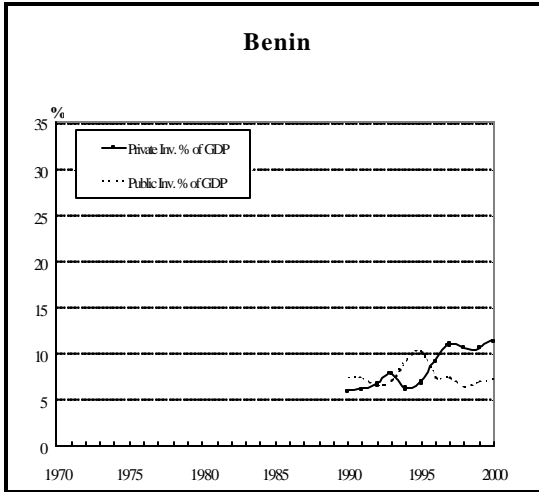
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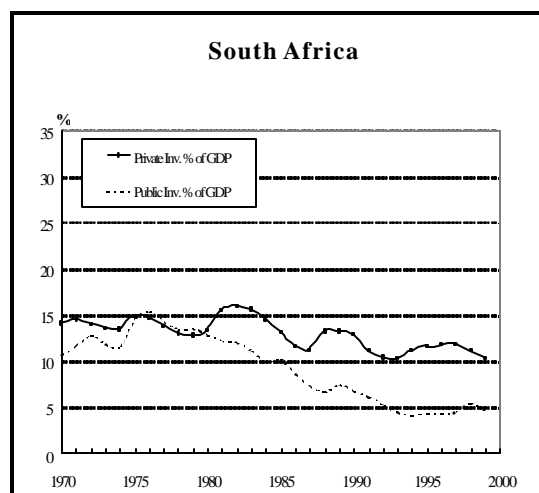
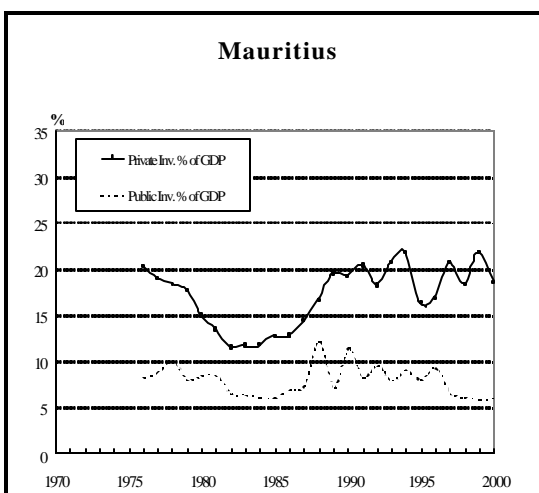
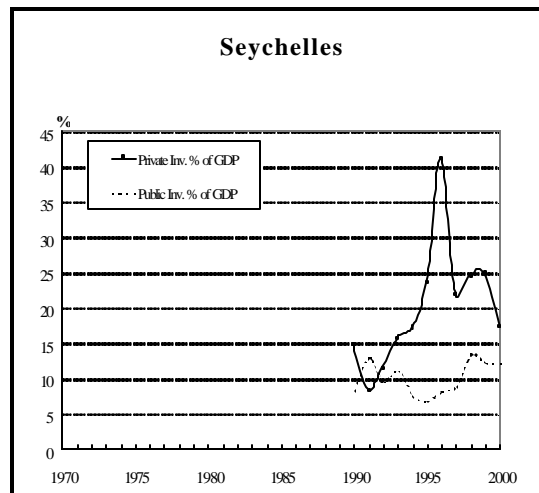
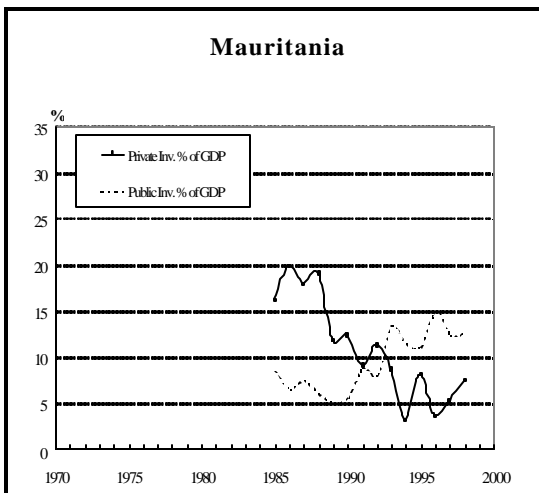
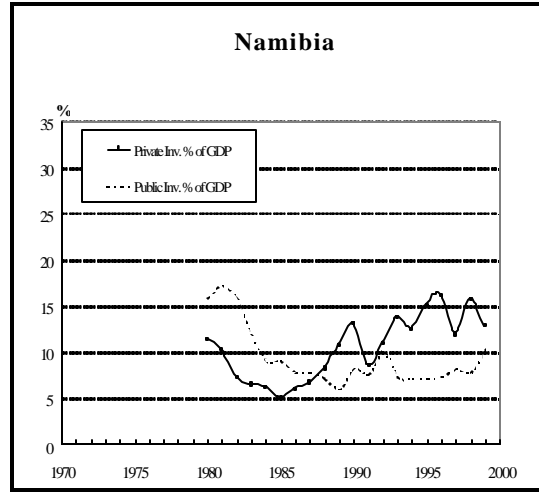
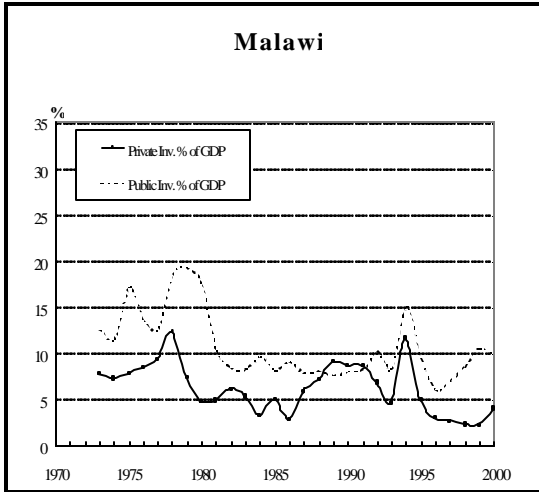
Mauritius

Namibia

Seychelles

South Africa

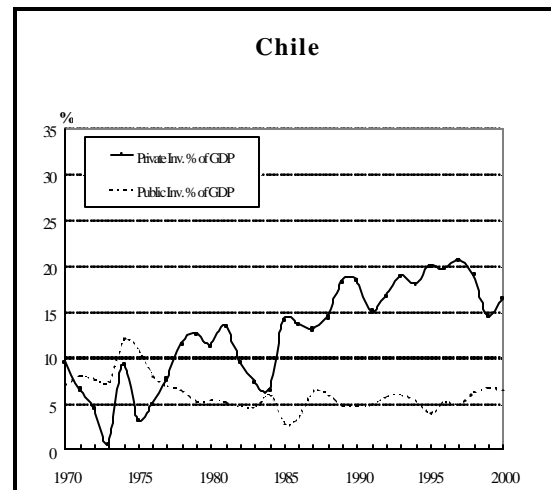
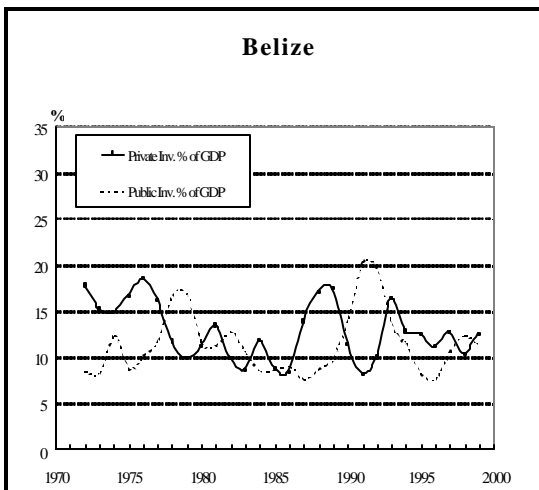
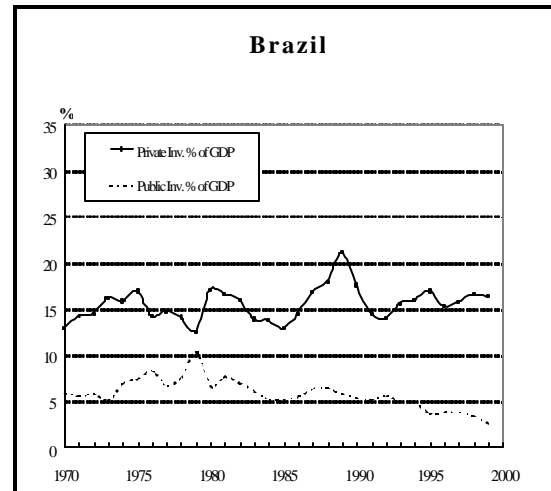
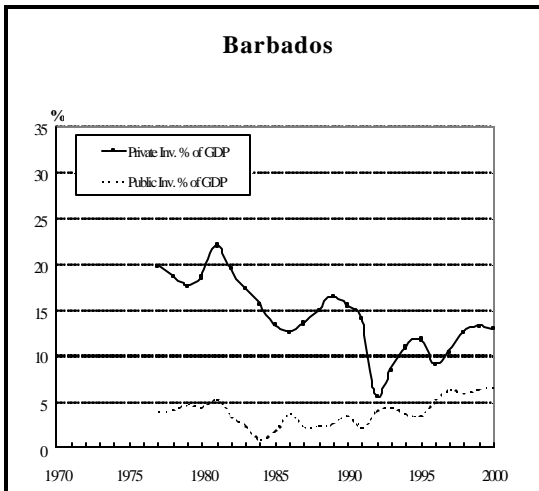
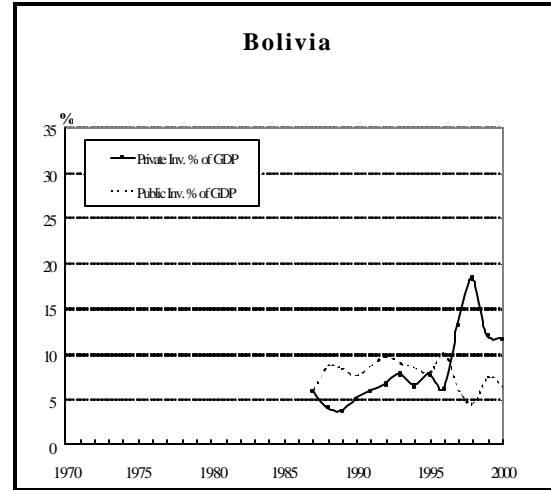
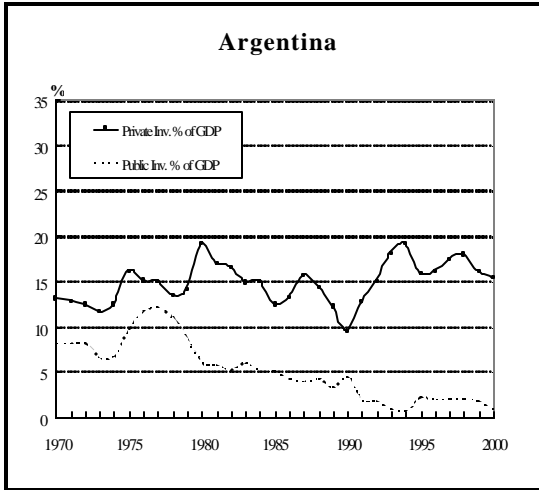


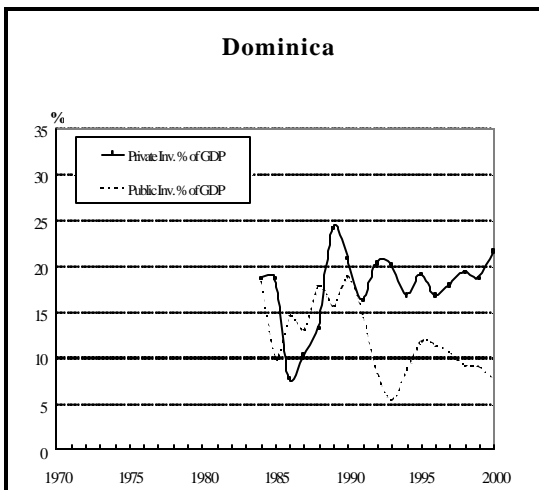
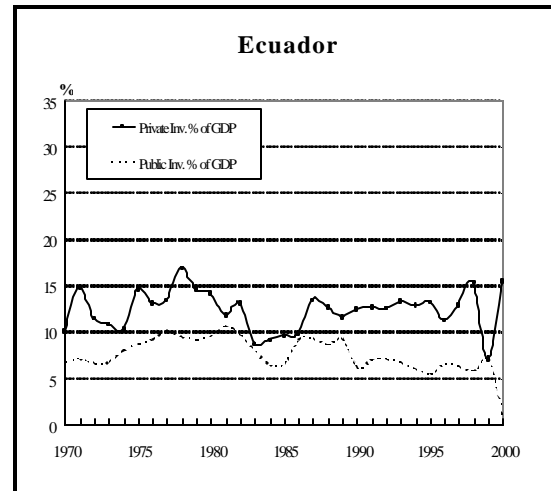
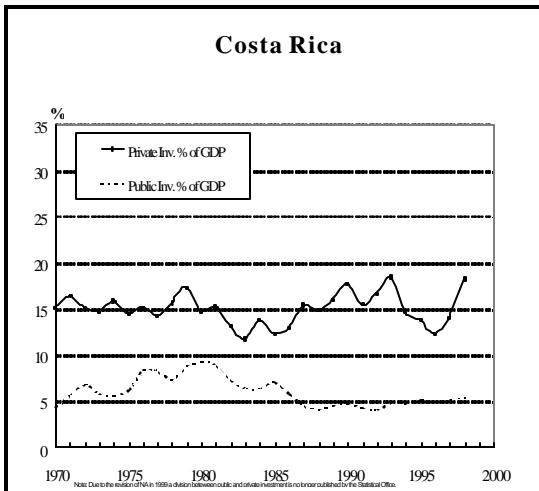
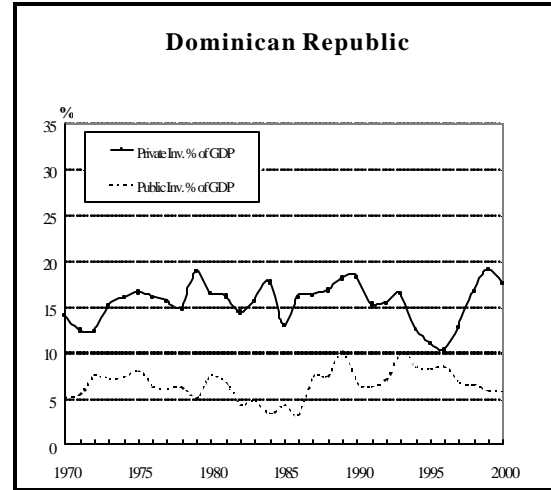
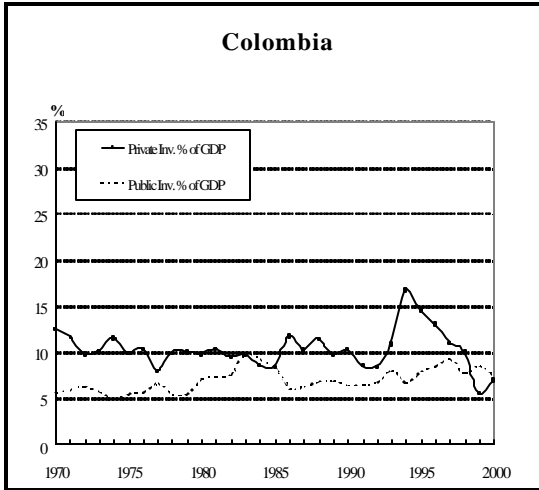


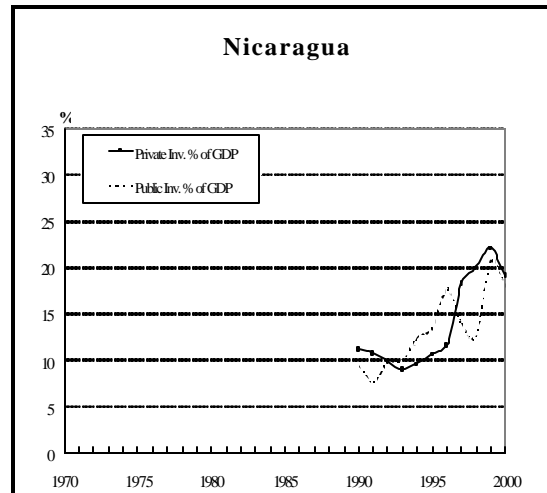
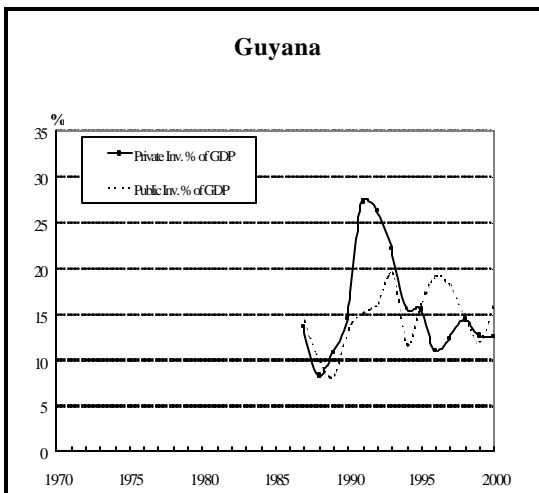
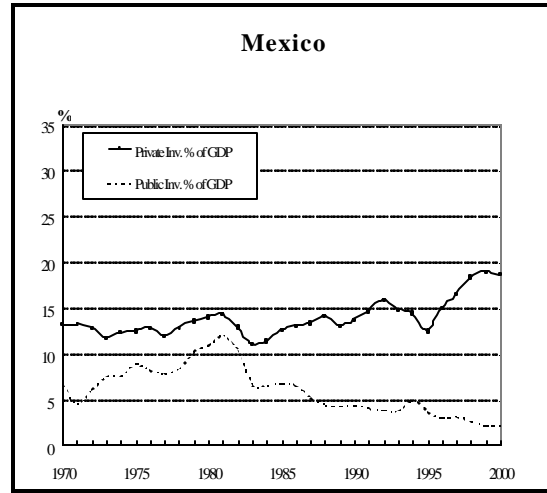
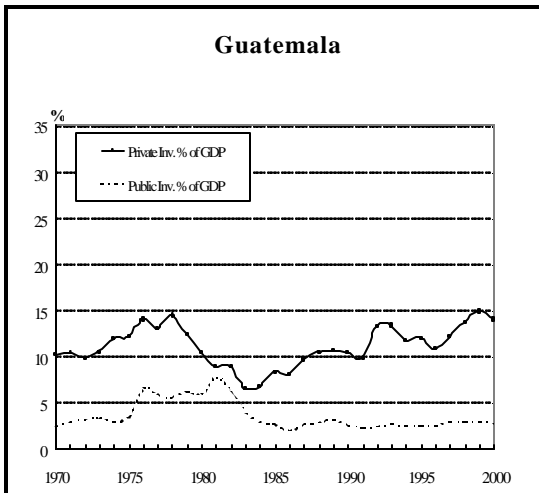
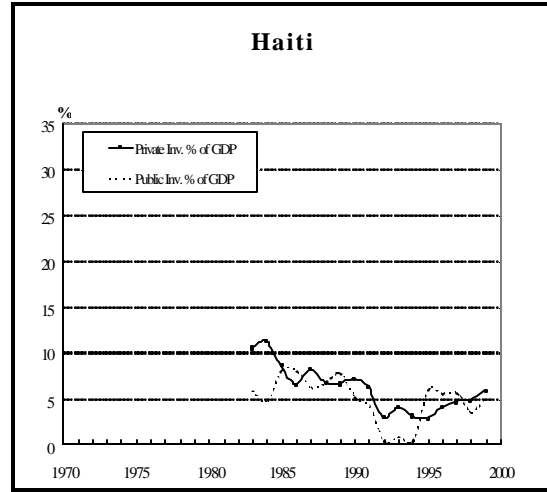
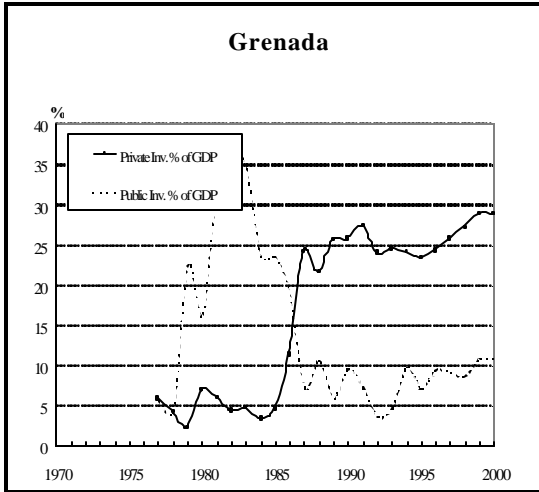


## **Latin America and the Caribbean**

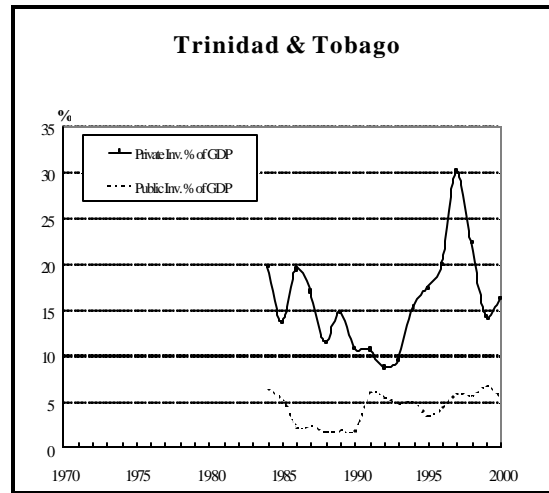
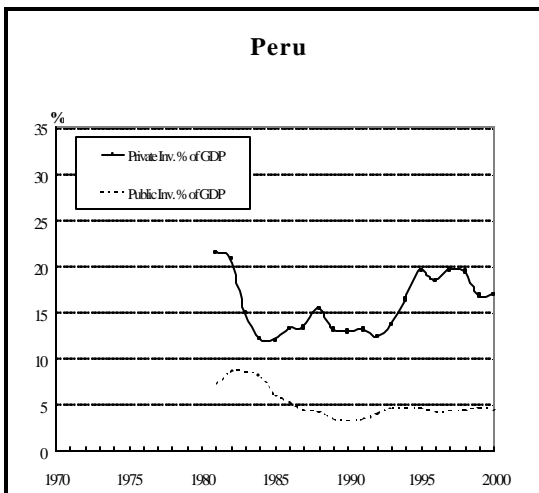
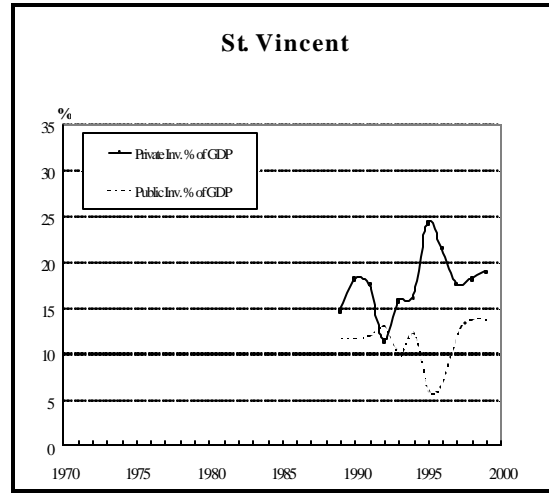
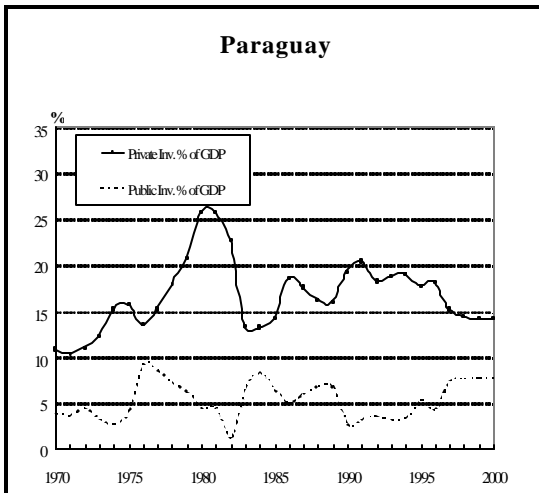
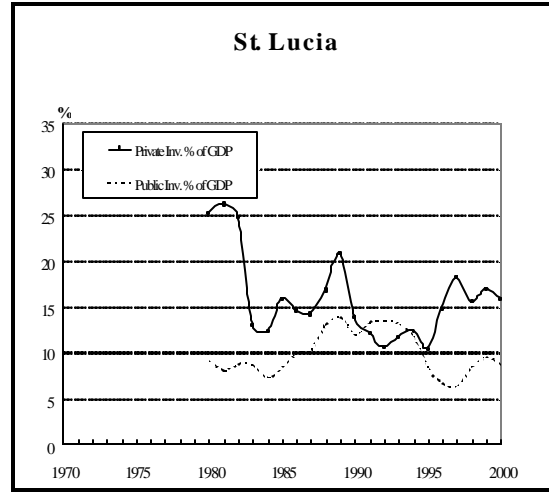
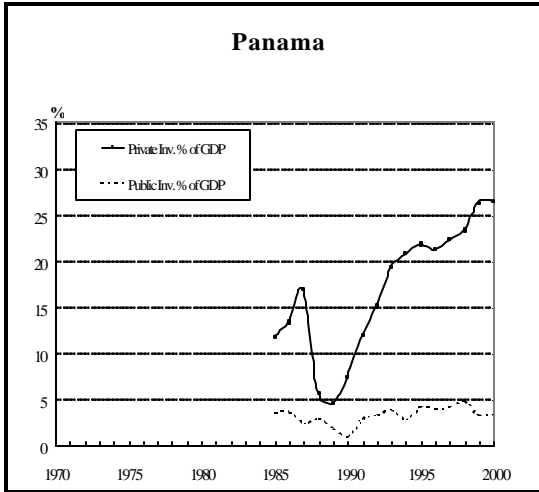
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Belize  
Bolivia  
Brazil  
Chile  
Colombia  
Costa Rica  
Dominica  
Dominican Republic  
Ecuador  
El Salvador  
Grenada  
Guatemala  
Guyana  
Haiti  
Mexico  
Nicaragua  
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Paraguay  
Peru  
St. Lucia  
St. Vincent  
Trinidad & Tobago  
Uruguay  
Venezuela, Republica Bolivariana de

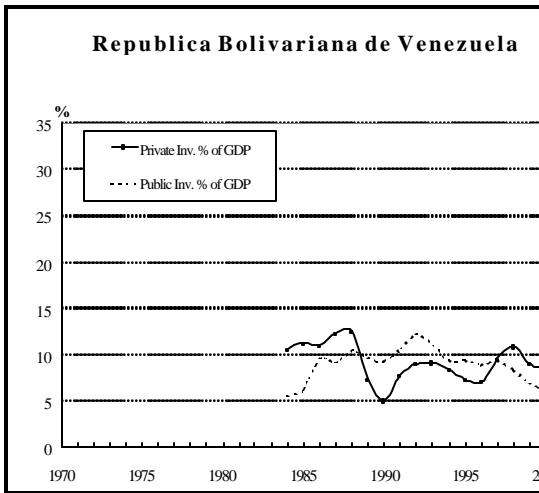
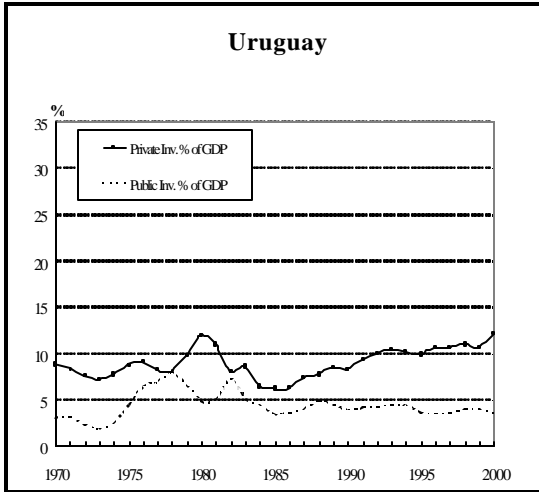












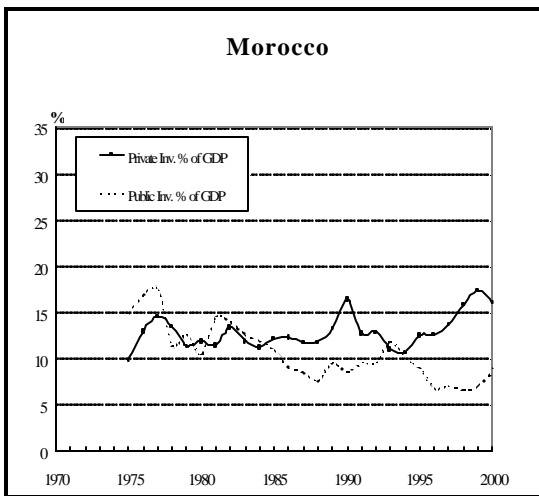
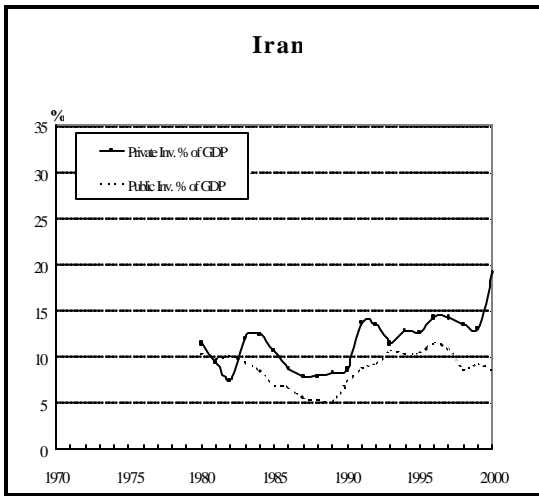
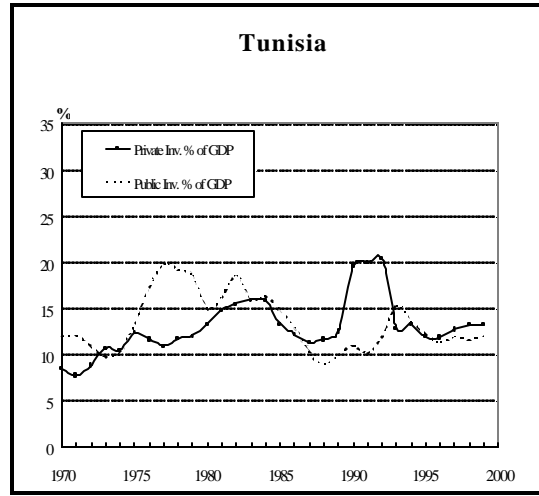
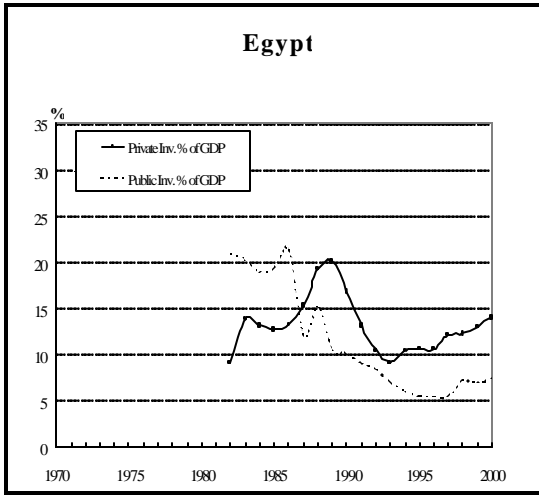
## **Middle East and North Africa**

Egypt

Iran

Morocco

Tunisia



## **Europe and Central Asia**

Azerbaijan

Bulgaria

Estonia

Kazakhstan

Lithuania

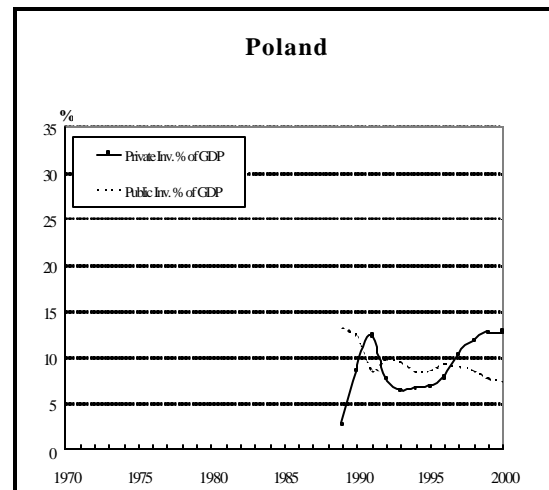
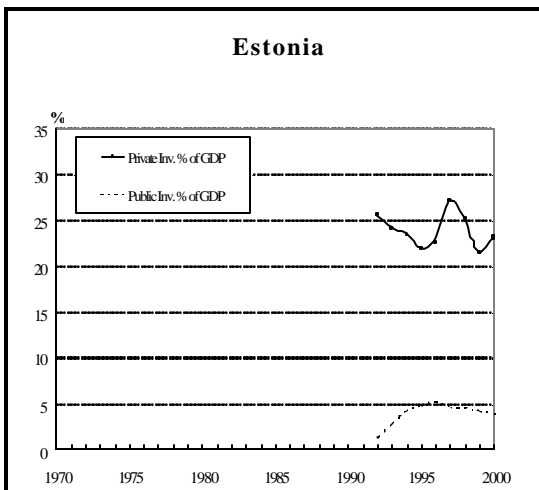
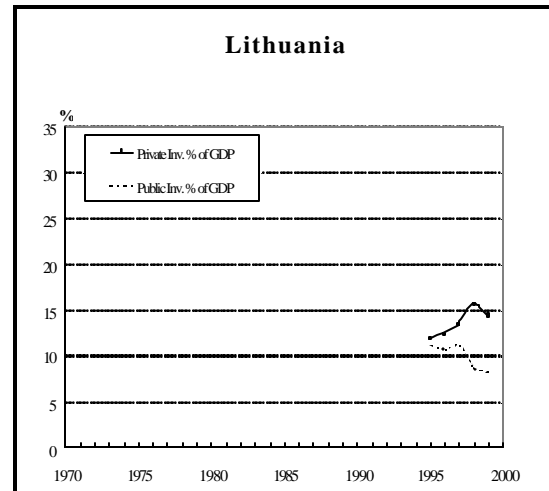
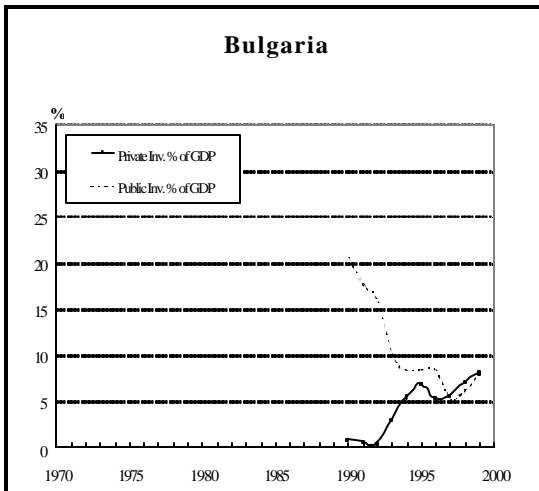
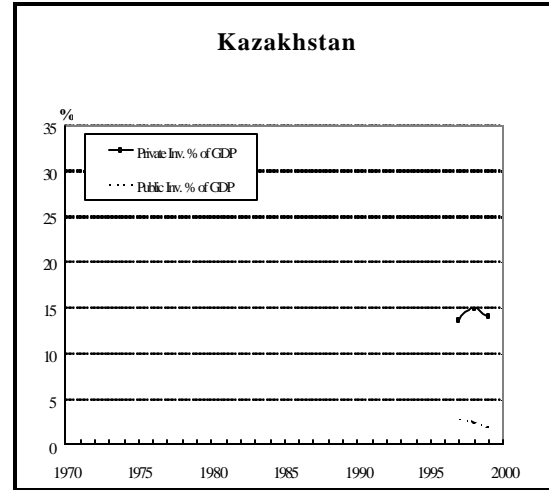
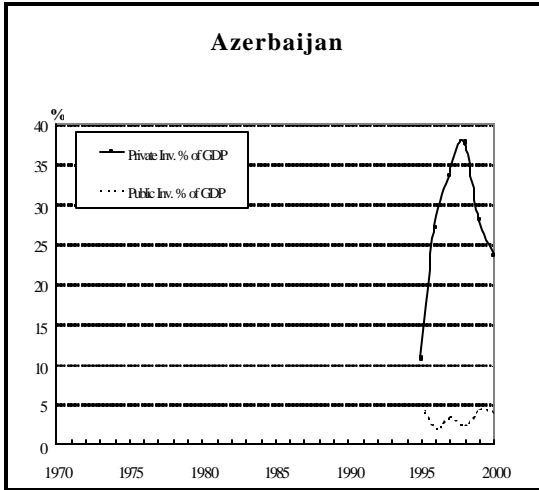
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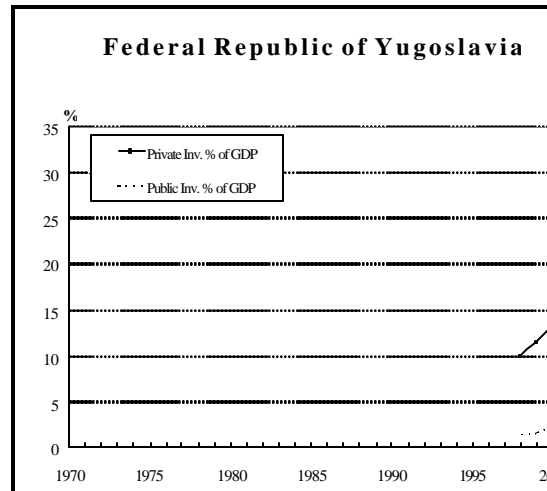
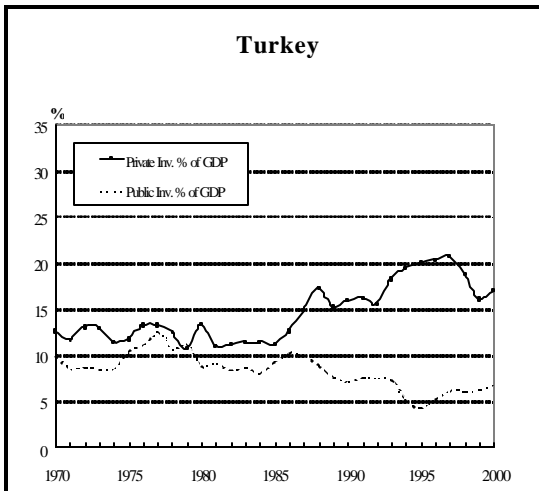
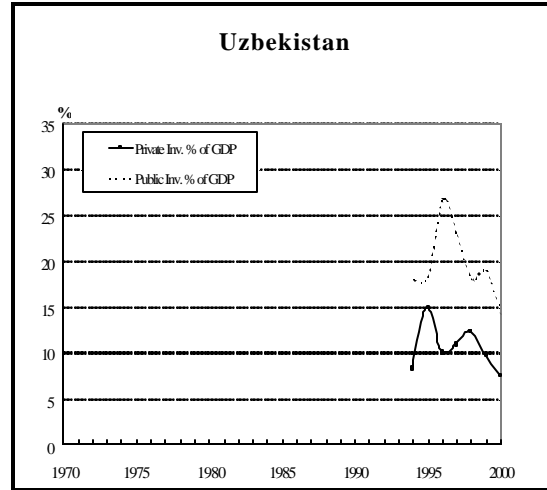
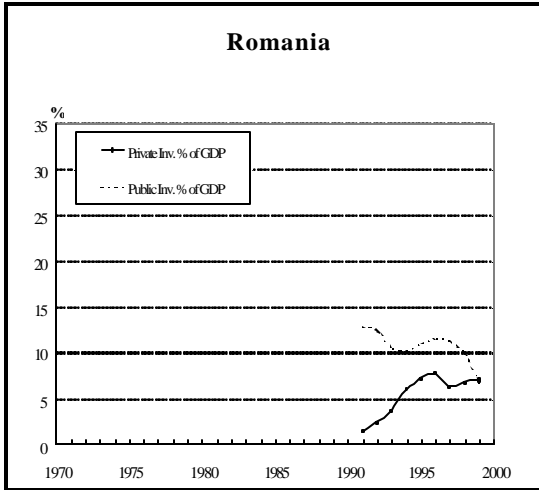
Romania

Turkey

Uzbekistan

Yugoslavia, Federal Republic of









## **East Asia**

Cambodia

China

Indonesia

Korea, Republic of

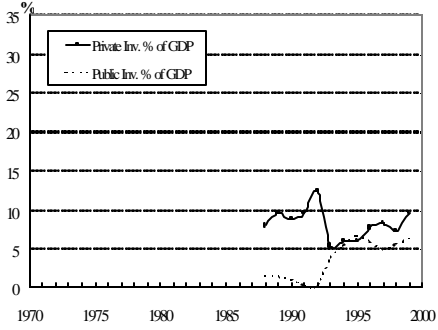
Malaysia

Papua New Guinea

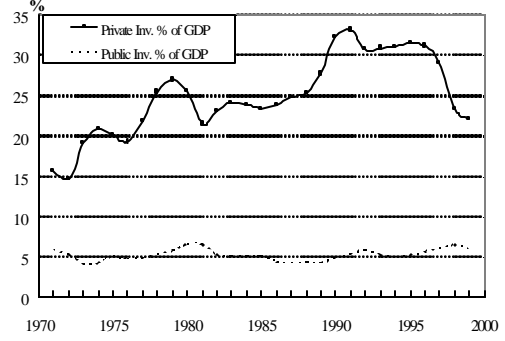
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Thailand

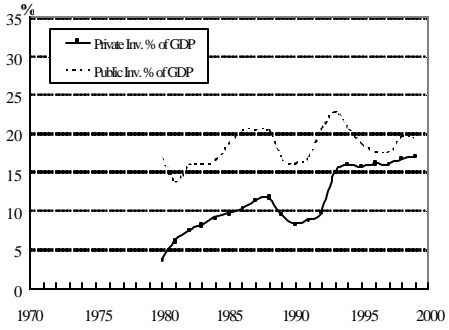
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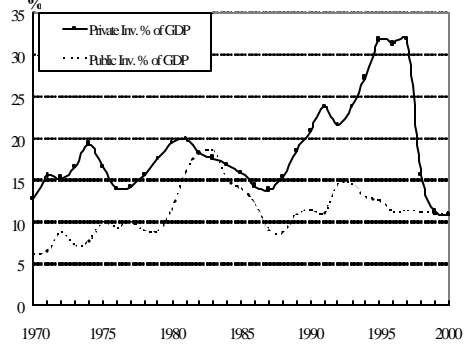
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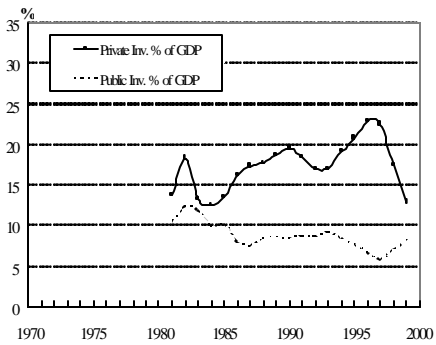
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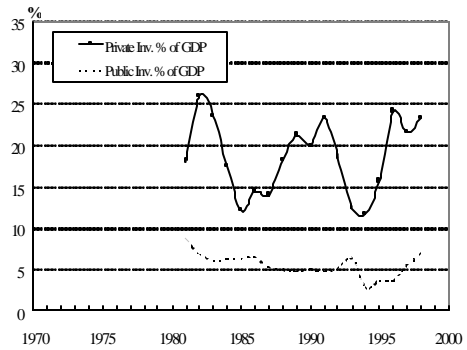
### Malaysia

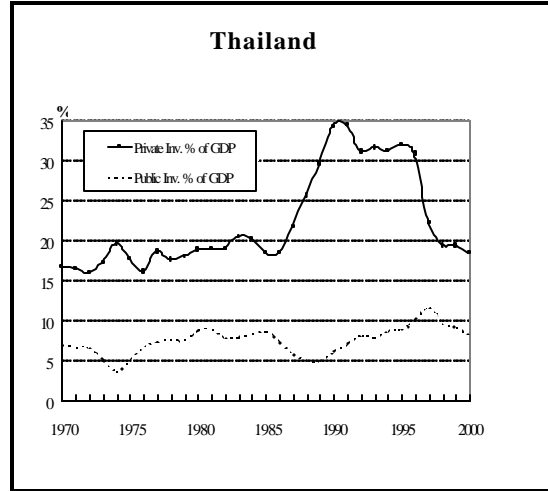
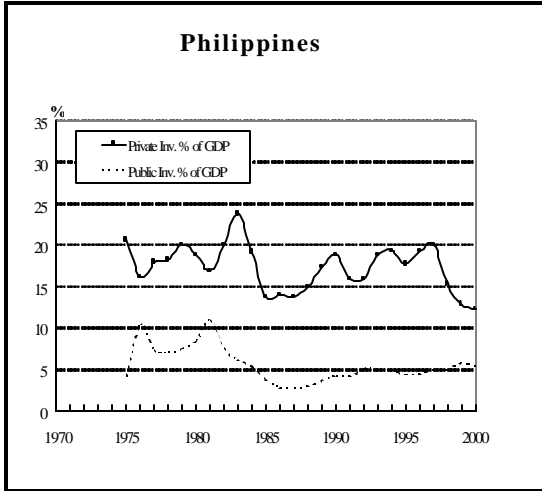


### Indonesia



### Papua New Guinea







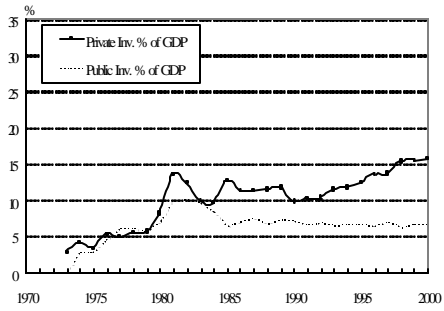
## **South Asia**

Bangladesh

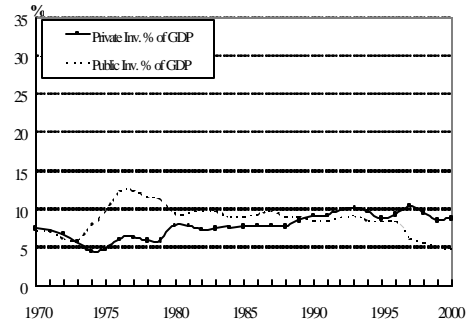
India

Pakistan

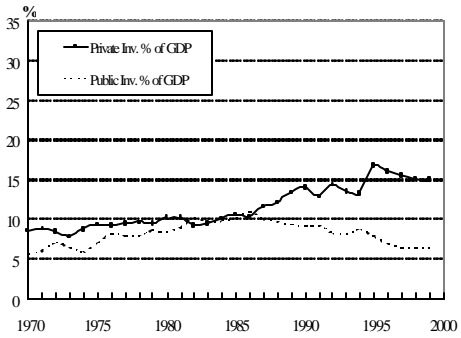
### Bangladesh



### Pakistan



### India



**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %)**

Country/Year		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
Argentina	GDFI/GDP	21.2	20.9	20.7	18.2	19.3	25.9	26.8	27.2	24.4	22.7	25.3	22.7	21.8	20.9	20.0	17.6	17.5	19.6	18.6	15.5	14.0	14.6	16.7	19.1	19.9	17.9	18.1	19.4	19.9	17.9	16.3		
	Private I/GDP	13.1	12.8	12.5	11.6	12.5	16.1	15.1	15.0	13.4	14.1	19.2	16.9	16.6	14.8	14.9	12.5	13.2	15.7	14.4	12.2	9.4	12.7	14.9	18.1	19.1	15.8	16.1	17.3	17.9	16.1	15.4		
	Public I/GDP	8.1	8.1	8.2	6.6	6.8	9.8	11.7	12.2	11.0	8.6	6.1	5.8	5.2	6.1	5.0	5.1	4.3	3.9	4.3	3.3	4.6	1.9	1.8	1.0	0.8	2.2	2.0	2.0	2.0	1.8	1.0		
Azerbaijan	GDFI/GDP																											15.6	29.1	37.0	40.0	32.5	27.6	
	Private I/GDP																												10.7	27.1	33.6	37.7	28.2	23.6
	Public I/GDP																												5.0	2.0	3.3	2.3	4.3	4.1
Bangladesh	GDFI/GDP				3.0	7.1	6.3	9.9	11.1	11.8	11.3	15.3	23.5	22.6	19.7	18.1	19.1	18.5	19.0	18.4	19.1	17.1	16.5	17.3	17.9	18.4	19.1	20.0	20.7	21.6	22.2	22.4		
	Private I/GDP				2.9	4.2	3.4	5.4	4.9	5.6	5.7	8.2	13.6	12.4	10.0	9.6	12.7	11.4	11.4	11.5	11.7	9.8	10.3	10.3	11.5	11.8	12.4	13.6	13.7	15.3	15.5	15.7		
	Public I/GDP				0.1	2.9	2.9	4.6	6.2	6.2	5.6	7.1	9.9	10.2	9.8	8.4	6.4	7.2	7.7	6.9	7.3	7.2	6.6	7.0	6.5	6.6	6.7	6.4	7.0	6.4	6.7	6.7		
Barbados	GDFI/GDP								23.7	22.7	22.2	22.8	27.2	22.8	19.6	16.5	15.1	16.1	15.8	17.3	18.8	18.9	16.2	9.5	12.7	14.5	15.1	14.2	16.7	18.5	19.4	19.5		
	Private I/GDP								19.7	18.7	17.5	18.5	22.0	19.5	17.3	15.6	13.3	12.6	13.5	14.9	16.3	15.5	14.0	5.6	8.3	10.9	11.7	9.1	10.4	12.6	13.1	12.9		
	Public I/GDP								4.0	4.0	4.6	4.3	5.2	3.3	2.4	0.9	1.8	3.6	2.3	2.4	2.5	3.5	2.2	3.9	4.4	3.6	3.4	5.2	6.3	5.9	6.3	6.6		
Belize	GDFI/GDP			26.2	23.5	27.1	25.3	28.7	28.0	28.5	26.6	22.7	24.8	22.5	18.9	20.3	17.4	17.4	21.5	25.7	27.4	25.6	28.5	29.3	29.8	24.1	20.6	18.8	23.3	22.6	23.8			
	Private I/GDP			17.8	15.2	14.8	16.6	18.5	16.1	11.7	9.8	11.1	13.5	9.8	8.5	11.8	8.7	8.4	13.8	17.1	17.4	11.4	8.1	10.0	16.3	12.7	12.4	11.1	12.7	10.3	12.5			
	Public I/GDP			8.4	8.3	12.3	8.7	10.2	11.9	16.8	16.8	11.5	11.3	12.7	10.4	8.6	8.7	9.0	7.7	8.6	10.0	14.2	20.4	19.3	13.5	11.3	8.2	7.7	10.6	12.3	11.3			
Benin	GDFI/GDP																						13.4	13.6	13.2	15.0	15.5	17.2	16.6	18.5	17.0	17.6	18.6	
	Private I/GDP																						6.0	6.1	6.7	7.9	6.2	6.9	9.1	11.0	10.5	10.6	11.3	
	Public I/GDP																						7.4	7.4	6.6	7.1	9.3	10.4	7.5	7.5	6.5	7.0	7.3	
Bolivia	GDFI/GDP																		12.1	12.7	12.0	12.6	14.5	16.3	16.7	14.9	15.5	16.2	19.0	22.8	19.4	17.9		
	Private I/GDP																		5.9	4.0	3.6	5.0	5.8	6.6	7.7	6.4	7.6	6.1	13.1	18.3	12.0	11.5		
	Public I/GDP																		6.2	8.7	8.4	7.6	8.7	9.7	9.0	8.5	8.0	10.1	5.9	4.5	7.5	6.4		
Brazil	GDFI/GDP	18.8	19.7	20.2	21.4	22.8	24.4	22.5	21.3	21.8	22.8	23.6	24.3	23.0	19.9	18.9	18.0	20.0	23.2	24.3	26.9	22.9	19.6	19.6	20.4	20.7	20.5	19.1	19.5	19.9	18.9			
	Private I/GDP	12.8	14.2	14.4	16.2	15.8	16.9	14.2	14.7	14.1	12.5	17.0	16.6	16.0	13.8	13.7	12.9	14.4	16.8	17.9	21.1	17.6	14.4	13.9	15.5	15.8	16.8	15.3	15.7	16.5	16.3			
	Public I/GDP	6.0	5.5	5.8	5.2	7.0	7.5	8.3	6.6	7.7	10.3	6.6	7.7	7.0	6.1	5.2	5.1	5.6	6.4	6.4	5.8	5.3	5.2	5.7	4.9	4.9	3.7	3.9	3.8	3.4	2.6			
Bulgaria	GDFI/GDP																						21.3	18.2	16.2	13.0	13.8	15.3	13.6	10.8	13.2	15.9		
	Private I/GDP																						0.8	0.5	0.3	2.9	5.4	6.8	5.3	5.5	7.0	8.0		
	Public I/GDP																						20.5	17.7	15.9	10.0	8.4	8.5	8.4	5.3	6.2	7.9		
Cambodia	GDFI/GDP																						9.4	11.0	9.8	9.9	12.7	9.2	11.3	12.7	13.5	13.0	15.8	
	Private I/GDP																						8.0	9.5	8.8	9.5	12.4	5.3	5.9	6.0	7.6	8.2	9.6	
	Public I/GDP																						1.4	1.5	1.0	0.3	0.3	3.9	5.4	6.7	5.9	4.8	5.7	6.2
Chile	GDFI/GDP	16.4	14.5	12.2	7.9	21.2	13.9	12.8	14.5	17.8	17.8	16.6	18.6	14.2	12.0	12.4	16.8	17.1	19.4	20.3	23.0	23.1	19.5	22.4	24.9	23.3	23.9	24.9	25.5	25.2	21.3	22.8		
	Private I/GDP	9.5	6.5	4.5	0.5	9.2	3.2	4.8	7.6	11.4	12.6	11.2	13.4	9.5	7.4	6.4	14.1	13.6	13.1	14.4	18.2	18.4	15.0	16.7	18.9	18.0	19.9	19.7	20.6	19.0	14.5	16.4		
	Public I/GDP	6.9	8.0	7.7	7.4	12.0	10.7	8.0	6.9	6.4	5.2	5.4	5.2	4.7	4.7	6.0	2.8	3.5	6.4	5.9	4.8	4.8	4.5	5.8	6.0	5.3	3.9	5.2	4.9	6.3	6.8	6.4		
China	GDFI/GDP											20.2	19.8	23.2	24.1	25.6	28.4	30.6	31.7	31.8	26.1	24.4	25.5	30.3	37.7	36.4	34.2	33.8	33.5	36.3	36.4			
	Private I/GDP											3.7	6.0	7.3	8.1	9.0	9.6	10.2	11.2	11.6	9.5	8.3	8.7	9.7	14.9	15.9	15.6	16.1	15.9	16.6	17.0			
	Public I/GDP											16.5	13.7	16.0	16.0	16.5	18.7	20.4	20.5	20.2	16.6	16.1	17.2	20.6	22.9	20.6	18.6	17.7	17.6	19.6	19.5			

Continued

**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %) (Continued)**

Country/Year		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000				
Colombia	GDFI/GDP	18.0	17.5	16.1	15.8	16.4	15.3	15.9	14.5	15.4	15.4	16.8	17.7	17.0	19.7	17.7	16.7	17.7	16.5	18.2	16.6	16.6	15.0	15.1	18.9	23.3	22.4	21.5	20.2	17.6	14.1	14.3				
	Private I/GDP	12.4	11.6	9.8	10.1	11.5	9.9	10.3	7.9	9.9	10.0	9.8	10.3	9.4	9.7	8.5	8.4	11.6	10.2	11.4	9.6	10.2	8.4	8.3	10.8	16.7	14.5	13.0	11.0	9.9	5.5	6.9				
	Public I/GDP	5.6	6.0	6.3	5.7	4.9	5.4	5.6	6.6	5.5	5.4	7.0	7.4	7.6	10.0	9.2	8.3	6.1	6.3	6.8	7.0	6.4	6.5	6.7	8.1	6.6	7.9	8.5	9.2	7.7	8.6	7.4				
Comoros	GDFI/GDP																						11.9	18.9	20.1	17.0	19.8	16.1	13.5	15.5	16.6	14.6	15.0			
	Private I/GDP																						6.7	14.3	9.2	9.8	9.5	9.2	7.3	8.9	8.1	7.4	7.4			
	Public I/GDP																						5.2	4.6	10.9	7.2	10.4	6.9	6.2	6.6	8.5	7.2	7.6			
Costa Rica	GDFI/GDP	19.4	22.1	21.9	20.5	21.3	20.7	23.5	22.4	23.0	26.2	23.5	24.1	20.3	18.0	20.0	19.3	18.7	19.8	18.9	20.5	22.4	19.7	20.8	23.2	19.5	18.9	17.1	19.2	23.7						
	Private I/GDP	15.0	16.4	15.1	14.7	15.8	14.4	15.1	14.2	15.6	17.3	14.7	15.2	13.1	11.6	13.7	12.3	12.9	15.4	14.8	16.0	17.7	15.5	16.6	18.3	14.6	13.8	12.2	14.0	18.2						
	Public I/GDP	4.4	5.7	6.8	5.8	5.5	6.3	8.4	8.2	7.4	8.9	9.2	8.9	7.2	6.4	6.4	7.0	5.8	4.4	4.1	4.5	4.7	4.2	4.1	4.9	4.8	5.1	4.8	5.1	5.5						
Cote d'Ivoire	GDFI/GDP																	14.8	14.1	13.8	12.2	8.5	8.6	8.5	7.8	11.1	13.6	15.6	15.5	16.0	16.3	17.6				
	Private I/GDP																	7.9	6.7	6.8	5.9	4.9	5.1	4.7	4.1	7.0	9.5	11.4	10.2	9.9	12.1	12.9				
	Public I/GDP																	6.9	7.4	7.0	6.3	3.6	3.4	3.8	3.7	4.1	4.2	4.2	5.3	6.1	4.2	4.7				
Dominica	GDFI/GDP																36.8	28.5	22.3	23.3	31.1	39.6	39.7	30.5	28.4	25.5	25.5	30.8	28.1	28.5	27.7	29.1				
	Private I/GDP																18.6	18.6	7.8	10.2	13.2	24.0	20.8	16.2	20.2	20.1	16.8	19.0	16.7	17.9	19.3	21.6				
	Public I/GDP																18.2	9.9	14.5	13.1	17.9	15.6	18.9	14.4	8.1	5.4	8.8	11.8	11.4	10.5	9.2	9.0	7.5			
Dominican Rep.	GDFI/GDP	19.1	17.9	19.8	22.2	23.3	24.5	22.3	21.7	21.0	23.9	23.5	22.8	18.7	20.3	21.0	17.3	19.3	23.7	24.3	28.2	24.9	21.6	22.5	26.4	21.1	19.2	18.7	19.5	23.1	24.8	23.2				
	Private I/GDP	14.0	12.4	12.2	15.1	15.9	16.5	16.0	15.6	14.8	18.8	16.3	16.1	14.3	15.6	17.6	12.9	16.0	16.2	16.8	18.1	18.2	15.3	15.4	16.4	12.6	11.0	10.2	12.7	16.6	18.9	17.5				
	Public I/GDP	5.1	5.5	7.6	7.1	7.4	8.0	6.3	6.1	6.2	5.1	7.6	6.7	4.4	4.7	3.4	4.3	3.3	7.5	7.5	10.2	6.7	6.3	7.1	10.0	8.5	8.1	8.5	6.8	6.5	5.9	5.8				
Ecuador	GDFI/GDP	16.7	21.8	18.0	17.6	18.2	23.2	22.2	23.6	26.2	23.7	23.6	22.3	22.7	16.6	15.4	16.1	18.8	22.7	21.3	20.7	18.4	19.7	19.5	19.9	18.8	18.6	17.8	19.0	21.0	14.0	15.9				
	Private I/GDP	10.0	14.7	11.4	10.8	10.2	14.5	13.0	13.4	16.8	14.5	14.1	11.7	13.0	8.6	9.0	9.5	9.6	13.4	12.7	11.6	12.4	12.6	12.4	13.2	12.8	13.1	11.2	12.8	15.2	6.9	15.4				
	Public I/GDP	6.7	7.1	6.6	6.8	8.0	8.7	9.2	10.2	9.4	9.2	9.5	10.6	9.7	8.0	6.4	6.6	9.2	9.3	8.6	9.2	6.1	7.0	7.1	6.7	6.0	5.5	6.6	6.3	5.7	7.1	0.5				
Egypt	GDFI/GDP																	30.1	34.2	32.1	32.1	34.4	27.3	34.4	30.6	26.9	22.2	19.1	16.2	16.6	16.2	16.0	17.6	19.5	20.0	21.5
	Private I/GDP																	9.1	13.9	13.1	12.7	13.2	15.2	19.2	20.1	16.7	13.1	10.5	9.2	10.5	10.7	10.5	12.1	12.3	13.0	14.0
	Public I/GDP																	21.0	20.3	19.0	19.4	21.3	12.1	15.2	10.5	10.2	9.2	8.5	7.1	6.1	5.5	5.5	5.6	7.2	7.0	7.5
El Salvador	GDFI/GDP	10.7	11.2	14.1	12.4	14.2	23.0	20.1	21.2	21.4	17.6	13.6	13.6	12.6	11.6	11.5	12.0	13.1	13.6	12.6	13.3	13.7	15.2	17.2	17.8	18.6	18.6	15.8	16.1	16.6	16.2	16.2				
	Private I/GDP	8.4	8.3	10.1	8.8	9.5	15.0	13.9	13.9	15.6	11.5	6.4	6.2	6.5	7.0	7.6	8.7	10.6	10.7	9.5	9.8	11.2	12.3	13.2	13.7	14.7	15.0	12.1	12.7	13.2	13.0	13.0				
	Public I/GDP	2.3	2.9	4.0	3.6	4.7	8.0	6.2	7.3	5.8	6.1	7.1	7.3	6.1	4.6	3.9	3.3	2.5	2.9	3.1	3.5	2.5	2.8	4.0	4.0	3.8	3.6	3.7	3.3	3.3	3.1	3.2				
Estonia	GDFI/GDP																							26.9	26.9	27.6	26.7	27.8	31.7	29.7	25.7	26.9				
	Private I/GDP																							25.5	24.0	23.5	21.9	22.6	27.0	25.1	21.4	23.1				
	Public I/GDP																							1.3	2.9	4.2	4.8	5.2	4.7	4.6	4.2	3.8				
Grenada	GDFI/GDP								11.5	8.6	24.6	23.3	38.4	41.7	39.1	26.9	28.0	30.1	31.4	32.2	31.5	35.3	34.7	27.7	29.2	33.9	30.5	33.7	35.0	35.9	39.6	39.6				
	Private I/GDP								5.9	4.3	2.3	6.9	6.1	4.5	4.7	3.4	4.6	11.4	24.2	21.6	25.6	25.8	27.4	24.0	24.5	24.1	23.3	24.3	25.8	27.2	28.8	28.8				
	Public I/GDP								5.6	4.3	22.4	16.4	32.3	37.2	34.4	23.5	23.4	18.7	7.2	10.6	5.9	9.5	7.3	3.7	4.7	9.8	7.1	9.5	9.2	8.7	10.8	10.8				
Guatemala	GDFI/GDP	12.6	13.3	13.0	13.9	14.8	15.6	20.6	18.9	20.0	18.7	16.4	16.8	15.0	10.5	9.6	11.0	10.1	12.4	13.4	13.7	13.0	12.2	15.6	16.1	14.2	14.5	13.3	15.1	16.6	17.9	16.8				
	Private I/GDP	10.2	10.4	9.8	10.5	11.9	12.1	14.0	13.0	14.4	12.4	10.5	8.9	8.9	6.6	6.7	8.3	8.1	9.7	10.5	10.6	10.4	9.8	13.2	13.4	11.7	12.0	10.8	12.1	13.7	14.8	14.0				
	Public I/GDP	2.4	2.9	3.2	3.4	2.9	3.5	6.6	5.9	5.6	6.3	5.9	7.8	6.1	3.9	2.9	2.7	2.0	2.7	2.9	3.2	2.6	2.4	2.4	2.7	2.6	2.5	2.5	3.1	3.0	3.1	2.8				

Continued



**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %) (Continued)**

Country/Year		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000								
Guinea-Bissau	GDFI/GDP																		35.2	44.7	39.0	29.9	31.0	48.4	30.9	21.8	22.3	23.0	21.6	11.3	16.3	19.2								
	Private I/GDP																		7.3	14.1	8.7	8.4	7.8	20.0	6.3	1.4	7.1	8.3	6.1	5.2	5.2	5.3								
	Public I/GDP																		27.9	30.6	30.3	21.5	23.2	28.4	24.6	20.4	15.2	14.8	15.6	6.2	11.1	13.9								
Guyana	GDFI/GDP																		27.8	18.0	18.9	27.7	42.2	42.3	41.5	27.2	31.7	30.0	30.3	28.8	24.5	28.7								
	Private I/GDP																		13.6	8.2	10.7	14.4	27.2	26.2	22.1	15.6	15.5	10.9	12.3	14.3	12.6	12.5								
	Public I/GDP																		14.2	9.8	8.2	13.3	15.1	16.1	19.4	11.6	16.3	19.1	18.1	14.5	11.8	16.2								
Haiti	GDFI/GDP														16.3	15.9	16.7	14.5	14.3	13.4	14.3	12.2	10.3	3.2	4.8	3.4	8.7	9.5	10.2	8.2	11.0									
	Private I/GDP														10.4	11.2	8.5	6.4	8.1	6.7	6.5	7.0	6.2	2.9	3.9	3.0	2.7	4.0	4.5	4.7	5.7									
	Public I/GDP														5.9	4.7	8.1	8.0	6.2	6.7	7.8	5.1	4.2	0.3	0.9	0.4	6.0	5.5	5.7	3.5	5.3									
India	GDFI/GDP	14.0	14.7	15.3	14.0	14.4	16.2	17.3	17.2	17.4	17.9	18.5	18.9	19.2	18.8	19.6	20.6	21.1	21.4	21.6	22.4	22.9	22.0	22.4	21.4	21.9	24.4	22.8	21.7	21.2	21.2									
	Private I/GDP	8.5	8.7	8.3	7.7	8.6	9.2	9.2	9.3	9.5	9.3	10.1	10.1	9.1	9.3	9.5	10.5	10.2	11.5	12.0	13.2	13.9	12.9	14.2	13.4	13.2	16.7	15.9	15.4	15.0	14.9									
	Public I/GDP	5.5	6.0	7.0	6.3	5.8	7.0	8.1	7.8	7.9	8.5	8.4	8.9	10.1	9.5	9.7	10.1	10.9	10.0	9.6	9.2	9.0	9.2	8.2	8.0	8.8	7.7	6.9	6.4	6.3	6.4									
Indonesia	GDFI/GDP														24.2	30.5	25.1	22.5	23.6	24.2	24.9	26.1	27.3	28.0	27.2	25.6	26.3	27.6	28.4	29.6	28.3	24.6	21.2							
	Private I/GDP														13.7	18.2	13.2	12.5	13.5	16.2	17.3	17.7	18.7	19.5	18.4	16.9	17.0	19.2	20.8	22.9	22.5	17.4	12.9							
	Public I/GDP														10.5	12.3	11.9	9.9	10.1	8.0	7.5	8.4	8.6	8.5	8.8	8.7	9.3	8.4	7.7	6.7	5.8	7.1	8.3							
Iran	GDFI/GDP											21.7	19.1	17.5	21.5	20.9	17.5	15.4	13.3	13.3	13.3	15.8	22.3	22.7	22.1	23.1	23.0	25.7	24.9	22.1	22.2	27.6								
	Private I/GDP											11.4	9.3	7.4	12.0	12.4	10.6	8.6	7.8	7.9	8.2	8.5	13.6	13.4	11.4	12.8	12.6	14.2	14.2	13.4	13.0	19.0								
	Public I/GDP											10.4	9.8	10.0	9.4	8.5	6.9	6.7	5.5	5.4	5.1	7.3	8.7	9.3	10.7	10.3	10.4	11.5	10.7	8.7	9.2	8.6								
Kazakhstan	GDFI/GDP																																	16.3	17.3	15.9				
	Private I/GDP																																		13.6	14.8	14.0			
	Public I/GDP																																		2.7	2.5	1.9			
Kenya	GDFI/GDP	19.7	22.7	22.1	20.8	19.2	20.2	20.0	21.0	25.1	23.7	23.6	23.9	19.0	18.0	18.1	17.9	19.6	19.6	20.1	19.3	20.7	19.3	17.0	19.6	18.9	21.4	19.8	17.6	16.5	15.1									
	Private I/GDP	13.7	14.0	13.6	11.4	10.5	11.7	11.6	12.1	15.6	12.8	13.3	13.6	10.7	11.4	10.9	11.6	12.6	12.0	11.6	11.3	11.0	9.8	11.5	10.4	13.9	12.7	11.2	10.8	10.1										
	Public I/GDP	6.0	8.7	8.5	9.4	8.7	8.5	8.4	8.9	9.5	10.9	10.3	10.2	8.4	6.7	7.2	7.0	8.0	7.1	8.0	7.8	9.4	8.3	7.1	8.0	8.5	7.4	7.0	6.4	5.6	5.0									
Korea, Rep. of	GDFI/GDP		21.5	19.9	23.2	25.1	25.2	23.9	26.7	30.7	32.7	32.1	28.0	28.4	29.2	28.9	28.6	28.2	29.1	29.6	31.9	37.1	38.4	36.6	36.2	36.0	36.7	36.8	35.1	29.8	28.0									
	Private I/GDP		15.6	14.6	19.1	20.8	20.1	19.2	21.8	25.4	26.9	25.5	21.4	23.0	24.0	23.8	23.3	23.8	24.8	25.3	27.7	32.2	33.1	30.7	30.9	31.0	31.5	31.1	29.0	23.2	22.0									
	Public I/GDP		5.9	5.3	4.2	4.2	5.1	4.7	4.9	5.3	5.8	6.7	6.5	5.3	5.2	5.1	5.2	4.4	4.2	4.3	4.2	4.9	5.4	5.9	5.3	5.0	5.2	5.7	6.1	6.5	6.0									
Lithuania	GDFI/GDP																																		23.0	23.0	24.4	24.3	22.5	
	Private I/GDP																																			11.8	12.3	13.3	15.6	14.3
	Public I/GDP																																			11.2	10.7	11.1	8.7	8.2
Madagascar	GDFI/GDP																8.5	9.0	10.1	13.3	13.4	14.8	10.6	11.3	11.4	10.9	10.9	11.6	11.9	12.5	12.9	16.1								
	Private I/GDP																2.6	3.6	3.1	6.4	3.7	6.9	4.6	3.7	3.7	4.7	4.9	5.0	6.3	6.9	6.8	8.2								
	Public I/GDP																6.0	5.4	7.0	6.9	7.9	5.9	7.6	7.8	6.2	6.0	6.7	5.6	5.6	6.1	7.9									
Malawi	GDFI/GDP			20.4	18.9	24.9	22.1	22.2	30.9	26.8	22.2	15.1	14.6	13.7	13.0	13.3	12.0	13.8	15.3	16.7	16.7	17.0	17.2	13.0	26.8	14.5	9.1	9.8	11.0	12.8	13.9									
	Private I/GDP			7.8	7.3	7.8	8.5	9.4	12.3	7.5	4.7	4.9	6.1	5.4	3.3	5.0	2.8	5.9	7.2	9.0	8.6	8.7	6.9	4.6	11.6	5.1	3.0	2.7	2.3	2.2	4.1									
	Public I/GDP			12.6	11.6	17.1	13.6	12.8	18.6	19.3	17.5	10.2	8.4	8.3	9.8	8.3	9.2	7.9	8.2	7.6	8.0	8.3	10.2	8.4	15.1	9.4	6.1	7.1	8.6	10.6	9.8									

Continued

**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %) (Continued)**

Country/Year		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
Malaysia	GDFI/GDP	18.9	22.1	23.9	23.7	26.9	26.6	23.4	24.3	24.7	26.4	31.1	36.0	36.3	36.0	31.9	29.8	26.3	23.0	24.1	29.3	32.4	34.9	36.0	38.3	40.1	44.3	42.5	43.1	26.8	22.3	21.9	
	Private I/GDP	12.8	15.5	15.2	16.5	19.3	16.6	14.0	14.2	15.7	17.5	19.5	19.9	18.2	17.7	16.8	15.8	14.3	13.8	15.4	18.5	20.9	23.7	21.5	23.8	27.2	31.7	31.3	31.8	15.6	11.3	10.8	
	Public I/GDP	6.1	6.6	8.7	7.2	7.6	10.0	9.4	10.1	9.0	8.9	11.6	16.1	18.2	18.4	15.1	14.0	12.1	9.1	8.7	10.8	11.5	11.1	14.5	14.6	13.0	12.6	11.2	11.3	11.2	11.0	11.1	
Mauritania	GDFI/GDP																24.5	26.4	25.3	25.1	16.8	17.9	17.9	19.3	22.0	14.5	19.3	18.6	17.7	20.0			
	Private I/GDP																16.1	19.9	17.8	19.0	11.8	12.4	9.1	11.2	8.7	3.1	8.1	3.6	5.2	7.3			
	Public I/GDP																8.4	6.5	7.5	6.1	5.1	5.6	8.8	8.1	13.3	11.4	11.2	15.0	12.4	12.7			
Mauritius	GDFI/GDP							28.4	27.7	28.3	25.7	23.3	21.9	17.9	18.0	17.8	18.7	19.7	21.6	28.7	26.5	30.6	28.6	27.8	28.5	30.8	24.2	26.1	27.3	24.4	27.7	24.6	
	Private I/GDP							20.3	18.9	18.3	17.7	14.9	13.5	11.5	11.6	11.8	12.6	12.8	14.3	16.6	19.5	19.2	20.4	18.3	20.6	21.7	16.3	16.7	20.8	18.3	21.8	18.6	
	Public I/GDP							8.1	8.8	10.0	8.0	8.4	8.5	6.4	6.4	6.1	6.0	7.0	7.3	12.2	7.1	11.4	8.2	9.6	7.9	9.1	8.0	9.3	6.5	6.1	5.9	6.0	
Mexico	GDFI/GDP	19.8	17.8	18.9	19.2	19.9	21.4	21.0	19.7	21.2	23.7	24.8	26.3	23.0	17.5	18.0	19.2	19.6	18.5	18.5	17.2	17.9	18.7	19.6	18.6	19.4	16.2	17.9	19.5	20.5	21.0	20.8	
	Private I/GDP	13.2	13.2	12.8	11.7	12.3	12.4	12.8	11.9	12.8	13.5	13.9	14.3	12.8	11.0	11.4	12.5	13.0	13.3	14.1	13.0	13.6	14.6	15.8	14.8	14.3	12.4	14.9	16.4	18.3	18.9	18.6	
	Public I/GDP	6.6	4.6	6.1	7.5	7.6	9.0	8.2	7.8	8.4	10.2	10.9	12.1	10.2	6.6	6.6	6.7	6.6	5.2	4.4	4.2	4.3	4.1	3.8	3.8	5.0	3.7	3.0	3.1	2.6	2.1	2.2	
Morocco	GDFI/GDP						24.8	29.7	32.0	24.9	24.0	22.2	26.0	27.3	24.4	23.1	23.1	21.3	20.2	19.3	22.8	25.0	22.2	22.4	22.8	20.7	21.4	19.4	20.7	22.4	24.3	24.8	
	Private I/GDP						9.8	12.5	14.5	13.5	11.4	11.8	11.4	13.4	11.8	11.2	12.1	12.2	11.6	11.8	13.2	16.4	12.7	12.8	11.0	10.6	12.5	12.6	13.6	15.7	17.3	16.0	
	Public I/GDP						15.0	16.7	17.5	11.4	12.6	10.4	14.5	13.9	12.6	11.9	11.0	9.1	8.6	7.6	9.6	8.6	9.6	9.5	11.8	10.1	8.9	6.8	7.1	6.6	7.0	8.8	
Namibia	GDFI/GDP											27.2	27.5	23.0	18.3	15.2	14.1	13.8	14.5	15.3	16.7	21.3	16.2	21.0	21.1	19.5	22.2	23.5	20.1	23.5	23.2		
	Private I/GDP											11.4	10.2	7.2	6.4	6.2	5.0	5.9	6.7	8.2	10.8	13.1	8.6	10.9	13.8	12.5	15.1	16.2	11.9	15.7	12.9		
	Public I/GDP											15.7	17.2	15.8	11.9	9.0	9.1	7.8	7.8	7.1	5.9	8.2	7.6	10.1	7.3	7.0	7.1	7.3	8.2	7.8	10.4		
Nicaragua	GDFI/GDP																						20.4	18.3	19.5	18.9	22.0	24.0	29.2	31.9	32.4	42.7	36.8
	Private I/GDP																						11.2	10.7	9.7	8.9	9.6	10.6	11.6	18.2	19.8	22.0	19.0
	Public I/GDP																						9.3	7.6	9.8	10.0	12.4	13.4	17.6	13.7	12.6	20.7	17.8
Pakistan	GDFI/GDP	14.3	14.0	12.6	11.5	12.2	14.4	18.2	18.6	17.3	17.0	17.1	17.1	16.8	17.0	16.5	16.5	17.0	17.5	16.5	17.3	17.3	17.4	18.6	19.1	17.9	16.9	17.4	16.4	15.1	13.3	13.3	
	Private I/GDP	7.3	7.0	6.6	5.6	4.4	4.6	5.9	6.2	5.8	5.8	7.7	7.8	7.2	7.4	7.5	7.6	7.8	7.7	7.7	8.3	8.9	8.9	9.8	10.0	9.6	8.7	9.1	10.3	9.5	8.3	8.6	
	Public I/GDP	7.0	7.0	6.0	5.9	7.8	9.8	12.3	12.4	11.5	11.2	9.4	9.4	9.7	9.6	9.0	8.9	9.2	9.7	8.8	9.0	8.4	8.5	8.8	9.1	8.3	8.2	8.3	6.1	5.6	5.0	4.7	
Panama	GDFI/GDP																15.4	17.0	19.3	8.8	6.5	8.5	15.0	18.5	23.2	23.6	26.0	25.3	26.5	28.1	29.6	29.9	
	Private I/GDP																11.8	13.4	16.8	5.7	4.5	7.4	12.0	15.1	19.2	20.8	21.8	21.2	22.3	23.2	26.3	26.4	
	Public I/GDP																3.7	3.7	2.4	3.1	2.0	1.1	3.0	3.4	4.0	2.9	4.3	4.0	4.2	4.8	3.3	3.5	
Papua N. Guinea	GDFI/GDP												26.8	33.0	29.7	23.9	18.4	21.0	19.3	23.3	26.0	25.1	28.0	23.8	18.8	14.5	19.4	27.9	27.1	30.3			
	Private I/GDP												18.1	26.1	23.6	17.6	12.1	14.5	14.0	18.3	21.2	20.0	23.3	18.6	12.5	11.6	15.7	24.2	21.6	23.3			
	Public I/GDP												8.7	6.9	6.1	6.2	6.3	6.4	5.3	5.0	4.7	5.1	4.7	5.2	6.3	2.8	3.6	3.7	5.4	6.9			
Paraguay	GDFI/GDP	14.8	14.0	15.5	15.6	17.9	19.9	22.7	23.8	25.2	27.0	30.2	30.2	24.0	20.1	21.6	20.7	23.5	23.7	23.1	22.7	22.0	23.7	21.9	22.0	22.5	23.1	22.6	22.7	22.1	22.1	22.1	
	Private I/GDP	10.8	10.3	11.0	12.3	15.2	15.7	13.5	15.2	17.9	20.7	25.7	25.7	22.7	13.3	13.2	14.2	18.5	17.6	16.3	16.0	19.2	20.4	18.2	18.8	19.0	17.7	18.2	15.2	14.4	14.2	14.2	
	Public I/GDP	4.0	3.7	4.5	3.3	2.7	4.2	9.2	8.6	7.3	6.3	4.5	4.5	1.3	6.9	8.4	6.5	5.1	6.1	6.9	6.7	2.8	3.3	3.7	3.2	3.5	5.3	4.4	7.5	7.7	7.9	7.9	
Peru	GDFI/GDP												28.8	29.5	23.7	20.2	18.2	18.5	17.8	19.7	16.6	16.1	16.6	16.5	18.3	21.2	24.3	22.6	24.0	23.8	21.6	21.4	
	Private I/GDP												21.5	20.8	15.1	12.1	12.0	13.2	13.4	15.5	13.1	12.9	13.1	12.4	13.7	16.4	19.5	18.3	19.6	19.4	16.8	17.0	
	Public I/GDP												7.3	8.7	8.7	8.1	6.1	5.4	4.4	4.2	3.5	3.2	3.5	4.1	4.7	4.8	4.7	4.3	4.4	4.5	4.8	4.4	

Continued

**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %) (Continued)**

Country/Year		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
Philippines	GDFI/GDP						24.7	26.4	25.1	25.2	27.5	27.2	27.8	27.5	29.8	24.5	17.5	16.8	16.5	17.8	20.8	23.1	20.0	20.9	23.8	24.3	22.0	23.6	25.1	20.2	18.6	17.6		
	Private I/GDP						20.6	16.1	17.9	18.2	20.1	18.8	16.8	20.0	23.7	19.1	13.7	14.0	13.7	14.9	17.3	18.9	15.9	16.0	18.8	19.4	17.7	19.2	20.1	15.3	12.9	12.2		
	Public I/GDP						4.1	10.3	7.2	7.0	7.4	8.5	10.9	7.5	6.1	5.4	3.7	2.8	2.8	2.9	3.6	4.2	4.1	4.9	5.0	4.9	4.3	4.4	5.0	4.9	5.7	5.4		
Poland	GDFI/GDP																					16.0	20.7	20.9	17.5	15.9	15.1	15.4	17.0	19.3	20.4	20.5	20.1	
	Private I/GDP																						2.7	8.5	12.3	7.7	6.4	6.7	6.8	7.8	10.3	11.8	12.7	12.8
	Public I/GDP																						13.3	12.1	8.5	9.8	9.4	8.5	8.6	9.2	9.0	8.6	7.8	7.4
Romania	GDFI/GDP																						14.2	14.7	14.1	16.1	18.0	19.2	17.4	16.4	13.5			
	Private I/GDP																						1.4	2.3	3.7	5.9	7.1	7.6	6.2	6.6	6.9			
	Public I/GDP																						12.9	12.4	10.4	10.2	10.9	11.6	11.3	9.8	6.6			
Seychelles	GDFI/GDP																						23.0	21.3	21.0	26.8	24.7	30.3	49.1	30.7	38.0	37.1	29.3	
	Private I/GDP																						14.8	8.4	11.5	15.6	17.1	23.6	41.0	21.9	24.6	24.8	17.3	
	Public I/GDP																						8.2	12.9	9.4	11.2	7.5	6.8	8.1	8.9	13.4	12.3	12.0	
South Africa	GDFI/GDP	24.7	26.2	26.9	25.4	25.1	29.4	30.1	28.0	26.4	26.2	26.2	27.8	27.9	26.8	24.4	23.3	20.2	18.5	19.8	20.6	19.6	17.2	15.7	14.7	15.2	15.9	16.1	16.3	16.5	14.9			
	Private I/GDP	14.1	14.5	14.0	13.5	13.4	14.8	14.7	13.7	13.0	12.7	13.3	15.5	15.9	15.6	14.6	13.1	11.6	11.2	13.2	13.2	12.9	11.0	10.4	10.3	11.0	11.6	11.7	11.8	11.1	10.3			
	Public I/GDP	10.6	11.7	12.8	11.9	11.7	14.6	15.5	14.3	13.4	13.5	12.9	12.3	12.0	11.2	9.9	10.2	8.6	7.3	6.7	7.4	6.8	6.1	5.2	4.4	4.1	4.3	4.4	4.5	5.4	4.6			
St. Lucia	GDFI/GDP											34.3	34.2	33.5	21.7	19.6	24.1	24.6	24.5	29.9	34.6	25.8	25.3	24.1	24.8	23.9	18.7	21.4	24.6	23.9	26.4	24.6		
	Private I/GDP											25.1	26.1	24.7	13.0	12.3	15.7	14.6	14.1	16.8	20.7	13.8	12.0	10.6	11.6	12.3	10.4	14.6	18.2	15.5	16.9	15.8		
	Public I/GDP											9.2	8.1	8.8	8.7	7.3	8.4	10.0	10.4	13.1	13.9	12.0	13.3	13.5	13.2	11.6	8.3	6.8	6.4	8.4	9.5	8.8		
St. Vincent	GDFI/GDP																					26.2	29.7	29.4	24.3	25.6	28.2	30.2	28.3	29.7	31.8	32.6		
	Private I/GDP																					14.6	18.1	17.5	11.3	15.7	16.0	24.2	21.4	17.5	18.1	18.8		
	Public I/GDP																					11.6	11.6	12.0	13.0	9.9	12.2	6.0	6.9	12.2	13.8	13.8		
Thailand	GDFI/GDP	23.8	23.3	22.7	22.4	23.3	22.9	22.9	26.0	25.3	25.6	27.8	28.0	26.9	28.5	28.6	27.2	25.8	27.6	30.7	34.6	40.4	41.6	39.3	39.5	39.9	40.9	41.0	33.8	29.0	28.7	26.6		
	Private I/GDP	16.7	16.6	16.0	17.3	19.6	17.7	16.1	18.6	17.6	18.0	18.9	19.0	19.1	20.5	20.3	18.5	18.4	21.7	25.6	29.6	34.2	34.4	31.1	31.6	31.2	32.0	30.8	22.2	19.4	19.4	18.5		
	Public I/GDP	7.1	6.7	6.7	5.1	3.7	5.2	6.8	7.4	7.7	7.6	8.8	8.9	7.9	8.0	8.3	8.7	7.4	6.0	5.0	5.0	6.1	7.2	8.1	7.9	8.7	8.9	10.2	11.6	9.6	9.3	8.1		
Trinidad & Tobago	GDFI/GDP															26.1	18.8	21.6	19.3	13.1	16.6	12.6	16.6	14.1	14.3	20.2	20.8	24.3	36.1	28.0	21.0	21.8		
	Private I/GDP															19.6	13.6	19.4	17.0	11.4	14.7	10.7	10.7	8.6	9.6	15.2	17.3	19.9	30.1	22.3	14.2	16.3		
	Public I/GDP															6.4	5.2	2.2	2.4	1.7	1.9	1.9	6.0	5.5	4.8	5.0	3.5	4.4	5.9	5.7	6.7	5.5		
Tunisia	GDFI/GDP	20.4	19.8	19.8	20.5	20.8	25.7	29.0	30.7	30.9	30.5	28.3	31.0	34.0	31.8	32.1	28.1	25.0	21.6	20.5	22.5	30.7	30.1	32.3	28.1	27.0	24.2	23.2	24.7	24.7	25.2			
	Private I/GDP	8.5	7.7	8.8	10.7	10.5	12.3	11.6	10.9	11.7	12.0	13.3	14.8	15.4	15.9	15.7	13.3	12.1	11.3	11.5	12.5	19.7	19.9	20.3	12.8	13.3	11.9	11.9	12.7	13.2	13.1			
	Public I/GDP	11.9	12.1	11.0	9.8	10.3	13.4	17.4	19.8	19.2	18.5	15.0	16.2	18.6	16.0	16.4	14.8	12.8	10.4	9.0	10.0	11.0	10.2	12.0	15.3	13.7	12.3	11.3	11.9	11.6	12.0			
Turkey	GDFI/GDP	22.5	20.2	21.7	21.4	19.9	22.1	24.4	25.7	23.1	21.9	22.1	20.1	19.4	20.1	19.5	20.3	22.8	24.7	26.1	22.8	22.9	23.7	23.0	25.5	24.5	24.2	25.4	26.8	24.9	22.3	23.8		
	Private I/GDP	12.6	11.6	13.0	12.9	11.3	11.7	13.2	13.2	12.4	10.7	13.3	11.0	11.1	11.4	11.4	11.1	12.6	14.7	17.2	15.2	15.8	16.1	15.6	18.3	19.4	20.0	20.2	20.6	18.8	16.1	17.0		
	Public I/GDP	9.9	8.6	8.7	8.5	8.6	10.4	11.2	12.5	10.7	11.2	8.8	9.2	8.3	8.7	8.1	9.2	10.2	10.0	8.9	7.6	7.0	7.6	7.4	7.3	5.0	4.2	5.2	6.2	6.1	6.2	6.8		
Uruguay	GDFI/GDP	11.8	11.5	9.8	9.0	10.3	13.3	15.5	15.2	16.0	16.2	16.7	16.1	15.2	13.7	10.9	9.6	9.9	11.4	12.5	13.0	12.1	13.4	14.2	14.8	14.5	13.5	14.0	14.3	14.9	14.6	15.7		
	Private I/GDP	8.8	8.3	7.5	7.1	7.7	8.7	9.0	8.2	8.0	9.7	11.9	10.9	8.0	8.6	6.4	6.1	6.2	7.4	7.6	8.4	8.3	9.3	9.9	10.3	10.1	9.9	10.5	10.6	10.9	10.6	12.1		
	Public I/GDP	3.0	3.2	2.3	1.9	2.6	4.6	6.5	7.0	8.0	6.5	4.9	5.2	7.3	5.1	4.5	3.5	3.7	4.0	4.9	4.5	3.9	4.2	4.3	4.4	4.4	3.7	3.5	3.6	4.0	4.0	3.6		

Continued

**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %) (Continued)**

Country/Year		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
Uzbekistan	GDFI/GDP																									26.2	33.0	36.8	33.8	30.4	28.6	21.8	
	Private I/GDP																										8.3	14.8	10.0	10.9	12.3	9.7	7.5
	Public I/GDP																										17.9	18.2	26.7	22.9	18.0	18.9	14.3
Venezuela, R. B.	GDFI/GDP															16.0	17.3	20.4	21.2	22.8	16.9	14.1	18.2	21.1	20.0	17.6	16.5	15.8	18.7	19.0	15.7	14.5	
	Private I/GDP															10.5	11.1	10.9	12.1	12.3	7.2	4.9	7.6	8.9	9.0	8.2	7.1	7.0	9.4	10.7	8.8	8.4	
	Public I/GDP															5.5	6.2	9.5	9.1	10.5	9.7	9.2	10.6	12.2	11.0	9.4	9.4	8.8	9.4	8.4	6.9	6.2	
Yugoslavia, F.R.	GDFI/GDP																														11.2	13.0	15.4
	Private I/GDP																														9.8	11.4	13.1
	Public I/GDP																														1.4	1.6	2.3
East Asia	GDFI/GDP	21.3	22.3	22.2	23.1	25.1	24.8	24.1	25.5	26.5	28.0	27.7	27.2	29.4	28.9	26.5	24.8	24.7	24.6	24.1	25.9	27.5	28.2	28.1	28.7	28.8	29.8	31.1	29.9	26.2	24.4	22.0	
	Private I/GDP	14.8	15.9	15.3	17.6	19.9	18.7	16.3	18.1	19.2	20.6	17.3	16.4	18.8	18.7	17.0	15.2	15.9	16.7	17.1	19.0	20.3	20.9	19.6	19.3	20.2	21.4	22.9	21.4	17.3	15.0	13.8	
	Public I/GDP	6.6	6.4	6.9	5.5	5.2	6.1	7.8	7.4	7.2	7.4	10.4	10.8	10.6	10.2	9.5	9.5	8.8	7.9	7.0	6.9	7.2	7.4	8.5	9.4	8.6	8.4	8.2	8.5	9.0	9.4	8.2	
South Asia	GDFI/GDP	14.1	14.3	13.9	9.5	11.2	12.3	15.1	15.6	15.5	15.4	17.0	19.9	19.6	18.5	18.0	18.7	18.9	19.3	18.8	19.6	19.1	18.8	19.5	19.5	19.4	20.1	20.1	19.6	19.3	18.9	17.9	
	Private I/GDP	7.9	7.8	7.4	5.4	5.7	5.7	6.8	6.8	7.0	6.9	8.7	10.5	9.6	8.9	9.0	10.3	9.8	10.2	10.4	11.1	10.9	10.7	11.5	11.7	11.5	12.6	12.9	13.1	13.2	12.9	12.2	
	Public I/GDP	6.2	6.5	6.5	4.1	5.5	6.6	8.3	8.8	8.5	8.4	8.3	9.4	10.0	9.6	9.1	8.5	9.1	9.1	8.4	8.5	8.2	8.1	8.0	7.9	7.9	7.6	7.2	6.5	6.1	6.0	5.7	
LAC	GDFI/GDP	16.6	16.9	17.4	16.7	19.0	20.5	21.1	20.5	20.9	21.9	22.4	24.0	22.2	18.9	18.8	17.9	18.5	19.7	19.6	20.5	20.0	20.4	20.0	21.1	20.6	20.8	20.7	22.5	22.8	22.5	22.3	
	Private I/GDP	11.5	11.6	11.5	11.1	12.5	13.2	13.1	12.8	13.3	13.1	14.5	15.0	13.5	10.9	11.6	11.4	12.1	13.4	12.8	13.7	13.3	13.4	13.1	14.3	14.1	14.4	13.9	15.5	16.1	15.1	15.9	
	Public I/GDP	5.1	5.3	6.0	5.6	6.5	7.3	8.0	7.7	7.6	8.8	7.9	9.0	8.7	8.0	7.2	6.5	6.5	6.3	6.8	6.7	6.7	7.0	6.9	6.7	6.5	6.4	6.8	7.0	6.7	7.2	6.4	
SSAFR	GDFI/GDP	22.2	24.4	24.5	22.2	21.1	24.8	25.2	24.7	27.7	25.6	24.5	23.2	20.5	19.0	17.7	17.2	17.0	19.2	21.8	20.1	19.0	18.3	20.0	19.0	19.1	19.0	20.2	18.5	18.6	19.0	19.3	
	Private I/GDP	13.9	14.2	13.8	10.9	10.4	11.4	13.8	13.5	14.8	12.7	11.5	11.6	10.3	10.1	9.3	9.3	9.5	9.5	11.5	10.5	10.4	9.6	10.3	9.7	9.7	10.5	12.2	10.7	10.9	11.3	10.6	
	Public I/GDP	8.3	10.2	10.7	11.3	10.7	13.4	11.4	11.2	12.9	12.9	13.0	11.7	10.2	8.9	8.4	7.8	7.4	9.7	10.3	9.7	8.6	8.7	9.8	9.2	9.4	8.1	8.0	7.9	7.7	7.7	8.7	
ECA	GDFI/GDP	22.5	20.2	21.7	21.4	19.9	22.1	24.4	25.7	23.1	21.9	22.1	20.1	19.4	20.1	19.5	20.3	22.8	24.7	26.1	19.4	21.6	19.2	19.7	19.1	20.6	21.4	24.0	24.2	22.8	21.0	22.6	
	Private I/GDP	12.6	11.6	13.0	12.9	11.3	11.7	13.2	13.2	12.4	10.7	13.3	11.0	11.1	11.4	11.4	11.1	12.6	14.7	17.2	8.9	8.4	7.6	10.3	11.1	11.5	12.5	14.1	15.7	15.9	14.3	16.2	
	Public I/GDP	9.9	8.6	8.7	8.5	8.6	10.4	11.2	12.5	10.7	11.2	8.8	9.2	8.3	8.7	8.1	9.2	10.2	10.0	8.9	10.4	13.2	11.7	9.4	8.0	9.0	8.9	9.9	8.5	6.8	6.8	6.4	
MENA	GDFI/GDP	20.4	19.8	19.8	20.5	20.8	25.3	29.3	31.3	27.9	27.2	24.1	25.3	27.2	28.0	27.1	25.2	24.0	20.6	21.9	22.3	24.6	24.2	24.1	22.3	21.8	21.2	21.1	22.0	22.2	22.9	24.7	
	Private I/GDP	8.5	7.7	8.8	10.7	10.5	11.1	12.3	12.7	12.6	11.7	12.2	11.8	11.3	13.4	13.1	12.2	11.5	11.5	12.6	13.5	15.3	14.8	14.3	11.1	11.8	11.9	12.3	13.1	13.6	14.1	16.4	
	Public I/GDP	11.9	12.1	11.0	9.8	10.3	14.2	17.1	18.6	15.3	15.6	11.9	13.5	15.9	14.6	14.0	13.0	12.5	9.1	9.3	8.8	9.3	9.4	9.8	11.2	10.1	9.3	8.8	8.8	8.5	8.8	8.3	

Continued

**TABLE C1. INVESTMENT AS A SHARE OF GDP (IN %) (Continued)**

Country/Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total GDFI/GDP	17.9	18.4	18.7	17.6	19.2	21.1	22.2	22.2	22.6	23.0	23.2	24.2	23.6	21.7	20.8	19.7	19.8	20.5	21.0	21.3	21.2	21.4	21.5	21.4	21.7	22.4	22.7	22.2	21.7	21.7	
Total Private I/GDP	11.6	11.9	11.8	11.2	12.2	12.8	12.9	13.0	13.6	13.3	13.7	14.1	13.5	12.4	12.2	11.7	12.0	12.8	13.2	13.6	13.4	13.2	13.2	13.4	13.5	14.1	14.6	15.1	15.0	14.1	14.7
Total Public I/GDP	6.3	6.5	6.9	6.4	7.0	8.4	9.3	9.1	9.0	9.7	9.5	10.1	10.1	9.4	8.6	8.0	7.8	7.6	7.8	7.7	7.8	8.0	8.2	8.1	7.9	7.6	7.8	7.7	7.3	7.5	7.1

*Notes:*

- Unless otherwise noted the sources are: national authorities & World Bank/IMF staff estimates.
- Data for 1998/99 are preliminary/estimates.
- Azerbaijan: public investment includes mostly government investment as investment by state owned units is considered negligible.
- China: private investment includes: investment by collective-owned units, joint-owned units, share-holding units, foreign-funded units, Hong Kong-Macao-Taiwan-funded units and by individuals.
- Costa Rica: due to the revisions of the National Accounts methodology data for private, public investments are unavailable for 1999.
- Brazil: *source*–1990-1998: FIBGE e Centro de Estudos de Economia e Governo/IBRE/FGV, previous years World Bank.  
Private investment includes investment by enterprises controlled by state and local municipalities for the period 1990-98.
- Kazakhstan: public investment includes mostly government investment as investment by state owned units is considered negligible.
- Korea, Republic of: *source*–Economic Statistics Yearbook various issues.
- Mauritania: 1999 private investment data are not available.
- Mexico: 1988-99 data based on a new INEGI methodology.
- Morocco: up to 1990 public investment are estimated by investment of 14 biggest public companies;  
1990-1999 data for the whole economy.
- Papua New Guinea: 1999 data are unavailable.
- South Africa: *source*–Quarterly Bulletin of South African Reserve Bank.