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Mobilization of Saving in Developing Countries: The Case of the Islamic Republic of Iran

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Abstract

Mobilization of national saving is an important determinant of investment and growth. It assumed greater importance in the case of the Iranian economy, given the difficult external environment. This paper discusses the recent saving performance of the Iranian economy, particularly in relation to investment needs. Following a quantitative evaluation of the determinants of saving, the paper reviews the main implications for domestic economic policies in the period ahead.

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Summary

The Second Five-Year Development Plan for the Iranian economy targets relatively high investment and growth targets. Meeting these targets will depend on sustaining a strong performance in saving, especially in view of the difficult external environment. This paper attempts to assess the nature of the challenge and its policy implications.

Following a review of the role and determinants of saving in developing countries, the paper examines the recent performance of saving in the Iranian economy. It documents the relatively high saving rate that the economy has sustained since the end of the war with Iraq. It links quantitatively the performance of Iranian saving to developments in the country's terms of trade, its inflation rate, the external debt situation, and the fiscal balances.

With the sharp decline in foreign saving, domestic saving has played an important role in the Islamic Republic of Iran. Domestic resource mobilization has been called upon not only to fund investment but also to meet relatively large debt payments. Part of the high saving has been concerted in nature, reflecting administrative controls and sharp import compression. These, in turn, have had an adverse impact on growth.

National saving will continue to be a critical determinant of the country's investment and growth performance, particularly in view of the difficult external environment. The economy needs to maintain a high voluntary national saving rate to fund investment, offset foreign dissaving in the short run, reduce the anti-growth bias of the concerted portion of existing saving, and limit vulnerability to international oil price variability. The paper discusses the three broad policy areas consistent with the emphasis in the Second Five-Year Plan. It argues that the implementation and effectiveness of measures has been facilitated by the progress made in normalizing the external debt situation and strengthening foreign exchange reserves.

I. Introduction

The Second Five-Year Development Plan (SFYP) identifies significant investment needs for the Iranian economy. 1/ Meeting these needs, particularly in infrastructure and the social sectors, will be an important determinant of the country's ability to sustain a high rate of economic growth, reduce unemployment, and provide jobs for the expected large number of entrants into the labor market.

Financing the higher level of investment poses a particular challenge for the Islamic Republic of Iran at this time. The country has limited access to international capital markets and to official foreign assistance. Inflows of foreign direct investment have been impacted by the adverse external environment. Accordingly, the mobilization of national saving--which plays an important role in the typical developing country--assumes even greater importance in the the Iranian economy.

The purpose of this paper is to discuss the Iranian economy's saving mobilization experience in recent years and explore related policy issues. To this end, Section II reviews the role and main determinants of saving in developing countries drawing on recent theoretical and empirical studies. Section III examines recent saving performance in the Islamic Republic of Iran, particularly in relation to investment needs. Some of the major reasons for these developments are assessed quantitatively in Section IV. Section V draws some implications for domestic policies. The paper's concluding remarks are contained in Section VI.

II. Saving, Investment and Growth--Some General Considerations

The role of saving in determining investment and growth has been a perennial issue in economic theory and policy. In recent years, the study of saving has received an added impetus in light of the new theoretical and empirical literature on determinants of long-run growth. This literature suggests that, unlike the neo-classical growth paradigm, the long-run steady state growth path of an economy, and not just the transition to the steady state, can be influenced by both the level and efficiency of investment. Since saving is regarded as a key enabling factor for investment, its importance in the growth process has received increased attention.

To provide a perspective for an analysis of the issues facing the Iranian economy, this section first surveys, in a selective fashion, the existing literature on the relationship between saving and investment. It

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1/ The "Second Plan of Economic, Social and Cultural Development of the Islamic Republic of Iran" was approved in late 1994 and covers the period 1995/96-1999/2000 (i.e., Iranian years 1374-78). It is reproduced in Islamic Republic of Iran (1994).

then examines the determinants of saving and provides related empirical evidence on this based on a cross section of developing countries.

1. Saving and investment--an overview

The last 25 years have seen considerable disparity of saving and investment rates in developing country regions (Charts 1 and 2). From 1980 to 1995, gross domestic saving relative to GDP increased by 10 percentage points in Asian countries. During the same period, the saving rate stagnated in Latin America and declined sharply in Africa--falling from over 25 percent of GDP to below 15 percent. In the Middle East, the decline in the saving rate in the early 1980s was even more precipitous and the average since the early 1990s has been around 20 percent of GDP. The investment performance of countries in the four developing country regions has been broadly similar to that regarding saving.

The region's growth performance was reflected in the divergent saving and investment performance. During the past quarter of a century, per capita GDP growth averaged about 4 percent in Asia, about 1 percent in Latin America, and less than 1/2 percent in sub-Saharan Africa (Chart 3). Over the same period, average per capita growth in the Middle East region was around 2 percent with significant temporal variation. Some, but clearly not all, of the variation reflects significant changes in the terms of trade of the region resulting from international oil price fluctuations.

The evidence noted above has led to substantial literature on the relationship between national saving and domestic investment. A key issue has been to what extent the lack of domestic saving affects domestic investment. The traditional view is that saving depends mainly on income and wealth, while investment depends on profitability and risk. Since they result from two separate sets of decisions, ex ante saving and investment can clearly differ. Ex post, however, the result would depend on the degree of international integration of an economy.

In a closed economy, ex-post national saving and domestic investment must be equal, and in that sense the availability of saving would constrain investment. For instance, if saving falls, investment must also fall. The adjustment mechanism making this equalization includes interest rate and income changes.

In an open economy, however, even ex-post national saving and investment can differ. Domestic investment need not be constrained by national saving since now it can be financed by foreign saving. 1/ Conversely, an increase in national saving may be reflected in a larger current account surplus or reduced deficit rather than in higher domestic investment. An extension of this argument has been to deduce what the relationship between

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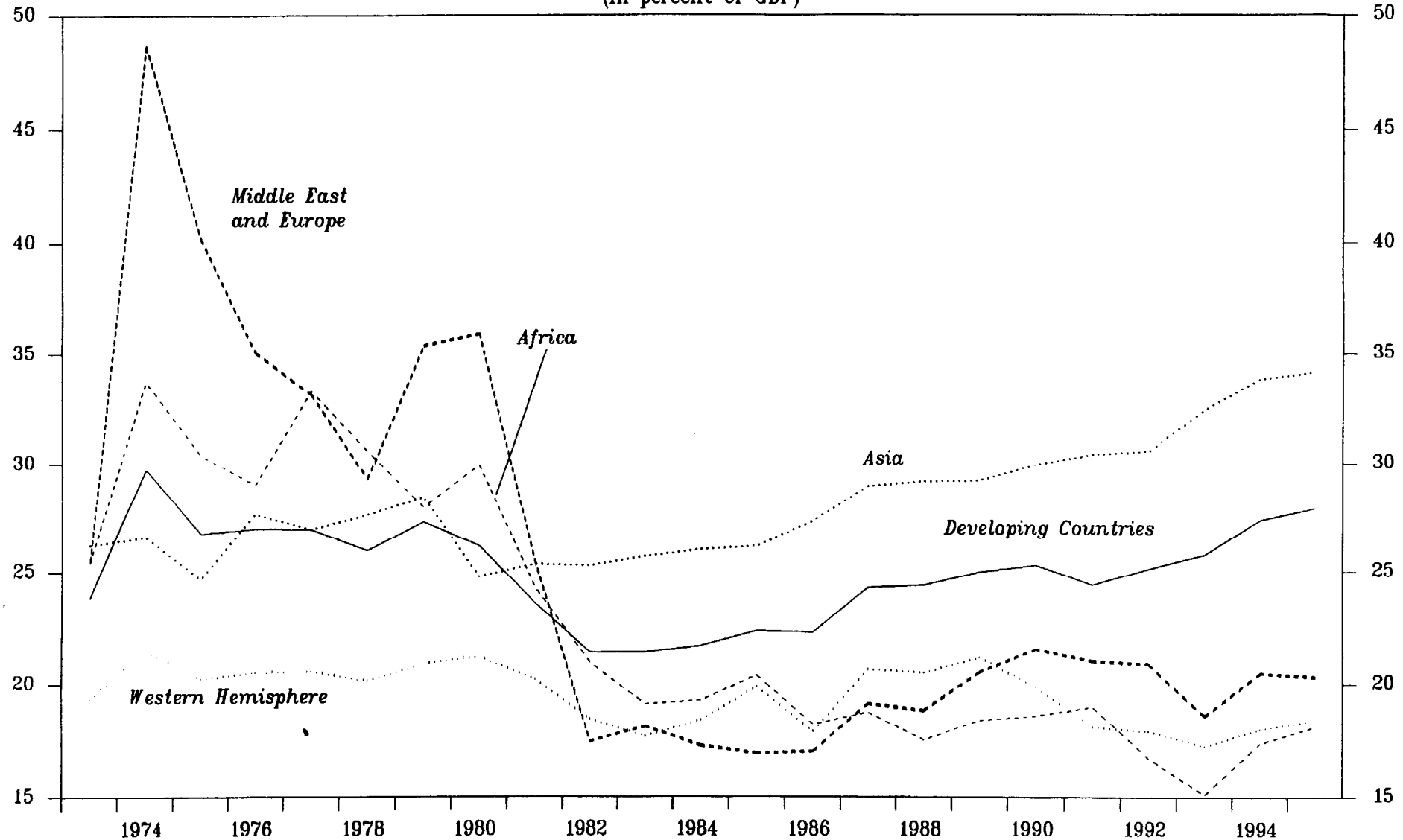
1/ There is, of course, a relationship in the long-term associated with current account sustainability issues.

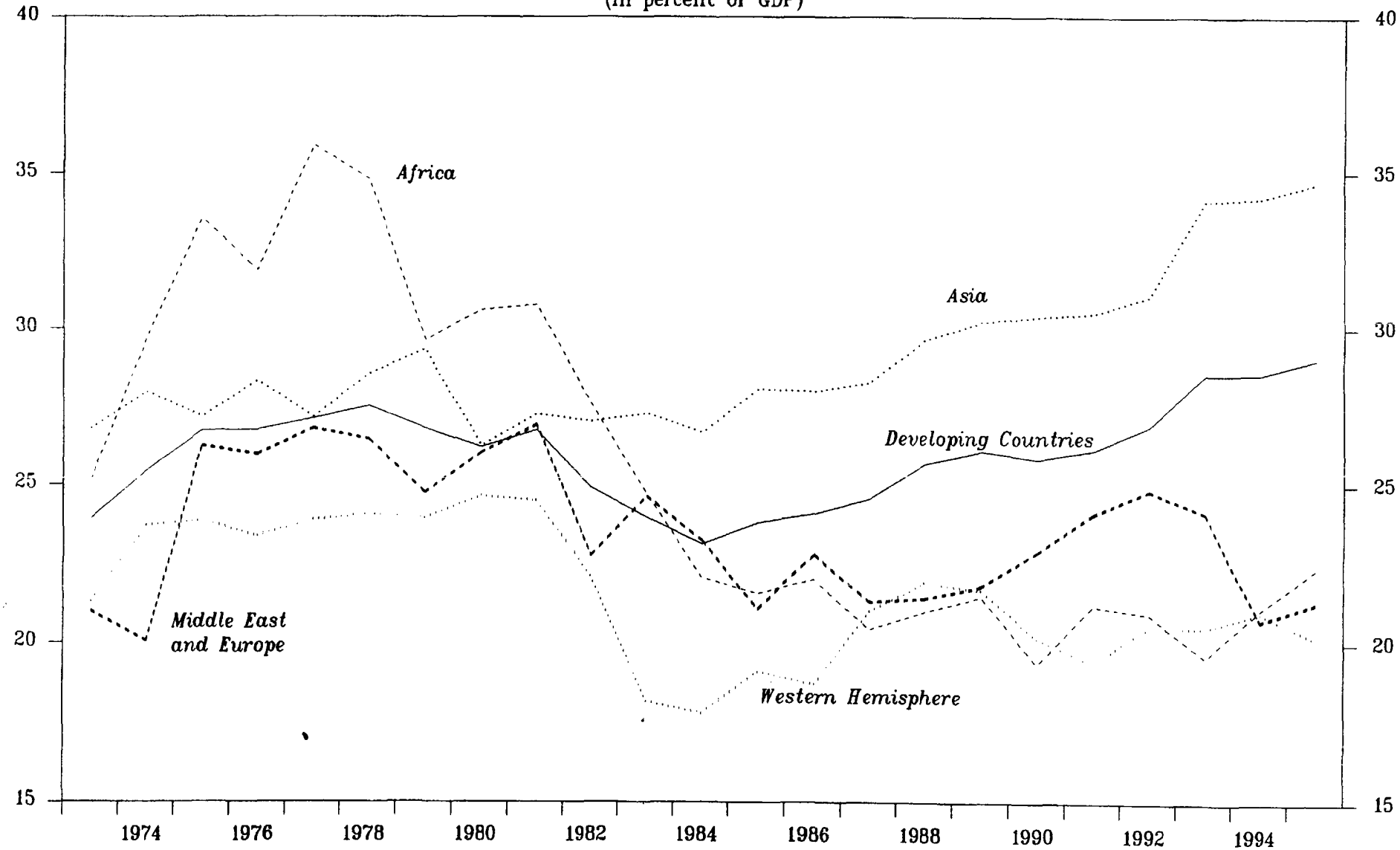
Chart 1.
Developing Countries: National Saving 1/
(In percent of GDP)



Source: World Economic Outlook.

1/ Weighted using countries' PPP GDP.

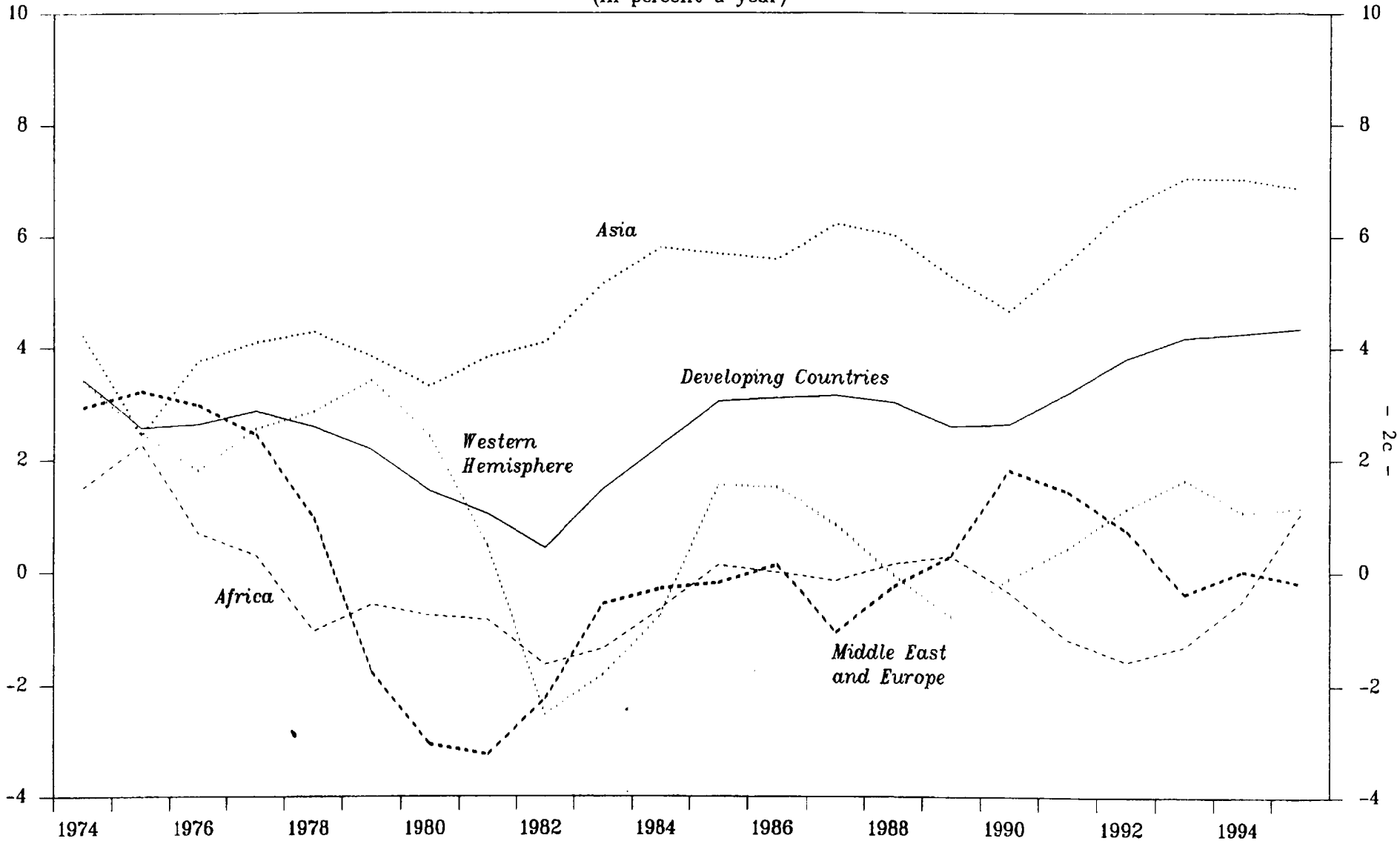
Chart 2.
Developing Countries: Gross Investment 1/
(In percent of GDP)



Source: World Economic Outlook.

1/ Weighted using countries' PPP GDP.

Chart 3.
Developing Countries: GDP Growth per Capita 1/
(In percent a year)



Source: World Economic Outlook.

1/ Three year centered moving average; weighted using countries' PPP GDP.

saving and investment across countries implies for the integration of international capital markets. The premise is that if capital were perfectly mobile among countries, then at the limit, changes in domestic investment would be independent of changes in national saving. Thus, the importance of national saving for investment depends on the degree of international capital mobility. 1/

Feldstein and Horioka (1980) argued in a seminal contribution that, in a world of high capital mobility, an increase in saving in any one economy could lead to an increase in investment in all countries depending on each country's initial capital stock and the marginal product of capital. This would suggest a low coefficient on saving in the following cross-section regression of domestic investment on national saving:

$$(I/Y)_i = \alpha + \beta\ (S/Y)_i \qquad (1)$$

A high coefficient on domestic saving would imply that most of the incremental saving in an economy is invested in the same economy. The Feldstein-Horioka results for the OECD countries for the 1960-74 period showed that the coefficient on saving was large and significantly different from zero, although not from unity. Numerous subsequent studies have shown the existence of a high correlation between saving and investment across industrial countries. 2/

Early estimates of the saving investment correlation across developing countries found them to be similar albeit somewhat smaller than those for industrial countries. 3/ This was so despite the general belief that these countries were unable to access international capital markets. The lower coefficient could also reflect the fact that many capital flows to developing countries from official sources are not based on market returns, as is assumed in the Feldstein-Horioka test. The results using more recent data are only marginally different. Over time, there has been some diminution in the correlation but it is still significantly different from zero. 4/

1/ As Aghevli et al (1990) point out, however, the degree of international capital mobility may itself be a function of national savings. Countries that have built up equity through higher savings and have more stable economies enjoy smaller risk premia and better access to markets.

2/ See Bayoumi (1996) for a comprehensive review of these studies and various extensions. Note that while the Feldstein and Horioka article only reported cross-sectional regressions, the follow up to the original article by Feldstein (1993) included evidence that savings and investment were highly correlated both across countries and over time.

3/ Dooley et al (1987) and Summers (1988).

4/ See Aghevli et al (1990).

There has been a considerable debate on whether the correlations between saving and investment provide evidence on the extent of international capital mobility. It has been argued that the correlations say little about capital mobility per se and are mainly the result of policy reactions or common third factors that cause saving and investment to move together over the long term. For instance, Obstfeld (1986) showed that if determinants of saving and investment across countries both contain the same variables, for instance, demographic trends, then saving and investment can be correlated even when capital markets are open and real interest rates are equal across countries. A simple calibration of the model using data from actual economies show that this mechanism could produce a correlation between saving and investment similar to that found by Feldstein and Horioka. 1/

Alternatively, Frenkel (1992) argued that, even under perfect capital mobility, shifts in saving alter the real interest rate, which in turn moves investment in the same direction as saving. Summers (1988) argued that restrictions on countries' current account imbalances may explain the correlation. In the case of very limited access to foreign capital, a condition faced by many developing countries during the 1980s and, as detailed below, the Islamic Republic of Iran in the last few years, national saving and investment will be very closely correlated.

Some studies have also focussed on the close link between corporate investment, which accounts for the bulk of private investment in industrial countries, and retained earnings (Murphy 1990). In developing countries, the relationship is also close as capital market imperfections are widespread and borrowing constraints are the norm. This is so not only for the organized corporate sector but also for households and firms in the informal sector which in many developing countries account for the bulk of private investment. This evidence would suggest that the high correlation between saving and investment across countries reflects not so much international as domestic capital immobility. 2/

1/ For more recent studies which also show that despite full capital mobility there can be high correlation between savings and investment, see Tesar (1991) and Baxter and Crucini (1993). For a detailed survey, see Obstfeld (1994).

2/ Bayoumi (1996) argues, however, that high savings rates indicate a high rate of return on capital which would be expected to spur more investment. This would then give a high correlation between savings and investment at the corporate level without there being any presumption of domestic capital immobility.

2. Determinants of saving

a. Theoretical perspective

The theoretical underpinnings for an analysis of the determinants of private saving have been traditionally provided by the life-cycle model of consumption. In this model, individuals are assumed to maximize the present value of their lifetime utility, subject to a budget constraint that is equal to their current net worth plus the present value of the labor income that they expect to earn over their remaining work life. Within this framework, variations in aggregate saving could result from changes in demographics, income growth, interest rates and inflation, and changes in budget deficits that shift tax burdens to future generations. There could also be an impact on the availability of foreign saving on domestic saving.

There are two major predictions of the life-cycle model relating to the relation between aggregate saving and the rates of population and income growth. If saving is "hump" saving, accumulated during the working years to finance retirement, then population growth provides more savers than dissavers and increases private saving. Per capita income growth has a similar effect because workers are saving on a larger scale than the retirees are dissaving. Deaton (1990) argues, however, that if young consumers anticipate a steady growth in income and are able to borrow, their dissaving in early years of the life cycle may induce a negative relation between saving and growth. The standard positive relation would appear to be appropriate if each worker experiences a stationary income stream over the life cycle with growth taking place between rather than within generations. The effects of population growth are considered to be similarly ambiguous. 1/

It has also been noted that the relatively short life expectancy of households in developing countries and the concept of extended families tend to weaken the relationship between age dependency and saving. Unlike in industrial countries where intragenerational transfers by households are done in order to smooth consumption during the life cycle, households in developing countries tend to depend more on intergenerational transfers within the extended family to smooth consumption over time.

1/ Obstfeld (1986), in the context of analyzing the relationship between savings and investment across countries, constructs an overlapping generations model in which individuals live for two periods, working when young and retiring in old age. As they smooth consumption over time, individuals save in the first period and run down their assets in the second period. The aggregate savings rate in such an economy thus depends upon the relative size of the generations.

A number of authors have argued that even the theoretical framework for analyzing saving in developing countries is likely to be different from the above life-cycle model because the environment in the two groups of countries is different. 1/ Several important differences can be identified:

- First, household income is much lower in the developing countries. In economies in which a large portion of aggregate consumption is accounted for by households with incomes barely exceeding subsistence level, the response of private saving to increases in intertemporal rates of return would be weak because many households would find it difficult to reduce consumption.

- Second, household income in developing countries may be more uncertain than in industrial countries. This is because a relatively large portion of households in developing countries derive their income from agriculture and other primary commodities where incomes are subject to larger fluctuations.

- Third, in developing countries, the menu of assets available to households is often limited to cash, deposits in the domestic banking system, and durable goods. The widespread use of ceilings on bank borrowing and lending rates may further constrain the options available to savers. In any case, credit may be rationed, limiting the intertemporal choices available to households.

- Fourth, because of shorter life expectancy and differences in the organization of production, individuals in developing countries may spend a relatively small portion of their lifetime in retirement. Thus, they would have less of an incentive to save for retirement. However, this effect may be partially offset by the reduced role of formal social security arrangements.

These factors suggest that, in developing countries, in addition to demographics and income and growth variables, a range of other variables are also likely to be important. These relate to the level of financial development and intermediation, mandatory saving schemes, terms of trade variation, and macroeconomic instability. A number of authors have also emphasized the negative impact on saving of large external debt, where "debt overhang" leads domestic residents to transfer funds abroad. 2/ A priori, the effects of terms of trade changes are ambiguous. In the traditional Harberger-Laursen-Metzler framework, a deterioration in the terms of trade, by lowering real income, lowers saving. The more recent intertemporal framework suggests, however, that saving may respond differently depending on whether the terms of trade changes are regarded as temporary or perma-

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1/ See, for instance, Aghevli et al (1990).
2/ See Corbo and Schmidt-Hebbel (1991).

nent, and whether or not these changes are anticipated. 1/ Similarly, the effects of an increased inflow of foreign capital on private saving are ambiguous. Increased inflows, by lowering liquidity constraints, may lead to higher consumption and lower saving. However, to the extent that foreign capital leads to the development of the domestic economy and higher incomes, there could be a beneficial impact on saving.

b. Empirical evidence

There has been a considerable amount of empirical work on the above-mentioned theoretical considerations. These are summarized below, noting differences between industrial and developing countries. The section ends by noting the extent to which the empirical findings suggest policy changes which can influence saving.

The empirical evidence generally supports the theoretical premise that the level and growth of income explain a significant portion of the cross-country variation in the saving rate. 2/ However, the relationship between the level of income and the saving rate is non-linear. The largest increases in the saving rate occurs in the transition from low- to lower middle income group countries, where the latter group of countries has, on average, private saving rates over 5 percentage points of GDP higher than the former group. There is less difference between the upper middle and lower middle income groups of countries, and virtually no difference between the average saving rate in the high-income and upper middle income countries. 3/

Panel estimates by Masson et al (1996) for the period 1982-93, for a large sample of developing countries, also suggest that growth is a significant determinant of private saving only in the case of the high-income group countries. 4/ The results support the hypothesis of a quadratic relationship between the national saving rate and per capita income. However, the estimated coefficients suggest that the turnaround is mild and occurs at a level of around 50 percent of U.S. per capita income. However, since very few countries in the sample have reached that per capita income level, the estimate is likely to lack precision. With regard to the issue of the causality going from saving to growth, Carroll and Weil (1994) report that saving typically follows, rather than precedes, growth.

In addition to the earlier discussion, a number of hypotheses relating to the concentration of growth in households with higher saving rates, such

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1/ See Khan and Kumar (1996) and Razin (1994).
2/ See, for example, Schmidt-Hebbel et al (1996).
3/ Ogaki et al (1995).
4/ The classification is done on the basis of per capita GDP in 1990. All panel estimations allowed for the presence of fixed country effects, i.e. separate country intercepts. The authors also included wealth/GDP ratio as an explanatory variable, but it was insignificant in all cases.

as rich or middle-aged households, have been put forward to explain the link between growth and the saving rate. A related possibility is that growth raises poor consumers above a subsistence level of income below which they cannot save. Consumption habits that change slowly despite increased income may also contribute to higher saving rates.

With regard to the importance of demographics, extensive literature has shown that in the industrial countries, a higher proportion of young and elderly to those of working age is associated with lower saving rates. For developing countries, similar results have been obtained by Aghevli et al (1990). Faruqee and Husain (1995) show that major shifts in the demographic structure of the population in Indonesia, Malaysia, Singapore, and Thailand since the early 1970s have been the main factor explaining the sustained rise in the saving rate in all four countries. Masson et al (1996) show that a one percentage point rise in the dependency ratio leads to a fall of about 0.2 percentage points in the private saving rate. 1/ Given that in developing countries there is projected to be a decline in the proportion of those under 20, despite an increase in those over 65, private saving will increase over time due to that factor alone. Hadjimichael and Ghura (1995) find, however, that in African countries, the dependency ratio has an insignificant effect on private saving.

Over the last decade, financial sector reforms in many developing countries have led to increases in financial deepening and often in real interest rates. While there is evidence on the positive impact on capital reflows (including repatriation), there are conflicting results regarding the relationship between interest rates and saving. 2/ This may reflect the importance of liquidity constraints and subsistence conditions in many developing countries. The latter would mean that the income effect outweighs any substitution effect. These arguments find support in the study by Ogaki et al (1995) which finds that the interest rate elasticity of saving is a function of the level of income, with the elasticity being close to zero in the low income groups, and significantly positive in the high-income groups. There may also be differences depending on the extent of negativity of interest rates.

The absence of a strong relationship between interest rates and saving may also reflect the possibility that financial reforms may have changed the relationship between these two variables over the last decade. There are generally also significant measurement problems related to the choice of the appropriate interest rate and measure of inflation which may also affect the results. With regard to financial liberalization and deepening per se,

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1/ This is defined as the ratio of those under 20, and 65 and over, to those aged 20-64. Separating the overall dependency ratio into ratios for the young and old does not have a significantly different effect.

2/ For example, Masson et al (1996), in a panel consisting of industrial and developing countries, find that interest rates have a significant, but relatively small, impact on savings.

while Schmidt-Hebbel et al (1992) found a significantly negative relationship between financial intermediation and the saving rate, others have found some positive relationship (Hadjimichael and Ghura 1995).

With regard to the impact of the compulsory saving schemes, such as "provident funds" instituted in a number of developing countries, the evidence is less clear cut. Early studies by Kopits and Gotur (1980) and Datta and Shome (1981) suggest that changes in compulsory saving rates are fully reflected in changes in total saving. However, Faruqee and Husain (1995) in their more recent analysis of ASEAN countries show that there is limited evidence of any general long-run impact of such schemes on the countries' saving rates.

As far as the impact of macroeconomic stability on the saving rate is concerned, the evidence generally accords with the a priori expectation. Aghevli et al (1990) find that a high inflation rate has a significantly negative effect on the saving rate for a sample of over 80 developing countries. Hadjimichael and Ghura (1995) also find that for African countries, high inflation has a significantly adverse effect on the saving rate. However, there does not appear to be a systematic relationship between other measures of economic instability and the saving rate. In particular, the evidence on the relationship between terms of trade changes and saving is ambiguous. Some studies find a negative relationship between an improvement in the terms of trade and the private saving rate, while others find either a positive or an insignificant effect.

Finally, with regard to the effect of public saving on private saving, the general result is that fiscal consolidation induces a partial offset in private saving in the short term. This offset depends on whether consolidation is achieved via a cut in public consumption expenditures, or an increase in revenues, and varies between one fifth to three fifths. Thus the Ricardian equivalence hypothesis of a full offset is invariably rejected. These results imply that changes in the government's fiscal position can have a significant impact on national saving, especially if they result from spending reductions. There appears to be some negative relationship between a large stock of external debt and the private saving rate, but the finding is not robust. Foreign saving has a partial offset on domestic saving, whereby an increase in foreign saving equal to 1 percent of GDP reduces the national saving rate on average by between a quarter to half a percentage point.

From a policy perspective, the above findings suggest that a number of policy measures could be adopted to increase the national saving rate in developing countries. Perhaps the most clear cut measure relates to fiscal policy with fiscal consolidation having a directly beneficial effect on overall saving. In particular, since a reduction in public consumption expenditure does not appear to exert a significant effect on private consumption, this reduction could lead to an increase in the national saving

rate. 1/ Even if fiscal adjustment takes the form of increased revenue from the private sector, national saving is likely to increase despite an offset in private saving.

Other policy instruments which affect the level of household resources as well as the intertemporal rates of return could also be utilized. For instance, an exchange rate devaluation, by acting as a capital levy on nonindexed financial asset denominated in domestic currency, would lead to a reduction in real private wealth. This diminishes the resources available to the household sector and thus reduces consumption relative to income. Of course, repeated exchange rate changes would reflect generalized macroeconomic instability, which may exert its own negative effect on national saving.

Financial reforms can also have a beneficial effect on the composition of saving. For instance, it may help channel saving away from nonproductive destinations or capital flight, and toward the domestic banking system or other organized financial markets, through which it can more efficiently be allocated to domestic investment. The institution of mandatory saving schemes, appropriately designed, may also have a role to play in providing an enhanced menu of instruments, which could lead to an increase in the overall saving rate.

Finally, policies to attain and sustain macroeconomic stability are likely to have a considerable indirect impact on the national saving rate. In particular, a low and relatively stable rate of inflation is likely to encourage financial saving. In this context, the role of fiscal consolidation becomes even more important since large fiscal deficits are frequently a key factor underlying high and variable inflation rates. To the extent that large fluctuations in the external terms of trade are a key factor in domestic economic instability, a longer run strategy to improve saving would also suggest an appropriate diversification of the country's economic structure.

III. Saving Performance in the Islamic Republic of Iran

1. The overall picture

Having reviewed some general considerations relating to saving and investment, this section considers the specific case of the Islamic Republic of Iran--a country where the traditional challenge of funding a high level of investment has been accentuated in the last few years by limited access to foreign saving.

1/ For an analysis of fiscal consolidation in developing countries, see Kumar (1992).

As detailed below, according to official Iranian sources, the Islamic Republic has sustained relatively high investment and growth rates in the period 1989/90-1994/95 as a whole. 1/ This was made possible by large saving mobilization, both of a voluntary and concerted nature. As the period evolved, increasing emphasis was placed on private saving to substitute for rapidly declining foreign saving--the latter falling sharply as a result of the more unfavorable external environment and the impact of external payments arrears.

Indeed, the period since the end of the war with Iraq can be viewed as consisting of two sub-periods: an initial phase of large capital formation and stock accumulation facilitated by access to foreign saving; and a second phase of lower investment with relatively high national saving, some of a concerted nature, having to compensate for large foreign dissaving. Economic growth performance also varied in the two periods, with significantly higher growth rates being recorded in the first period reflecting in part a catch up to a higher GDP path. 2/

Looking forward, the SFYP targets the maintenance of a relatively high economic growth of 5 percent per annum and a further reduction in unemployment. With the possibility of a continued foreign dissaving in the short term--albeit to a declining extent--a major policy issue is how to generate the required level of national saving to finance the targeted increase in investment. 3/ In view of the discussion of Section II and the recent Iranian experience, two questions are particularly important: first, what are the policies needed to sustain a high level of national saving; and second, what composition of national saving should be targeted in terms of the relative share and nature of the private and public components. These questions will be taken up in Section V following the more detailed discussion of saving/investment performance in recent years.

2. Investment and saving developments

After the end of the war with Iraq, the Islamic Republic of Iran substantially increased investment activity. Investment expenditure is estimated to have fluctuated in the range of 29-35 percent of GDP in 1990/91-1993/94, with gross capital formation averaging some 21 percent of

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1/ The Iranian fiscal year covers the period March 21-March 20. The years covered here correspond to 1368-1373.

2/ As regards sectoral distribution, the manufacturing sector recorded growth rates of some 12 percent in the first period.

3/ Real gross domestic investment is targeted to increase by 6 percent per annum.

GDP during this period. 1/ Investment fell in 1994/95 to an estimated 24 percent of GDP reflecting, inter alia, a sharp reduction in stock accumulation. Nevertheless, throughout the period, the Islamic Republic's investment rates compared favorably to that of MENA (Middle East and North Africa) countries as a group but were below the rates recorded by the more dynamic Asian economies (Chart 4).

At first sight, the composition of the Islamic Republic's investment performance differed from that of most other countries in the MENA region in an important respect--the balance between the public and private sectors. Specifically, while MENA recorded a consistently high ratio of public to private fixed capital formation, this does not appear to have been the case for the Islamic Republic of Iran where the private sector played a greater role (Chart 5). However, the data are subject to qualification, including on account of the classification of quasi-public activities. 2/

The high rate of investment was an important contributor to the Islamic Republic's growth performance. GDP grew at an annual average rate of some 5 percent in 1990/91-1994/95, notwithstanding the marked slowdown in the last two years. This favorable performance was associated with progress in the liberalization and deregulation of the economy and significant infrastructure and capacity building. The inward-looking economic strategy, with heavy resort to government-directed resource allocation, gradually gave way to increasing reliance on market-based arrangements. Indeed, the Iranian economy has evolved gradually away from what has been characterized as a centrally managed war economy. 3/ While there is disagreement on the sequencing and implementation of policies, 4/ there is widespread recognition of the Iranian authorities' efforts to liberalize the external trade and payments regime, decontrol domestic prices, and deregulate other aspects of economic activity.

The financing of investment expenditure has evolved in an interesting manner. During the high investment years of 1991/92-1992/93, foreign saving contributed a cumulative total equivalent to almost 17 percent of GDP. Subsequently, the resort to foreign saving fell sharply. In 1994/95, the economy experienced a rate of external dissaving amounting to an estimated 8 percent of GDP (Chart 6). This was the counterpart to the

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1/ The difference between the two numbers relates to inventory accumulation, as reported in the official Iranian national accounts data. In view of the very sharp changes in relative prices and sectoral deflators associated with the liberalization and exchange rate variations of recent years, the investment-to-GDP ratios are derived on the basis of the respective nominal values.

2/ The private sector data cover the private sector proper, public enterprises, and charitable foundations.

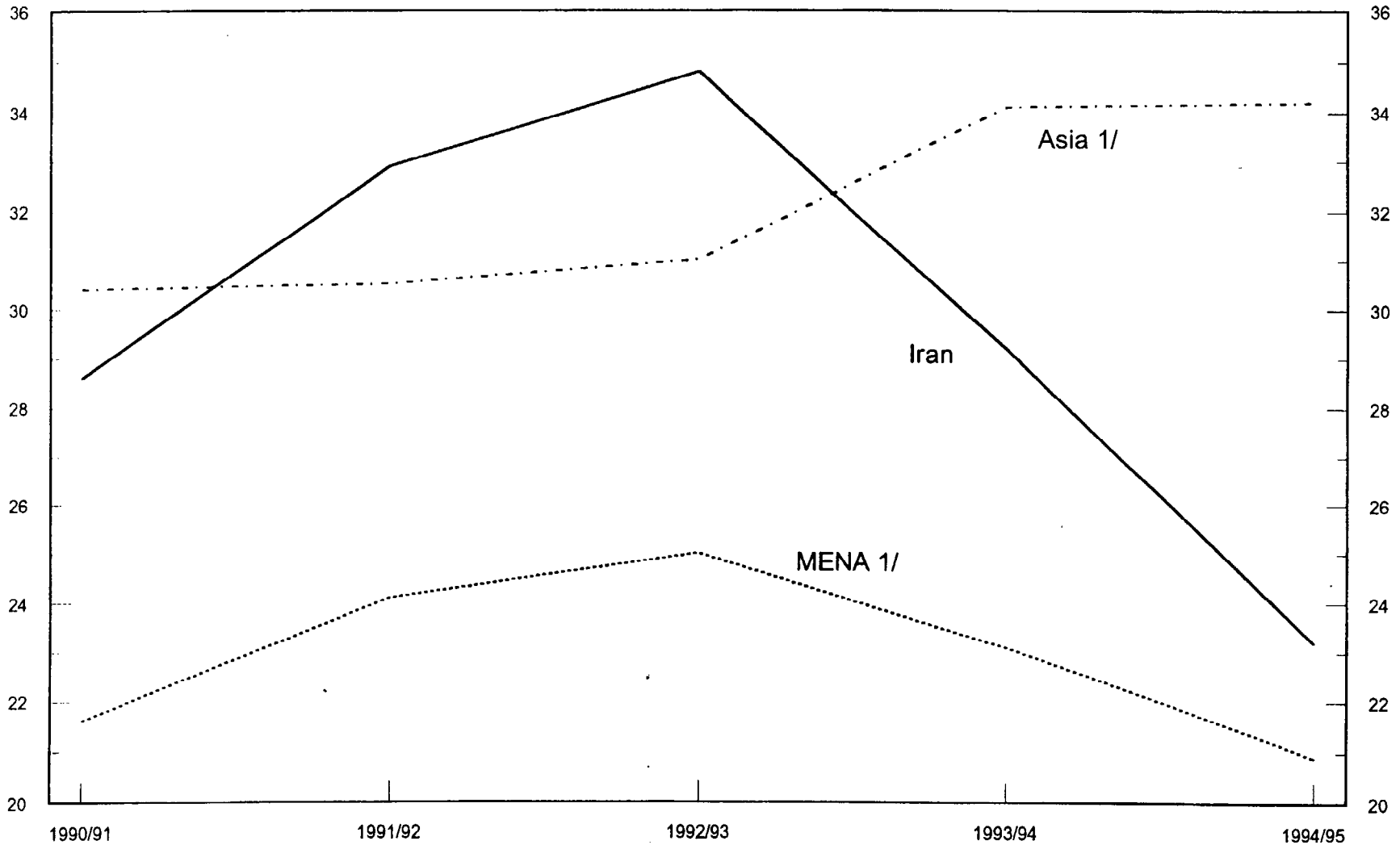
3/ See Karshenas and Pesaran (1995).

4/ See, for example, Farzin (1995).

Chart 4

Islamic Republic of Iran: Gross Investment, 1990/91-1994/95

(In percent of GDP)



Source: World Economic Outlook.

1/ Data for MENA region and Asia represent calendar years.

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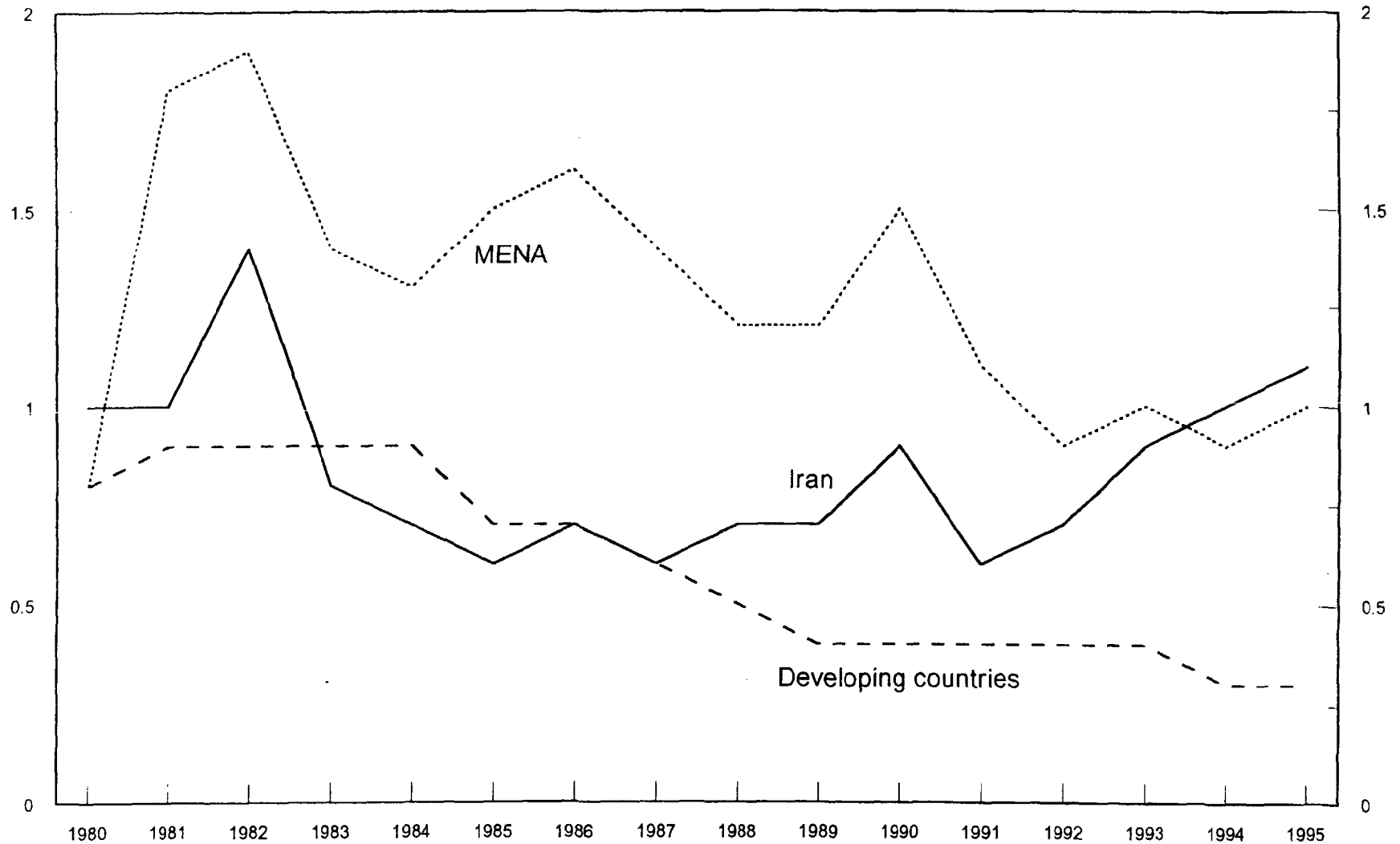
Chart 5

Islamic Republic of Iran: Public to Private Gross Fixed Investment Ratios, 1980-95



Source: World Economic Outlook.

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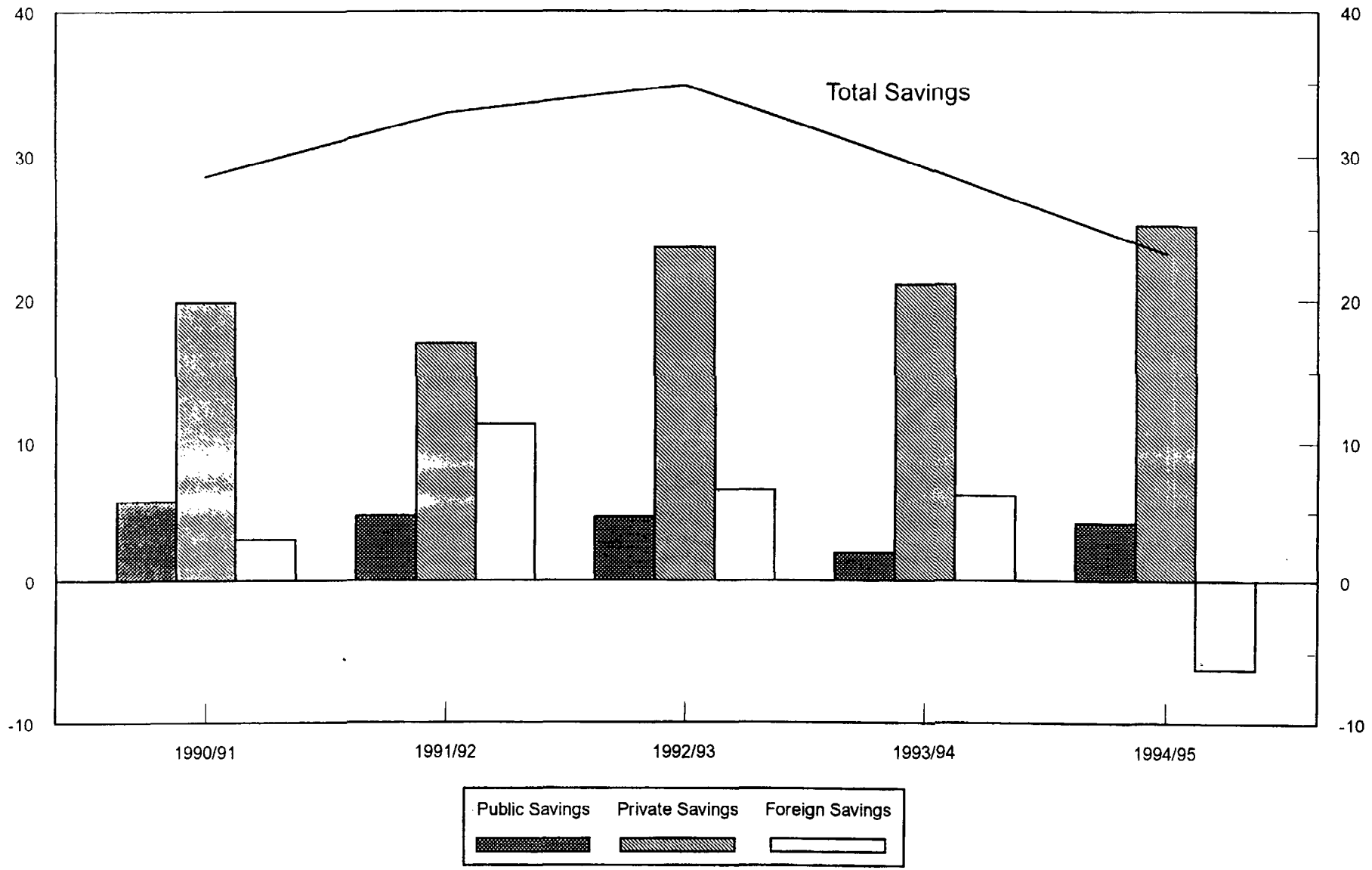
Chart 6

Islamic Republic of Iran: Saving Rates, 1990/91-94/95

(In percent of GDP)



Source: World Economic Outlook.

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current account surplus generated to meet debt payments in the context of limited capital inflows, whether in the form of new loans or foreign direct investments. 1/

The turnaround in foreign saving may be traced mainly to external credit rationing associated with the accumulation of arrears. After the end of the war with Iraq, there was a clear need for reconstruction and rehabilitation. There were few sources of concessional financing available to the Islamic Republic and the scope for foreign direct and portfolio investment was narrow given the circumstances of the economy. Accordingly, the Islamic Republic resorted to commercial borrowing. The willingness of creditors to provide external credits reflected the Islamic Republic's excellent record of debt service payments throughout the war with Iraq, the country's limited external liabilities, and its significant commercial potential in view of its oil income and its large and growing population.

Despite heavy borrowing in the first few years after the end of the war, the Iranian debt stock was not excessive by international standards. The problem was its extremely short maturity profile which funded not only trade but also investment projects with long gestation periods. 2/ Specifically, the concentration of short-term maturities resulted in very heavy debt servicing relative to both exports and international reserves--this at a time of unfavorable terms of trade developments (due to the fall in international oil prices) and increasing political pressures from the United States. At the same time, claims on foreign exchange earnings were accentuated by an acceleration of import expenditure in anticipation of a devaluation in the context of exchange rate unification. 3/ The process was aggravated by moral hazard risks associated with the perceptions of providers of letters of credit of the availability of an implicit foreign exchange guarantee from Bank Markazi. Finally, as was the case with the developing country debt problems of the 1980s, the emergence of payments arrears intensified the credit rationing problem, with several export credit agencies putting the Islamic Republic "off cover"--thereby aggravating the country's liquidity problems.

In view of the decline in the importance of foreign saving, national saving has played an important role in financing investment. Indeed, the Islamic Republic has sustained relatively high rates of saving amounting to an estimated annual average of 25 percent of GDP in 1990/91-1994/95 and reaching as high as 32 percent in 1994/95. This rate compares favorably

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1/ Preliminary estimates for 1995/96 point to a current account surplus in dollar terms somewhat above that recorded in 1994/95, contributing to the virtual elimination of external payments arrears.

2/ Short-term debt accounted for over 76 percent of outstanding obligations in 1993/94. See Islamic Republic of Iran (1996).

3/ Imports rose by more than 30 percent annually in 1990/91-1991/92.

with other developing countries but is lower than that recorded by the Asian economies (Chart 7). It has helped fund investment, meet external payments, and accumulate a large foreign exchange reserve cushion.

A striking aspect in analyzing saving performance in the Islamic Republic is the importance of nongovernment saving. After averaging 20 percent of GDP per annum in 1989/90-1993/94, nongovernment saving rose sharply to 26 percent of GDP in 1994/95, partly compensating for the decline in foreign saving. With available partial indicators suggesting a relatively subdued saving performance by the public enterprise sector (including foundations), this reflected primarily increased saving on the part of the private sector. Part of this saving was concerted in nature and was the counterpart to such measures as strict import controls and compression, with adverse effects on economic growth.

As in other MENA oil economies, government saving has been strongly influenced by developments in international oil prices. With oil receipts accounting for a large portion of export and budgetary revenues, 1/ increases in oil prices were associated *initially* with higher government saving. 2/ The analysis of longer time periods points to a number of other interesting features. For example, there is a relatively close relationship between oil prices and investment outlays. 3/ As a result, with the substantial fluctuations in international oil prices, 4/ both the level of saving and investment rates have been subject to considerable variability.

Looking ahead, and given the Iranian authorities' emphasis on meeting all debt service obligations without resort to further debt restructuring, the near-term prospects include the need to generate further current account surpluses. 5/ Accordingly, national saving will be required not only to fund the country's investment needs but also to provide for resource transfers to the rest of the world. Thus, rather than help relax the domestic saving constraint and assist in funding productive investments, the external sector is likely to add--albeit to a declining extent--to the national saving challenge in the next couple of years. As a result, a key

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1/ In the period 1990/91-1994/95, the shares amounted to 84 percent and 56 percent, respectively.

2/ For a discussion on the impact of oil price increases on other aspects of the Iranian economy, see Mazarei (1995)

3/ The unlagged correlation coefficient amounts to 0.57 from the 1980-95 period.

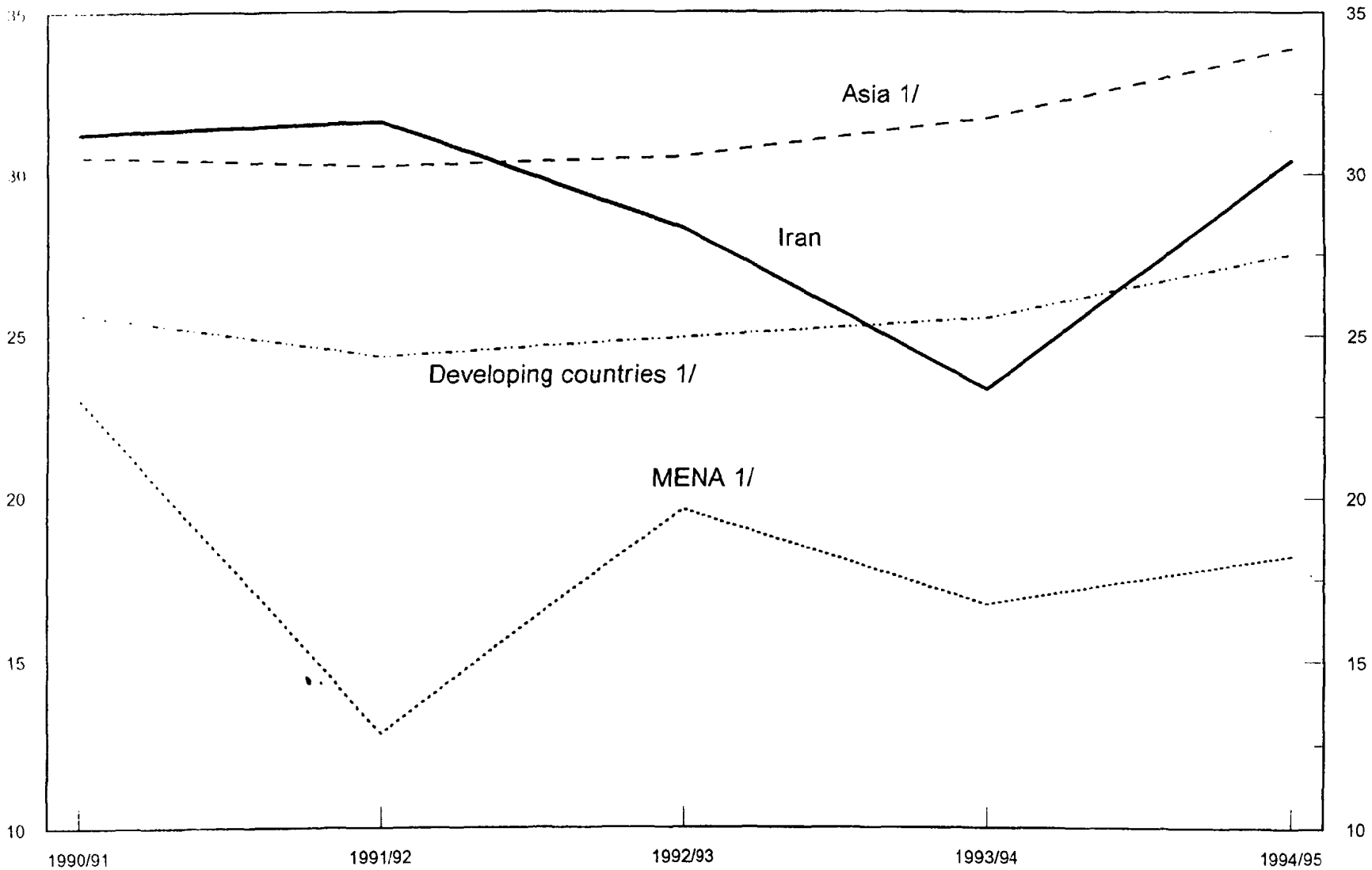
4/ This has resulted in terms of trade variability in MENA countries which is 15 times as high as that for developing countries as a whole, and 30 times as high as that of industrial countries. The divergence is more acute for the oil producers within MENA. See El-Erian et al (1996).

5/ The magnitude of the required surplus is expected to decline reflecting the sharp projected decline in external debt servicing after 1996/97. See Islamic Republic of Iran (1996).

Chart 7

Islamic Republic of Iran: National Savings, 1990/91-94/95

(In percent of GDP)



Source: World Economic Outlook.

1/ Data for MENA region, Asia, and Developing countries represent calendar years.

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policy question facing the authorities is how to sustain a relatively high level of saving, taking into account the distribution between the public and private sectors. This issue goes well beyond resource mobilization per se and encompasses, by necessity, the overall economic development strategy as noted in the previous section. We will return to this question in Section V following an empirical investigation of the determinants of national saving.

3. Historical parallel

Before concluding this section, it is interesting to note that the significant national saving challenge facing the Islamic Republic as a result of the unfavorable external environment has an interesting historical parallel. This is evident in comparing the recent developments with those of 1951-53, with implications for the policy discussion undertaken in Section V. 1/

The country faced a sudden and sharp loss in foreign exchange inflows in 1951 following the nationalization of the oil industry and the subsequent boycott imposed by Britain. Oil exports fell to an almost insignificant level and the British imposed restrictions on the use of sterling and limited access to commercial borrowing. The study argues that by embarking immediately on an adjustment process, the country was able to minimize the adverse impact. Growth and inflation performance were maintained while the balance of payments was quickly restored to a sustainable position.

The key aspects of the adjustment effort were an exchange rate devaluation, mobilization of fiscal revenue, administrative price adjustments, and a slowdown in the public investment program. The Government also resorted to import quotas though the authors question the effectiveness of this action relative to the other measures. The process was facilitated by a comfortable foreign exchange cushion which, despite some decline (from US$250 million to US$172 million) never fell below the equivalent of one year of import cover.

The change in the international environment was also reflected in a change in the country's trade patterns. Non-oil products played a more important role and the destination of exports changed markedly, with a sharp decline in the importance of the U.K. market and an increase in the importance of the West German and Soviet markets.

1/ As analyzed by Clawson and Sassanpour (1987).

IV. Determinants of Saving--An Empirical Analysis

This section provides a preliminary empirical analysis of the Iranian saving performance over the last 25 years, including in comparison to a set of oil-exporting developing countries. 1/ The analysis looks at the effects of a range of variables identified in Section II, as well as elements specific to these economies (e.g., the international price of oil and specific exogenous shocks). In view of the difficulties noted earlier in separating the public and private components of national saving, the analysis below examines mainly the determinants of total saving. However, in the Iranian case, a preliminary attempt is also made to separate out the private and public components.

1. The framework

The regression framework used to assess the effect of different factors on aggregate saving resorts to both time series data for individual countries and pooled data for the five countries for the period 1970-94. Four sets of variables are considered with the empirical specification for the saving equation taking the form:

$$SY_{it} = f(E^S_{it}, P^S_{it}, TD^S_{it}, D_{it}) \qquad (2)$$

where

SY_{it} = the ratio of aggregate domestic saving to GDP;
E^S = set of economic variables;
P^S = set of macroeconomic policy variables;
TD^S = set of external and demographic variables;
D = set of dummy variables to capture structural breaks and exogenous shocks;

The economic variables include real GDP growth (GR), inflation rate (π), current account balance (CA), external debt as a share of GDP (DB) and external debt service as a share of exports (DS). The policy variables include real interest rates (RIR), the real exchange rate (REER), fiscal balance (FBAL), and a measure of financial depth (M2). The external variables include change in oil prices (OP), change in overall terms of trade (TOT) and foreign direct investment (FDI) while the demographic

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1/ The set includes Algeria, Indonesia, United Arab Emirates (UAE), and Venezuela. While the structural characteristics of each of these economies differ from those of the Iranian economy, production and export of oil play a key role in all of them.

variable includes population growth (POP). The dummy variables (DVAR) are included to capture a number of major noneconomic developments with significant economic consequences in several of the countries. 1/

2. The context

Before discussing the regression results, Tables 1 and 2 provide some basic information on the sample characteristics and correlations. As shown in Table 1, for the period 1970-1994, the Iranian saving rate averaged around 30 percent of GDP. There has been, however, a significant variation in this over time, with the saving rate exceeding 40 percent in the two years following the oil price increase in 1973 and falling to below 25 percent during 1984-88. Of the other four oil exporting countries, the U.A.E. has the highest average saving rate, although it has come down substantially in recent years. At the other extreme, the average Indonesian saving rate over the 25-year period is low; however, it should be emphasized that this reflects low saving rates in the early to mid 1970s. In recent years, Indonesia's saving rate has exceeded 30 percent.

As Table 1 also shows, the Iranian GDP growth performance over the last 25 years has been similar to or better than the other oil-exporting countries, except Indonesia. However, the population growth in these oil exporting countries excepting again Indonesia has been high, with the result that GDP growth per capita has been limited. As with the saving rate, in the Islamic Republic of Iran there are significant variations in growth performance over time, with high growth rates recorded in the early 1970s, early 1980s, and 1990-1992.

3. The results and their interpretation

The *correlation matrix* for the main variables for the pooled sample for the five countries, and for the Islamic Republic separately, is shown in Table 2 to provide some preliminary evidence on the determinants of saving. As the first column indicates, the simple correlation between the aggregate saving rate and other variables is generally as expected: real GDP growth, fiscal balance, current account balance, population growth, and changes in oil prices and terms of trade are all positively correlated with saving, with highly significant correlation in the case of the last four of these variables. M2, denoting the ratio of broad money to GDP and which is used as a proxy for financial depth, displays virtually no relationship with saving while foreign direct investment has a negative relationship. Inflation and the debt service ratio also have a negative correlation, with the latter being highly significant. With regard to the correlation among other variables, as expected, there is a strong relationship between changes in oil prices and changes in the terms of trade of these countries. Both

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1/ It was not possible to obtain data on interest rates for all countries, and data on dependency ratios were not available on a systematic basis.

these variables are also significantly positive correlated with the current account balance and the fiscal balance, highlighting the importance of oil receipts for export and budgetary revenues.

The correlation analysis was also undertaken separately for each of the five countries. The results for the Islamic Republic are shown in brackets, which show that while several of the coefficients were similar to those in the pooled sample, there were some marked differences. For instance, the negative relationship between inflation and the saving rate was significantly stronger, as was the positive relationship between the fiscal balance and the saving rate. The correlation between changes in the terms of trade and the saving rate was also more marked, and net foreign direct investment had a significantly positive relationship with the saving rate. In addition to the variables shown in the Table, we constructed a time series of Iranian real rates of return on bank deposits, and found that there was a positive relationship between the level of real interest rates and the aggregate saving rate.

In the case of the Islamic Republic of Iran, a preliminary attempt was also made to disaggregate domestic saving into the public and private components, and to assess the correlation between the two components and the various variables noted above. While, in general, the relationship between the two components of the saving rate and the above variables was similar, there were three notable differences: first, there was a much stronger correlation between growth and public saving than between growth and private saving; second, while there was virtually no relationship between debt stock and debt service ratios and public saving, there was a marked negative correlation between the debt variables and private saving; and third, while there was a strong positive correlation between public saving and changes in the terms of trade, the relationship between private saving and terms of trade was, if anything, even stronger. Although these findings are of some interest, nevertheless given the uncertainties involved in the separating out of public and private saving, the rest of the analysis below continues to focus on the aggregate saving rate.

The results of estimating, equation (2), using *regression analysis* are presented in Tables 3 and 4. The first of these tables presents results of panel estimation, using the pooled data for the five oil-exporting countries. The estimation was undertaken using the fixed effects estimators which allows for differential intercepts for each country. 1/

1/ Statistical tests were undertaken to assess the order of integration in each of the univariante time series. All series were stationary (I(0))except output, consumer prices, populations, terms of trade and oil prices which were difference stationary (I(1)). Accordingly, in the regression analysis, the first differences of the latter set of series were used.

The results suggest that the variables included in the analysis can explain a significant proportion of the variation in the domestic saving rate of the five countries over the last 25 years. 1/ Although neither GDP growth nor population growth had a significant impact on the saving rate, the regression coefficients do suggest a number of important findings: first, even when the other determinants of saving are taken into account, inflation has a statistically significant adverse effect on the saving rate. Also, from an economic perspective the effect is non-negligible, with an increase in inflation of 1 percentage point leading to a decline in the saving rate of roughly 0.15 percent. Second, the fiscal balance has a significantly positive effect. The coefficient on this variable implies, however, that while there is no evidence of Ricardian equivalence, there is some offset in private saving for any increase in government saving. A percentage point improvement in the government's fiscal balance was reflected in just under half a percentage point increase in the overall saving rate.

There are four additional explanatory variables which appear to be important. The external debt service ratio generally has a significantly negative effect on the saving rate. This would suggest that high external debt could have an adverse effect on saving through liquidity constraint as well as by generating uncertainty about the future path of policies. The current account balance has a significantly positive effect on the saving rate suggesting that any windfall gains following an increase in oil prices are almost entirely saved, while conversely, a fall in oil prices and a deterioration in the current account is reflected almost entirely in a decline in the saving rate. This result is consistent with the notion of the permanent income hypothesis as noted earlier. The change in the terms of trade, or the change in oil prices, has a significant effect on the saving rate. In terms of the intertemporal framework noted above, this would suggest that the increase in incomes resulting from a sharp improvement in the terms of trade is regarded as temporary, and is largely saved. 2/ Finally, in this sample, the proxy for financial intermediation also exercises a significantly positive influence on the saving rate.

1/ Data on real effective exchange rates were not available for all countries from 1970 onwards and so were not included in the final estimation shown in these Tables. Similarly, interest rate/rate of return variable was available for only Indonesia and the Islamic Republic of Iran. In view of the very high correlation between debt stock and debt service variables, only the debt service variables were included in the final estimation.

2/ It is also worth noting that given the high correlation between the current account balance and terms of trade, including both these variables in the regression leads to a multicollinearity problem and the latter variable becomes insignificant.

The results of estimating the saving function for individual countries are given in Table 4. In the Iranian case, as the first two rows of the table indicate, several of the variables which have been identified above in the pooled estimation continue to be important, and the explanatory power of the equation is very high.

With regard to the specific determinants, there is a strong relationship between the fiscal balance, the current account balance, and the saving rate. The coefficient on the fiscal balance suggests that an improvement in the government's budgetary balance of 1 percent of GDP was reflected in an improvement in the saving rate of around three quarters of a percent. Similarly an improvement in the current account balance of 1 percent of GDP was reflected in an increase in the saving rate of two fifths of a percent of GDP.

It is also worth noting that neither GDP growth, nor population growth appear to have had any significant effect on the saving rate. There was, however, a strong negative relation between inflation and the saving rate, and a weak negative relationship between debt service and domestic saving. Also in keeping with the earlier evidence from pooled data, there is a highly significant positive relationship between changes in the terms of trade and the saving rate. The real rate of return also appeared to have a weak positive effect on the saving rate; this result was not, however, robust and the magnitude of the coefficient changed considerably in alternative specifications. An intercept dummy variable to capture the effect of the war with Iraq during the 1980s was also included in the specification. This variable turned out to be highly significant, indicating that the war years had led to a marked break in the Iranian economy's saving rate.

A comparison of the above results with those obtained for the other four oil-exporting countries reveals several similarities, but also some interesting differences. Changes in the terms of trade, fiscal balance and the current account balance have also had a significantly positive effect on the saving rate in the other countries although, as shown in Table 4, the magnitude of the coefficients differed considerably. Similarly, the inflation rate has generally had a pronounced adverse effect while the external debt service ratios had a weak negative effect. However, unlike the Iranian case, the proxy for the degree of financial intermediation had a positive, and more pronounced, impact. Also, in the U.A.E. and Venezuela, population growth also had a significantly positive effect on the saving rate, and in addition in Venezuela, GDP growth had a positive impact.

V. Some Preliminary Policy Implications

Having discussed both quantitatively and qualitatively the Iranian saving performance, this section discusses some of the policy implications. Reflecting the challenges facing the Iranian economy, and consistent with the above analysis, the authorities' policy stance rightly places emphasis on improving domestic resource mobilization, enhancing the financial

sector's role in mobilizing and allocating resources, and maintaining prudent debt management policies. Given the analysis of the previous sections, this broad emphasis is consistent with the attainment of the SFYP's objectives. It will also help reduce inflation whose high level undermines national saving.

1. The external environment

It should be noted at the outset that the Islamic Republic of Iran's saving/investment challenge is likely to be accentuated in the next few years by the prospects of a subdued external outlook facing MENA countries. 1/ Two issues are particularly relevant for the Islamic Republic at this time:

- Notwithstanding the recent spike, most analysts expect oil prices to be sluggish over the medium term. While world demand for oil is expected to rise, led by developing countries, the increase in non-OPEC production would lead to only a marginal increase in OPEC output/international prices. Thus, the baseline scenario calls for only marginal increases in nominal prices (with declines in real terms) and a continued erosion in OPEC's share of global demand (from about 40 percent in 1995 to 37 percent by the end of the decade). There is also a significant downside risk associated with the impact of Iraq's possible return to the oil markets. Depending on the terms of market re-entry and given the behavior function of non-OPEC countries, this could lead to a significant decline in international oil prices in the absence of a compensating decline in production by other OPEC countries.

- The expected decline in aggregate demand in the GCC countries as they intensify their adjustment efforts will affect their import expenditure, limiting the scope for increased regional exports from the Islamic Republic of Iran--albeit to a smaller extent than for some other countries given the composition of Iranian exports to the GCC. 2/

In sum, like several other countries in the MENA, the Iranian economy cannot look to the external environment as a source of windfall gains in the next few years. This is accentuated by the difficult environment facing the country as a result of sanctions which constrain the prospects for large inflows of foreign direct and portfolio capital. Nevertheless, some increase in capital inflows (including in the form of portfolio flows and capital repatriation) could materialize as a result of the near full

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1/ Details may be found in El-Erian (1996).

2/ GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. In 1991-94, the Islamic Republic accounted for 22 percent of the GCC's imports from MENA countries, with a particularly high share of food products. See Sassanpour (1996).

normalization of the external payments situation, the sharp improvement in the country's debt profile, improved debt management procedures, and the buildup in foreign exchange reserves. 1/

2. The main policy issues

a. Overview

In view of the above, the Iranian saving challenge may be specified as needing to maintain a high national saving rate to: (i) fund investment; (ii) offset foreign dissaving in the short run; (iii) reduce the concerted and inefficient (anti-growth) bias nature of a portion of existing saving; and (iv) limit vulnerability to international oil price variability. In this regard, we can identify three broad policy areas consistent with the emphasis of the SFYP:

- Enhancing public saving with due regard to limiting any adverse impact on private saving;
- Insulating, to the extent possible, public saving performance from the vagaries of the oil markets; and
- Improving the financial sector's ability to mobilize domestic private saving and allocate it to productive investment requirements.

Progress in these areas will contribute in an important manner to reducing domestic financial imbalances, with both direct and indirect favorable effect on national saving. Indeed, as the results in Sections II and IV confirm, inflation reduction can play a major role in helping to mobilize domestic resources to finance productive investments. The results of Section IV also suggest that recent progress in normalizing the external debt situation will have a positive impact on the saving rate.

b. The role of government saving

Public saving has a particularly important role to play in the next few years. Continued efforts at government budget consolidation will need to be accompanied by an improvement in the saving performance of all segments of the public sector.

Budget consolidation would benefit from a further broadening of the domestic tax base. Indeed, larger domestic resource mobilization would permit the maintenance of prudent government saving concurrent with higher outlays on basic social services, infrastructure, and safety net provisions. The latter would facilitate two issues that attract particular emphasis in

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1/ The share of short-term debt has declined from 75 percent in 1993/94 to under 20 percent in 1995/96. See Islamic Republic of Iran (1996).

the Iranian authorities' policy statements--the "crowding in" of private investment and minimizing the cost of transition for the most vulnerable groups of the population. 1/

Among the instruments to be considered in enhancing domestic resource mobilization, particular attention may be devoted to the implementation of a modern broad-based consumption tax, further rationalization of income and trade taxation through the elimination of exemptions and concessions, and aligning more closely domestic oil prices with international levels. Judging from the experience of other countries, such measures would also contribute to an increase in overall economic efficiency and, therefore, the sustainability of the investment and growth performance. The reform of the exchange system would also impact favorably on the budget.

c. Dealing with the terms of trade risks

The broadening of the domestic tax base will also serve to reduce the country's vulnerability to adverse oil price developments. Indeed, this provides the best instrument of "self insurance," along with export diversification, basing budgetary and balance of payments projections on cautious oil price assumptions, and strengthening the international reserve cushion to help absorb unanticipated adverse exogenous shocks and provide for an orderly adjustment to the new set of parameters, if required.

Beyond a certain point, self insurance can be very costly. Accordingly, other instruments of insurance may also be considered, depending primarily on the nature and financial cost of access to segments of the international capital markets. Specifically, resort to hedging and other market-based risk management instruments can mitigate the adverse impact of unfavorable changes in international oil prices and interest rates. 2/

d. Putting nongovernment saving on a firmer footing

As noted in Section II, fiscal consolidation measures could be expected, ceteris paribus, to induce some reduction in private saving notwithstanding an overall increase in total national saving. There is also a risk of a reduction in the concerted element of private sector saving as the authorities move to liberalize the economy further in order to exploit more fully its growth potential. The extent of this reduction can be minimized by measures aimed at enhancing the overall saving performance of the nongovernment sector (i.e., public enterprises and voluntary private sector saving).

1/ See, for example, Islamic Republic of Iran (1995).
2/ Some of these instruments are discussed in Mathieson et al (1989).

The saving level of public enterprises, including those operating under the guidance of foundations, has been a concern. 1/ Thus the emphasis on hardening their budget constraint (including access to bank credit), commercializing their activities, and privatizing some of them is well placed. The scope of privatization may be usefully extended to include financial services such as pension funds, social security funds, and insurance, as well as banks--thereby also enhancing institutional saving. Indeed, judging from the experience of other developing countries, financial sector reforms may also be expected to enhance private saving.

Consideration also needs to be given to adjusting the structure of the rate of returns which, at this time, is negative and accumulates incentives for consumption and hoarding. 2/ In addition to its direct effects, this would allow for a gradual relaxation of various administered controls on commercial banks which, while useful in sterilizing liquidity overhangs, tend to depress the level and dynamism of the financial intermediation process in terms of both deposit mobilization and credit allocation to productive uses. 3/ Indeed, a reversal of financial repression can be expected not only to enhance the intermediary role of banks but also enhance the role of the equity market in mobilizing investible resources; 4/ it can also contribute to the further development of the range of financial instruments. 5/

Consistent with the emphasis on increased resource mobilization, this year's budget provides for the issuance of participatory development bonds. The effectiveness of these bonds will depend on the holders' expected return and their wide availability. More generally, consideration may be given to increasing the range of financial instruments available to the public. The experience of the Tehran municipality last year provides some insights in this regard. The municipality's issuance of a profit-sharing basis security was oversubscribed. The experience may be repeated by other public agencies as a means of mobilizing domestic funding in a less inflationary manner. Consideration could also be given to broadening the scope of monetary policy instruments, including a profit-sharing based central bank instrument. 6/

1/ Enterprises operating under the guidance of foundations are included in the private sector classification.

2/ For a historical perspective on this issue, see Salehi-Isfahani (1989).

3/ For a discussion of the institutional evolution of the Iranian banking system, see Khan and Mirakhor (1990). This evolution is described in three phases: the nationalization, restructuring and reorganization of the banking system (1979-82); the adoption of an Islamic banking system with a 3-year transitional period (1982-86); and the emergence of the banking system as a direct instrument of government policies (since 1986).

4/ El-Erian and Kumar (1995).

5/ Mirakhor (1988).

6/ For a comprehensive discussion of the matter, see Choudhry and Mirakhor (1996).

In conclusion, it should be noted that these measures all contribute to enhancing saving performance consistent with the authorities' emphasis, as outlined in both the SFYP and this year's budget, on reducing the size of the public sector and improving social sector performance. The favorable supply and demand effects will also help reduce inflationary pressures, with a positive impact on saving performance. They facilitate the implementation of the wider range of structural reform measures needed for the Islamic Republic's economy to exploit fully its economic and financial potential, including the further reform of the exchange and external trade system, regulatory and legislative reforms, and additional domestic deregulation.

VI. Concluding Remarks

The role of saving in determining investment and growth has been a perennial issue in economic theory and policy. It has received an added impetus in recent years in light of developments in the theoretical literature and empirical findings. The issue is of particular relevance to the Islamic Republic of Iran. The country's "Second Plan of Economic, Social and Cultural Development" identifies significant investment funding needs consistent with the country's growth and social justice policy objectives. Given the limited access at this time to foreign saving, the mobilization of national saving assumes greater importance than in many other countries.

Since the end of the war with Iraq, the Iranian economy has sustained relatively high saving and investment rates. With the decline in foreign saving of recent years, national saving (of both a voluntary and concerted nature) has played an important role. Indeed, domestic resource mobilization has been called upon not only to fund investment but also to meet relatively large debt payments.

The preliminary quantitative analysis suggests that, like other developing countries, the Iranian saving rate has reflected developments in a set of economic, policy, and external variables. In particular, and consistent with a priori theoretical considerations, the saving rate appears linked, inter alia, to developments in the country's terms of trade, its inflation rate, the external debt situation, and the fiscal balance.

Looking forward, national saving performance will continue to be a critical determinant of the country's investment and growth performance. This factor assumes added importance due to the relatively subdued medium-term outlook for international oil prices, and the constraints on the availability of large inflows of foreign direct investment and portfolio capital associated with the difficult external environment.

In view of this, the Iranian saving challenge has been specified in this paper as needing to maintain a high national saving rate to: (i) fund domestic investment (including in the social sectors); (ii) offset foreign dissaving in the short run; (iii) reduce the concerted and anti-growth bias nature of a portion of existing private saving; and (iv) reduce the sensi-

tivity of the economy to the vagaries of the international oil market. Successfully meeting this challenge will depend primarily on continued progress in reducing inflation, enhancing public sector saving, further reforms in the exchange and payments system and widening the scope of saving instruments. Recent progress in normalizing the external debt situation and strengthening the international reserves position will facilitate the implementation and effectiveness of policy measures in these areas.

Table 1. Sample Means of Key Regression Variables, 1970-94

	Islamic Rep. of Iran	Algeria	UAE	Indonesia	Venezuela
National saving as a percent of GDP (SY)	30.8	26.4	47.6	21.0	25.0
GDP growth (GR)	3.5	2.6	3.6	6.7	2.7
Inflation (π)	18.3	13.5	9.4	12.9	20.8
Fiscal balance/GDP (FBAL)	-5.0	3.0	-4.0	-0.14	-1.8
Debt service ratio (DS)	14.0	38.7	0.0	24.8	27.6
Current account balance/ GDP (CA)	1.0	-2.0	20.6	-2.3	2.3
Population growth (POP)	3.2	3.0	6.8	2.0	3.1
Foreign direct investment/GDP (FDI)	0.15	--	--	0.33	0.16
Broad money/GDP (M2)	46.3	60.5	41.5	20.8	32.7
Real interest rate (RR)	-9.39	--	--	0.38	--
Δ terms of trade (ΔTOT)	8.25	5.45	4.16	4.03	8.86
Δ oil prices (ΔOP)	16.9	16.9	16.9	16.9	16.9

Source: WEO Data Bank.

-- indicates data not available.

Table 2: Matrix of Correlation Coefficients for Pairs of Key Variables in the Regression Analysis-Pooled Sample and Islamic Republic of Iran 1/

	TS	GR	π	FBAL	DS	CA	POP	FDI	M_2	ΔTOT	ΔOP
TS	1.0										
GR	0.08 (0.13)	1.0									
π	-0.11 (-0.35)	-0.12 (-0.33)	1.0								
FBAL	0.09 (0.53)	0.28 (0.50)	-0.04 (-0.35)	1.0							
DS	-0.40 (-0.14)	-0.08 (0.02)	0.26 (0.32)	0.06 (0.03)	1.0						
CA	0.87 (0.70)	0.06 (-0.02)	0.01 (-0.23)	0.04 (0.48)	-0.34 (-0.25)	1.0					
POP	0.57 (0.02)	0.26 (0.11)	-0.05 (0.10)	0.11 (0.01)	-0.32 (-0.19)	0.56 (-0.09)	1.0				
FDI	-0.08 (0.29)	0.12 (0.29)	0.13 (-0.41)	0.00 (0.32)	0.09 (-0.05)	-0.06 (0.22)	-0.08 (-0.06)	1.0			
M_2	0.02 (-0.64)	-0.27 (-0.47)	-0.11 (0.39)	-0.24 (-0.60)	0.21 (0.00)	-0.15 (-0.54)	-0.10 (-0.01)	-0.10 (-0.55)	1.0		
ΔTOT	0.39 (0.69)	0.10 (0.04)	0.02 (-0.24)	0.26 (0.36)	-0.19 (-0.21)	0.45 (0.65)	0.16 (0.14)	-0.07 (0.24)	-0.18 (-0.31)	1.0	
ΔOP	0.30 (0.60)	0.15 (0.04)	0.04 (-0.30)	0.29 (0.41)	-0.20 (-0.23)	0.38 (0.71)	0.18 (0.06)	-0.10 (0.34)	-0.22 (-0.36)	0.86 (0.98)	1.0

1/ Coefficients for the Islamic Republic of Iran are shown in brackets. For definition of variables, see text.

Table 3. Determinants of Saving: Panel Estimates

Equation	GR	π	FBAL	DS	CA	POP	FDI	M_2	ΔTOT	ΔOP	s.e.e.	$\bar{R}^2$
1	0.04 (0.10)	-0.16** (0.05)		-0.15* (0.09)	0.90** (0.16)						6.07	0.80
2							1.62 (2.18)	0.10 (0.10)		0.08** (0.03)	14.07	0.26
3							1.49 (2.06)	0.11 (0.13)	0.19** (0.04)		13.01	0.30
4	0.01 (0.09)	-0.15** (0.05)	0.43** (0.17)	-0.14* (0.08)		0.06 (0.22)	-0.53 (0.97)	0.14** (0.06)	0.23 (0.15)		5.69	0.84

Note: Standard errors are in brackets; ** and * denote statistically significant at the five and ten percent level respectively.

Table 4: Determinants of Saving: Country Estimates

Equation	GR	π	FBAL	DS	CA	POP	FDI	M_2	RIR	ΔTOT	DVAR	R^2	s.e.e
Islamic Rep. of Iran	0.13 (0.17)	0.84* (0.46)		-0.03 (0.18)	0.39** (0.20)			-0.05* (0.16)	0.38 (0.76)			0.62	5.50
	0.09 (0.10)	-2.05* (1.20)	0.74* (0.40)	-0.09 (0.11)		0.04 (0.80)	-1.74 (2.46)	0.04 (0.22)	0.59 (0.80)	0.07** (0.03)	-8.58** (3.82)	0.82	4.65
Algeria	0.10 (0.45)	0.01 (0.10)		-0.13** (-2.78)	0.40* (0.24)							0.33	3.55
	0.11 (0.43)	-0.02 (0.20)	-0.10 (0.40)	-0.10* (0.05)		3.03 (2.64)	-0.09 (0.26)	0.19* (0.10)		0.09** (0.04)	2.03 (4.89)	0.44	4.19
UAE	0.18 (0.14)	-0.10 (0.19)		0.11 (0.17)	1.11 (0.80)							0.36	5.49
	0.19 (0.10)	-0.12 (0.34)	0.38 (0.31)	-0.51 (0.22)		0.49 (1.97)	0.38 (0.31)	0.10 (0.16)		0.12** (0.04)		0.81	3.70
Indonesia	-0.23 (0.43)	-0.48** (0.16)		-0.65* (0.27)	1.47** (0.31)				0.40 (0.28)			0.63	4.44
	-0.17 (0.30)	-0.45** (0.16)	0.30 (0.73)	0.10 (0.15)		0.17 (0.62)	-0.54 (0.56)	0.37* (0.19)	0.42 (0.30)	0.10* (0.05)		0.84	2.28
Venezuela	0.40* (0.21)	-0.10 (0.06)		-0.14 (0.14)	0.47* (0.35)							0.60	5.33
	0.35** (0.16)	-0.02 (0.04)	0.80** (0.36)	-0.03 (0.08)		1.04* (0.51)	0.58** (0.06)	0.41** (0.11)		0.17** (0.03)		0.85	2.85

Note: ** and * denote statistically significant at 5 and 10 percent level respectively. Standard errors in brackets.

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