THE DETERMINANTS OF SAVINGS IN DEVELOPING COUNTRIES:
THEORY, POLICY AND RESEARCH ISSUES

by
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ABSTRACT

The paper reviews the savings behavior of households from the perspective of developing countries. Though the standard analytical framework used to explain savings in developed countries is still relevant to developing countries, it must be applied with care. Two sets of issues must be given particular attention. One is the role of market imperfections and extra market institutions which have developed to supplement them. The other is the role of activist government budgetary and tax policies, and other market interventions.
1. INTRODUCTION

In a completely closed economy savings determine the amount of funds available for investment in the country. As investment in physical and human capital and in research and development is vital for growth, it is of great policy interest to governments. In a completely (perfect) open economy, savings have a direct effect on the capital account, but not on domestic investment. A change in the capital account will lead to changes in the exchange rate and the balance of trade. This in turn could affect the entire structure of the economy, and consequently domestic investment. In any real economy which is neither completely closed nor completely open both the effect on domestic investment and the effect on the current account will be observed, and be of immediate policy concern.

The World Development Report for 1985 reports that the weighted average of gross investment rates in low income developing countries was 26% of their GDP and their gross domestic saving rate was 24%. Thus foreign capital inflows financed less than 10% of their investment. It financed an even smaller proportion of investment in the middle income developing countries. As the climate for capital flows has deteriorated over the last few years it is possible that these proportions will be even smaller in the near future. It is therefore important to understand the determinants of domestic saving.

Saving rates vary substantially among countries and over time. For instance, in Japan the net saving rate was 15% compared to 4% for the U.S. in 1984. In India the saving rate averaged 13% in the sixties and 24% in the early eighties (1980-82). India and China together, among the low income countries, saved and invested 28% of their GDP in 1983, an increase from 22%
in 1965. On the other hand, low income sub-Saharan African countries invested only 16% in 1983 compared to 15% in 1965. These differences in cross country saving behavior and in changes in rates over time are intriguing and beg explanation. We must first identify in somewhat greater detail the problems and issues in saving behavior which may contribute to an explanation of these facts. It is useful to start on a more fundamental level with the motivations of individuals and the constraints and policy effects impinging on saving behavior.

This paper offers a brief review of the analytical basis of savings behavior. As much of this work has been done the developed countries particular attention is paid to the factors which are of interest to developing countries. Some of these are peripheral to developed country situations, or have been neglected in the literature. In the process issues of particular relevance to developing countries are identified for future research.

Section 2 outlines the motivation for individual saving as seen in the analytical literature. Section 3 discusses the role of market imperfections, market constraints and extra market institutions in saving behavior. Section 4 deals with the influence of government policies on saving behavior. Section 5 reviews some of the other determinants, and section 6 concludes the paper.

2. MOTIVATIONS FOR SAVING

Why do people save? There are three basic reasons for savings. To undertake future personal consumption, to make provisions for expenditure on children, and to leave bequests to their heirs (and others). The amount and pattern of savings does not depend only on the tastes and motivation of savers. It is also affected by the constraints imposed by market opportuni-
ties and the government, and the incentives provided by the latter. Many savings puzzles must be traced to the interaction between the tastes and opportunities of savers and the constraints and incentives that they face.

2.1 CONSUMPTION SMOOTHING: CREDIT MARKETS AND FAMILY STRUCTURE

Much of the analysis of savings behavior has focused on own consumption of the nuclear family. One aspect of this is the desire of such a family or household to smooth consumption over time. Leaving aside uncertainty and unanticipated fluctuations for the moment, the anticipated pattern of consumption will not match the pattern of income over the lifetime. Earnings are likely to increase over time with education and experience. Similarly, earnings will fall at the time of retirement for employees, and due to weakening health for the self-employed. Over shorter time periods such as the agricultural year, income from production and agricultural employment will also have a cyclical pattern.

Families will prefer to smooth out their consumption of many goods (e.g. nondurables) to the extent possible. Savings (and dis-saving) is a way of reducing or eliminating the expected mismatch between the time pattern of earnings and the desired pattern of consumption (Ando and Modigliani (1963), Ghez and Becker (1975)). Though household age-income and age-consumption profiles are fairly well known in developed countries, little is known about them for developing countries. The extended family prevalent in

1. Expenditures on housing and other consumer durables often have a lumpy character which also affects the consumption pattern.

2. The extent to which income and consumption streams can be matched is of course critically dependent on the nature of credit markets. This issue is considered below.
many developing countries may make these profiles quite different. This type of family structure also complicates the problem of defining the unit—nuclear family including minors, two generation and three generation families—over which household savings are defined.

2.2 UNCERTAINTY AND PRECAUTIONARY SAVINGS

In addition to the broadly known or anticipated changes in earnings and consumption, there are several sources of uncertainty which can lead to unanticipated changes in both. Household agricultural producers are subject to uncertainty about the weather and crop epidemics which in turn cause income uncertainty. Exporters of crops and minerals face uncertainty with respect to cyclical fluctuations in the world price of these commodities.3/ Other self employed producers are similarly subject to both technological and market uncertainty which will affect their production and income (Levhari and Srinivasan (1969), Sandmo (1970) on uncertainty in returns to capital). Employees similarly face uncertainty with respect to their jobs. For informal sector employees the uncertainty might relate to having employment the next day. For salaried employees the question is when they might become unemployed and how long they will have to search for another job (Leland (1968), Hall (1978), Sargent (1978) and Eden and Pakes (1981) on earnings uncertainty). The more developed LDCs are also subject to the usual business cycles.

The most important source of uncertainty in consumption is uncertainty about the individual's time of death. The shorter (longer) the life span the less (more) consumption will take place after retirement. The

3. On an aggregate level the corresponding issue is terms of trade effects (section 5).
provision which must be made for it therefore depends on the degree of uncertainty (Levhari and Mirrman (1977), Davies (1981)). The amount of bequest that may be left to heirs is also affected by this uncertainty. 4/ These and other sources of uncertainty influence savings in a way very similar to the usual income and substitution effects. The net effect of precautionary demand on savings is therefore often ambiguous. 5/

2.3 CHILDREN: CONSUMPTION OR HUMAN CAPITAL

The timing and number of children also influences the time profile of both earnings and consumption. The simplistic view has been that more children result in greater consumption and reduced savings by households (see Kelly (1976) and Bilsborrow (1979) for criticisms). Savings may however increase in anticipation of a planned birth, and the expenditures associated with it. The expected reduction in the mother's input into production or her withdrawal from the labor force will also contribute to this. To the extent that children provide consumption benefits, parents will substitute away from personal consumption of market goods. As the former involves spending more time with children, goods which are more complimentary with leisure are likely to be affected more. There may also be a shift away from financial to housing assets with an associated increase in housing consumption (Freedman and Coombs (1966), Espenshade (1975)).

As the children grow older, they are likely to themselves start contributing labor input in household and agricultural activities. In an urban

4. See for example Davies (1981). The issues connected with bequests are considered below.

5. The availability of different types of insurance also plays a role, as is discussed below.
or semi-rural setting parents may also start saving in anticipation of increased expenditures on schooling and college. Female labor force participation may also increase. These and other actions related to children affect the time profile of household consumption and income, and consequently their saving behavior.

2.4 BEQUESTS

Whether households leave bequests or not, and if so what the reasons for such bequests are is a critical issue in savings behavior. The issue is not an abstract theoretical one, but has a profound bearing on the effect of a host of government policies. Any policy which shifts the burden of taxation (including inflation tax) between generations will have completely different affects in the "pure" life cycle and "altruistic" models.

In the "pure" life cycle view households do not receive or give bequests because they get no satisfaction from the latter. In this case each household plans its savings and dis-savings to cancel out over the lifetime. One implication of this is that asset holdings have a hump shaped pattern with age, and the marginal propensity to consume changes with age (Tobin (1967), Davies (1981), King and Dicks-Mireaux (1982) and Modigliani (1983)). Another is that total household saving is merely the result of aggregating over all households, of which the relatively young are saving and the relatively old dis-saving. 6/

A polar view of "altruistic" households was propounded by Barro (1974). In this view households derive utility not only from their own life

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6. Assuming perfect markets. Imperfect market issues are addressed below. A more detailed discussion of aggregation issues is also postponed.
time consumption, but also from the life time consumption of their children. This effectively means that they derive utility from the consumption of all their descendants. Kotlikoff and Summers (1981) found that a substantial proportion of U.S. savings could be due to the provision of bequests. Other evidence in favor of intergenerational gifts and transfers has been presented by White (1978), Mirer (1979), Darby (1979), Bernheim (1982), Kurz (1981, 1982, 1984) and Boskin and Lau (1984). King (1983) concludes that the polar altruistic model is unlikely to be true for more than a minority of households (in developed countries) and that more realistic versions of the life cycle model would apply to a majority of households.

Several reasons for bequests have been suggested in the context of the basic life cycle model. The simplest is to assume that households derive utility from bequests to their children (and possibly to others). In this context Blinder (1975) suggested that bequests may be a luxury good. In a similar vein it might be thought that parents care about the opportunities available to children but not their entire lifetime utility. Another approach is that the possibility of bequests is used as an inducement to children to spend time with their aged parents (Bernheim, Shleifer and Summers (1985)). A third approach is connected to uncertain lifetimes, bequests merely being the random residual wealth which remains at death. Whatever the reasons for bequests they will influence the age profile of asset holdings (Atkinson (1971)). They will also influence the composition of household portfolios (King (1983)).

3. MARKET CONSTRAINTS AND IMPERFECTIONS

The essence of the approaches to savings considered above is a forward looking attitude by households. The extent to which this attitude is
fruitful depends on the nature of the credit, insurance and annuity markets that exist. Thus for example consumption smoothing depends critically on the ability of households to lend and borrow freely at a single interest rate. Similarly how uncertainty influences savings depends on the type of insurance and annuity markets that exist. The effect of government policies on savings also depends on the nature of these markets. We therefore consider credit, insurance and annuity markets in turn.

3.1 CREDIT MARKETS

Even in countries with highly developed credit markets such as the U.S. there is increasing evidence that the implications derived under perfect markets are not universally valid. Among the evidence is the following: a) Low and middle income households have low levels of liquid wealth (Diamond (1977), Diamond and Hausman (1983)). b) The pattern of lifetime consumption is closely related to the timing of lifetime resources (Kotlikoff, Spivak and Summers (1982)). c) Retirement probability depends on the level of tangible wealth (Hurd and Boskin (1984)). d) The life cycle model as tested is invalid for approximately 20% of U.S. and Canadian households (Hall and Mishkin (1982) and King and Dick-Mireaux (1982) respectively). e) 50% of US households are liquidity constrained, though consumption is only reduced on average by 3% due to this constraint (Hayashi (1982)).

As this work has been carried out in the developed country context, the problem has been seen largely in terms of the inability to borrow against

7. A smaller percentage of young households is constrained by as much as 10%. 
human capital. In most developing countries this is likely be the least im-
portant problem with the loan market. Consumer credit is seldom available for 
the purchase of household consumer durables. Mortgage loan markets for 
housing are often absent, and housing is financed entirely by own and extended 
family funds. The absence of mortgage markets has been suggested as a pos-
sible cause of the high saving rate in Japan as it forces households to save 
for these lumpy investments. 8/ The pattern of household saving could also be 
directed away from financial and physical assets into consumer durable goods 
(including housing). 9/

In many developing countries a perfect market cannot be assumed even 
for borrowing against physical capital or the future returns from it. The 
assumption of separability between production and consumption decisions may 
therefore be invalid for agricultural and other small producers. In this case 
consumption and production decisions will jointly affect savings and must be 
incorporated in the analysis. One way of analyzing this problem is in terms 
of differential lending and borrowing rates faced by households. 10/

Credit market imperfections also change the role played by col-
lateral. It can be shown that though collateral is basically irrelevant in a 
perfect market, it has a critical role in an imperfect one. The amount of 
loan depends on it (Virmani (1986)). It is likely that households with land

8. The existence of an extended family structure may be an important factor.

9. Housing would appear to be a collaterable asset, unless markets for 
resale of residential housing are thin or absent. The lack of mobility 
in traditional societies, and government policies, such as rent control 
and the legal treatment of defaulters, may be responsible.

10. See Hu (1980) for an analysis using this approach for a somewhat 
different problem.
and other collaterable assets will be less constrained in their inter temporal consumption smoothing. Households may therefore save in collaterable assets like land and jewelry. Inter linkage of markets which allow sharing of information and reduce monitoring costs can also reduce the effect of credit market imperfections (Braverman and Srinivasan (1981)). Similarly the extended family may make tacit loans to its members, which will have similar effects. The extended family and other social institutions substitute for formal credit markets and will jointly influence saving behavior.

It has long been thought that one feature of underdeveloped capital markets is segmentation (Shaw (1973)). Many developing countries have therefore set up a host of financial institutions like cooperative credit, agricultural and small industry banks and term lending institutions. Following Shaw (1973) and Mckinnon's (1973) analysis of the role of financial intermediation in development this was seen as an essential element of economic development. 11/

The simplest way to view this problem from the current perspective is in terms of separate credit market islands imperfectly linked to each other. Development of modern banks and other financial institutions and introduction of deposit insurance can facilitate the flow of funds between them. Improvements in transport and communications can have similar effects. Integration will lead to a higher interest rate in some islands and a lower rate in others. The net effect of credit market development on total savings is therefore ambiguous, and needs to be empirically investigated. The allocation

11. McKinnon's analysis also depends on the lumpy nature of investment in irrigation, but reaches the opposite conclusion from that reached (above) for housing.
efficiency of investment will simultaneously improve. To the extent this happens there will be a fall in the average spread between returns to savings and to investment. This will have a positive impact on saving.

The conventional view on the effects of interest ceilings, following Mckinnon, is that they retard financial development. Another view is that interest ceilings have negative consequences on allocation efficiency and distribution independent of whether markets are developed or not (Virmani (1982, 1984, 1985a)). Deposit interest ceilings will harm those who have no opportunities for direct investment, and reduce their savings. Those who have to save for lumpy investment may however increase their saving, particularly in the context of the extended family. On the other hand, loan interest ceilings will create rationing and distortion where none existed and increase it where it was already present (Virmani op. cit.). Allocation efficiency will therefore worsen. They are likely to reduce savings and have adverse effects on distribution and allocation.

Even in the most highly developed capital markets, it is difficult if not impossible to obtain loans against future labor income. Money lenders will make such loans at interest rates which include a hefty risk premium. 12/ Arbitrary bans on money lenders are likely to worsen rather than alleviate any existing distortion. On the other hand certain policies such as loan interest subsidies through subsidized rediscounting can have positive

12. A high contracted rate is quite different from fraudulent change of contract terms. The latter must of course be dealt with severely by the socio-legal system.
effects if properly focused on distorted segments of the market. A careful consideration of these issues may help in disentangling the effect of a slew of contrary credit market policies on saving behavior.

3.2 INSURANCE AND EQUITY MARKETS

The influence of uncertainty on household decisions depends critically on whether insurance markets exist. A well functioning insurance market effectively eliminates all interpersonal uncertainty leaving only system-wide uncertainty. In some cases such as health insurance the latter may be unimportant. A perfect insurance market would convert unknown health care expenses into an ordinary monthly expenditure such as on food. The degree of uncertainty therefore depends on how good these markets are. Social arrangements such as individual labor contributions to produce food for the tribal granary constitute partial health insurance. Government provision of health services combine insurance with subsidies. Their effect depends on how good the private provision of health insurance is.

Income uncertainty arises from uncertainty in returns to labor earnings, and the uncertainty in returns to capital. The former can be mitigated by unemployment insurance and the latter by efficient capital/equity markets. Even in developed countries unemployment insurance is either provided by the government or is a side effect of implicit contracts between employees and large firms (Baily (1974), Aziardes (1975)). Though there are not many developing countries with unemployment insurance, government laws on dismissal of employees may force large companies to implicitly provide this insurance. Agricultural landowners may also implicitly provide partial in-

surance to their regular labor, and to tenants through share cropping (See Stiglitz (1974)). Public provision of crop insurance can also be an important element in the reduction of uncertainty faced by households in weather dependent agriculture.

Under some conditions earnings uncertainty reduces both current consumption and leisure (Leland (1968), Sandmo (1970), Miller (1974, 1976), Skinner (1983a, b)). This implies a positive effect of uncertainty on savings. In this case a breakdown in traditional arrangements for risk sharing or a removal of policies forcing such action will increase the saving of labor. Earning risk related to acquisition of human capital similarly leads to reduced training and increased labor supply (Barsky, Makiw and Zeldes (1984)). Households would tend to substitute physical for human capital resulting in higher measured saving. Policy packages such as wage taxation combined with unemployment compensation implicitly provide human capital insurance and would reverse this effect (Varian (1980), Eaton and Rosen (1980)).

Perfect equity markets eliminate diversifiable risk through pooling, leaving only the economic risks to which the entire system is subject. Corporate enterprises constitute a much smaller fraction of total production in developing countries relative to developed countries. Even where equity markets exist they are very thin and controlled by particular household groups. For these controlling groups the corporation is effectively like a household enterprise. Large conglomerates will in this situation constitute "internal capital markets" which effectively eliminate nonsystematic risk (Virmani

14. This applies even to a relatively developed developing country equity market such as Korea (Virmani, 1985c).
(1985c)). For noncontrolling shareholders however equity shares are a relatively illiquid long-term investment which permits some diversification of risk.

Whether households decide on personal or on private savings is closely linked to the "corporate veil" issue (Feldstein (1973)). Controlling shareholders are likely to make personal and corporate saving decisions in terms of their personal consumption plans. It is clearly a veil for them, and a study of their savings must take account of accrued capital gains. It is likely not to be a veil for other shareholders who will take little account of retained earnings and consequent capital gains on household wealth. To the extent that this is so policies such as investment credits, development rebate and tax holidays, which provide incentives for corporate investment will increase total saving.

A system of capital taxation with full loss offset is effectively like a government partnership in productive enterprises. In this case government by sharing risk can reduce individual risk and increase investment. 15/ This would tend to increase direct savings. As few countries have full loss offset provisions the effect is more uncertain. Other government policies which promote or retard the development of equity and futures markets also have long term effects. For instance, restrictions on equity trading by pension funds and other financial institutions can retard the development of equity markets by keeping markets thin.

15. Stiglitz (1973, 1976), and Gordon (1985) show that this happens even with a complete equity market. It seems even more probable in the developing country situation.
For the majority of households uncertainty in returns to capital is untouched by the equity market. The institution of the extended family may be a partial substitute for absent capital and insurance markets. By investing in children the family can diversify its portfolio and provide old age security thus compensating for missing annuity markets. Investment in children's education can also be used as an asset diversification device which reduces capital risk. In this case savings which only take account of physical capital could be negatively affected if the improvement in allocation efficiency is not sufficient to raise total capital.

To the extent that family members have different sources of labor and capital income family risk pooling will take place. Specific family policies such as migration of one or more members out of a risky agricultural environment may also be adopted for this purpose. Increased physical and occupational mobility will therefore reduce household risk and influence household saving.

In a nuclear family life insurance for the primary earner reduces earnings uncertainty (from date of death uncertainty). Life insurance could also be used to make bequests to grown children. More importantly, if borrowing against life insurance is possible it can be almost equivalent to an annuity market. Annuity markets basically act as an insurance against time of death uncertainty. If these markets were perfect time of death uncertainty could be effectively eliminated in a manner similar to perfect health insurance. In the life cycle view there would then be no bequests, while in the

16. Care has to be exercised in empirically separating this motive from a search for higher return to human capital.
altruistic view there would be no annuities purchased (only life insurance). Moral hazard problems are notorious in this market however (See Pauly (1974), Rothschild and Stiglitz (1976)). The extent to which life insurance is available will influence the level of saving and the assets in which it is accumulated.

Annuity markets are seldom observed even in developed countries. Households cannot therefore plan to run down their assets by the time of death even if they wanted to do so. Bequests are therefore viewed by pure life cycle individuals as a consequence of life time uncertainty. Indexed pensions and social security act as substitutes for absent annuity markets.

The issue of children as old age security is directly linked to imperfections in life insurance and annuity markets. Kotlikoff, Shoven and Spivak (1983) have shown that an extended family can provide imperfect insurance. This will result in higher household wealth than if markets were perfect. Parents may therefore have more children to insure that an extended family survives into their old age. The number of children in turn influences the level and pattern of saving.

4. GOVERNMENT POLICY INCENTIVES AND CONSTRAINTS

Government policy influences household behavior and national savings at several levels. Individual taxes, transfer schemes, government expenditure and subsidies will affect some group of households. Before getting into the


18. Government policies along these lines are considered below.
detailed consideration of each of these, it is useful to look at the aggregate picture.

Short term macroeconomic analysis of economic performance and government budgets commonly focuses on the issues of deficit financing and borrowing by public enterprises. IMF and other recommendations for short-term adjustment usually involve measures to limit government and public enterprise borrowing and money creation. Alternatively the recommendation is to increase tax effort and limit inflationary finance because of the likelihood of nominal expenditures rising faster than nominal revenues. The effect on the real net debt of the government, which determines its dis-saving, is usually ignored. With the advent of structural adjustment lending there has been increasing concern with the long-term effect of these policies on growth. The influence of these policies on savings is the critical link between their short run and long run effects. The pattern of government expenditures and the pattern of taxes can all affect savings. Consider first the pattern of financing.

4.1 PATTERN OF FINANCING

Government expenditure must be financed by taxes (and nontax revenues), by base money creation (inflation tax) or government debt. \(^{19/}\) Taxes will have effects on savings which we consider subsequently. Money creation is usually seen as the residual in discussions of macro policy. From the saving perspective the inflation tax is another way of raising resources which will have its own set of distortions. It is changes in the government's

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19. Transfers and subsidies are commonly included in government expenditure data. The former are however subtracted from taxes to get net taxes in most economic analysis. One could do the same for subsidies, though it is much more difficult to extract this data from government accounts.
net debt which constitute public (dis)saving. As most developing countries invest in productive assets, this must be subtracted from formal debt before getting a true picture of net government indebtedness (Eisner and Piper (1984)).

In analyzing whether the pattern of financing influences household behavior, taxes are assumed to be nondistorting lump-sum taxes for simplicity. For any given level and pattern of government expenditures, the issue is what extent changes in government saving are offset by changes in private saving. Given the government budget constraint this change must be due either to a reduction in taxes or in money creation. The Ricardian Equivalence proposition is that a change from taxes to debt will have no effect on total saving. The Barro argument depends on the previously mentioned altruistic bequest motive linking generations. An increase in government debt entails future tax liabilities on heirs to pay interest and/or principal. The discounted value of these future liabilities exactly balances the current reduction. There is no crowding out. The increase in government supply of bonds is exactly balanced by increased demand from the public to leave as bequest to heirs who will have to pay the extra taxes.

There are a number of direct arguments against this reasoning, but three are most relevant for developing countries (Tobin and Buiter (1980)). Firstly, the chain is broken if parents expect children to be so much better off than them that they would actually like to leave negative bequests. The second is if households are liquidity constrained. The third is that if households expect debt to be financed by future money creation instead of future taxes, the effect could be quite different (see below). In the life
cycle view of households the argument does not apply at all. In this view, the extent to which tax liability is shifted to future generations, households will perceive an increase in their net wealth (discounted after tax income). They will therefore increase their consumption and national saving will fall. To the extent that any increase in private saving falls short of the increase in government borrowing (dis-saving), private borrowing will be crowded out.

In investigating this crowding out issue in developing countries it has to be remembered that government bond markets are seldom present. Financial institutions are often forced to hold government debt by fiat or by the nature of it being the only acceptable reserve asset. Part of the effect of this forced lending is an implicit tax on the financial institutions. If however their net lending to the private sector falls by an amount equal to the increased holding, and private bonds increase to fill the gap, the effect may not be very different.

In considering the change in pattern of financing from taxes to money creation open market operations are likely to have different effects from government borrowing from the central bank. The former involves changes in government bonds as an intermediate step, and therefore requires some of the above analysis (Tobin and Buitel (1980)). In the latter case the effects depend on whether there are any unemployed resources and the relative distorting

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20. Strictly it does apply to a person's own future tax liability.

21. The degree to which government and private bonds are substitutes is an issue here. See Frankel (1985) for an empirical study.
effects of ordinary taxes versus the inflation tax. It also depends in
general on whether inflation is anticipated or not.

In practice inflationary finance or the inflation tax can influence
household savings through several channels. In the hypothetical case of a
fully anticipated and frictionlessly adjusted price level (with relative
prices unaffected) inflation will provide an incentive to shift out of money
and into physical assets. From the growth perspective, in the long run steady
state it is a tax on the holding of wealth in the form of money. As Tobin has
emphasized, even if total savings fall there will be shift away from money
holding to saving in physical assets.

In the medium-term inflation will influence the real interest rate
and the distribution of income and wealth. For instance unanticipated infla-
tion will tend to redistribute income between younger people who are likely to
be net savers and older people who are net dis-savers. Differences in mar-
ginal savings propensities between these groups will change total
saving. 22/ Though household savings may fall investment and capital stock
may be higher if the value of government debt falls.

Inflation will operate through a number of other channels, some of
which have a positive and others a negative effect on savings. Among these
are the problems of disentangling individual price changes from general infla-
tion, a redistribution of income between young and old, a change in the real
interest rate, a change in real income uncertainty and precautionary saving,
and portfolio shifts (Deaton (1977), Juster and Wachtel (1972 a,b), Von
Furstenberg (1980a, 1981)).

22. The issue of intergenerational transfers is considered further below.
4.2 PATTERN OF TAXES AND TRANSFERS

The government budget constraint dictates that a change in one tax must be offset by some other change. As the effect of debt and money creation have already been considered these will be assumed fixed. Either some other tax, a transfer or government expenditure must change. We can look at these in turn.

Consider first a change in the pattern of taxes so that the income of households remains unchanged. In this case the standard argument is that a shift from capital to labor taxation will increase savings because of substitution effects. As Atkinson and Sandmo (1980) have shown the effect of a shift from labor to capital taxation is much more complicated. This is because taxes on returns to capital (labor) have cross-effects on labor (capital) supply. The effect also depends on whether the economy is on the golden rule path. \(^{23}\) In developing countries collection problems and costs often limit the flexibility of the government in shifting from one tax to another. \(^{24}\) The effect of the existing pattern of taxes on saving particularly the mix of capital, labor and commodity taxes still merits investigation.

The taxation of interest, dividends and other earnings from capital changes the after tax returns to capital. Boskin (1978) found a significant effect of the after-tax interest rate on saving. Such an analysis has not

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23. When saving is less than required by the golden rule, the total effect of after tax interest rates rather than the substitution effect is relevant (op. cit.).

24. See Virmani (1985b). Auerbach, Kotlikoff and Summers (1973) have simulated the effect of a number of such tax substitutions.
been done for any developing country. This issue is however closely linked to the question of interest elasticity of saving. Gyfason (1980) and Howry and Hymans' (1978) for the DCs contradict Boskin's results. Fry (1978) and Giovanini (1985) similarly produce contradictory results for the developing countries. Some of the difficulties which have prevented a clear answer are as follows. Temporary changes can have an opposite effect from a permanent one. Defining the tax on corporate capital requires a careful consideration of financing decisions as the two interact (King (1977), King and Fullerton (1985)). The use of one interest rate to represent the rate of return to all savers is also problematic particularly in developing countries with credit market imperfections. The treatment of inflation requires consideration of the effect on the value of outstanding debt as well as the real rate (nominal minus inflation). Summers (1981a) has also emphasized that the human wealth effect of interest changes can be quite substantial and is often neglected.

Both interest and labor taxes influence human capital formation (Heckman (1976), Kotlikoff and Summers (1979) and Boskin (1975)). Capital income taxation will therefore also provide an incentive to shift from saving in physical capital to human capital. Though total saving may fall only slightly, savings as measured in the national income accounts could be negatively affected. In the case of labor taxation, the effect depends on whether households have to incur out of pocket expenses, and whether the income tax is nonlinear. The pattern of taxes therefore influences the pattern of saving in human versus physical capital. Systematic differences across countries in the pattern of taxes and major tax reform episodes may form part of the explanation for the observed saving rates.
Tax changes can also lead to changes in asset prices. Thus for example a land tax will reduce the price of land and an investment incentive will reduce equity prices (Feldstein (1977), Summers (1981b), Auerbach and Kotlikoff (1983)). If this results in intergenerational redistribution savings will be affected. For instance, as older individuals are likely to have more assets than younger ones, the life cycle model suggests that savings will rise. In the altruistic model there would be no effect on saving (Calvo, Kotlikoff and Rodriguez (1979)).

The usual public social security system found in the US and Latin America is the "pay as you go" one. As labor taxes on workers finance social security payments to the retired, this is an example of an intergenerational tax-transfer policy. Such income transfers from the relatively young to the old will have a negative effect on saving if the marginal propensity to save of the former is greater than that of the latter. The effect of a social security system on savings is therefore an important issue in many developing countries.

Balooning food and fertilizer subsidies have become of concern in countries as diverse as Bangladesh and Korea. Though these are touted as transfer payments to the poor the effective transfer to this segment of the population is often questionable. Similarly public sector inefficiency and below cost pricing often represent hidden transfers to the rich and middle classes. The issue of user charges for irrigation, health and education is a reflection of the concern that the subsidy may be much larger than can be justified by the difference between social and private returns. In combination with the taxes that finance them these subsidies represent intra-generational transfers.
In some countries provident fund schemes, certain government pension schemes and some types of life insurance make a lump sum payment to the individual. They are therefore essentially contractual saving schemes. These often involve an implicit tax as the implicit rate of return is below the market rate of interest, and therefore also involve intragenerational transfer.

If the marginal propensity to consume (MPC) of the rich and poor is different, tax-transfer policies (intragenerational redistribution) can have affects similar to that of intergenerational ones. Blinder (1975) found that redistribution would have a mildly positive effect on saving. More recent empirical work suggests that the MPC declines with wealth implying the opposite conclusion (Menchik and David (1983), Diamond and Hausman (1983)).

The influence of government fiscal policy is critically dependent on whether insurance markets exist. Merton (1983) suggested that fiscal policy as a veil for insurance. For instance unfunded social security in combination with a consumption tax would pool both human and physical capital risk. Similarly indexed pensions and social security can substitute for absent annuity markets. Thus a government pension will have ambiguous effects on saving if households are altruistic, but is likely to be positive for life cycle households as precautionary demand declines (Sheshinski and Weiss (1981), and Hubbard (1983) respectively). Similarly in an involuntary bequest
life cycle economy fully funded social security will reduce savings (Abel (1983, 1985)). 25/

If markets exist some of these government policies will merely displace private markets. They could even have negative effects if government policy is itself a source of uncertainty (Weiss (1976), Stiglitz (1982), Eaton (1981), Skinner (1983)). 26/ The empirical results depend on the nature of markets. The evidence on the effect of unfunded social security on private saving is contradictory (Feldstein (1974) and Lesnoy and Leamer (1981)). 27/ This is also partly the result of econometric problems as suggested by Williamson and Jones (1983).

4.3 PUBLIC CONSUMPTION AND PATTERN OF EXPENDITURES

Though transfer and subsidy policies are conventionally analyzed as negative taxes, for some purposes it is useful to view them as expenditures. In this context one can take the financing pattern including the structure of taxes (excluding transfers and subsidies) with its associated welfare costs as given. We can then consider the effect of shifting resources from one type of government expenditures to another.

To determine the influence of public expenditures on investment it is necessary to distinguish between different types of expenditures. There are broadly four different categories of government expenditures, though any in-

25. See also Diamond and Mirrlees (1978) on how the means test actually contributes to making the implicit insurance more efficient.

26. The earlier idea of Friedman was focussed primarily on money growth uncertainty and business cycles.

dividual expenditure item may often have elements of more than one. The biggest and the most difficult category to empirically disentangle in developing countries is transfers and subsidies. This is because subsidies are associated with each of the other three categories of expenditures. Any investment is likely to be associated with a stream of (future) subsidies. The three types of expenditures are (Samuelson) public goods, goods and services involving externalities or appropriation problems, and pure substitutes for private goods.

General administration expenditure (particularly police), defense and certain urban and rural amenities may be thought of as public goods. If there is deliberate over manning and other political and social expenses this part of expenditure should strictly be separated and included in subsidies. The extent to which public consumption crowds out private consumption is an issue of direct crowding out (Tobin and Buiter). This element has usually been ignored even in developed country studies in savings (see however Kormendi (1983)).

The second type of goods and services are popularly associated with the term infrastructure. They include things like market and institutional development, agricultural and other R & D, public health, water supply, population control, canals, dams, roads, water and sewer, post telephones and telegraph, and electricity. These are goods which are generally seen as complementary to private production, because increasing returns to scale or private sale would produce an inefficient amount. Again, however, any subsidy

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28. In small developing countries electricity production is also included because the efficient size is beyond the capability of private entrepreneurs.
amount greater than the difference between social and private returns is a transfer element which should be separated out. We expect that such complementary investment and expenditures will increase returns to private investment. In an economy with producer-consumer households or a closed one they will have a positive influence on saving (Von Furstenberg (1980b), Blejer and Khan (1984)).

Government current expenditures on education and health, have an income and a substitution effect. The income effect is like the tax-transfer policy discussed earlier and the important question is whether transfers are to the poor or middle classes. Expenditures on primary and rural secondary education are more likely to provide subsidies to the poor. In contrast higher education usually subsidies the urban middle classes. In addition the former are more likely to be complementary to and the latter substitutes for private investment in physical capital. Though the net effect on (physical) saving is ambiguous, saving in the form of human capital will definitely increase. This will tend to raise labor productivity as long as the return to education is greater than the return to physical capital.

Investment in goods which are or can be produced by private individual (substitutes) should have no effect on private saving if financed by lump sum taxes. Real world taxes to finance such investment will tend to reduce total savings, and possibly even the rate of saving. Even more important is the fact that the rate of return to such investment is often less than the private. Thus there is a stream of future subsides associated with it. As

29. Education may also have some element of externality which is very hard to define and measure.
with the previously mentioned subsidies, these involve a pure transfer to workers and buyers of these goods. In most cases the nominal subsidy is an underestimate because the true subsidy should include a rate of return equal to the private one. In the context of many developing countries, these implicit subsidies are likely to go to the relatively well educated and richer people. Such reverse redistribution will therefore invert the effect of any explicit welfare policies.

5. AGGREGATION ISSUES AND OTHER DETERMINANTS

In the pure life cycle view household net wealth is the discounted stream of labor earnings. Households consume their entire net wealth over the life time, so that saving and dis-saving cancel out. As Summers (1981) has shown total saving arise only if the relative young are saving more than the relatively old are dis-savings. In a static economy total net savings would be zero. In this view aggregate saving arises because of growth in productivity and population. Higher economic growth has a positive influence on saving in the long run. In the short run however an increase in the growth rate results in an increase in lifetime wealth. Households will want to borrow against future income and savings would fall (Summers (1985)). The kind of loan market problems mentioned earlier may reduce or eliminate this effect.

An exogenous increase in population growth, due to fertility increase or reduced infant mortality, will have similar long-run effects if labor is fully employed and markets are efficient. 30/ Birth control programs directly influence population growth. Expenditures on health also influence other

factors which lie behind the change in population growth. Each can have a
different effects on savings in the medium term. Life expectancy will have an
unambiguously positive effect on saving only in the long run. A decline in
infant mortality will reduce the wasted "investment" in children and could
lead to an increase in investment in children's human capital. Public health
measures which reduce or eliminate debilitating diseases and epidemics will
raise life time productivity. Other demographic changes will also influence
household and national saving.

With imperfect markets the effects are less clear. In the short run
the effects are similar to those discussed in an earlier section. An increase
in life expectancy will however have an unambiguously positive short-term
effect. This is because households have to make provisions for a longer re-
tirement period. 31/ With fertility decisions endogenous this simple analysis
has to be modified along the lines indicated earlier (Schultz (1974, 1985)).

Many developing countries control the foreign investment of savings
by their nationals. Illegal capital flows through the grey market financed by
under invoicing of exports and over invoicing of imports. In many countries
of Latin America (e.g. Argentina) and Africa this market is virtually an open
one. In countries like Egypt, Pakistan and the Philippines where there is a
large flow of remittances, a proportion of these also flow through the grey
market. Exchange rate policies have an effect on these flows and consequently
on measured national savings. Some of these effects may be temporary, in an-
ticipation of a devaluation. Such flow have also been influenced in the past
by the perception of political risk in countries such as Chile, Argentina,

Ghana, Pakistan and the Philippines. Long-term effects of these policies are difficult to disentangle but may be quite important in some countries.

In recent years the old debate on the extent to which foreign aid substitutes for domestic saving has been revived. Associated with this is the issue of whether governments slacken their saving effort, and waste resources on public consumption. Recent work has shown the necessity to distinguish long term project related aid commitments from emergency short-term humanitarian aid. As the latter is closely connected to severe falls in income, the propensity to consume out of it is relatively high. When allowance is made for this the propensity to save out of long term aid flows is found to be quite high. This issue could be clarified by the individual country analysis.

Terms of trade changes are an external source of changes in national income. The policy response to these changes has an important influence on national savings. The effect of changes in terms of trade depends on whether private individuals or the government is more directly affected. In the case of natural resources owned by the government public dis-saving would be lower in countries which take better account of long cycles in trade prices. In this case governments should increase savings during positive trends and reduce them during negative ones. The effect of terms of trade changes on private saving will depend on the degree of permanence of the change. \(^{32}\) It will also be influenced by the government's behavior in taxing away positive changes in income.

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32. Changes in weather which effect agricultural production will have to be similarly analyzed. In this case too, government procurement and tax-subsidy policies must be accounted for.
6. CONCLUSION

In studying saving behavior from a policy perspective, a number of interesting and important issues will have to be resolved. First, some light needs to be shed on the differences in saving behavior across countries and within countries over time. This will enable insights into the economic circumstances, particularly public policies, that result in greater savings in some countries over certain periods. The second is to examine certain controversies and unresolved policy issues which have so far been considered exclusively in the developed country context. Among these are liquidity constraints, public social security programs, corporate veil and the effect of corporate incentives on saving, the role of bequests and the Ricardian equivalence proposition.

Third, existing work on saving has not given due attention to certain aspects specific to developing countries. Among these are the absence of, or imperfections in relevant markets, extended family structures, terms of trade changes, demographic effects and widespread use of inflationary finance. Similarly there are a wide range of policy interventions carried out by developing countries which are relevant to saving behavior, but whose effect has not been thoroughly evaluated. These range from interest controls, development of financial and insurance markets to large public expenditure programs in infrastructure, education and health.
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