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Book Reviews

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The Journal provides a forum for in-depth analysis of the problems of social, economic, political, institutional, cultural and environmental transformation taking place in the world today, particularly in developing countries. It welcomes articles with rigorous reasoning, supported by proper documentation. Articles, including field-based ones, are expected to have a theoretical and/or historical perspective. The Journal encourages inter-disciplinary articles that are accessible to a wider group of social scientists and policy makers, in addition to articles specific to particular social sciences. The Journal also gives scope to Research Notes, Comments, Book Reviews and Review Articles.

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The Development of Development Thinking

Ravi Kanbur *

Introduction

It is an honor and a pleasure to give this public lecture as the V.K.R.V. Rao Chair Professor at the Institute for Social and Economic Change. V.K.R.V Rao is widely recognised as a leader in development thinking and development policy, and I have chosen as my topic "The Development of Development Thinking." In this lecture I would like to examine the evolution of thinking on development and development policy, with a special focus on economic issues, in the last fifty years. In particular, I would like to explore the interaction between ideology and experience in determining the course of economic thinking and policy on development.

Let me start by clarifying my approach.

First, I will not be discussing the entire history of development thinking. I am not going as far back as Kautilya, or even as far back as the development thinking that underlay the Indian independence movement. There are already many excellent studies of these topics, and in any case talking about them would take me well outside my areas of expertise. Rather, I will focus on the last fifty years—from the mid 1950's till now. Perhaps a better title for this talk might have been "The Last Fifty Years of Development Thinking."

Second, although this lecture is being given in India I will draw mainly on the development experience of other parts of the world, including Africa, Latin America, East Asia and Eastern Europe. The development of development thinking, as we shall see, has been influenced by a large and varied set of experiences, in a range of countries around the world.

Third, I will focus primarily on economic issues and the thinking of economists. The reason for this is simple. I am an economist and although I try to engage in interdisciplinary dialogue, my expertise is in economics and I will stick to what I know best.

The Last Fifty Years: A Simple Periodisation

Picking, rather arbitrarily, 1955 as a starting point, it might be useful to think very roughly in terms of three phases: 1955 to 1980; 1980 to 2000; and 2000 onwards. Let me emphasise that this is only a very rough periodisation to organise exposition. I recognise as well as anybody that history does not evolve quite as neatly as that, and that there are considerable continuities. Nevertheless, a simple schema may prove useful for our purposes. I want to look at the evolution of

* Cornell University: T.H. Lee Professor of World Affairs, International Professor of Applied Economics and Management, and Professor of Economics. This is the text of a public lecture delivered at the Institute for Social and Economic Change, Bangalore, on June 10, 2004, during his tenure as V.K.R.V. Rao Chair Professor at the Institute.

development thinking and policy in these three phases, and consider the relative influence of ideology and experience in this evolution.

To begin at the beginning. But of course there is no beginning since any starting point has its own antecedents. The 1950s and 1960s represent the high water mark of the statist model of development. But the hold of this model on development thinkers and policy makers owes much to the ideological debates of the half-century before this period. The rise of Fabian socialism in Britain, which in turn influenced a generation of freedom fighters from British colonialism in Asia and in Africa, was itself in the shadow of the rise of the communist central planned system as an alternative to free market economies. The economic disasters of the 1930s in Europe convinced many that the liberal market system caused misery for the masses, and was not even successful in its own terms. In the 1950s and 1960s the Soviet Union and Eastern Europe stood as an example of a successful alternative to the economic structures of the former colonialists. Not surprisingly, this was the economic model that was aspired to by most newly independent countries in Asia and in Africa. Latin American countries had been independent from their colonial masters, Spain and Portugal, for quite some time. Their struggle, rather, was seen as one for economic independence from US market forces. Many of the same methods, in particular state ownership and control of industry, and control of trade, were used. As East Asia emerged from the Korean War, US influence remained strong militarily and politically, but a recognisably statist model was followed, in South Korea and Taiwan.

It is worth noting that the precise nature of the statist model varied from country to country, depending on its specific circumstances.

—In India the 1950s and early 1960s saw planning models that emphasised overall growth and investment, and then in the 1960s and 1970s direct interventions on redistribution and direction of economic activity to benefit the poor. Trade restrictions and industrial controls intensified over this period.

—In South Korea and Taiwan the state directed credit to favoured industries (it "picked winners") but, especially in the 1970s and through into the 1980s, it measured success and conditioned support on export success. The South Korean experiment in heavy chemicals in the 1970s, which was brought to an end when it proved unsuccessful, was contrasted with the experience in India and in Africa, where lack of success seemed to occasion more subsidy and more support.

—In addition, in South Korea, like Taiwan and Japan but unlike Latin America, land reform had led to a relatively equal land distribution, and there was continuing emphasis on widespread basic literacy and education.

—In Latin America, Brazil epitomised the model of state supported development of heavy industry, leading to high growth but increasing inequality in the 1960s, which in turn led to state interventions with distributional objectives in mind, for example, price support for basic foods for the urban poor.

—And China, of course, had its own variant of statism, which included the excesses of the "Great Leap Forward" in the 1950s and the "Cultural Revolution" in the 1960s.

So this was the picture in the 1950s, 1960s and 1970s. What happened then? The late 1970s and early 1980s were a period of considerable economic turmoil in the world economy. Two oil price shocks ("OPEC I" in 1973 and "OPEC II" in 1979) were followed by an interest rate shock in the early 1980s—the rise in interest rates brought about by vastly increased US borrowing to finance a ballooning budget deficit. These shocks had generally severe effects on developing countries—even the oil price exporters had to cope with the increased interest rates. Several Latin American countries went into debt default. This included Brazil, but also Mexico, an oil exporter. African countries did not have exposure to commercial debt, but were severely affected on the trade side, and began borrowing heavily from official financiers. Countries that did not go into a full- blown crisis, like those in South and East Asia, were nevertheless adversely affected by these global trends.

Immediately after this period of turmoil, one began to see a weakening of adherence to the statist model. I will examine the causalities presently, but note that as a factual matter many countries began to reduce government intervention in various sectors of the economy.

—African countries, particularly those in Eastern and Southern Africa but also countries like Ghana in West Africa, began to liberalise their foreign exchange markets. Over a period of 10 years, from the mid 1980s to the mid 1990s, there was a transformation in these markets. The so-called black market premium for foreign exchange disappeared into insignificance. Again in Africa, many trade barriers began to be lifted and some start was made in the direction of disposing of loss making state enterprises.

—In Latin America, the debt crisis of the early 1980s brought on what was known as "the lost decade"— a period of low growth and low progress on social indicators. But there was episodic movement on the policy front. There would be periods of macroeconomic stability (for example in Brazil in the mid 1980s) but instability would set in again.

—In South Korea, there were some readjustments and reconsideration of support for previously favored industries.

—Even in India, where the common narrative is that economic liberalisation began in 1991, it has been argued by Rodrik and Subramaniam that attitudes to the private sector began to be relaxed, in small but discernible ways, in the early 1980s.

—Then there is China, which began its period of liberalisation, especially in the agricultural sector, in the late 1970s and early 1980s.

—And finally there is the example of Vietnam. A mere decade or so after defeating the preeminent capitalist power of our time, Vietnam began to liberalise and open out is economy, and began to encourage and actively seek foreign direct investment.

Thus weakening adherence to the statist model of development gathered pace during the decade of the 1980s. In the case of the former Soviet Union and Eastern Europe, the fall of the Berlin Wall in 1989 and the end of communist party

rule in Russia in 1991 ushered in as rapid and as complete a reversal from the statist model as has been seen anywhere. Almost overnight, these economies abandoned central planning and state direction and began to navigate the turbulent waters of the market-oriented world. But here again, there are variations. First of all, not all these economies were totally centrally planned. In some, like Poland, significant sectors had been left relatively free. And these same economies had a "memory" of market economics, which had been the rule only forty years earlier. It is now recognised that overall, the so-called "transition economies"—the economies in transition from communism to capitalism—had a terrible decade in the 1990s, in terms of growth and human development. There were considerable variations around this average. But the fact remains that in the late 1980s and early 1990s the movement away from state led development policies continued apace.

Even in the less dramatic setting of non-communist countries, the late 1980s and the 1990s showed major movements:

—In Mexico, the Salinas Presidency signed the North American Free Trade Agreement, and launched a series of domestic and external sector liberalisations.

—In Argentina the Menem government liberalised trade, introduced privatisation even into the social sectors, and sought to assure macroeconomic stability by guaranteeing currency convertibility at a fixed rate.

—In Brazil the Cardoso government over a period of 8 years maintained macroeconomic stability and attempted to attract Foreign Direct Investment (FDI).

—In Ghana, Zambia, Senegal, Mali and many other African countries, newly elected governments maintained the liberalised foreign exchange markets, and pressed ahead with privatisations and trade liberalisation.

—Even in South Africa, the African National Congress, which had taken power after toppling the evil of apartheid, soon began to talk in terms of macroeconomic stability and openness to external trade and FDI.

—In Asia, China extended its liberalisations from the domestic to the external sector, leading to a boom in FDI.

— And, of course, in 1991 India embarked on what many claim to be a decisive break from the post-Independence consensus of state direction of industry and commerce, and towards a more market and externally oriented development strategy.

I will presently discuss the development outcomes of these policy shifts in the 1980s. For now, let me continue the narrative into the new century and the new millennium. Already in the 1990s, concerns were being raised about some of the market-oriented policies that seemed to be the fashion of the times. The East Asian financial crisis in 1997 was preceded by the Mexican crisis in 1994 and followed by crises in Russia and Brazil in 1998, Turkey in 2000 and Argentina in 2002. Countries that had not opened out their financial markets to the same extent as South Korea, Hong Kong, Taiwan, Malaysia or Thailand, namely countries like India, China and Chile, weathered the 1997 crisis and subsequent storms much better. The moment the crisis hit, Malaysia abandoned capital market openness and

introduced temporary short-term capital controls. Many have argued that because of this it did not suffer as deep a recession in the crisis.

The financial crises brought to the fore concerns that the market oriented reforms of the 1980s and 1990s might not necessarily be delivering even in their own terms, in terms of growth and productivity, and even when averages were improving, inequalities were on the increase. On averages, we are of course aware of the spectacular improvements in growth performance of India and China during this period, as well as for some African countries like Ghana. The Indian and Chinese stories have been discussed more fully by others, elsewhere. But these stories have to be set against worse growth performance for Africa, Latin America and Eastern Europe as a whole, and the dramatic reversals in East Asia after the crisis. If we take population-weighted country performance, of course India and China will dominate the outcome. But if we take each country as an unweighted observation, average growth rates in developing countries were lower in the period 1980-2000 than in the period 1960-1980. In addition to these results on poor economic performance on average, increasing inequalities within countries have been causing concern, even in successful countries like India and China and in East Asia, let alone in the transition economies and in Africa and Latin America. Electoral results in different countries have confirmed this concern, whether it is the election of Lula as President in Brazil, the election of a wave of former communists in Eastern Europe, or as in India, where surely some part of the recent electoral results must have to do with increasing inequality in the era of reforms.

The Evolution of Development Policy: Ideology or Experience?

The renowned economist John Maynard Keynes, who was V.K.R.V. Rao's teacher in Cambridge, once famously said that the power of economic ideas in influencing economic policy is greatly under-appreciated. What he actually said was the following:

> "The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist…I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas…. But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil…"

In the extreme version of this view, then, practical policy is a slave to shifting ideologies, moving this way and that as fashions or beliefs change. This is perhaps too extreme a claim, but I would not dispute a less extreme version of this position, that all of us approach policy questions with preconceptions and frameworks. In this sense, surely, ideas and ideologies shape the way we view the orld and design economic policy for the world.

However, I want to make an obvious complementary point, that frameworks change, eventually, when faced with the results of experience. I feel sure that V.K.R.V. Rao, and Keynes himself, would subscribe to this interplay between ideas and experience. On another famous occasion, when Keynes was accused at a public meeting of inconsistency between what he was saying at the meeting and what he said five years ago, Keynes retorted, "When the facts go against my proposition, I change my mind—what, Sir, do you do?" This dialectic between ideas and experience, between frameworks and outcomes, is central to the way development policy has evolved and continues to evolve.

The 1950s were the start of cold war rivalry, which was as much about ideas as about territory. Two camps faced each other, militarily as well as ideologically. Viewed in this light, the adoption of the tenets of central planning and a statist model of development by development thinkers and policy makers might well be seen as the triumph of one ideology over another. However, as I argued at the start, the development thinkers and policy makers of fifty years ago were greatly influenced on the one hand by the perceived failures of capitalism in the West, and on the other, by the perceived successes of central planning in the communist East. I would therefore argue that it was the interpretation of this experience that led them to develop their ideas of planned development as the former colonies became independent.

It is similarly tempting to interpret the shift to market orientation in development policy and thinking in the 1980s as an ideological victory. After all, the 1980s saw the emergence of Thatcher in Britain, Kohl in Germany and Reagan in the United States. With this shift in the G7 countries, it is argued, the International Financial Institutions also started to espouse a "market fundamentalist" ideology. They then imposed their programmes of "structural adjustment" on hapless countries in the developing world, which had no choice but to accept, given their heavy indebtedness. With the collapse of the communist system in Eastern Europe and the former Soviet Union the triumph of the West was complete. The distinguished social scientist Francis Fukuyama even went so far as to proclaim "the End of History", meaning by this that all significant questions had been settled once and for all, and Western free market democracies had triumphed.

There is of course a grain of truth in this narrative emphasising the power of ideas and ideology. But I believe that it masks the experiential basis of the changes in development policy in many countries. At the extreme, few would deny that the central planned system in Eastern Europe and the Former Soviet Union system eventually failed to deliver at least part of what it had promised—higher economic productivity and growth, compared to the market system. It provided a safety net and redistribution, but inequalities, though hidden, were nevertheless present in the form of benefits to the nomenklatura. And, moreover, environmental disasters were caused and created. Thus the system failed precisely where it was supposed to work—in correcting market failures. In China it led to major calamities for the population, including the Great Famine of the 1950s, perhaps the biggest famine in human history.

In less extreme settings, central planning and the statist development model did not deliver high growth in India in the 1960s and 1970s, and did not deliver much in the way of poverty reduction either. In Brazil it delivered high growth but did not mitigate historical inequalities. In Africa, it did not manage to diversify the economy out of dependence on primary commodity products. At the same time in East Asia, where statism was combined with some elements of market like discipline, there were high growth rates.

It is not surprising, then, that after a quarter of a century or more of experience with the statist model of development, thinkers and policy makers were ready for a change. As Keynes might have said, when the facts didn't fit the proposition, it was time for a change of mind. The change of mind was not ideological. What was ideological was how sharply it changed. Suddenly, in the 1980s and early 1990s, in the mainstream development discourse we seemed to go from a situation where the state could do no wrong to one where the state could do no right. The presumption became that the state should be "rolled back". It was a question of "roll back first and ask questions later." The pendulum swung too far the other way. That it began to swing the other way was the due to experience. That it swung too far the other way was due to ideology.

Of course this swing too far in the other direction was bound to meet its own come-uppance as the force of ideology met the force of experience. I have already touched on this part of the evolution, which brings us right up to the current time. Let me give you five concrete examples of cases where the rush to markets led to problems in the last decade or so.

1. When the communist state collapsed in Eastern Europe and the former Soviet Union, the new state was left as the owner of industry and natural resources. The question was one of transition from this position to one where ownership was primarily in the hands of private entities. There were two possible trajectories. One was a gradualist path, building capital market institutions along the way, with the state releasing control as appropriate. The other was the path of immediate privatisation of all assets, in the faith that the capital market institutions would emerge spontaneously. The latter approach was followed, with disastrous short—and long run consequences that are with us today. Asset inequalities have skyrocketed, with a small number of individuals and groups controlling the vast bulk of the wealth in Russia, for example.

2. Throughout the 1980s, and the early 1990s, there was considerable pressure on developing countries from the International Financial Institutions and from the G7 to liberalise their external capital accounts and to allow foreign financial institutions to operate inside the developing countries. This was partly because of pressure from Western financial institutions looking for business. The ideological basis of it was that freer movements of capital increase global efficiency, since capital moves from low return environments to high return ones. This proposition, which can be debated even for physical capital (foreign direct investment), is problematic for financial flows because of their volatility. Chile, the poster child for

market economics, had had capital controls for a while, in the form of taxes on inflows that were then taken out rapidly. But capital account liberalisation and internal financial liberalisation were pushed hard and successfully by the G7 and the IFIs. When the financial crises of the late 1990s and early 2000s came, the voices of those who had counseled caution began to be heard. One does not hear quite much these days from those who touted the virtues of free financial flows. And when one does, they are always couched in terms of a long-term objective, to be attempted after sufficient depth has been achieved in internal financial markets.

3. By the 1980s, the Zambian maize marketing parastatal had become a byword for inefficiency and corruption. Farmers carried their maize long distances to purchasing points which, if they were open, would sometimes pay them in the form of "chits" to be cashed at a bank, to which the farmer then had to walk another long distance. Of course much maize went missing from the warehouses, and politicians often used these as their private granaries. The statist model seemed to have failed. There were two possible options. One was a political economy based reform that would improve the responsiveness of the organisation to farmers' needs, and gradually bring in private traders and reduce the role of the state marketing board. The other was to immediately dismantle the organisation, leaving the field clear for the private traders, in the faith that the trading operations would develop quickly in response to market demand, and farmers' needs would be served. The second option was chosen, and the results were disappointing to say the least. Trading operations took quite a while to get going, leaving most farmers stranded in terms of selling their maize. Even in the long run, farmers in remote areas, and these were the poorest farmers, were still left with inadequate trading networks. Farmers were now at the mercy of the one trader truck that would pass by in several days. This trader would obviously have tremendous bargaining power and would offer a low price, which the farmer would have no choice but to accept. Thus it turns out that despite all their problems, the maize marketing board's purchasing points provided a safety net of sorts to farmers, and a fixed price they could rely on. This was not recognised in the headlong rush to a market based solution. But the problems are recognised now, after the event.

4. Argentina introduced a currency board, pegging the Argentinean currency to the dollar. This draconian measure, which many advised against, was part of a "dream package" of macroeconomic stability and market oriented reforms that made Argentina the darling of the financial markets. The convertibility guarantee led to a boom in capital inflows. It was hoped that the guarantee would also "stiffen the spine" of Argentinean policy makers to hold down the budget deficit. But what had not been allowed for is that the budget process is a political one that first and foremost responds to the needs and interests of Argentineans, not of international financial markets. A major problem in Argentina is regional imbalance, and the fiscal deficits of the provinces began to balloon out of control as a complex game was played between center and provinces and within provinces. Of course, this could not go on. In the struggle between domestic politics and international financiers,

domestic politics won and Argentina suspended convertibility. It went into a prolonged period of economic and political turmoil and is only now, slowly, emerging from it.

5. In the 1980s and early 1990s, Indonesia was considered to be a miracle economy, one with high growth and declining poverty. This success was seen as flowing from outward oriented and market friendly economic policies. Indeed, Indonesia had high growth rates, and measured poverty fell throughout the 1980s and 1990s. But some parts of the economy were getting ahead faster than others. Inequalities began to increase, between ethnic groups and between regions, particularly from the late 1980s onwards. When the big crash came with the East Asia crisis in 1997, and Indonesia was vulnerable to the crisis because of its relatively open capital account, the gains of an entire decade were wiped out in one full swoop. But, equally importantly, the resentments that growing inequalities had built up spilled over into the streets: the ethnic minority suffered rape and killings in an orgy of rioting by the disaffected majority community. Today, as Indonesia struggles with becoming a functioning democracy, inequalities created in the past are a constant burden.

Note that I have not mentioned the latest general election results in India in my list of five examples. This is partly because I do not have sufficient expertise directly on India to speak authoritatively about it. It is also because it is too early for analysts to have come to interpretations of the result based on serious academic analysis. What I know about the result is what most others know, based on newspaper discussions and columns. There are those who have jumped on the result as an indictment of the reforms. And there are those like my predecessor as V.K.R.V. Rao Professor, Arvind Panagariaya, who have argued that the results reflect an anti-incumbency factor rather than an anti-reform factor. Those taking the latter view, point to the significantly higher growth rates in the period of reforms. To those who question whether the benefits of higher growth have trickled down to the poor, they respond that in fact the data show that they have. Despite the controversy surrounding the data, and despite the available alternative estimates, the consensus now is that measured poverty has indeed come down during the 1990s. But it is worth noting that inequalities have increased—across states, across rural and urban areas, and across individuals. This is also accepted as a consensus. And, as in any policy reform process, some people will indeed be hurt—there will be losers as well as winners. In view of all this, my tentative conclusion is that surely the consequences of the reform process in India will have had some effects on the election outcomes, although the exact nature and magnitude of these effects are still to be fully charted.

Where Does this Evolution Leave Us?

As discussed, the last fifty years have seen twists and turns of development thinking and policy. But the oppositions and conflicts in the last fifty years were relatively simple. We went from market orientation (before the second world war), to

statism, to market orientation. Are we now in for a similar wild swing of the pendulum as the problems of the last swing to the market are manifesting themselves? I do not believe so. I want to argue that we are entering a more complex phase of development thinking and policy, driven by the experience of the last decade or two.

A key feature of this experience has been the variability of performance, on economic growth and poverty reduction in the last two decades. For the same degree of economic reform, for the same degree of rolling back of the state, different countries have experienced vastly different growth performance. A forthcoming World Bank Report on the "Lessons of the 1990s" quantifies this proposition, but the qualitative examples I have given, the contrast between the macro successes in India and China and the macro failures in Africa and Eastern Europe should give a flavor of this argument. This variation does not give comfort to either side in the state versus market debate. Rather, what it says is that country specificities matter. The same amount of trade liberalisation can have very different impacts on exports depending on quality of infrastructure in the country. Privatising a state owned utility can have very different impacts depending on the quality of regulatory institutions. The benefits of liberalising the capital account depend on the preexisting depth of the internal financial markets.

Moreover, while economic growth is the *sine qua non* of poverty reduction, the same rate of economic growth has been translated into very different rates of poverty reduction, depending on structural inequalities, as the work of Martin Ravallion and others has shown.

A key factor underlying this variation in performance, in growth and in poverty reduction, is the performance of institutions, broadly defined—political, social and economic. The role of institutions in economic development has of course been discussed in the past fifty years. Indeed, Douglas North won a Nobel Prize in economics for his work on institutions and economic history. But it would be fair to say that only in the last decade or decade and half that it has truly become prominent in economic policy debates, thanks to the work of economists like Dani Rodrik or Daniel Kaufman.

Thus, as we emerge from the latest swing of the pendulum between state and market, the question is no longer the simple one of state versus market, but of the appropriate combination of these two, taking into account the historical specificities of each economy and society. Adding to the mix is a third sector which is neither state nor market but civil society, broadly defined. Of course this sector has always been present, although it can be argued that it has grown in the last fifty years as a mediator and an alternative to the other two sectors. Certainly analysts have become more aware of it, as have policy makers. All the discussion of social capital that has developed in the last ten or fifteen years is a manifestation of this. And policy makers have been reaching to civil society to help implement their programmes. So in fact the problematic for development thinking is to understand development in terms of the development of and interactions between state, market and civil society (also sometimes known as "the third sector") within a specific historical and socio-political context.

Given where we have come from, and given where we are, what are the sorts of questions that development thinkers, development practitioners and policy makers will have to tackle in the next decade or two? Let me give you three categories of questions.

1. What exactly is the boundary line between state and market? Accepting that it went too far in the direction of statism in the 1950s and 1960s, and accepting that some of the shifts in the other direction since 1980 have been too drastic, how are we to think of the relative domains of the two? It is now generally accepted that commercial and production activities are best left to market entities, suitably regulated. But this still leaves open the question of how to regulate. Moreover, in the social sectors like health and education, while there is general acceptance that primary education and primary health care should be provided publicly, how far up into the secondary and tertiary sectors should state responsibility go? What is the nature of a successful public-private partnership in the social sectors?

2. How can public sector institutions be made more responsive to public needs? In democracies, governments change when electorates are dissatisfied with their broad policies. But many institutions of public service in developing countries, most of them set up in the statist period, continue to be ineffective or dysfunctional. One simple answer seems to be to disband these institutions, like the Zambian maize marketing board. But, as that experience illustrates, it is not so straightforward as that. If there is to be disbandment then it has to be a phased disbandment which protects the services that these institutions do indeed provide, despite all their problems. But the alternative of improving service through monitoring and control must also be explored.

3. How can civil society be made more effective in transmitting the views of the public (and especially the poor) to the government, in ensuring that government programmes for the poor reach the poor, and that the rights of the poor are protected? There is a wide range of civil society organisations, some very successful in achieving development objectives, others not so successful or even downright harmful to the development process. What can policy do to encourage the first type and discourage the second type of civil society organisation? In order to answer this question, however, we have to answer the prior question of what accounts for the success of some civil society organisations and the failure of others. This is an important ongoing research question.

The questions asked above are not new. In fact there is already a large body of research on these questions, much of it dating from the last decade, although it has only really scratched the surface. My purpose in stating these questions is to show that the development of development thinking, and of development policy, is not going to be quite so straightforward in the next fifty years as it has been in the last fifty. The last fifty years have been marked by an all out battle between the two frameworks, one fundamentally statist and the other, fundamentally market oriented in nature, without much attention being paid to country and historical particularities,

and to any institutions outside the state and the market. These two frameworks have dominated the discourse, and as experience has shed doubts on one, it has been displaced by the other. But we have gone through this cycle at least once, and it is now clear, at least to me, that the same cycle will not, cannot, repeat. We are in an era where the principal thrust of research questions and policy discourse will be the three cornered balance between state, market and civil society, informed by historical, political and social factors, with the role of institutions center stage. The old style battles will no doubt continue unabated for a while. Indeed, we are seeing these battles right now, in the debate on the interpretation of the recent Indian election results. However, slowly but surely, the new agenda will impose itself—one can already see it happening in the global context.

All of this means that the development of development thinking will be an exciting and challenging enterprise in the coming decades. I, for one, welcome this challenge.

Keeping Our Cities Clean: Urban Solid Waste Management in Karnataka

Madhushree Sekher*

Abstract

This paper broadly examines the process of municipal waste management in our cities, focusing on the situation in Karnataka. The paper is reflective in nature, drawing on a case study of solid waste management process in Bangalore. It highlights the characteristic of municipal waste generated, the management practices involved and the stakeholders in the refuse collection and disposal services, and thereupon attempts to identify future interventions to strengthen the delivery of public municipal services. The paper argues that much more needs to be understood if institutional pluralism in local government is to become an effective development strategy.

Introduction

Urban solid waste management (SWM) is a major challenge facing governments in developing countries. However, viewed from the global context, limited attention has been bestowed on waste management in these countries, especially on the need to develop an integrated approach such that it is both cost effective and efficient. In India, too, the situation is no different. With about 17 per cent of the global population and a staggering urban population of about 27 per cent of the country's total population[1] (World Bank 1998), urban SWM in India represents a formidable challenge. The situation assumes more serious proportions if we consider the fact that while the country's overall annual population growth rate is about 2 per cent, the estimated urban population growth rate is much higher - around 3.5 per cent per annum (World Bank 1998).

Although there is dearth of precise and reliable data on waste generated in the country because of non-availability of such information at the municipal level, it is officially estimated that the country generates about 30 million tonnes of urban solid waste annually[2] (GOI 1998). The per capita waste generation in India varies between 0.1 kilogrammes and 0.6 kilogrammes per day, with an average of 0.33 kilogrammes (Bhide 1990). It is also estimated that the per capita waste generation in a typical Indian metropolitan city is expected to increase by 1.33 per cent per year (Shekdar *et al* 1991). According to a survey conducted by the Central Pollution Control Board (CPCB), the present annual solid waste generation in Indian cities has increased from 6 million tonnes in 1947 to 48 million tonnes in 1997 and is expected to increase to 300 million tonnes per annum by 2047 (CPCB 2000). This can be mainly ascribed to excessive urbanisation and the resultant slumming of the

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cities. At the same time, there is large difference between urban and rural levels of waste generation and, also between larger and smaller urban centres, which reflect the economic extremes existing within Indian society (WHO 1991). The larger cities are centres of major economic activity, reflected in the prosperity and the culture of consumerism among the residents and also greater waste generation.

Solid waste may be categorised according to its source as – (a) domestic solid waste, (b) commercial and industrial solid waste, which is bulky but not hazardous; and (c) hazardous waste from industries and hospitals, and also to some extent from households that require special handling. The waste composition varies significantly across different areas within an urban centre, such as between residential, commercial/market and industrial areas. Also, as in most low-income developing countries, urban solid waste in India has high content of organic matter that amounts to anywhere between 30 and 75 per cent of total generation (Venkateswaran 1994). But, the percentage of luxury waste-material such as paper, plastic, metals and glass is low (Bhide and Sundaresan 1984). Besides the fact that generation of more luxury waste materials is associated with economic prosperity, as observed in developed countries, another reason for its low content in the municipal waste in India can be the fact that traditionally such waste materials are segregated at source for reuse, starting from the households where it is either reused or sold to the *kabadiwallas* (itinerant waste buyers [IWB]).

Given its high organic content and moisture, waste disposal and processing are important in waste management practices in India. It is argued that the best method for disposing garbage is by composting or in sanitary landfills (Appaswamy 1994). However, the most common practice in the country is dumping at sites located around the city that are generally uncontrolled dumps. Dumping is also carried out illegally on private farmlands in the city vicinity. One reason for this is the lack of landfill space in the cities. Often, siting plans for potential landfills are strongly opposed by residents in the surrounding locality which causes complications.

The challenge of waste management in our cities and towns is addressed by various agencies. The responsibility of collection, removal and disposal of garbage from public places in urban areas and maintenance of dumping grounds, however, comes under the purview of the local municipal body which is the main formal stakeholder involved in the governance of SWM service in our cities. It is estimated that 10 to 40 per cent of the municipal budget is utilised for SWM (Bhide 1990). Yet, it is generally argued that the Indian waste management system is starved of resources when the demands of increasing urbanisation are taken into account (Shekdar *et al* 1992). Other actors like private organisations that are engaged in waste collection and processing works (for example, compost making) , and informal recycling system are also actively involved in the country's waste management process. Their presence in the delivery of SWM services in the cities is, however, dependent on the operation of the municipal body (Sudhir *et al* 1996).

The services provided by the municipal authority are, for the most part, inefficient. It is estimated that, on an average, 30 per cent of the disposed solid waste are left uncollected (NIUA 1989). This is beside the point that, as in most

developing countries, there is an active informal network in the country that exists as a parallel system and contributes significantly to the overall waste management process in the cities. Comprised of waste pickers, itinerant waste buyers and junk dealers, the quantum of waste recovery by this informal sector is placed in the range of 6 to 7 per cent to around 15 per cent of waste generated (Bhide 1990).

To address the problem of SWM in the country, the Ministry of Environment and Forest (MEF), Government of India, has brought into force the Municipal Waste (Handling and Management) Rules, 2000. This specifies that the primary responsibility to manage SWM in the cities will now rests on urban local bodies (ULBs). It also provides for the collection, segregation, storage, transportation, processing and safe disposal of municipal solid waste, excluding hazardous waste. The management of hazardous waste is under the purview of the Hazardous Waste Management Rules, 1989, the Biomedical Waste (Handling and Management) Rules, 1998, and the Batteries (Handling and Management) Rules, 2001. However, though these rules emphasize environmentally sound management of municipal solid waste, it is with regard to their enforcement that questions are raised. Due to their nature and type of regulations to ensure compliance with the delivery norms listed in the rules and also due to the inadequate information for monitoring providers, more often it is a case of rule violation.

Karnataka Scenario

Waste Flow in the Cities

The status of urban SWM in Karnataka is no different from the national scenario. Being one of the more urbanised states in the country with about 237 towns and urban agglomerations (as per 2001 Census), and an urban population of about 34 per cent as compared to the national figure of about 27 per cent, the problem of SWM is equally grave in Karnataka. According to the State of the Environment Report and Action Plan 2003 (GoK 2004), on an average, 40 to 50 per cent of the total municipal waste in the state is generated in the six municipal corporations of Karnataka (Table 1).

Besides, a major proportion of the waste generated in the urban centres of the State remain uncollected, as evident from a survey carried out by the Infrastructure Development Corporation (Karnataka) Limited (iDeCK) in 2003 (Table 2). The per capita waste generation in the urban centres varies between 0.16 kilogrammes and 0.67 kilogrammes per day, which is similar to the national picture. As mentioned earlier, while discussing the national scenario, variations in the waste generated in the urban areas of the State can be attributed to their urbanisation with the bigger cities producing more municipal waste than the smaller places.

Bangalore Case Study

A case analysis of waste management practices in Bangalore city, studied as a proxy for similar urban centres (Sekher 1998; Beukering *et al* 1999), throws specific insights about waste generation and composition in cities. From a field

survey[3] carried out in the city it was estimated that Bangalore generated about 3,613 tonnes[4] of solid waste per day, with commercial establishments being the major contributors accounting for about 39 per cent of the total, while households contributed about 18 per cent (Table 3). The waste generated by various institutions located in the city accounted for only about 4 per cent. Although industries[5] also generated a significant amount of solid waste, it was evident that most of this was high quality recyclables and, was recovered for recycling and reuse. Only a small per cent found its way into the city waste stream. Reflecting the national scenario, the city's solid waste also largely consisted of organic and other biodegradable matter – about 43 per cent of the total generation (Table 4). Comparatively, the percentages of recyclables like paper, glass, plastics, metals, cardboard/packaging material and rubber, were lower (36 per cent).

Of the total waste generated in Bangalore, the study showed that about 1,451 tonnes of waste per day got collected in public dustbins located at different points in the city. While waste pickers recovered 312 tonnes of waste from the public dustbins (PDB), 939 tonnes of waste from PDB was collected by the municipality (either by itself or private contractors) and dumped in open spaces and on roadsides outside the city. Remaining 200 tonnes of PDB waste (mostly comprising of vegetable waste from markets) were directly sent to large composting units such as Karnataka Composting Development Corporation (a government concern) and private units located in the city for composting. The analysis showed that about 245 tonnes of waste per day was dumped or burnt by the generators themselves (gone/ unaccounted waste). This included debris and unorganised waste that remained uncollected in the city (Table 5).

The case study also revealed that about 65 per cent of the total waste generated in the city was collected for recovery[6] (about 2,329 tonnes per day). While 722 tonnes per day was reused, the remaining went for recycling (Table 5). Agents involved in the collection and recovery process were waste pickers, IWB, middlemen, the municipality, and recycling units (both small and large). While the three agents in the informal sector and the municipality were directly involved in waste collection activities, the waste was processed by the recycling units which received the recyclable waste from both middlemen and municipality. In addition, community based organisations (small recycling units) collected 56 tonnes of waste directly from households for composting. The waste recovered for recycling through middlemen and waste pickers accounted for about 40 per cent of the total waste generated (1,139 tonnes per day and 312 tonnes per day respectively). The middlemen accumulated recyclables from the consumers and IWBs. The waste pickers took their collection either to the middlemen or sold it directly to small recycling units in the city. The contribution of the waste pickers in the informal waste recovery process in the city needs special reference. Although exact figures were not available, based on available data, the study estimated that there were roughly 25,000 waste pickers whose average per capita collection was about 15 kilogrammes per day. Collecting about 312 tonnes of waste per day, the waste

pickers recovered about 21 per cent of the 1,451 tonnes of waste that went into public dustbins.

However, it needs to be mentioned that the waste that flows into the public dustbins is mixed waste, often containing household hazards like glass pieces, batteries, polythene bags, etc. Its impact is serious given its potential harmful characteristics. More worrying is the fact that hospital waste also gets mixed with municipal waste in the public dustbins. This problem has also been highlighted in the State of the Environment Report and Action Plan 2003, which says, "… about one to two per cent of biomedical waste gets mixed with municipal solid waste in the community bins" (GoK 2004:135). Given the extent of scavenging at the dump sites, this is a dangerous trend.

Solid Waste Management (SWM) Practices

SWM encompasses the range of activities, such as – (i) prevention, either by reducing the content of waste or by reusing it; (ii) recycling the waste into secondary raw material or as a source of energy; and (iii) disposal through land-filling. However, the reality is quite different from these environmentally sound options. A major problem regarding urban SWM pertains to the collection of waste generated. Although, door-to-door collection has been introduced in some cities of Karnataka (Bangalore and Mysore), a major portion of the waste generated gets collected in public dustbins and the waste that reaches disposal sites is usually mixed, containing plastic, glass, metals etc., as waste segregation is not practised in most of the urban areas (GoK 2004). Moreover, a large quantity of waste that gets deposited in the public dustbins remains uncollected (Tables 1 and 2). Besides, the waste collected from the public dustbins is mostly disposed by either dumping in an uncontrolled manner in some open space or it is burnt in the open air causing high levels of pollution and environmental damage.

Regarding domestic waste collection, the NSS 54th Round estimates (NSSO 1999) show that in Karnataka it was mainly the household members who themselves took the household garbage and dumped it in a common dumping spot away from the house from where the municipal authorities generally made arrangements for its removal (Table 6). Three-fourth of the urban households surveyed in the state reported that they resorted to this method of garbage disposal. Though collection of garbage from households by local municipal authorities formed the other important method of waste removal, the practice of door-to-door collection was limited. According to the State of the Environment Report and Action Plan 2003, the practice was mainly existing in Bangalore and Mysore, with the bulk of the waste from households still getting collected in community bins or a common dumping spot (GoK 2004).

The NSS 54th Round estimates (NSSO 1999) also throw light on where the domestic refuse, after collection, is taken to for disposal in the cities in Karnataka. The picture that emerges is equally grim. About 80 per cent of the urban households reported that the domestic waste was mainly disposed indiscriminately at some common dumping spot – a community dumping spot/dustbin, or any other

convenient spot in the neighbourhood. Considering the fact that the waste has high organic content and is unsegregated, failure or inadequate collection can result in serious threat to public health. Available information in this regard shows that little progress has been made.

Most of the urban localities in the state do not have appropriate dump sites to dump the garbage and to compost it. In some cases, municipal land is used for the purpose and in some other cases government land in the city outskirts is used (Table 7). Since the capacity of such dump sites is inadequate in relation to the requirement (Box I), in cities like Bangalore, it is common for the municipality to dump garbage in open spaces and on roadsides in the city outskirts. However, as of November 2003, 220 urban local bodies in Karnataka had identified landfill sites and applied for authorisation, of which 192 received authorisation from the Karnataka State Pollution Control Board (GoK 2004). It is to be now seen how this development changes the situation in the cities.

Box I: Projected Requirement of Land for Dump Site (Composting) and Landfill Site for the Next Ten years.

As per the guidelines given in the national manual on Municipal Solid Waste Management, published by the Government of India, Ministry of Urban Development in May 2000, the requirement of land for dump sites in selected cities of Karnataka is as follows:

City Corporation	Area required for dump site (composting) (acres)	Area required for landfill site (acres)
Bangalore	112.5	129.600
Mysore	13.0	11.910
Belgaum	8.0	7.040
Mangalore	13.0	12.950
Gulbarga	8.0	6.216
Hubli/Dharwad	13.0	12.950

Landfill area required for Bangalore is 129.6 acres (AusAid 2001). Likewise, requirement for other cities has been calculated.

For the efficient management of the solid waste, infrastructure facilities for storing, transporting and dumping the garbage are needed. The general impression is that the number of dustbins provided is inadequate considering the quantity of waste generated and, these are typically of R.C.C. with capacities varying between 540 to 1,100 litres which are difficult to maintain (KUIDFC 2003). In a study carried out by the Institute for Social and Economic Change, Bangalore (Aziz *et al* 2002), it is stated that discussions with citizens also brought out the point that public

dustbins were often not located at the right places because of which, in many cases, the garbage got thrown in the vicinity and around the dustbins and not into them.

As for transport vehicles, municipalities either own or hire lorries/trucks, tractors, tippers and tricycles of different capacity. The general complaint among municipal authorities is that the number of vehicles available with them is woefully inadequate to the task of transporting garbage to the dump site. If one does an exercise relating to the quantity of garbage generated in the urban area with the number of vehicles in functioning condition that are with the concerned urban local body, and analyses it by the capacities and trips that can be made in a day, this complaint appears to be genuine (Aziz *et al* 2002). Data about the number of public dustbins and transport vehicles with some urban local bodies in Karnataka is given in the Table 8 as an indication of the ground reality.

Regarding the work force employed for SWM, the situation is different in different city corporations. Generally speaking, the number of health workers and *Pourakarmikas* (waste pickers working for the ULBs) employed by the municipality is estimated in terms of the load of work in the municipality (collecting municipal garbage and disposing it, and also cleaning the open and underground drains and municipal urinals). But, traditionally, the practice is to deploy the work force according to the city population. It is now accepted in Karnataka, *vide* Government of Karnataka Circular No. HMA/118/MNM/17, dated June 30, 1997[7], that for a population of 500 in the city there should be one *Pourakarmika*. However, the ratio between the workforce and the population varies between cities (GoK 2004). For instance, in Bangalore, for every 301 persons there is one health worker, whereas in Gulbarga, it is 631 persons for one health worker (GoK 2004). Table 9 presents the number of *Pourakarmikas* working *vis-à-vis* the required number. It is evident that the number of these workers falls short of the desired number in the cities under reference. The overall gap in respect of the five cities is 46 per cent, thus pointing to the fact that the municipal administrations are functioning under severe constraints with regard to their workforce (Aziz *et al* 2002).

Stakeholders in the Refuse Collection and Disposal Services: The main stakeholders in the urban SWM process are the waste processors (all agents directly active in waste processing – that is, service producers) and waste generators (all agents generating and consuming services provided by the waste processors):

- The waste processors consist of waste pickers, itinerant waste buyers, middlemen like junk dealers and wholesalers, the urban local body, and various recycling units, both private and government. While the first three agents constitute the informal network, the others are formal agents[8].
- The waste generating categories comprise mainly of four types of agents, *viz*., households, commercial establishments (markets and hotels), institutions (offices, educational institutions and hospitals), and industries[9] (large, medium and small).

While the three agents in the informal sector and the municipality are directly involved in the waste collection activities, waste processing is done by recycling units that receive recyclables from the middlemen and the municipality. Among the agents involved in waste recovery process, the contribution of waste pickers in the waste recovery process needs special reference. Although, exact figures are not available, in the Bangalore case study it was estimated that there were roughly 25,000 waste pickers in the metropolis whose average per capita collection was about 15 kilogrammes per day, accounting for the recovery of about 21 per cent of the waste that went to the public dustbins (Beukering *et al* 1999). It is thus obvious that, though existing on a subsistence basis, the waste pickers formed a significant conduit in the waste recovery process.

However, as laid down in the Karnataka Municipal Corporation Act, 1976, keeping the city clean is the responsibility of civic administration. But, the municipal bodies alone cannot perform this activity. The SWM process has various dimensions that require involvement of the private, the non-government and the informal sectors. This necessitates cooperation and co-ordination among various agents, rather than an insular approach, for better management of urban waste.

One problem often observed is the multiplicity of agencies dealing with SWM services. In Bangalore, for instance, besides the Municipal Corporation, the other agencies involved are Bangalore Water Supply and Sewage Board (BWSSB), The Metropolitan Region Development Agency (BMRDA), and the Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC). Because of these, gaps and duplications can be observed in the provision of service and planning (Aziz *et al* 2002). For example, both BMRDA and Bangalore Development Authority (BDA) have jurisdiction over the BDA area although BMRDA was constituted with a mandate to look after larger areas. Further, sewerage service provision is handled by BWSSB, but this is not coordinated with the BMC which also has the responsibility relating to drainage and SWM. With regard to slum upgradation, this responsibility is split among different agencies with no common line of direction for the development of slums as a result of which these areas are very badly serviced.

Often, it is the struggle between local and state-level politics that influences the delivery of SWM services, or for that matter any other public service. When the Bangalore Agenda Task Force (BATF) was constituted in November 1999 to provide an opportunity to public-private-partnership, the Bangalore Mahanagara Palike (BMP) with the support of BATF launched the 'Swachha Bangalore' programme. Through door-to-door solid waste collection system, this programme targeted to bring cleanliness in the 128 Health Wards[10] in the city that are managed through *Pourakarmikas* of the Corporation. The BATF managed to get pushcarts to collect door-to-door garbage costing Rs. 5,500 a piece. But now, with the new government in the State going slow on the fate of BATF, the continuation of such a partnership is dependent on the will of the political leadership and the clout commanded by the civic leadership (in the case of BATF, the *czars* of Information Technology on its governing board, constitute an important component of the civic leadership). On

the other hand, the Bangalore Mahanagara Palike, today, does not have an annual maintenance contract in place and the net result is that many of the pushcarts are lying around with broken wheels and parts missing (*Times of India*, Bangalore 27 July 2004).

Concluding Remarks

Considering the present rate of waste generation in Karnataka, it is estimated that by 2011 the projected municipal waste generation will be about 7,424.8 metric tonnes per day (GoK 2004). While only about 9 per cent of the recyclable material (plastic and paper) is recovered due to non-segregation of wastes, it is hoped that this can be increased to 15 per cent by 2010 by practising segregation (GoK 2004).

It is thus obvious that urban refuse collection and disposal service need to receive priority in future efforts. The priority areas that need to be addressed are:

- Inadequate municipal service
- Unscientific disposal system
- Lack of civic awareness/waste management leading to unsegregated waste generation and disposal
- Existence of an extensive informal network driven mainly by market forces and functioning at subsistence level
- Insufficient capacity for waste processing, particularly organic wastes which are abundant.
- A small market for recycled waste products and poor marketing of these products.

As of now, very little concerted effort has been made in this direction. Considering that a number of marginal and poor sections are active in the process as informal labour, any strategy to strengthen the waste management service needs to benefit the society as well as allow for income generating opportunities to the poor along its route. No amount of urban planning will translate into reality unless the government takes the required initiative and makes the necessary inputs which do not have to be only financial. The BATF initiative on the part of the state government was a positive step in this direction. However, as matters stand today, its future is in doubt.

Some strategies as also measures and intervention required have been suggested here to address the problem of urban solid waste management: Box II.

Though a number of innovative SWM experiments are under way in the country, these are basically location-specific viable options after an analysis and identification of the local problem areas (Sekher 2001). However, while the experiments complement and supplement the efforts of the municipal authority in managing urban waste, the government needs to take the required initiative and make necessary inputs available to evolve a framework for an integrated approach that will coordinate all the insular initiatives. To that extent, the state has a role.

Box II: Strategies and Measures for SWM

Strategies	Measures	Interventions
1	2	3
1. Increasing waste segregation through source separation	• Create public awareness	• Use of media and newspaper • Role of NGOs/CBOs • Facilitating collection from source
2. Strengthening institutional interventions through public-private partnerships	• Increasing NGOs' involvement and encouraging community participation • Privatisation of municipal solid waste systems • Integrating the contributions of informal sector, particularly waste pickers' contributions, in the process of waste removal and recovery • Developing and strengthening regulatory mechanisms, especially relating to hazardous waste	• Strengthening the municipality SWM system by increasing its resources (levying taxes on related services) and its authority by giving it policing powers to prevent public littering and ensuring public conformity to civic regulations. • Policy changes in the urban local government allowing for interface with the non-government and private organisations • Recognised community representation in the municipal solid waste system (formation of Resident Welfare Association or area committees with people's representation) • Official policy for door-to-door collection either under the municipality, or a community organisation, or through private initiatives
3 Increasing waste recovery	• Enhancing capacities of waste processing and recycling units	• Government policies for providing facilities and exemption to the recycling units to enable them to increase their production and to sell their products at a competitive price
4. Popularising reuse practices	• Government itself setting an example • Educating public	• Writing down this in the government's purchase rules • Advertisements in popular media about recycled products to and assistance to NGOs to demonstrate in the community

Source: Sekher 2001

Table1: Municipal Sold Waste Generation Per Day in six City Corporations of Karnataka for 2002

City	Population (2002) (Tonnes/Day)	Waste Generated (Tonnes/Day)	Waste Collected (Tonnes/Day)	Per Capita Waste* Generated (Grams/Day)
Bangalore	5,882,162	2,500	1,400	425.0
Mangalore	551,701	250	200	453.1
Hubli/Dharwad	801,442	250	200	311.9
Mysore	794,677	230	183	289.4
Belgaum	516,155	120	100	232.5
Gulbarga	452,944	120	100	264.9
Total	**8,999,081**	**3,470**	**2,183**	**386.0**

Source: GoK 2004.

Table 2: MSW Generation in Select Cities/Towns

ULB Name	Population (2004)	Total Amount of MSW Generated Generated Per Day (Tonnes/Day)	Total Amount of MSW Collected Per Day* (Tonnes/Day)	Per Capita Generation (Grams)
Hospet	1,63,284	60.75	35.3	372.05
Hassan	1,16,628	50.70	36.0	434.72
Gadag	1,54,849	65.70	35.4	424.28
Bidar	1,72,298	51.06	45.0	296.35
Chitradurga	1,22,549	50.00	20.3	408.00
Bhadravathi	1,60,392	52.00	45.0	324.21
Bellary	3,17,000	90.00	62.0	283.91
Davanagere	3,63,780	180.00	130.0	494.80
Mandya	1,31,211	35.00	25.0	266.75
Gangavathi	93,249	35.00	18.0	375.34
Channapatna	63,561	25.00	20.0	393.32
Ramanagara	79,365	30.00	20.0	378.00
Maddur	26,456	7.00	6.0	264.59
Arasikere	45,160	14.00	13.5	310.01
Belur	20,225	8.00	6.0	395.55
Holenarasipura	27,018	12.00	10.0	444.15
Ullala	49,862	16.00	16.0	320.89
Alur	6,133	1.00	1.0	163.05
N.R. Pura	7,441	5.00	1.0	671.95
Shringeri	4,253	1.50	1.5	352.69

Source: Table prepared from SWM data provided by the Infrastructure Development Corporation (Karnataka) Limited (iDeck), Bangalore (data collected during 2003-04).

Table 3: Source-wise Generation of Solid Waste in Bangalore (Tonnes Per Day)

Stakeholders	Volume	Percentage
1. Households	**650**	18.00
2. Commercial establishments	**1,456**	39.00
i. Markets	369	-
ii. Hotels	1,066	-
3. Institutes	**128**	4.00
i. Hospitals	20	-
ii. Offices	15	-
iii. Educational Institutions	92	-
4. Industries	**1,399**	39.00
Total	**3,633***	100.00

Source: Beukering *et al* 1999.

Table 4: Physical Composition of the Waste Generated in Bangalore (Tonnes Per Day)

Composition	Percentage	Share of The Waste That Goes to Public Dustbins (Percentage)
Glass	2.9	0.24
Plastic	6.7	0.48
Paper/cardboard	16.5	3.12
Metal	1.5	0.05
Rubber	9.9	0.0
Organic waste	33.4	55.12
Other biodegradable	9.2	1.92
Hazardous hospital waste	2.0	1.06
Miscellaneous (old clothes, gunny bags, coconut shells, debris, etc)	17.9	

Source: Beukering *et al* 1999.

Table 5: Refuse Collection and Disposal, and Agents Involved

Tonnes per day

Total Waste Generated		***3,633***
1. Waste collected by Municipality/ Private contractors from public dustbins and dumped		939
2. Waste collected by Municipality/ Private contractors from public dustbins and used for composting (sent to large composting units)	-	200
3. Waste recovered by waste pickers from public dustbins	-	312
4. Waste collected by CBOs directly from households for composting	-	56
5. Waste traded for recycling (middlemen & IWB)	-	1,139
6. Reused waste	-	722
7. Uncollected (unorganised waste)	-	245

Source: Adapted from Beukering *et al* (1999).

Table 6: Distribution of Households by Arrangement for Domestic Garbage Removal (Urban)

Mode of Garbage Removal	**Percentage of Households**
Local (municipal) authorities	20.4
Private arrangement among residents *	4.8
Household members **	70.3
Other arrangements ***	4.5

Notes: * A group of residents in an area has made arrangements for garbage clearance (neighbourhood residents associations - NRAs)

** Household dumped garbage in a common dumping spot away from the house, which may not be a public dustbin

*** Removal of waste by non-government organisations

Source: NSSO (1999)

Table 7: Number of Dump Sites- City-wise (Notified and Un-notified)

Sl. No.	Centre Name	No. of Legal Dump Site	Area of Legal Dump Site (in acres)	Distance from the City (kms)	No of Illegal Dump Site	Quantity of Waste in Dump Site (Tonnes/ day)
1.	Bangalore	Nil*	0	0	N.A**	370
2.	Belgaum	1	8	2	1	N. A.
3.	Gulbarga	1	15		2	N. A.
4.	Hubli	2	28	3	1	N. A.
	Dharwad		10	3		
5.	Mangalore	1	70	15	Nil	200
6.	Mysore	1	4	5	Nil	183

Notes: 1) N.A= Not available;
2) * According to a Government Order No. RD 126 LGB 94, dated 11.11.1994, nine landfill sites have been leased in by the BCC. However, these are not being used due to local opposition and litigations.
3) ** Dumped on the city outskirts (16-27 kms.)

Source: City Corporations, Respective Cities

Table 8: Infrastructure and Manpower of Select ULBs

(in Numbers)

Sl. No.	Name of ULB	Public Dustbins	Vehicles
1	Ullal	40	1
2	Tumkur	450	6
3	Ramanagara	150	2
4	Channapatna	65	2
5	Mandya	560	6
6	Maddur	74	1
7	Kundapur	100	2
8	Hassan	1,560	7
9	Kolar	350	6
10	Chickmagalur	150	5
11	K.G.F.	129	8

Source: KUIDFC (2003).

Table-9: Actual Number of Pourakarmikas and Their Desired Number

Name of the City	Estimated Population (in Lakhs in 1998)	Desired Number of Pourakarmikas	Actual Number of Pourakarmikas	Percentage of Gap
Bangalore	50.00	10,000	5,504	44.96
Mysore	7.58	1,516	863	43.07
K.G.F.	2.65	530	306	42.27
Robertsonpet	1.75	350	125	64.29
Shimoga	2.59	518	388	25.10
Bijapur	2.30	460	176	60.74

Source: Aziz *et al* 2002: 7.

Notes

[1] Out of 1,027 million (or 102.7 crore) population of India, as per Census 2001, 742 million lived in rural areas and 285 million in urban areas comprising 72.2 per cent and 27.8 per cent of the population respectively.

[2] Unofficially, the estimate is put around 60 million tonnes of waste generation annually.

[3] For the purpose of data collection, a limited sample survey was carried out for some stakeholders and, wherever possible, available data were used. It needs to be emphasized that this exercise was more in the nature of a benchmark survey, taking into consideration all the stakeholders involved in the city's waste management process and extrapolating the data collected to give a picture of the whole city (For details, see, Beukering *et al* 1999).

[4] Various estimates put the total waste generated in Bangalore between 2,000 to 2,500 tonnes per day. In this study, the estimate of 3,613 tonnes per day is mainly because industrial waste (approximately 1,400 tonnes per day) was also taken into account as a component of the total urban solid waste generated in the city.

[5] In this study, other types of industrial wastes such as sludge, effluents, etc., have not been taken into consideration as the focus is on urban solid waste. Only solid waste generated by the industries has been considered.

[6] The high level of 65 per cent is rather deceiving. Part of the compostable waste materials collected by the municipality is delivered to the farmers around the city who use it to enrich their soil. This may be considered as a form of composting, as done in this analysis. Otherwise, it can be considered as a form of disposal. In that case it should be subtracted from the recycled portion.

[7] Quoted in KSFC 1996: 136.

[8] This division is arbitrary. Informal stakeholders are generally those who are not registered with the municipality and do not pay tax. For a number of recycling plants located in Bangalore this characteristic also holds. Moreover, they often employ informal labour. However, since a majority of the recycling plants are registered, they are grouped as part of the formal sector.

[9] According to the Bangalore Urban District Industrial Directory published by the District Industries Centre, Bangalore, Government of Karnataka, industries are broadly grouped as large, medium and small.

[10] Bangalore city has 100 administrative wards. These have been divided into 277 Health wards for functional convenience. Of these, 147 Health wards, including two markets, are under private contract system of cleanliness. The remaining 128 Health wards are managed through *Pourakarmikas.*

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Managing Water Resources in India: A Synoptic Review

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Abstract

This review paper attempts to bring together various issues in the light of recent developments in the irrigation sector management in India. The paper emphasises the need for an integrated approach for water management and governance. Different governance structures are in operation depending on the nature of the water source. For, surface water mostly comes under state ownership/management while groundwater is managed mainly by private people. State, market and civil society have equal role in water governance. State should allocate and protect the entitlements of the people (especially the poor), the market should conserve resources through reflecting the scarcity value of water, and civil society should adopt the roles of service, advocacy and innovation. Inequity in the distribution of water is the cause of conflict. While it is difficult to avoid conflict altogether, it can be minimised through prioritisation of the resource distribution. Drinking water should be given highest priority in the context of allocating water for different uses. Similarly, scarcity regions should be guaranteed with minimum levels of water in the case of regional allocations. Of the different sources, groundwater distribution is more iniquitous. This is mainly due to the bundling of water and land rights and lumpy nature of capital requirements for groundwater exploitation. Discussion on legal aspects of water rights is crucial. De-linking of water rights from land rights would go a long way in addressing the equity issues in groundwater distribution. Allocating rights to the community under the supervision of PR institutions could be a feasible option in this regard.

Introduction

Judicious management of water resources is among the critical policy issues across the continents. The need for action in this direction is growing by day, as countries and communities across the globe are increasingly experiencing water stress in various contexts. Water stress often leads to civil strife and conflict. The conflicts can be traced from micro level to global level. The conflicts range from killing of own brother over irrigation water, district collectors coming to blows for a share in canal water (AP), to the *Cauvery* dispute between Tamil Nadu and Karnataka and the *Paragodu* controversy between Andhra Pradesh and Karnataka. At the global level, while water conflicts are well known in the Middle East, sharing of river

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waters between India and Bangladesh is a potential conflict situation. These conflicts are expected to be more frequent in the future due to the increasing pressure on the resource. Increasing inter-sectoral competition between agriculture and other users (i.e., drinking water, industry) is adding to the complexity of managing both surface and ground-water resources. These conflicts are the cumulative effect of gross neglect and mismanagement of water resources over the years. For, the problem is not due to absolute shortage of water, but due to the absence of proper mechanisms for conservation, distribution and efficient use.

Irrigation development and management assumes paramount importance in the agrarian economies like India. For, in these economies irrigation consumes more than 70 per cent of the water utilised and continue to face shortages in terms of quality as well as quantity. Water scarcity is resulting in regional inequalities and political turmoil. In other words, water, especially irrigation, has become the great divider across the communities and regions. Though genuine natural or environmental factors explain such a division, policy induced ill management of water is at the core of water stress and conflicts. In order to improve the management practices various policy measures such as institutional approaches and market mechanisms have been suggested[1]. Often, in the literature, either of these issues is emphasised to the neglect of the other. Similarly, partial approach in the case of resource management is also common. That is, canal irrigation, tank irrigation and groundwater irrigation are often dealt separately[2]. While the integrated water resource management (IWRM) is a right step in this direction, approaches to irrigation management are far from integrated.

In the absence of such an approach 'water security' would remain a distant dream. Water security means that "people and communities have reliable and adequate access to water to meet their different needs, present as well as in future, are able to take advantage of the different opportunities that water resources present, are protected from water related hazards and have fair recourse where conflicts over water arise" (Soussan 2002). Such water security ensures equity and sustainability. In the context of scarcity, allocation of water should be governed by optimality rather than productivity. For, optimality combines economic as well as social benefits. Water security is indispensable for addressing inter and intra-regional as well as inter-household inequalities in growth and development and sustaining the ecological balance. In fragile resource regions environmental degradation is seen as a cause of household food insecurity and as a consequence of water insecurity. That is food security is linked to water security through environmental degradation in these regions (Reddy 2002a).

In this paper, an attempt has been made to bring together various issues in the light of recent developments in the irrigation sector management in India. This paper begins with a brief presentation of the development and degradation of irrigation sector in India followed by all examinations of the effectiveness of institutions in the context of recent developments and viewing water governance from the demand side. The paper winds up with a discussion on some of the important aspects that need attention in future for judicious irrigation management.

Irrigation: Development and Degradation

The huge and growing public investments (about Rs. 1,556,250 millions, from 1950-51 to 1999-2000) over the last five decades do not reflect the expansion of area under public irrigation systems. Major and medium irrigation received about two-thirds of the total sectoral investments. While area under public canals more than doubled, its share in the overall irrigation declined from 34 per cent to 31 per cent (Table 1). The area under tank (another public source) declined both in absolute and relative terms. On the other hand, area under well irrigation, which is a private source, recorded five-fold increase over the years. Presently, well irrigation is the single largest source of irrigation accounting for 34 million hectares and 59 per cent of the share in the total irrigated area. These imbalances in water resource development are resulting in resource degradation.

This is mainly due to the imbalance in the distribution of and access to water resources across regions. Within the surface systems canal irrigation has been the most favoured sector to the neglect of minor systems such as tanks. Interestingly, most of the tanks are located in the fragile resource regions, where groundwater is the major source of irrigation. The inter-linkages or complementarity between these two sources coupled with the policy neglect have resulted in ecological problems, equity and sustainability of water resources. As the number of wells and tube wells multiply by year, water tables go down at a faster rate. As a result, failure of the wells in drought-prone areas has become very common in recent years. In fact, the failure of the well-linked indebtedness is identified as one of the main reasons for farmer's suicides, as the costs of groundwater depletion are quite substantial (Reddy 2002b). While the groundwater board identifies about 2-3 per cent of the 7,063 blocks in the country as overexploited, the problem is severe in some states like Tamil Nadu, Madhya Pradesh, Uttar Pradesh, Maharashtra, Rajasthan, Gujarat, Punjab, Haryana, Karnataka and Andhra Pradesh (Singh 2002). In a study of six states (Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Tamil Nadu), it is observed that between 1989 and 1995, the proportion of dark blocks had increased from 16 per cent to 26 per cent (Selvarajan 2001). In Punjab and Haryana, about 50 per cent of the blocks fall under the dark category.

The situation of over-extraction and the resultant environmental degradation is the consequence of lack of appropriate and adequate policies (policy failure) for managing the subsurface water resources. Hitherto, groundwater policies are on the lines of encouraging overexploitation. These policies are in the nature of providing incentives for groundwater development such as subsidised credit and subsidised power or diesel/kerosene. While these policies helped in promoting groundwater development in the regions where groundwater development was below the potential, they led to overexploitation of the resources in fragile resource regions. On the other hand, no attempts were made (at the policy level) to strengthen the natural resource base in terms of replenishing the water table. On the contrary, groundwater development is seen as a substitute for tanks, which are the main agents of replenishment. In this regard the State has become a mere spectator, as

this process has conveniently shifted the financial burden to private people. This has resulted in the concentration of public funds in the endowed regions (especially in the canal commands) depriving the fragile resource regions.

The first victims in this process are small and marginal farmers. The impact of resource degradation on these farmers is in two ways. Firstly, while small and marginal farmers dominate the ownership of wells, in general, and open wells, in particular, medium and large farmers dominate the ownership of bore wells. As a result of degradation, a majority of these farmers have lost or losing access to water, as most of the open wells have dried up. That is, these farmers are denied their genuine share in the common pool resources. Secondly, one of the interesting observations in recent years (Reddy 2002b) is that, bore well technology is becoming cheaper making it size (owned land) neutral, though the process may be slow. As a result, these farmers are also investing substantial amount of money on bore wells. Such investment becomes unviable in the event of well failure. Besides, the poor quality of technology at lower costs is resulting in high maintenance costs and uncertainty in water supply. It is observed that groundwater markets will take care of the equity problems to a large extent (Shah 1993). But, evolution of water markets is possible only in the regions where ground-water is available in sufficient quantities. Markets do not evolve when there is not enough water to share or sell (Reddy 2001). This is true in many regions where groundwater markets do not operate, as the available water is not enough to irrigate the well owner's land.

Even the recent policies in water management have failed to take the needs of these regions or farmers into account. For instance, groundwater is totally left out of the purview of the water user association legislation in Andhra Pradesh and other states. There are no efforts to integrate well and tank irrigation at the policy level. While water user associations are found to be effective in the canal commands they are not serving the purpose in the case of tank irrigation though 80 per cent of the associations are for tanks (Reddy 2002b). Unfortunately, there are no policies so far that address the equity and management aspects of groundwater. Although there are regulations on groundwater exploitation they are inadequate and ineffective. This calls for a shift in the policy from supply side management to demand side management, from populist to economic, from convenient to efficient, from engineering to institutional, from centralised to decentralised and from fractured to integrated approach. That is, water policies should aim at integrating all sources of water in the regional context rather than treating them in isolation. Demand management is equally, if not more, important, especially in the context of scarce resources, as the supplies are limited. Demand management helps in efficient and sustainable use of the resources when compared to supply regulation.

Sustaining Irrigation Institutions

Despite ever increasing budget allocations towards major and medium irrigation, funds available for operation and maintenance (O and M) are inadequate resulting in poor maintenance of the systems, unsatisfactory service and ecological

problems. While the tail-end regions are facing severe water shortages due to poor maintenance of distributary systems, head reaches are having water-logging and salinity problems due to poor drainage facilities. The vicious circle of low allocations to O and M, poor service, declining area under irrigation, low yields and incomes, low recovery of irrigation charges and low allocation is common in all the Indian states (Raju *et al* 2000). It is often argued that participatory institutional approach is effective in addressing the issues at hand (for a review, see, Reddy 1998). Often, these impressions are based on small-scale experiments managed by committed non-governmental organisations (NGOs), but are found to be difficult and costly to replicate. An alternative is the scaling up of the institutional arrangements by formalising the institutions through state legislation.

During the second half of 1990s, a number of states in India transferred the irrigation management responsibilities to Water User Associations (WUA) or private/ NGO contractors (Table 2). Out of seven states that have transferred, five have followed the WUA model. The initiative has come mainly from the government. In most of the cases, full transfer of powers has taken place as far as the responsibilities are concerned (O and M; water distribution, fee collection, etc.,), while only partial transfer has taken place in the case of assessment, assured water supply, etc. However, the effectiveness of these institutional arrangements needs to be assessed. But, the early indications are that these institutions are bogged down with bureaucratic control in the absence of full transfer of powers. Their sustainability appears to be a big question mark in the absence of financial support from outside. This is mainly due to the reason that these institutions are not allowed to become financially self-sufficient, as the financial control is still in the hands of line departments. As a result, in most of the cases these formal institutions have remained very small in scale, passive and their performance is nowhere comparable to the informal ones. This is true even in the case of Andhra Pradesh (AP), where WUAs are promoted through legislation on a large scale.

While some of the early studies indicate the positive aspects of the WUAs, most of them raise questions on the sustainability of the programme once the external funding dry up (van Koppen, Parthasarathy and Constantina 2002; Raju 2000; Jairath 1999; Brewer *et al* 1999; Naik and Kalro1998). A detailed study (Parthasarathy and Joshi 2001) of WUAs located in three different regions of Andhra Pradesh reveal that their performance had only a limited success in terms of participation as well as impact. It was observed that a majority (51.5 per cent) of the households were not even aware of WUAs though there were variations across the regions. Participation levels were very low. The highest participation was in the WUA election, which stood at 7 per cent, followed by R and R work (5.8 per cent), motivation (2.5 per cent), etc. Only about 17 per cent of the households contributed labour as their share. And most of this contribution came from small farmers and tail-end farmers. Only 13 per cent of the households participated in the annual general body meetings. A majority of the tail-ender farmers attended the meetings when compared to head reach farmers despite greater awareness of WUAs among

the latter. This clearly indicates the absence of general awareness and interest regarding the WUAs though participation among the committee members is quite high. In comparison, the impact of participation due to the WUAs is marginal. Only two per cent of the sample households reported increase in the area under irrigation. This poor performance of WUAs has been observed even in the case of Gujarat where the process had been initiated by NGOs with Government support on a small scale (Parthasarathy and Joshi 2001).

While corroborating with the above observations, another study on AP WUAs (Reddy and Reddy 2002) indicated that informal or socially embedded institutions were more effective than the formal WUAs. The reason being that informal institutions reflected commitment and cohesion, as they were evolved from within the system. More importantly, they were flexible in adapting to the changing situations. On the other hand, formal institutions were rigid and rule bound. In the case *of* informal institution, equity in water distribution was taken care *of* through rotational systems. Independent third party supervision mechanisms were in place to safeguard the effectiveness *of* the system. Proper incentive and disincentive structures were designed to support rule compliance. No such systems are present in the case *of* formal WUAs. Under the present circumstances, the WUAs cannot guarantee equity, especially under scarcity conditions. Why should everybody co-operate for the benefit *of* the few?

Self-sufficiency and resource strength are central to the sustainability of institutions. The formal institutions are yet to generate their own funds, while informal ones have succeeded in generating surplus funds. Lack of proper devolution of powers to local level is hindering the progress in this direction in the case of formal ones. Transfer of powers and responsibilities to the WUAs at the minor level should be done effectively though in a phased manner. Only under such circumstances can innovations at the community level become possible. Hitherto, the WUAs have been entrusted with responsibilities without any rights.

A number of studies have tried to explain the causes of poor performance of WUA through identifying the factors that characterise successful WUAs (for a detailed review of studies, see, Meizen-Dick *et al* 1997). These studies have identified, among other factors, social capital, group size, homogeneity, leadership, operational rules, etc., as important factors in explaining the success stories. The existing collective action theories are based on these success stories. Moreover, they have not helped much in formulating policies for effective participatory irrigation management (PIM). It is observed: "Currently dominant institutional-economic models fail to grasp the cultural specifics of irrigation as social practice and are a poor guide to the meanings and motivations of local institutional development" (Mosse 2003: 287). While the evolution of PIM may depend on policy support and external funding, its sustainability critically hinges on the effective support from the political networks and irrigation bureaucracy. "PIM cannot become a reality nor become self sustaining without restructuring of state irrigation departments… However, the irrigation bureaucracy is unlikely to initiate such a change. The record

of last 20 years standing against it." (Singh 2000: 698). Historically, WUAs are political institutions (Mosse 2003), local leaders compete for control over these institutions, as these new institutions tend to be financially stronger. The situations do not vary much between resources (irrigation or watershed development) or locations (Tamil Nadu or Andhra Pradesh) (Mosse 2003; Reddy 2003). As Bardhan puts it, "In most poor countries, there are massive costs of collective action in building new economic institutions and political coalitions, and in breaking the deadlock of incumbent interests threatened by new technologies" (2004:481). Therefore, evolving, sustaining and replicating WUAs or PIM are not easy given the socio-cultural and political dynamics in countries like India.

Groundwater Management

As far as institutional approaches to water resource management are concerned, groundwater is a neglected area. None of the PIM studies discussed above deals with groundwater management. In fact, groundwater does not find a place even in the constitution and the consequent acts or tribunals fail to take comprehensive view of water resources (Iyer 2003). Groundwater rights are customarily attached to land ownership, hence, ground-water management is totally left to the private initiatives. Despite the requests from the Central Ground Water Authority to regulate groundwater use, the response from the states is very poor (Iyer 2003). Of late, overexploitation of groundwater has become a matter of concern for the Ministry of Environment and Forests rather than to the Ministry of Water Resources.

Approach to the development of groundwater needs to be specifically addressed. In recent years, independent South Africa has brought out water Policy that deals comprehensively with groundwater management (GOSA 1998). According to this policy; where groundwater users are in conflict or the environment is threatened, sensitive areas may be declared where notice of intention to drill will be required. Groundwater use must be carried out in the context of an adequate catchments management plan, based on an understanding of the sustainable yield of the local groundwater sources. In sensitive areas, approval of drilling may thus include operating conditions to protect other users as well as resource itself.

These policy changes are fostered with appropriate institutional arrangements and legal framework. In the case of groundwater, the problem is not due to the absence of property rights *per se* rather it is due to mis-allocation of the rights. Here, property rights are not allocated equitably though they fulfil all the aspects of property rights (universality, exclusivity and transferability). Universality means that all the common resources should be ownable. In the present context, water resources are ownable (in *de facto* sense at least) but by a few individuals. This distortion, in turn, is resulting in appropriation externalities. Therefore, the policy should promote equitable distribution of these rights let alone deciding on the permanency of the rights.

In the Indian context, the riparian system is class biased, especially in the groundwater regions. Therefore, policy changes should be in the direction of delinking water rights from land rights. The response to such issues at the policy level is hostile at the best. Often, the idea is brushed aside saying that it is difficult or impossible to achieve such an objective. China abolished private water rights along with land reforms way back in 1949 (Vaidyanathan 1999). The experience of South Africa in implementing such a difficult programme throws some light so that we can move in that direction. While the contexts are not comparable one can think of such an approach in a limited way. Applying the concept to groundwater management in India can be a starting point. Moreover, it would be effective in bringing equitable and sustainable allocation of resources. Appropriate institutional arrangements and legal framework should be in place to address this issue. Besides, the transaction costs are high for implementing and monitoring. In this context, the high transaction costs out-weigh the benefits because they are compared against zero benefits, as groundwater does not have an economic value, especially from the policy point of view. If groundwater is valued economically then the benefits from such an approach will out-weigh the transaction costs.

Another way to deal with groundwater is to bring it under the net of institutional reforms in water resources. Groundwater should be treated as a common pool resource and the rights should be community based rather than on land ownership based. The *pani panchayat* model of providing water rights even to landless (Deshpande and Reddy 1991) would go a long way in managing groundwater in a sustainable and equitable manner. Promoting community tube wells on large scale, especially in the drought-prone areas, should be the starting point. These wells should be backed by water replenishing mechanisms of rainwater harvesting through percolation and other tank systems. In the fragile resource regions, these investments should largely come from public sources, as these investments would be meagre when compared to the investments that have gone towards the development of large and medium irrigation projects.

Further complexities arise in groundwater management, as it is closely linked with other policies like power policies and grain policies. So far, groundwater is regulated through supply regulation of electricity rather than fixing the electricity charges appropriately, thanks to the widespread power shortages. Though this has helped in checking the degradation in the short-run it is not a real solution in the long-run. Subsidised power prices would further aggravate the process of environmental degradation. Therefore, economic pricing of electricity with proper monitoring facilities would be more appropriate. The recent spurt in political populism across states has brought back the free power regime, which is a regressive step in the long-run. Similarly, the policy of support prices is not only biased in favour of water intensive paddy and wheat but also sans any economic rationality and triggers the race for groundwater exploitation.

Such policies result in groundwater mismanagement causing irreversible environmental damage. The resulting negative externalities impose enormous social

costs. Though we have regulatory mechanisms to control overexploitation of groundwater they are grossly ineffective. Recent initiatives such as watershed development programmes address this aspect indirectly, as it integrates water bodies' development with the watershed development only in a limited way. These initiatives as well as some of the local initiatives like *neeru-meeru* (water-you) in Andhra Pradesh attempt to address the recharge (supply side) issues rather than management issues. The latest initiative in Andhra Pradesh is the introduction of 'Water, Land and Trees Act of 2001' (GOAP 2001) which is an attempt to integrate the land, water and plant resources for a sustainable resource management. This Act makes the registration of all the wells mandatory. And the new wells are expected to take permission from the authorities. The state has the right to close down the existing wells if found causing damage to environment or other uses. This legislative act is important to the extent of checking overexploitation of the resources. But, it falls short in addressing the equity issues. Management of groundwater resources requires effective institutional arrangements fostered with legal and legislative support and needs long-term planning and process. Hence, it escapes the policy attention, which often looks for quick fixes to the problems. According to Vaidyanathan, "Social myopia can be countered only by publicising and dinning into the public's ears the experience of such *(over-exploited)* areas, their consequences and the extreme importance of taking collective action to regulate use in the long-term interests of the community and its succeeding generations" (1999:.171, italics mine).

Irrigation Governance: Looking from the Demand Side

One of the main reasons for the poor performance of irrigation sector is the philosophy of supply side management hitherto followed, to the neglect of demand management structures, by policy markers. Unless the demand regulation is given due importance in the water resource planning and management, it would be difficult to meet the demands of the increasing population, either in terms of water or food, in the event of increasing water shortages coupled with mounting financial constraints. Demand regulation includes conservation of water, enhancing the productivity of water, etc., by following appropriate price policies and adopting technologies fostered with suitable legislations and institutions.

Water Pricing

Water pricing has become hackneyed and ritualistic in the Indian context. Everybody supports but nobody implements. While some progress has been made in the case of domestic (urban) water, very little is being done in the case of irrigation (especially canal) water. Even in the reforming states like Andhra Pradesh very little is done in this direction. Artificially kept low water prices fail to provide any incentive to improve the systems, technically or institutionally, as the economics of transaction costs go against it. Present prices do not even cover the O and M costs in many cases. The main bottleneck is the political will to take hard decisions.

Often pricing policies are thwarted with an excuse of lack of willingness to pay for irrigation water. Contrary to this general belief, farmers are willing to pay substantially higher prices for improved water supplies (Reddy 1998). Therefore, willingness to pay is not a bottleneck for charging higher prices. In fact, it is the willingness to charge, which is the main obstacle. Therefore, pricing of water on cost basis is essential because it not only helps in resource generation but also results in efficient usage of water and discourages wastage of water. It is often observed that the decision-makers, in the event of resource constraints, opt for permitting shortages and allocating water by non-price means of supply regulations when the existing capacities are on the verge of full utilisation. Though this has become a norm in most of the developing countries, supply regulation is considered to be a unsatisfactory permanent policy.

However, under the existing institutional arrangements pricing on cost basis may not lead to sustainability of the irrigation systems in terms of efficient allocation of water or financial viability. For, in the given institutional set up, recovery rates are very low (ranging from 27 to 70 per cent across the states) and it is unlikely that higher water rates would lead to better recovery. In fact, recovery rates have declined in Andhra Pradesh after the hike in water rates (Reddy 2003). Pricing policies need to be fostered with institutional changes at all levels. Devolution of powers to WUAs, in terms of assessment and fee collection, would help in addressing the problem to a large extent. This would pave the way for volumetric pricing. For this, irrigation departments need to be reformed and the powers of collection of water charges should be taken away from the revenue department.

Similarly, groundwater also should be brought under pricing mechanism. While cost based power tariff is useful in checking overexploitation, adding scarcity rent of water to the tariff would be more appropriate. A pre condition for this is to minimise the risk and uncertainties in groundwater and power availability. Large-scale public investments toward replenishing mechanisms like renovating traditional tanks, rainwater harvesting structures, etc., are necessary. These investments could be cross-subsidised from the revenues generated in the canal command areas. More importantly, institutional arrangements such as making groundwater a real common pool resource and exploiting it on a community basis are critical for equitable distribution and sustenance of the resource.

Technologies

Technologies are often given little importance in the demand side management of irrigation water. This is mainly because of the reason that the area covered under water saving technologies is negligible. One reason for this is the distorted water tariff structure (Repetto 1986). Of late, more and more area is being brought under these technologies in order to tackle the scarcity conditions. The most important among the irrigation water saving technologies are sprinkler and drip irrigation techniques, also known as micro irrigation systems. Of late, these technologies are spreading to more number of crops instead of limiting to horticultural

crops. In Gujarat, farmers use micro irrigation systems on various crops like wheat, bajra, maize, groundnut, cotton, castor and vegetables apart from a number of horticultural crops (Kumar *et al* 2004) while drip systems are used even on water intensive crop like sugarcane in Maharashtra (Narayanamoorthy 2003).

It is estimated that micro irrigation systems save 48-67 per cent in terms of water, 44-67 per cent in terms of energy and 29-60 per cent in terms of labour. Farmers have also reported low incidence of pest attack, reduced weed growth, improvement in soil quality and increased yields. As a result, net incomes have increased substantially. Farmers are interested in investing on their own without any subsidy (Kumar *et al* 2004). Cost-benefit analysis of drip irrigation in Maharashtra has revealed high economic viability for banana, grapes and sugarcane (Narayanamoorthy 1997 and 2004). The economic viability seems to hold good even in the case of small-holdings of just one hectare (Narayanmoorthy 2003). Despite the high economic viability the spread of these technologies is limited due to high initial cost and lack of awareness. The rationale for subsidies on these technologies is valid not only for spreading of these technologies but also due to the reason that social returns are far in excess of private returns accruing to drip investors (Dhawan 2000). Besides, there is need for strong extension support for better adoption rates (Narayanamoorthy 2003).

Water Rights

Provision and clarity in water rights are expected to result in efficient use of water. Water rights are seen from many perspectives, *viz*., riparian, federalist, formal law, civil society, stakeholder, human rights, environment and economics (Iyer 2003). While the best way to deal with is the integration of all these perspectives, how to go about is rather difficult. Right to use water is tied to the ownership of land along rivers and groundwater aquifers. As a result, common pool resources are used as private property. This is the root cause of the problems related to equity and sustainability. Rights on water are not clearly defined giving scope for indiscriminate exploitation. The existing riparian rights, though provide natural right on water to the people, they thwart the main objective of equity and sustainability. On the other hand, water rights from economic perspective would adversely affect the interests of those whose ability to pay is low. There is a need to find a middle path that would ensure equity and sustainability of water resources. The recent water policy of South Africa is an interesting case in point.

South Africa (SA) has effectively abolished the riparian system as it is racially biased (GOSA 1998). In SA, the state has become the custodian of all water bodies in the country. No ownership of water is allowed. Only water rights to individuals / firms on a five-year contract basis (to a maximum of 40 years depending on the use) are allocated by the state. However, water for basic needs and environmental sustainability is given as a right. All other uses will be subject to a system of allocation that promotes optimality for achieving equitable and sustainable economic and social development. This would have an important bearing on the

equity, sustainability and efficient use of water, as water allocations keep altering users and uses across locations depending on the scarcity conditions.

Managing Irrigation: The Way Ahead[3]

Enhancing the Supplies

Supply side management continues to be the main instrument at the policy level despite its shortcomings. Of late, two issues are in the forefront regarding provision of water to the scarcity regions. These are inter-linking of rivers and rainwater harvesting. The inter-linking of rivers project is macro level initiative of linking up Himalayan (14) and Peninsular (16) rivers costing roughly Rs.5,60,000 crores (Iyer 2003). On the other hand, rainwater harvesting is a micro level low cost method of water conservation. Cost effectiveness, political and ecological feasibility of large-scale water supply or augmentation (river-linking) projects need thorough scrutiny. In this context, the river linking proposal is termed as 'mirage' (Iyer 2003:318). Moreover, the proposal is likely to create conflicts among the states in India and with our neighbours like Bangladesh. While big projects cannot be avoided in the long-run, small and local options should be given priority in the short-run. Utilisation of available waters from within the state should be given first priority. Innovative institutional arrangements such as multi-stake holder approach could play a critical role in sorting out inter and intra state problems. Local level augmentation of the resource is possible through rainwater harvesting, watershed management and conservation. Judicious planning and implementation of these programmes could yield substantial gains in enhancing water availability in most of the regions where average annual rainfall is above 500 mm. Alternatives need to be explored in the case of low rainfall and rain shadow regions. One such alternative is the water saving technologies. These technologies need to be popularised and promoted through proper incentive mechanisms and extension support. Cloud seeding is also being tried on a large scale in these regions though the results are not very clear.

Public-Private Partnership

The bottom line for water management is privatisation of water resources or commodification of water. While there is no clear agreement in this regard, privatisation of water, especially sources, would have serious impact on the poor. Even in the absence of privatisation, the poor are paying more for water. Therefore, as far as basic requirement (drinking water) is concerned, water should be treated as a social good. However, the rich depriving the poor, often corner the benefits from the social good. Here, the state should ensure and protect the entitlements. In the case of other uses like irrigation, industrial, and environmental uses, privatisation can help improve the situation through enhancement of the financial viability. In these cases water can be treated as an economic good. The third option is the middle path, i.e., private-public partnership in water resource management. This

approach is expected to integrate the good aspects of social and economic goods. However, a cautious approach is required given the strident nature of the resource. Understanding the nature, structure and process of such partnership (adopted mainly in the developed countries) and its adaptability to the Indian context is a pre-condition for adopting such an approach.

The Dutch model illustrates the relevance of different types of public-private partnership in water sector and who should participate. But, water utilities in the western countries are different, both in form and functions, from those in countries like India. The implications obviously are manifold but vitally influence the methods for raising resources. Besides the differences, there have been attempts by government departments in India towards enlisting private participation as well as in raising money for initial and working capital expenses such as Narmada Bonds issued by Sardar Sarovar Narmada Nigam (Corporation) Limited, Gujarat. It is interesting to observe that even in the Netherlands, one-third of the Water Boards' budget comes through loans every year. Even in the other two-thirds component, pollution tax appears to be important. In a country where pollution laws are in a nascent stage but not integrated to water management institutions there is no immediate logical case on which an argument can be made for an integration. Similarly, "who benefits pays and also have a say" model has equity dimensions in small holder dominated agriculture. The equity aspects need to be resolved in an amicable manner.

Governance

Who will govern the resource is a major issue to be addressed. Different governance structures are in operation depending on the nature of the water source. For, surface water mostly comes under the state ownership / management while groundwater is managed mainly by private people. State, market and civil society have an equal role in water governance. State should allocate and protect the entitlements of the people (especially the poor), market should conserve the resource through reflecting the scarcity value of water and civil society should adopt the roles of service, advocacy and innovation. All the three should work in tandem rather than in a conflicting manner. In some cases all of them may complement one another. The role and responsibilities of *Panchayati Raj* (PR) institutions in water management should be clearly understood. Often responsibilities are given to PR bodies without allocating financial resources.

Inequity in the distribution of water is the cause of conflict. Conflict is pervasive mainly due to historical reasons, i.e., some regions are endowed with rivers and others are not. While it is difficult to avoid conflict altogether, it can be minimised through prioritisation of the resource distribution. Drinking water should be given highest priority in the context of allocating water for different uses. Similarly, scarcity regions should be guaranteed with minimum levels of water in the case of regional allocations. Given the fact that 'water is life', provision of 'right to water' would go a long way in safeguarding 'right to life' and right to food'. Of the

different sources, groundwater distribution is more iniquitous. This is mainly due to the bundling of water and land rights and lumpy nature of capital requirements for groundwater exploitation. Discussion on legal aspects of water rights is crucial. De-linking of water rights from land rights would go a long way in addressing the equity issues in groundwater distribution. Allocating the rights to community under the supervision of PR institutions could be a feasible option in this regard.

Table 1: Changes in Net Irrigated Area under Different Sources All-India from 1950-51 – 1999-2000

(In Million Ha.)

Year	Canals			Tanks	Ground-water	Other Sources	Total Net Irrigated Area	Gross Irrigated Area
	Govt.	Private	Total					
	1	2	3	4	5	6	7	8
1950-51	7.2	1.1	8.3	3.6	6.0	3.0	20.9	22.6
	(34.4)	(5.3)	(39.7)	(17.2)	(28.7)	(14.4)	(17.6)	(17.2)
1955-56	8.0	1.4	9.4	4.4	6.7	2.2	22.9	25.6
	(34.9)	(6.1)	(41.8)	(19.2)	(29.3)	(9.6)	(17.7)	(17.4)
1960-61	9.3	1.2	10.5	4.6	7.3	2.4	24.7	28.0
	(37.6)	(4.9)	(42.4)	(18.5)	(29.5)	(9.6)	(18.6)	(18.3)
1965-66	9.9	1.1	11.0	4.3	8.7	2.5	26.3	30.1
	(37.6)	(4.2)	(41.2)	(16.1)	(33.1)	(9.1)	(19.3)	(19.9)
1970-71	12.0	0.9	12.9	4.1	11.9	2.3	31.1	38.2
	(38.6)	(2.9)	(41.4)	(13.2)	(38.2)	(7.3)	(22.1)	(23.0)
1975-76	13.0	0.9	13.9	4.0	14.4	2.4	34.5	43.2
	(37.7)	(2.6)	(40.3)	(11.3)	(41.4)	(7.0)	(24.3)	(25.3)
1980-81	14.5	0.8	15.3	3.2	17.7	2.6	38.8	49.6
	(37.4)	(2.1)	(39.4)	(8.3)	(45.6)	(6.7)	(27.7)	(28.6)
1985-86	15.1	0.5	15.6	3.0	20.8	2.7	42.5	54.0
	(35.5)	(1.2)	(37.0)	(7.4)	(49.0)	(6.7)	(30.2)	(30.4)
1990-91	16.9	0.5	17.4	3.0	24.7	2.9	48.0	62.2
	(35.2)	(1.0)	(36.3)	(6.3)	(51.4)	(6.0)	(33.6)	(33.5)
1995-96	16.6	0.6	17.2	3.1	29.7	3.5	53.4	71.3
	(31.1)	(1.1)	(32.2)	(5.7)	(55.6)	(6.5)	(37.6)	(38.1)
1999-2000	17.6	0.5	18.1	2.7	33.6	2.9	57.2	76.3
	(30.8)	(0.9)	(31.6)	(4.7)	(58.7)	(5.0)	(40.5)	(40.2)

Note: Figures in parenthesis in columns 2 to 7 are relative shares to net area irrigated. Figures in parenthesis in columns 8 and 9 are respective percentages to the net and gross sown areas.

Source: Modified and updated from Vaidyanathan (1999). Data for the recent years have been obtained from the Statistical Abstracts of India (various years).

Table 2: Irrigation Management Transfer in India

State	WUA Organisation	Transferred Respobsibilities	Water Supply	Water Distribution
Andhra Pradesh (1995-96)	Three tiers: 1) Village (outlet) WUA, 2) WUA for distributary channel command 3) Project Committee.	O and M below the outlet - Maintenance of the distributary Collection of govt. irrigation fees.	Assured water supply through WUAs	Full power including punishing the rules-breaker
Bihar (1995)	Two tiers: 1)Village (outlet) WUA 2) WUA for distributary channel command of over 10,000 ha.	Distribution to outlet on the distributary Maintenance of the distributory Collection of govt. irrigation fees.	No power	Full power including punishing the rules-breakers
Haryana (1994-95)	Outlet level WUAs	O and M below the outlet Collection of govt. irrigation fees	No power	Responsibility but limited or no power of punishment.
Maharashtra (1995)	Contact (Cooperative WUA for minor canal about 500 ha)	O and M with the WUA area. Payment of volumetric fee to the agency	Assured water supply through contract	Full power including punishing the rules-breaker
Gujarat (1995)	Contact (Cooperative WUA for minor canal about 500 ha.)	O&M with the WUA area. Payment of volumetric fee to the agency	No power	Full power including punishing of the rules-breaker
Tamil Nadu (1994)	Three Tiers: Outlets WUA, WUA at 500 ha. Level, System level Joint management (JMC)	Maintenance within the WUA area, advise on operations at all levels through WUAs and JMCs	Influence over water supply through JMCS	Responsibility but limited or no power of punishment
Kerala (1995)	Three tiers: Outlet WUA, branch canal JMC, System level Joint management (JMC)	Advice on operations at all levels through JMC	Influence over water supply through JMCs of punishment	Responsibility but limited or no power

(Contd..)

State	Maintenance	WUA Finance	State fee	Transfer means
	(6)	(7)	(8)	(9)
Andhra Pradesh (1995-96)	Full responsibility for maintenance within WUA area	Full: powers to collect fees and spend funds but not to set water fees	Paid by individual farmers through WUAs based on area assessments.	Incentives, Govt. initiation. Not decided fully.
Bihar (1995)	Full responsibility for maintenance within WUA area	Partial: powers to collect fees and and spend funds but not to set water fees	Paid by individual farmers through WUAs based on area assessments	Not decided
Haryana (1994-95)	Full responsibility for maintenance within WUA area	No power over finances	Paid by individual farmers through WUAs based on area assessments	Not decided
Maharashtra (1995)	Full responsibility for maintenance with WUA area	Full: including power to set and collect water fees and spend funds	Paid by WUAs to state based on volume of water used	Incentives, NGO's initiation and publicity
Gujarat (1995)	Full responsibility for maintenance within WUA area	Full: including power to set and collect water fees and spend funds	Paid by WUAs to state based on volume of water used	Incentives, Govt. initiation, NGO's initiation and publicity
Tamil Nadu (1994)	Full responsibility for maintenance within WUA area	Partial: powers to collect fees and spend funds but not to set water fees	Paid by individuals to state through land-tax	Govt. agency
Kerala (1995)	Full responsibility for maintenance within WUA area	Partial: powers to collect fees and spend funds but not to set water fees	Paid by individuals to state through land-tax	Govt. agency

Source: Brewer, J. *et al* 1999.

Notes

[1] There is an overlap between institutions and markets as water markets are also institutions. Here, market mechanism means pricing and other instruments like, pricing, property rights and public-private partnership rather than water markets *per se*.

[2] Though these studies have helped in understanding the specificities in detail and also provided immense policy directions, they undermine the complementarity between the three types of irrigation.

[3] This section mainly draws from Reddy and Dev 2003.

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Impact of Income Inequality on Economic Growth: The Case of Taiwan and Policy Implications

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Abstract

In this paper, a classical K-L production function augmented with human capital and technological progress to estimate the effect of income inequality on economic growth in Taiwan has been employed. The generalised autoregressive conditional heteroskedasticity (GARCH) and/or ARCH models have been applied to estimate regression parameters. The research findings suggest that a higher Gini coefficient deteriorates economic growth. When measured by the ratio of the highest fifth's income to the lowest fifth's income, the negative relationship between inequality and economic growth is also confirmed. Other results are consistent with the economic theories: growth in employment, human capital investment, and R and D spending all contributing to economic growth.

Introduction

The phenomenal growth of Taiwan has slowed down in recent years as a result of the Asian financial crisis, burst of the economic bubble in Japan, global recession, increasing international competition, and soaring labour costs. Despite the overall economic hardship, a few entrepreneurs have managed to succeed in information technology, internet industry, and other niche fields, and have made a good fortune. The large family-owned conglomerates have also maintained their market dominance and have continued to expand and generate enormous profits. In contrast, unemployment has worsened, wage differentials between skilled and unskilled workers have increased, demographic patterns have changed (with more single parents than in the past), and investment outflows and businesses emigration to China have accelerated. These factors appear to widen income inequality. During 1990-2001, the Gini coefficient increased by 4.5 per cent from 0.312 to 0.350, and the ratio of top fifth's income to the bottom fifth's income rose by 23.36 per cent from 5.18 to 6.39. The once fabled East Asian miracle with rapid economic growth and exceptionally high equality (the Gini coefficient at 1972 was 0.27) seems to enter a different phase of economic development.

This study attempts to examine the impact of rising income inequality on economic growth in Taiwan, and then provides policy reference. The highlights are listed as follows: On the model framework, it incorporates human capital input and technological progress into the classical capital-labour production function. On

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measuring income inequality, the Gini coefficient is first considered, and then the regression is iterated using the ratio of the top quintile to the bottom quintile household income to see whether the procedure would yield different results. On capital stock measurement, capital growth is replaced by the investment-output ratio multiplied by the marginal product of capital. This substitution is necessary due to the absence of data for capital stock. On selecting the econometric instrument for analysis, the generalised autoregressive conditional heteroskedasticity (GARCH) or ARCH model is applied to see whether the error variance depends on the size of past squared errors and past error variances.

Literature Survey

Snower (1998) cites three common causes of income inequality as deindustrialisation, globalisation, and skill-biased technological change. Deindustrialisation refers to the structural shift from the declining low-wage manufacturing sectors to the rising high-wage service sectors, which leads to unemployment and rising inequality. Globalisation or trade tends to depress the return of low-skill workers and raises the return for the high-skill ones, which worsens the income distribution as suggested in the factor proportions trade theory. Technological progress serves to improve the productivity and return of the skilled rather than the unskilled workers.

In a study on monetary policy and poverty, Romer and Romer (1998) find that an increase in the unexpected inflation rate improved income equality, an increase in output and inflation variability worsened inequality, a decline in the unemployment rate reduced poverty rate, and monetary policy could help the poor. They argue that monetary policy aimed at price and growth stability would benefit the poor in the long-run; though the impact of expansionary policy on poverty reduction was only temporary. However, their research did not confirm that the Gini coefficient was correlated with the unemployment rate.

Furman and Stiglitz (1998) confirm that unemployment and income inequality were correlated, and there existed a vicious cycle of high inequality and high unemployment. However, they find that income inequality might be neither the cause nor the result of growth. Lindback (1998) proposes several policies to reduce income inequality ranging from augmenting minimum wages with a payroll taxes reduction to providing vocational and educational training for less productive workers. He notes that the vocational programmes in the private sector were more cost-effective. He also indicates that some social welfare programmes might reduce worker's incentives and the impact of poverty-reduction programmes might vary across countries.

Dimelis and Livada (1999) examine the relationship between business cycles and income inequality for the U.S., the U.K., Italy, and Greece. Their findings suggest higher output reduced inequality in the U.S. and the U.K., but increased inequality in Greece. In addition, the poor suffered more from high unemployment, but gained from high inflation.

Jao (2000) reports that the Taiwanese government had increased the welfare spending substantially over the years in an attempt to reduce income inequality. Balisacan (2000) shows that economic growth had helped the poor in the Philippines, but the benefit of growth was not evenly distributed. Shari (2000) reports that the New Economic Policy in Malaysia reduced income inequality in the late 1970s, but the reversal of deregulation, liberalisation, and privatization had led to higher inequality since the late 1980s. Asra (2000) finds that economic growth in Indonesia reduced poverty in the last 20 years, but the Gini coefficient failed to show a clear trend of income inequality.

Leung (2001) finds that as the coverage of social insurance reduced, productivity, output growth rate, and income inequality all increased. An increase in social insurance coverage, however, did not guarantee an improvement in income equality. Acemoglu and Robinson (2002) claim that growth did not necessarily follow a Kuznets curve: growth and might lead to either an "autocratic disaster" with low output and high inequality, or an "East Asian Miracle" with high output and low inequality.

The Model

Extending the works of Jao (2000), Basisacan (2000), Shari (2000), Asra (2000) and others, a real output (Y) model is constructed to include major input factors such as labour employment (L), capital stock (K), technology (T), human capital (H), and income inequality (IQ).

$$Y = F(L, K, T, H, IQ) \tag{1}$$

Let the production be a simple function of L, K, and T. Totally differentiate the production function and divide it by output Y, then the output growth rate equation is obtained.

$$\frac{\dot{Y}}{Y} = \frac{\partial Y / Y}{\partial L / L} \cdot \frac{\dot{L}}{L} + \frac{\partial Y}{\partial K} \cdot \frac{\dot{K}}{Y} + \frac{\partial Y / Y}{\partial T / T} \cdot \frac{\dot{T}}{T} \tag{2}$$

The impact of capital stock growth on output growth is replaced by the product of marginal product of capital and investment-output ratio ($\beta_2 * IY$), since capital stock data for Taiwan is not available. Next, enter human capital and income inequality measure into the equation for growth rate. We obtain equation (3) for estimation.

$$GY = \beta_1 GL + \beta_2 IY + \beta_3 GT + \beta_4 H + \beta_5 IQ \tag{3}$$

$\frac{\dot{Y}}{Y} \equiv GY$ = the growth rate of real GDP.

$\frac{\overset{\circ}{L}}{L} \equiv GL$ = the growth rate of labour employment.

$\frac{\overset{\circ}{T}}{T} \equiv GT$ = the growth rate of technological progress.

$\frac{\partial Y/Y}{\partial L/L} \equiv \beta_1$ = the labour input elasticity of output.

$\frac{\partial Y}{\partial K} \equiv \beta_2$ = the marginal product of capital.

$\frac{\partial Y/Y}{\partial T/T} \equiv \beta_3$ = the technology input elasticity of output.

$IY \equiv \frac{\overset{\circ}{K}}{Y}$ = the ratio of investment spending to output.

The sign of β_5 is determined by the relationship between income inequality and economic growth. Furman and Stiglitz (1998) identify four plausible channels—savings, imperfect information and agency costs, fiscal policy, and social or political stability. Though the rich tended to save more, the empirical result on rising income inequality and aggregate saving was inconclusive. Segmented markets and imperfect information often plagued a society with uneven distribution of income. Asymmetric information lead to the principal-agent problem and high agency cost, and resulted into a widespread economic inefficiency and slow growth. Under the pressure of rising income inequality, governments might pursue a more progressive income tax policy to redistribute wealth. However, such policy might hinder capital accumulation and economic growth. Or the rich and the powerful might lobby for lowering the tax rate and government spending. If income inequality continued to worsen, social unrest and political instability would occur, which strained the growth.

In analysing macroeconomic data, one may observe that variance of the forecast error depends on the size of the previous disturbance. Thus, we select the GARCH model instead of the usual time-series models. The GARCH model employed can be expressed as:

$$V_t = \beta_0 + \sum_{i=1}^{m} \beta_i \varepsilon^2_{t-i} + \sum_{j=1}^{n} \theta_j V_{t-j} \qquad (4)$$

It indicates that current error variance V_t is a function of past squared errors ε^2_{t-i} and past error variances V_{t-j}. Note that if $\theta_j = 0$, equation (4) reduces to an ARCH model.

Empirical Results

The sample runs from year 1981 to 2001. Data for R and D spending prior to 1981 were not available, and the most recent figures of income inequality were for year 2001. Data sources came from the 2003 *Taiwan Statistical Data Book*, published by the Council for Economic Planning and Development and the *Social Indicators*, published by the Directorate General of Budget, Accounting, and Statistics in Taiwan. Per cent of population with a high school diploma aged 15 or older was selected to represent human capital, denoted by H. Technological progress (GT) was expressed as the growth rate of R and D spending. The Gini coefficient took values between zero, representing complete income equality, and one, representing complete inequality. An alternative inequality measure was the ratio of the highest fifth's income to the lowest fifth's income, denoted by HFLF. GDP, investment spending, and R and D spending were measured in millions of NTD (New Taiwan Dollars). Employment is expressed in thousands.

The GARCH (1,1) model is applied first. The results have been outlined in Table 1. As shown in the variance equation, the coefficients of lagged squared residuals and lagged residual variance are significant at the one per cent level. Because the Durbin-Watson statistic of 2.09 is less than the critical value of 3.439 ($4 - d_L = 4 - 0.561$) at the one per cent level, the null hypothesis of no negative autocorrelation cannot be rejected. All the coefficients are significant at the one per cent level. The sign for the Gini coefficient is negative and significant, suggesting that an increase in income inequality is detrimental to the economic growth. If the Gini coefficient increases by 0.01, real GDP will decline by 1.61 percentage points. The signs for the coefficients of other input factors areas are expected. Based on the estimates, a one percentage point expansion in labour employment would lead to 1.58 per cent of real GDP growth, and one percentage point increase in R and D spending would lead to 0.079 percentage points of growth. The marginal product of capital is estimated to be 0.545. Moreover, if percent of population with a high school diploma aged 15 or older rises by 1 percentage point, real GDP would grow by 1.23 percentage points.

As a comparison with the GARCH model, the results from the OLS regression are outlined in Table 2. As shown, all coefficients are significant at one per cent except that the coefficient of GT is significant at the 10 per cent level. The values of the coefficients are similar to those obtained from the GARCH model. However, based on the log-likelihood function, Akaike information criterion, and Schwarz criterion in selecting a model, it appears that the GARCH estimation is more appropriate than the OLS. Major reasons are that the OLS does not consider autoregressive conditional heteroskedasticity, residual variance is likely to be biased, and hypothesis tests are invalid.

The results using the ratio of the top fifth's income to the bottom fifth's income (HFLF) have been presented in Table 3. The ARCH (1) model is chosen because the coefficient for the lagged squared residuals is significant, but the coefficient for the lagged residual variance is insignificant. As shown, the coefficient of HFLF is negative and highly significant. However, the values of the estimated coefficients for some variables are different from those in Table 1. These results suggest that different measures for income inequality do affect the empirical result.

Table 4 compiles statistics for the latest Gini coefficient and the annual economic growth rate during the 10-year period for eight countries in East Asia. The data were taken from the International Monetary Fund and the World Bank. As shown, the Gini coefficient ranges from a low of 24.9 in Japan to a high of 46.1 in the Philippines. Taiwan's income inequality ranked the third lowest among these countries. The annual economic growth rate ranges from a low of 2.28 per cent in New Zealand to a high of 9.94 per cent in China. When we regress the economic growth rate on the Gini index with the sample of eight countries including Taiwan or seven countries excluding Taiwan, the coefficient of the Gini index has a positive sign and is insignificant at the 10 per cent level. It suggests that when a cross-country sample is employed in empirical work, the outcome may be different from the result using a time series for an individual country.

Policy Implications

The empirical results from testing the Gini coefficient suggest that improvement in income equality may contribute to the growth of the Taiwanese economy. Therefore, economic policy should target on human capital formation, labour employment opportunities, business investment prospects, assistance to single-parent households, and income equality.

1. Human capital formation policy

Traditionally, governments are inclined to pursue a redistributive policy to solve the problem of income inequality, i.e., relatively high taxation for the rich *versus* subsidies and low taxation for the poor. Policymakers, however, need to know how large the trade-off is between taxation and economic efficiency, and how high taxation affects the investment behaviour of the rich.

An alternative is a policy on promoting formation and equal distribution of human capital. The Taiwanese government had quite a legacy on improving the quality and equality of human capital in the past, and that paved the road to the country's economic success and social equity. Recently, however, there are concerns on the quality of education and school funding after deregulation of the education sector. The Ministry of Education of Taiwan should safeguard its role in setting and monitoring national educational standards, reviewing occupational needs, and financing schools to avoid uneven distribution in the opportunities and quality of human capital. With a more equal distribution of human capital, not only greater growth and efficiency, but also greater equality can be realised.

Other related issues include higher education and training programmes. Institutes of higher education in Taiwan should be more responsive to the demand of labour market by preparing students with adequate career skills. Training programmes need to promptly adapt to structural shift of the economy, e.g., the current programme should focus on information technology.

2. Social welfare policy

Rising unemployment undermines economic growth and worsens' income inequality, and the poor, in particular, are more at risk of being trapped in unemployment. The poor, unlike the rich, do not have the means to improve their human capital and job prospect when unemployed. Furthermore, they are at a greater risk of social disintegration including crime and family breakup. The equality-oriented policy, therefore, should aim at the poor with objectives to provide them work incentives and opportunities for human capital improvement. To name a few, options include a tax benefit plus housing subsidy for the low-income workers and a vocational school with internship system for the unemployed.

The minimum wage for workers should be raised to at least the subsistence level. "Equal pay for equal work" policy needs to be implemented to reduce wage differentials between genders.

The Taiwanese government currently has one-time six-month unemployment compensation policy. There are talks on more benefits in the light of the recent severe recession. A more generous programme certainly improves the income distribution, but its impact on job seeking incentive, the reservation wage, and wage bargaining behaviour should be carefully weighed.

On an average, earnings of single parents are less than half the income earned by families with two parents. Thus, single-parent households are more likely to fall into lower quintiles of income groups, and children growing up in such an environment are likely to be trapped in a vicious cycle. In Taiwan, there has been a significant increase in single-parent households since the 1990s, and it contributes to rising inequality. To cope with the issue of changing family structure, policymakers could make childcare subsidy and tax credit available for single parents. A long-term approach, however, is to emphasise on human capital formation in single-parent households, such as subsidising a working mother with schooling children and offering preferential access to education.

3. International business policy

For an economy the size of Taiwan, a close tie to the global market, especially China, is pivotal. Its international business policy should be pragmatic: focus on facilitating companies in market expansion, establishing effective channels to handle disputes, and providing insurance against risks. The Taiwanese government needs to evaluate and clarify its current trade and investment policy provisions on China, expedite the direct transport policy with China, and abolish business restrictions that are detrimental to economic growth of Taiwan. By allowing

for greater factor mobility, the economy will benefit from improved business efficiency, job creation, and repatriated investment income.

Summary and Conclusions

This paper employs an augmented production function to examine the trade-off between income inequality and economic growth in Taiwan. The GARCH or ARCH model is chosen for empirical analysis. Empirical evidence strongly supports that rising inequality, as measured by the Gini coefficient, indeed impairs economic growth, and its impact could be significant. With the application of the alternative HFLF inequality measure, however, the relationship between income inequality and economic growth becomes inconclusive. One explanation may be that the Gini coefficient records the income distribution of the whole economy, but the HFLF targets the richest and poorest groups only, leaving out the entire middle class. Other findings indicate that growth in employment, investment spending, human capital, and technology all contribute to economic growth. Although similar results are obtained from the OLS, the residual variance is biased and hypotheses tests are likely to be invalid because the OLS fails to address autoregressive conditional heteroskedasticity in time-series data.

Policy implications relate to human capital, social welfare, labour market, and international business opportunities. At issue is to emphasise on human capital formation and even distribution as the long-term objective, while thoroughly weighing the cost and benefit of a redistributive policy for the short-term. Policymakers should be mindful about social welfare spending as it involves economic inefficiency.

Table 1: GARCH Regression with GINI

Dependent Variable: GY
Method: ML - ARCH (Marquardt)
Sample (adjusted): 1982 2001
Included observations: 20 after adjusting end points
Convergence achieved after 21 iterations
Bollerslev-Wooldrige robust standard errors & covariance
Variance backcast: ON

	Coefficient	Std. Error	z-Statistic	Prob.
GL	1.577936	0.115192	13.69834	0.0000
IY	0.545496	0.031159	17.50697	0.0000
GT	0.079183	0.021428	3.695338	0.0002
H	1.230183	0.047447	25.92775	0.0000
GINI	-160.9841	3.047144	-52.83116	0.0000
Variance Equation				
C	0.660132	0.385134	1.714031	0.0865
ARCH(1)	1.008475	0.362649	2.780859	0.0054
GARCH(1)	-0.529777	0.141289	-3.749592	0.0002

R-squared	0.893661	Mean dependent var	6.771752
Adjusted R-squared	0.831629	S.D. dependent var	3.122409
S.E. of regression	1.281218	Akaike info criterion	2.855231
Sum squared resid	19.69822	Schwarz criterion	3.253523
Log likelihood	-20.55231	Durbin-Watson stat	2.090036

Table 2: OLS Regression with GINI

Dependent Variable: GY
Method: Least Squares
Sample(adjusted): 1982 2001
Included observations: 20 after adjusting end points

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GL	1.680002	0.372166	4.514127	0.0004
IY	0.498422	0.105049	4.744651	0.0003
GT	0.096765	0.051068	1.894834	0.0776
H	1.254380	0.197834	6.340578	0.0000
GINI	-160.56M28	24.67048	-6.508296	0.0000

R-squared	0.900234	Mean dependent var	6.771752
Adjusted R-squared	0.873630	S.D. dependent var	3.122409
S.E. of regression	1.109971	Akaike info criterion	3.258862
Sum squared resid	18.48052	Schwarz criterion	3.507795
Log likelihood	- 27.58862	Durbin-Watson stat	2.305803

Table 3: ARCH Regression with HFLF

Dependent Variable: GY
Method: ML - ARCH (Marquardt)
Sample(adjusted): 1982 2001
Included observations: 20 after adjusting endpoints
Failure to improve likelihood after 35 iterations
Bollerslev-Wooldrige robust standard errors & covariance
Variance backcast: ON

	Coefficient	Std. Error	z-Statistic	Prob.
GL	0.552856	0.418108	1.322280	0.1861
IY	0.317366	0.084491	3.756196	0.0002
GT	0.109826	0.049101	2.236745	0.0253
H	0.596586	0.175214	3.404897	0.0007
HFLF	-4.390677	1.259856	-3.485063	0.0005
Variance Equation				
C	2.406193	1.032166	2.331209	0.0197
ARCH(1)	-0.159599	0.084613	-1.886223	0.0593

R-squared	0.735959	Mean dependent var	6.771752
Adjusted R-squared	0.614094	S.D. dependent var	3.122409
S.E. of regression	1.939682	Akaike info criterion	4.197426
Sum squared resid	48.91077	Schwarz criterion	4.545933
Log likelihood	-34.97426	Durbin-Watson stat	1.935760

Table 4: Gini Coefficients and Economic Growth Rates for Selected East Asian Countries

	Gini Index	Growth Rate (In Percentages)
Australia	35.2	3.26
China: Mainland	44.7	9.94
China: Hong Kong	43.4	6.90
Japan	24.9	3.66
Korea	31.6	5.62
New Zealand	36.2	2.28
The Philippines	46.1	2.85
Taiwan, ROC	35.0	5.41

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How to Identify Rural Poor? An Alternative Approach

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Abstract

This paper delineates a set of non-monetary indicators for identification of rural poor households through the scientific method 'Discriminant Analysis'. An analysis of the NSS household data brings out a different set of indicators with varying degrees of discriminating power for the selected five states. This paper suggests a feasible, reliable and alternative approach through which 85 - 90 per cent of the poor households in rural areas can be correctly identified as poor.

Introduction

The policy makers and administrators are looking for an alternative approach to identify the rural poor households in India. Evaluation studies of different Poverty Alleviation Programmes (PAP) conducted by various organisations point out the presence of non-poor households in significant proportion among the set of beneficiaries, whereas many of the poor households are excluded from the scheme. The Expert Group (Planning Commission 1993) on estimating the proportion and number of poor also expressed that the income criterion adopted by the implementing agencies (DRDAs) to identify the poor in rural areas 'may suffer from reporting bias which arises when it is known to form the basis for identifying the beneficiaries for Government assistance'.

Eminent scholars and the Government of India (GOI) are making efforts to evolve a suitable alternative approach other than income/expenditure criteria to identify the real poor households for poverty alleviation and safety nets programmes. The GOI in 1982 set up a Working Group to evolve an acceptable methodology to identify the poor through criteria alternative to per capita income / expenditure. The Working Group suggested a new methodology with a list of household characteristics and the suggested methodology was tested in a field study of Maharashtra during 1982-83. With the help of 'Discriminant Analysis' a set of indicators was selected and the application of which the indicators revealed the existence of misclassifications to the extent of 35 per cent. Scholars like Rao *et al* (1998) made attempts in this direction, wherein they suggested involvement of the local bodies in scrutinising the households among equals for consideration of IRDP assistance. They identified a set of indicators, assigned

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scores and derived a composite score. However, in a field study it was discovered that the suggested approach was not free from bias. Chakrabarti *et al* (1996) examine a large set of basic minimum needs indicators as an alternative to income / expenditure criteria. But, they concluded that their approach supplemented the 'monetary criterion' but was not found to be an alternative. Rao and Mary (1986) also attempted 'Discriminant Analysis' to classify selected households into poor and non-poor on the basis of a set of households' indicators in a study of Tamil Nadu. However, their set of indicators was not proved to be an alternative due to the existence of high proportion (40 per cent) of misclassifications. Reddy (2002) while assessing poverty in different sections of population using NSS data for the year 1993-94 developed an innovative methodology to identify the poor in rural areas. He examined the deprivation levels of the poor and non-poor and developed a new tool *viz.*, 'Index of Deprivation (ID)' as an alternative criterion to identify the poor households. His analysis indicated that the targeting (exclusion and inclusion) errors would be minimized in different poverty zones / states through his ID approach and thereby improved the efficacy of poverty alleviation / safety nets programmes.

The Ministry of Rural Development, GOI has been periodically organizing a survey/census (BPL Census) for identifying 'Below Poverty Line' (BPL) households in rural areas for targeting various poverty alleviation schemes. The BPL Census conducted before 1997, followed household income approach for classifying a household under one of the two categories, *viz*., BPL or APL (Above Poverty Line). But, under the BPL 1997 Census methodology, if the per capita monthly household expenditure was less than the Planning Commission's poverty line, the household was classified as poor, otherwise, not.

In the context of the Tenth Five-Year Plan, all the States and UTs were asked to conduct BPL 2002 census following the criterion suggested by the 'Expert Group on Identification of Households Below Poverty Line'. The Expert Group identified 13 non-monetary household characteristics/indicators and assigned scores (0,1,2,3,4) to every household in respect of each of the 13 identified indicators. The total score for each household was to be arrived at, by simple aggregation, which was used as the basis for identification and sub-categorisation of poor households. The issue was widely debated and some scholars even questioned the basis for selected indicators and assigned scoring pattern (Sundaram 2003). The field-based case studies found large-scale variations in the cut-off points used in identifying a BPL household and a large number of real poor households were excluded from the BPL list (Jain 2004).

The methodology to be followed and the set of indicators to be considered in identifying the poor should be i) acceptable to the locals; ii) that one should be able to collect the data with minimum efforts; and iii) that the data should be verifiable for reliability. The involvement of local bodies like PRIs in identifying the deserving poor households cannot depend on the impressions or views expressed by a few individuals. They should also be in a position to scrutinise the information on households' indicators, while identifying the deserving disadvantaged groups. A

composite index or a set of indicators should be able to serve the purpose of identifying the real poor households.

In view of the above, there is a need to evolve an alternative methodology, other than monetary criteria, to identify the poor for poverty alleviation/safety nets programmes in rural areas. The purpose of the present study is to evolve a criterion to select appropriate indicators, which differentiate the poor from non-poor (better-off) from a set of known household characteristics. For this, a 'Discriminant Analysis[1]' is applied to classify households into one of the two groups, *viz*., 'poor' or 'non-poor' on the basis of a set of identified non-monetary indicators. This approach / methodology is recommended only when it is proved that the misclassification of 'poor into non-poor' (exclusion errors) and 'non-poor into poor' (inclusion errors) categories are at minimum.

Data Base

The present study analyses the 50th Round NSS household consumer expenditure data for the year 1993-94 (July 1993 – June 1994)[2]. The household socio-economic characteristics, *viz*., i) possession of employment and income generating assets like land, irrigation and cattle; ii) housing condition - like structure of house, floor type, sanitation and drinking water supply facilities; iii) social status – source of energy for cooking and lighting, mobility of household members and participation in poverty alleviation programmes; and iv) household characteristics like caste, occupation, family size, number of children etc. are related to the per capita expenditure. The following household characteristics/variables[3] have been considered in classifying a household into one of the two distinct groups *viz*., 'poor' and 'non-poor'.

1. X_1: Size of operational land holding (Ha.)
2. X_2: Irrigated land owned (Ha.)
3. X_3: Possession of milch/draught animals
4. X_4: Type of structure of house owned
5. X_5: Floor type
6. X_6: Type of latrine possessed (if any)
7. X_7: Primary source of drinking water
8. X_8: Overall condition of the house
9. X_9: Primary source of energy for cooking
10. X_{10}: Primary source of energy for lighting
11. X_{11}: Mobility of household members by train/bus
12. X_{12}: Accessibility of household to PAP
13. X_{13}: Social status (caste)
14. X_{14}: Type of household (occupation)
15. X_{15}: Family size
16. X_{16}: Sex of the head of household
17. X_{17}: Child/adult composition of household

Approach

The following five states (one each from five geographic regions), *viz*., Gujarat (Western), Kerala (Southern), Madhya Pradesh (Central), Uttar Pradesh (Northern) and West Bengal (Eastern) were purposively selected for the present study. The official state-specific poverty lines were used to classify a household into one of the two groups, *viz*., poor (BPL) and non-poor (APL) - Gujarat: Rs.202.11, Kerala: Rs.243.84, Madhya Pradesh: Rs.193.10, Uttar Pradesh: Rs.213.01 and West Bengal: Rs.220.74 per capita per month at 1993-94 prices. Household (qualitative) characteristics were quantified by assigning a score between 0 and 4 in the present analysis as detailed in Table 1.

The percentage distribution of households of each indicator/variable was derived and compared between 'poor' and 'non-poor'. The means and SDs of the values or assigned scores of the variables between the two groups were computed and tested for its significant difference with the help of statistical t-test. Irrespective of their significance levels, all the indicators considered were included in computing discriminant coefficients and the number and proportion of misclassified cases. In the step-wise discriminant analysis procedure, the unimportant variables were automatically excluded from the model.

Discriminant Function Analysis

The first step in Discriminant Analysis is to select variables and cases to be included in the computations. The dependent variable is a classifying group, measured as an integer, and the number of independent/explanatory variables measured on ratio scale/assigned scores should be less than the number of cases.

Predicting a household as 'poor' or 'non-poor' given the household characteristics and identifying the variables / indicators which helps to classify a household into one of the above two groups are the important issues to the policy makers, administrators and academicians. 'Discriminant Analysis' is an appropriate tool to classify a household into one of the two groups (BPL/APL categories) for a given set of household characteristics. The functional form of linear discriminant model is similar to multiple linear regression equation.

$$D = B_0+B_1X_1+B_2X_2+B_3X_3+ \ldots+B_pX_p$$

The Xs are the values of p-explanatory / independent variables measured on ratio scale or assigned scores (see Table-1) and Bs are the coefficients chosen so that the values of discriminant score D, differ as much as possible between the groups. Based on the (un-standard) discriminant coefficients, it is possible to calculate discriminant score for each case (household). Using the discriminant score, it is possible to obtain a rule to classify a household into one of the two groups. The technique used in the present discriminant analysis (SPSS Discriminant) is based on Bayes' rule.

The probability that a case (household) with a score of D belongs to group 'i' is estimated by

$$P(Gi/D) = P(D/Gi)\,P(Gi) / \Sigma\, P(D/Gi)\,P(Gi))$$

where, i takes the value "1" if the household belongs to BPL category and "2" otherwise. A case is classified, based on its discriminant score D, in the group for which the computed probability[4] is the largest.

The fitness of the model is tested with the help of chi-square test for establishing its significance. The standardised discriminant coefficients help to know the relative importance of the variables and to measure their discriminating power in the classification of households. The percentage of cases classified correctly is often taken as an index of the strength of the discriminant function, just as R^2 in multiple regression analysis. Like in multiple regressions the step-wise (forward / backward) procedure can be adopted for inclusion / exclusion of an independent variable, which depends on its contribution to differentiate between the groups.

Simple Classification Functions

Fisher (1936) has suggested that the classification should be based on linear combination of the discriminant variables, which maximises the group differences, while minimising variation within the groups. Separate linear discriminant function for each group, called Fisher's "classification functions", has the following form:

$$H_g = b_{g0} + b_{g1}X_1 + b_{g2}X_2 + b_{g3}X_3 + \qquad + b_{gp}X_p$$

where g is a grouping variable, and g=1, if it is assumed that a household belongs to BPL category, and g=2, otherwise. The computed functional value H_g is the (discriminant) score for group g and bs are a set of coefficients obtained for each group. A case is assigned to the group for which it has the largest discriminant score (H_g value). This approach can be used directly for classifying a case (household) into one of the two groups, i.e., BPL or APL category.

Justification for the Inclusion of Variables

Productive assets like land, irrigation and animals either owned or possessed are needed for generating employment and income at the household level in rural areas. The percentage distribution of (sample) households and the average values / assigned scores show the existence of significant variation between the poor and non-poor in all the five states chosen from five geographical regions of India.

Housing being one of the basic minimum needs of a family, the information on owning a house, structure of the house, the floor type and amenities possessed such as safe drinking water, sanitation, electricity are some of the important indicators to classify a household into poor or non-poor. The type of fuel used for cooking and lighting also reflects the economic status of a household. The qualitative

nature of housing conditions and the amenities possessed are quantified by assigning scores as detailed in Table 1.

The NSS data shows that poverty is concentrated among weaker sections ST/SCs and labour class (agricultural and non-agricultural labourers). Artisans and marginal farmers also fall under poverty stricken groups though at less intensity. Accordingly, households have been assigned appropriate scores for both the variables in the present exercise.

The mobility of family members by train / bus for economic or education or social purpose during the last month and their participation in any one of the government sponsored programmes like i) IRDP, ii) Employment schemes and iii) PDS, indicate their ability to participate in public programmes. The existence of variation between the poor and non-poor is measured in terms of the number of activities they participated.

The family size, the family composition (child-adult ratio) and sex of the head of the household influence the family decision making, participation in works and per capita income / expenditure. But, the per capita expenditure is the sole criterion generally followed to classify a household into poor and non-poor. Appropriate scores are also assigned to the above variables in the present exercise.

The means and standard deviations (S.Ds) for BPL and APL households for each variable are computed separately and statistical t-test is applied to test the existence of mean difference between the two groups. The computed means, SDs for BPL and APL category of households and t-ratios have been presented in the Annexure for all indicators considered (before assigning codes in the case of quantitative variables like land, family size and proportions in the case of sex of the head of the household). From the Annexure, it can be seen that the computed t-ratios indicate many of the variables / indicators considered and show significant statistical variation in their mean differences/proportions between the poor and non-poor at one per cent level. Among the 17 variables considered, the three variables measured in scores, *viz*., 1) possession of animals (Gujarat and U.P.), 2) primary source of drinking water (Kerala and W.B.), and 3) sex of the head of the household in Madhya Pradesh are found to be insignificant. However, all the 17 variables have been retained in the present step-wise (forward) Discriminant Analysis. The step-wise 'Discriminant Analysis' procedure adopted scrutinises the set of variables / indicators considered and arrives at a minimum set of indicators, which maximises the correctly classified cases and minimises the misclassifications/ errors.

Discussion of the Results

The linear discriminant function model fitted is found to be significant when judged on the basis of chi-square test for statistical significance. The computed chi-square values in all the five states indicate that the indicators included in the discriminant function differentiate the groups at one per cent significance level. However, the number and type of indicators included in the discriminant function

are not the same in all five states. Of the 17 households characteristics considered, eight households characteristics in Gujarat, 11 each in Kerala and Madhya Pradesh, 14 in Uttar Pradesh and 13 in West Bengal are found to be worth consideration as indicators to classify a household under one of the two groups, *viz*., 'poor' and 'non-poor'. The standardised discriminant coefficients and the percentage discriminating power[5] of the indicators / variables included in the discriminant function have been presented in Table 2.

Gujarat: By examining the magnitude of standardised coefficients, it can be seen that the source of energy for lighting, i.e., electricity makes the greatest contribution (25.9 per cent) among all the variables included in the model. The family size (25 per cent) and child-adult ratio (18.4 per cent) are the next in rank order, which also contribute to a large extent in discriminating the poor from the non-poor. The rest of the five variables, which have been included in the model are of less importance whose individual discriminating power is less than 8 per cent.

Kerala: The family size (26.0 per cent), source of energy for lighting (14.2 per cent) and mobility (13.8 per cent) are the first three important indicators which together contribute to about 54 per cent of the total discriminating power. The interesting point to be noted is that the sex of the head of the household is included in the model, while excluding the 'caste' factor from it.

Madhya Pradesh: The family size (20.2 per cent), caste (14.6 per cent), occupation (13.5 per cent) and child-adult ratio (12.4 per cent) together contribute about 60 per cent of the total discriminating power. The next important indicators are mobility and energy for lighting, whose contribution is greater than eight per cent individually.

Uttar Pradesh: The important five indicators are: i) family size (19.6 per cent), ii) mobility (15.5 per cent), iii) household occupation (9.6 per cent), iv) child-adult ratio (8.9 per cent), and v) electricity (8.6 per cent) which together contribute about 62 per cent of the total discriminating power of the fitted linear model. The next in the rank order are irrigated land owned and animals possessed.

West Bengal: Family size (19.6 per cent), child-adult ratio (13.3 per cent), occupation of the household (13.3 per cent) and mobility (11.5 per cent) together contribute about 58 per cent of the discriminating power of the function fitted. The income generating assets like possession of animals, size of land holding and irrigation emerge as next important indicators to classify a household under one of the two groups.

Selection of Important Indicators

From the foregoing discussion of the results, it may be seen that the family size emerges as the most powerful indicator to classify a household under one of the two groups, *viz*., 'poor' or 'non-poor' in all five states. For a given family income, as the family size increases the per capita expenditure decreases – which is the criterion used in classifying a household under BPL or APL category. The economic variables: i) operational land holding in the states like Madhya Pradesh, West Bengal and Kerala; ii) irrigated land owned in Uttar Pradesh, Gujarat, West

Bengal and Madhya Pradesh; and ii) possession of animals in Madhya Pradesh, Kerala, West Bengal and Uttar Pradesh may be useful to classify a household under one of the two groups. But, their discriminating power is not to the extent of expected level. The low levels of discriminating power of income generating assets possessed might be due to lack of management skills by the poor households.

Contrary to expectations, the condition of house has not emerged as a good indicator to identify a poor household. The indicators like the structure of the house in Uttar Pradesh and West Bengal, floor type in Gujarat and Kerala, the possession of latrine in West Bengal, Kerala, Uttar Pradesh and Madhya Pradesh are included in the discriminant model. However, their contribution together is less than 10 per cent in any state. Though the source of drinking water supply is included only in one state, *viz*, Uttar Pradesh, its discriminant power is minimum. This clearly shows that the entire village may be provided with protected drinking water irrespective of their economic status or neglected completely. In other wards, one has to identify the problem villages to tackle 'drinking water supply'.

Among the indicators examined here, the fuel used for cooking contributes the least in two states, *viz*., Uttar Pradesh (2.1 per cent) and Madhya Pradesh (2.6 per cent), while it is excluded from the model in other three states. The two indicators, *viz*., the usage of electricity for lighting and mobility of family members by bus/train for socio-economic purposes have been found to be important household characteristics to classify it under non-poor in all five states. Also, their discriminating power to classify a household has been found to be high compared to many other indicators included in the model.

'Caste' has been a factor found to be one of the most important indicators in Madhya Pradesh, though it has no relevance in Kerala. Household occupation significantly contributes in all the five states in identifying a poor household. The results clearly indicate that family composition, i.e., the child-adult ratio is arrived at as a powerful indicator to classify a household under poor in all five states, while the sex of the head of the household has got marginal relevance in three states, *viz*., Kerala, Uttar Pradesh and West Bengal.

Procedure to Identify Rural Poor Households

As mentioned earlier, identifying real poor households in rural areas is one of the important tasks of policy makers and administrators for the effective implementation of anti-poverty programmes. The purpose of present Discriminant Analysis is not only to suggest a set of indicators, but also to suggest an alternative procedure to identify rural poor households. The Fisher's classification function coefficients can be used directly to classify a case (household) under one of the two groups, *viz*., 'poor' and 'non-poor'.

Given the household characteristics, one can assign a score for each discriminating variable as given in Table 1. Table 3 presents the estimated linear classification function coefficients of the identified set of discriminating variables / indicators for the selected five states. For each case (household), two discriminating

scores, *viz*., H_1 for Group-1 using BPL coefficients and H_2 for Group-2 using APL coefficients can be computed by simple arithmetic calculations. For a given household, if the computed $H_1 > H_2$, then that particular household is identified as 'poor', otherwise, 'non-poor'. This procedure has been tested for all (50^{th} Round) NSS rural sample households in the selected five states. The proportion of misclassified cases computed using Fisher's classification coefficients (weights) presented in Table 3 and Bayes' rule have been found to be the same.

Misclassifications

Table 4 presents the percentage of misclassified households, i.e., the 'poor households classified as non-poor' (exclusion errors) and 'non-poor households classified as poor' (inclusion errors). Among the five states, the proportion of total (errors) misclassified number of cases has been found to be minimum in West Bengal (24.6 per cent) and maximum in Madhya Pradesh (29.9 per cent). Through 'discriminant' approach, the proportion of total errors / misclassifications likely to be committed will be less than 30 per cent in all five states. In other words, with the selected set of indicators more than 70 per cent of the households can be correctly classified. But, the proportion of exclusion errors are found to be on the higher side ranging from 25.5 per cent in Gujarat to 27.7 per cent in Kerala.

Classifying a poor household, particularly the poorest among the poor, as non-poor is more serious than classifying a non-poor household as poor. The distribution of misclassified BPL households by the intensity of poverty, i.e., the poorest, ultra poor and moderate poor has been presented in Table 5. From the table, it can be seen that in all five states, most (70 - 84 per cent) of the misclassified BPL households belong to 'moderate poor' category and a negligible proportion of households belong to the poorest of the poor.

An attempt has also been made to minimise the misclassification of poor households as non-poor, so as to see that the deserving poor should not be penalised by denying an opportunity to be identified for government assistance. In the Fisher's classification rule, all those households for which the computed $H_1 > H_2$, they are classified as poor. If we relax this classification rule, say if $H_1 > k\, H_2$ (where k=0.995, 0.99, 0.98 and 0.95) then the household is classified as 'poor', otherwise, as 'non-poor'. When the relaxed rule is applied, it is observed that the number and proportion of misclassified cases of 'poor' into 'non-poor' declined, while the other category of misclassifications increased when the assigned k -value declined. Table 6 presents the percentage of misclassified 'poor households' under 'non-poor' (and total errors likely to be committed) for different values of 'k'. If we assume that the proportion of misclassified poor households is tolerable at 10 - 15 per cent level, the suggested Fisher's classification rule/criterion, i.e., $H_1 > k\, H_2$, differs from state to state as shown in the last column of Table 6. At the suggested criteria, the proportion of misclassified poor households (exclusion errors) ranges from 11.9 per cent in Kerala to 13.8 per cent in West Bengal. Also, the total possible errors likely to be committed have been found to be minimum in West Bengal

(29.5 per cent) and maximum in Gujarat (43.8 per cent). It is also noticed that when the Fisher's rule is relaxed, the proportion of households to be identified as poor increases mainly due to the inclusion of non-poor households (inclusion errors). However, the list of households identified as poor by this discriminant method (at the village level) may be placed for further scrutiny before a committee of knowledgeable persons / Gram Sabha for the deletion of wrongly classified non-poor households.

Conclusions

An attempt has been made in this article to suggest a set of non-monetary indicators to identify the real poor households in rural areas. Through 'Discriminant Analysis' approach the indicators (household characteristics), which make significant contribution in classifying a household under one of the two groups, *viz*., 'poor' or 'non-poor' have been identified. The number and type of indicators so arrived at are not the same and vary between states depending on the socio-economic culture of the people. The discriminating power of the set of indicators / variables included in the discriminatinat analysis varies from state to state. The set of indicators identified can be measured with little effort and its reliability is verifiable. The suggested set of indicators minimises the misclassification errors, which are less than 30 per cent. Through this approach the proportion of misclassification of 'poor' households as 'non-poor' can also be reduced to the desired permissible level, say 10 to 15 per cent. The present analysis suggests an alternative, feasible and reliable criteria to the policy makers and administrators for adoption to identify poor households in rural areas for poverty alleviation and safety net programmes that are being implemented in rural areas.

Table 1: Scores Assigned to Independent Variables

Sl.	Variable	Score Assigned				
		0	1	2	3	4
1	Size of operational land (Ha.)	Nil	Up to 1.00	1.01 – 2.00	2.01 – 4.00	4.00+
2	Irrigated land owned (Ha)	Nil	Up to 1.00	1.01 – 2.00	2.01 – 4.00	4.00+
3	Animals possessed (milch/draught)	No animal	One milch or draught	One milch and one draught	One milch and a pair of draught	—
4	Structure of the house	No house	*Katcha*	*Semi-pucca*	*Pucca*	—
5	Floor type	No house	Mud, bamboo, wood, plank	Brick, lime stone, cement	Mosaic tiles	—
6.	Possession of latrine	No latrine	Service type	Septic or flush	—	—
7.	Primary source of drinking water	No supply	Tank, pond, canal, spring	Well, tube well, hand pump	Tap	—
8.	Condition of the house	No house	Bad	Satisfactory	Good	—
9.	Primary source of energy for cooking	No cooking	Firewood, coal, dung cake	Kerosene	Gas	—
10.	Primary source of energy for lighting	No arrangement	Kerosene, oil	Gas, candle	Electricity	—
11.	Mobility of family members by train/bus (Economic, education, social purpose)	No	Any one purpose	Any two purposes	All purposes	—
12.	Availed PAP/Safety nets scheme	None	One only	Any two	All three	Rich
13	Social group (caste)	—	ST	SC	Others	—
14	Type of household (occupation)	Labour (Agriculture and non-agriculture)	Artisan	Cultivation + irrigation<1.00Ha	Cultivation+ irrigation>1.00Ha	Others
15.	Family size (No.)	10 and above	8 - 9	6 - 7	4 - 5	Up to 3
16.	Sex of the head of the household	—	Female	Male	—	—
17.	Family composition (child-adult ratio)	No adults	Children>adults	Children=adults	Children<adults	

Table 2: Standard Linear Discriminant Function Coefficients – Selected States

S.No.	Variable	Gujarat	Kerala	Madhya Pradesh	Uttar Pradesh	West Bengal
1.	X_1 : Operational land holding	—	0.10	0.18	—	0.11
			(3.9)	(6.7)	(4.1)	
2.	X_2 : Irrigated land owned	0.14	—	0.10	0.18	0.12
		(6.1)		(3.7)	(6.2)	(4.4)
3.	X_3 : Possession of milch/	—	0.16	0.18	0.18	0.17
	draught animals		(6.3)	(6.7)	(6.2)	(6.3)
4.	X_4 : Type of structure of	—	—	—	0.17	0.12
	house owned				(5.8)	(4.4)
5.	X_5 : Floor type	0.18	0.19	—	—	—
		(7.9)	(7.5)			
6.	X_6 : Type of latrine possessed	—	0.12	0.07	0.09	0.14
	(if any)		(4.7)	(2.6)	(3.1)	(5.2)
7.	X_7 : Primary source of drinking	—	—	—	0.05	—
	water				(1.7)	
8.	X_8 : Overall condition of the	—	0.16	—	0.14	0.11
	house		(6.3)		(4.8)	(4.1)
9.	X_9 : Primary source of energy	—	—	0.07	0.06	—
	for cooking			(2.6)	(2.1)	
10.	X_{10} : Primary source of energy	0.59	0.36	0.22	0.25	0.12
	for lighting	(25.9)	(14.2)	(8.2)	(8.6)	(4.4)
11.	X_{11} : Mobility of household	0.13	0.35	0.23	0.45	0.31
	members	(5.7)	(13.8)	(8.6)	(15.5)	(11.5)
12.	X_{12} : Accessibility of	—	—	—	—	—
	household to PAP					
13.	X_{13} : Social status of the	0.13	—	0.39	0.17	0.16
	household (caste)	(5.7)		(14.6)	(5.8)	(5.9)
14.	X_{14} : Occupation of the	0.12	0.14	0.36	0.28	0.36
	household	(5.3)	(5.5)	(13.5)	(9.6)	(13.3)
15.	X_{15} : Family size	0.57	0.66	0.54	0.57	0.53
		(25.0)	(26.0)	(20.2)	(19.6)	(19.6)
16.	X_{16} : Sex of the head of	—	0.13	—	0.06	0.09
	the household		(5.1)		(2.1)	(3.3)
17.	X_{17} : Child/adult composition	0.42	0.17	0.33	0.26	0.36
	of the household	(18.4)	(6.1)	(12.4)	(8.9)	(13.3)
18.	Chi-square value	468.1*	499.2*	1257*	2283*	1511*

Note: Figures in parentheses indicate the percentage of the discriminating power of the variable.

* Significant at 1 per cent level.

' –' indicates not included in the model.

Table 3: Fisher's Classification Function Coefficients - Selected States

Description of the	Gujarat		Kerala		Madhya Pradesh		Uttar Pradesh		West Bengal	
Variable	BPL	APL	BPL	APL	BPL	APL	BPL	APL	BPL	APL
Const.	-13.2	-19.9	-28.0	-34.9	-23.7	-29.4	-83.1	-90.2	-49.9	-57.3
X_1: Opera.tional landholding	—	—	0.12	0.31	0.73	0.86	—	—	0.68	0.94
X_2: Irrigated land owned	-0.66	-0.50	—	—	-1.15	-1.06	-0.72	-0.50	-1.39	-1.16
X_3: Possession of milch/draught animals	—	—	-0.50	-0.14	1.76	2.07	—	—	0.41	0.84
X_4: Type of structure of house	—	—	—	—	—	—	2.03	2.26	0.61	0.81
X_5: Floor type	0.97	1.29	2.54	2.87	—	—	—	—	—	—
X_6: Type of latrine possessed (if any)	—	—	-0.81	-0.62	-4.56	-4.33	-5.00	-4.81	-2.15	-1.86
X_7:Primary source of drinking water	—	—	—	—	—	—	22.21	21.39	—	—
X_8: Overall condition of the house	—	—	0.73	0.93	—	—	2.13	2.35	1.35	1.52
X_9: Primary source of energy of cooking	—	—	—	—	21.06	21.39	10.83	11.03	—	—
X_{10}: Primary source of energy for lighting	1.68	2.54	1.08	1.53	1.47	1.71	0.04	0.39	1.60	1.83
X_{11}: Mobility of household members	2.60	2.91	2.10	2.62	0.49	1.00	0.16	1.09	0.28	0.93
X_{13}: Social status (caste)	2.98	3.19	—	—	2.67	3.16	12.58	13.02	5.79	6.13
X_{14}: Occupation of the household	0.40	0.51	0.70	0.80	1.26	1.57	1.02	1.28	1.62	2.00
X_{15}: Family size	2.31	3.00	4.77	5.63	2.68	3.18	3.66	4.16	4.37	5.03
X_{16}: Sex of the head of the household	—	—	11.48	11.85	—	—	29.70	30.00	31.90	32.34
X_{17}: Child/adult composition of the household	3.40	4.12	4.99	5.30	2.92	3.38	1.68	2.04	2.71	3.34

BPL: Below Poverty Line APL: Above Poverty Line

Table 4: Proportion of Errors/ Misclassified Cases

(In Percentages)

S.No	State	Exclusion Errors	Inclusion Errors	Total Errors
1	Gujarat	25.5	25.1	25.2
2	Kerala	27.7	28.3	28.2
3	Madhya Pradesh	26.6	31.6	29.9
4	Uttar Pradesh	26.1	30.5	29.0
5	West Bengal	25.9	24.0	24.6

Table 5: Number and Proportion of Misclassified BPL Households,1993-94.

State	Poorest	Ultra Poor	Moderate Poor	Misclssified BPL cases
1. Gujarat	2 (2.2)	16 (17.2)	75 (80.6)	93 (100)
2. Kerala	2 (1.5)	38 (27.7)	97 (70.8)	137 (100)
3. Madhya Pradesh	7 (1.4)	109 (22.3)	372 (76.2)	488 (100)
4. Uttar Pradesh	17 (2.1)	222 (27.2)	577 (70.7)	816 (100)
5. West Bengal	4 (1.0)	59 (15.3)	323 (83.7)	386 (100)

Notes:

The poorest: Households with monthly per capita expenditure (MPCE) less than 50 per cent of the state specific poverty line.

Ultra poor : Households whose MPCE lie between 50 per cent and 75 per cent of the state specific poverty line.

Moderate poor: Households with MPCE greater than 75 per cent of the state specific poverty line, but below poverty line.

Table 6: Proportion of Misclassified Poor Households - Alternative Criteria

(In Percentages)

State	Criterion to Classify a Household as Poor					
	$H_1>H_2$	$H_1>.995H_2$	$H_1>.99H_2$	$H_1>.98H_2$	$H_1>.95H_2$	Suggested
1. Gujarat	25.5	23.1	21.4	19.2	**12.1**	$H_1>0.95H_2$
	(25.2)	(26.9)	(28.6)	(31.5)	(43.8)	
2. Kerala	27.7	23.4	18.8	**11.9**	0.4	$H_1>0.98H_2$
	(28.2)	(30.3)	(33.1)	(39.8)	(68.9)	
3. Madhya	26.6	23.1	19.5	**13.2**	1.9	$H_1>0.98H_2$
Pradesh	(29.9)	(31.5)	(33.1)	(38.4)	(56.2)	
4. Uttar Pradesh	26.1	**13.4**	5.5	0.5	Nil	$H_1>0.995H_2$
	(29.0)	(34.5)	(41.7)	(56.2)	(65.3)	
5. West Bengal	25.9	19.0	**13.8**	6.9	0.3	$H_1>0.98H_2$
	(24.6)	(26.6)	(29.5)	(37.1)	(60.7)	

Note:- Figures in the parentheses indicate percentages of total (errors) misclassified cases.

Annexures : Means, S.D.s and t-Ratios Between Mean Values/Scores of Poor and Non-Poor: Selected States

S.N	Variable	Gujarat			Kerala			M.P.		
		BPL	APL	t-Value	BPL	APL	t-Value	BPL	APL	t-Value
1	X_1 : Operational land holding (in Ha)	0.78 (1.40)	2.03 (4.34)	5.4*	0.04 (0.24)	0.18 (.60)	4.8*	1.52 (2.29)	3.13 (4.79)	13.6*
2	X_2 : Irrigated land owned (in Ha.)	0.29 (.87)	0.87 (1.85)	5.2*	0.02 (.22)	0.08 (.47)	2.9*	0.32 (1.07)	1.10 (2.80)	11.6*
3	X_3 :Possession of milch/draught animals	0.66 (.64)	0.67 (.62)	0.4 NS	0.20 (.43)	0.34 (.52)	5.5*	0.57 (.62)	0.76 (.60)	11.3*
4	X_4 : Type of structure of house owned	1.76 (.78)	2.14 (.87)	7.7*	1.95 (.82)	2.39 (.89)	9.9*	1.92 (.62)	2.03 (.69)	6.1*
5	X_5 : Type of floor	1.04 (.38)	1.39 (.79)	8.4*	1.35 (.57)	1.74 (.69)	11.7*	0.99 (.25)	1.08 (.41)	8.3*
6	X_6: Type of latrine possessed (if any)	0.04 (.28)	0.33 (.73)	7.4*	0.68 (.67)	1.11 (.74)	11.6*	0.02 (.17)	0.10 (.41)	7.6*
7	X_7 : Primary source of drinking water	2.28 (.57)	2.38 (.58)	3.0*	2.05 (.40)	2.05 (.42)	0.15 NS	2.00 (0.34)	2.05 (0.32)	5.9*
8	X_8: Overall condition of the house	1.78 (.71)	2.04 (.97)	4.8*	1.73 (.83)	2.27 (1.0)	11.1*	1.88 (.71)	2.09 (.84)	9.2*
9	X_9: Primary source of energy for cooking	1.04 (.26)	1.25 (.64)	6.2*	1.00 (.12)	1.20 (.62)	7.2*	1.00 (.11)	1.03 (.26)	5.3*
10	X_{10} : Primary source of energy for lighting	1.78 (.94)	2.50 (.86)	14.3*	1.70 (.95)	2.36 (.93)	14.1*	1.71 (.97)	2.12 (.99)	14.5
11	X_{11} : Mobility of household members	0.72 (.54)	0.83 (.56)	3.5*	1.18 (.73)	1.52 (.81)	8.3*	0.23 (.42)	0.39 (.50)	11.7*
12	X_{12} : Accessibility of household to PAP	1.04 (.20)	1.05 (.23)	0.23 NS	1.03 (.33)	1.00 (.38)	1.31 NS	0.91 (.80)	1.08 (.90)	6.6*
13	X_{13} : Social status of the household (caste)	2.15 (.89)	2.50 (.79)	7.5*	2.80 (.45)	2.90 (.34)	5.5*	1.94 (.90)	2.40 (.82)	18.7*
14	X_{14} : Occupation of the household	1.16 (1.57)	1.87 (1.57)	7.9*	1.08 (1.54)	1.77 (1.6)	8.7*	1.08 (1.22)	1.87 (1.29)	21.7*
15	X_{15}: Family size (No. of persons)	6.3 (2.35)	5.1 (2.55)	8.1*	5.4 (2.19)	4.4 (1.8)	9.7*	5.7 (2.48)	5.2 (2.95)	5.9*
16	X_{16}: Proportion of Female headed households (p)	.044	.058	2.43*	0.236	.217	2.06*	.054	.056	1.27 NS
17	X_{17} : Child/adult ratio of the household	1.07 (.58)	1.08 (.62)	11.5*	2.46 (.77)	2.67 (.62)	6.2*	2.22 (.87)	2.58 (.71)	16.3*

contd.....

Annexure : Means, S.D.s and t-Ratios Between Mean Values/Scores of Poor and Non-Poor: Selected States

S.N	Variable	U.P.			W.B.		
		BPL	APL	t-value	BPL	APL	t-value
1	X_1 : Operational land holding (in Ha.)	0.73 (1.25)	1.45 (2.26)	16.6*	0.24 (0.43)	0.67 (1.02)	15.6*
2	X_2: Irrigated land owned (in Ha.)	0.56 (0.99)	1.25 (1.92)	18.7*	0.09 (0.26)	0.35 (0.73)	13.3*
3	X_3:Possession of milch/draught animals	0.28 (0.51)	0.26 (0.48)	2.1 NS	0.33 (0.53)	0.53 (0.56)	11.4*
4	X_4 : Type of structure of house owned	1.82 (0.77)	2.18 (0.86)	19.7*	1.39 (0.73)	1.87 (0.88)	18.1*
5	X_5 : Type of floor	1.02 (0.23)	1.14 (0.42)	14.0*	0.97(0.30)	1.20 (0.50)	16.1*
6	X_6: Type of latrine possessed (if any)	0.05 (0.25)	0.21 (0.56)	14.9*	0.13 (0.39)	0.55 (0.80)	19.2*
7	X_7 : Primary source of drinking water	2.01 (0.25)	2.05 (0.31)	5.2*	2.04 (0.31)	2.04 (0.27)	0.43 NS
8	X_8: Overall condition of the house	1.86 (0.69)	2.16 (0.78)	17.9*	1.60 (0.82)	2.07 (0.91)	16.9*
9	X_9: Primary source of energy for cooking	1.00 (0.08)	1.06 (0.35)	9.6*	1.00 (0.10)	1.03 (0.28)	4.4*
10	X_{10} : Primary source of energy for lighting	1.19 (0.59)	1.58 (0.91)	21.4*	1.06 (0.35)	1.44 (0.83)	16.9*
11	X_{11} : Mobility of household members	0.23 (0.44)	0.54 (0.61)	25.3*	0.43 (0.57)	0.78 (0.68)	17.3*
12	X_{12}: Accessibility of household to PAP	0.90 (0.90)	1.15 (1.08)	11.3*	1.03 (0.44)	1.02 (0.43)	0.40 NS
13	X_{13}: Social status of the household (caste)	2.64 (0.50)	2.81 (0.42)	17.1*	2.36 (0.71)	2.60 (0.60)	11.8*
14	X_{14} : Occupation of the household	2.42 (1.24)	3.08 (1.20)	24.6*	1.71 (1.02)	2.67 (1.37)	24.0*
15	X_{15}: Family size (No. of persons)	6.1 (3.0)	5.6 (3.4)	7.3*	5.6 (2.2)	5.1 (2.6)	7.3*
16	X_{16}: Proportion of Female headed households (p)	.084	.073	3.94*	.081	.069	3.34*
17	X_{17} : Child/adult ratio of the household	2.15 (0.90)	2.51 (0.78)	19.4*	2.07 (0.88)	2.60 (0.71)	21.3*

Note:- Figures in parentheses indicate standard deviations

* Indicates significant at 1% level. NS - Not significant.

Notes

[1] For details, see, Williams (1980), Procedure DISCRIMINANT in SPSS Package.

[2] The 50th Round NSS Household data available in CD-ROMS have been analysed. However, only sample household characteristics of selected states (Gujarat: 2,219, Kerala: 2,555, M.P: 5,313, U.P: 9,010 and W.B: 4,480) have been used in the present analysis.

[3] Three other important variables, viz., economic dependency, levels of education and health status of a household have not been considered in the present analysis due to measurement difficulties involved in the NSS data.

[4] In the present exercise, while computing the probability, the prior probabilities of the two groups have been assumed equal.

[5] The discriminant power of the variables has been taken as the ratio of the standard coefficient of the variable to the sum of the absolute values of the coefficients of the variables included in the discriminant model. The variables included and the sum differs from state to state.

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Community Banks, Credit Supply and Rural Economy

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Abstract

In this paper, the contribution of community banks (CBs) to the supply of credit in the rural areas of Nigeria has been investigated by using appropriate model and estimation technique. The results reveal that the contribution of CBs is not significant as compared with other major suppliers of credit in the rural areas, such as conventional banks and state credit institutions. This poor performance of the banks may be attributed to several factors including limited number of banks, weak capital base, diversion of funds, non-repayment of loans, among others. As a matter of policy, the regulatory institution of the community banking system can improve the performance by applying appropriate measures to the problems that have been identified in the study. An enlarged and well-managed community banking system, operating in an enabling environment, is expected to make more meaningful contribution to the supply of credit in the rural areas.

Introduction

In the last two decades, most developing countries have experienced a phenomenal growth in the number of financial institutions that provide credit to the rural poor (Economic Commission for Africa 1998). In addition, there has been a corresponding increase in the number of non-governmental organisations (NGOs) that integrate credit for the poor into their programmes. These developments have tended to enhance the supply of credit in the rural areas, thereby ameliorating the problem of limited access to productive resources. It is generally agreed that credit facilities for micro-business in the rural areas is a necessity for the economic progress and social well-being of the people, but opinions differ on the best strategy to encourage a steady and substantial flow, at least to alleviate the level of poverty. A majority of the opinions seem to favour the intervention of government, instead of depending on private initiative to provide the needed credit for rural upliftment. This opinion is expressed in several studies, some of which include Idemudia (1993), Oyaide (1987), Aliu (1994), Ehigiamusoe (1997) etc.

The government of Nigeria responded initially to this challenge by articulating the rural banking programme in 1977, which could be classified as the first major attempt to foster rural development through improved access to banking services. Under the programme, the urban-based commercial banks were required to set up rural branches in designated locations, within a given time-frame. Most of

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the commercial banks were reluctant to comply with the directive, for the simple reason that rural branches were unprofitable ventures. Thus, the laudable rural banking programme failed to realise its objective of taking banking and credit services to the rural poor. Following this failure, the government went into direct participation by establishing the Peoples' Bank of Nigeria (PBN) in 1989, which was aimed at providing financial services to the rural dwellers through a wide network of branches. The PBN started operations in 1990 by opening branches across the country and providing loans to a large number of beneficiaries who were engaged in agriculture, manufacturing, commerce, transportation, etc. After a period of nine years (1990-1998), it started to experience serious problem of non-repayment of loans, and this again led to the failure of the government to sustain the provision of credit to the rural dwellers. However, a few other credit institutions established by the government for this purpose recorded more impressive performance than the Peoples' Bank of Nigeria (Ogwuma 1993: 61).

At the time government commenced direct participation in rural banking, it also gave approval for the establishment of community banks (CBs), which were owned and operated by members of the rural community. The CBs were meant to encourage savings and credit culture among rural dwellers. At the end of the second quarter of the year 2001, the number of such banks stood at 451, including a few that were granted licence to operate in urban areas. In order to standardise the operations of the community banking system, a regulatory body known as National Board for Community Banks (NBCB) was put in place by the government to oversee the system. The NBCB issued operating licences to CBs, together with a matching loan of N500,000 (half a million naira) to enable them commence operation. The matching loan was repayable over a maximum period of five years with six months moratorium, and no dividend could be paid out to shareholders until the marching loan had been completely repaid. They operated like the conventional banks by accepting deposits and providing credit to rural dwellers, but unlike the conventional banks, they were prevented from having branch network.

The CBs have been in operation in Nigeria for fifteen years (1990-2004), and on the basis of this, they can be considered ripe enough to warrant a study of their contribution to the supply of credit in the rural areas *vis-a-vis* other major suppliers of credit, such as the conventional banks, state credit institutions and Non-governmental Organisations (NGOs).

Research Issue and Methodology

A spate of criticisms has trailed the operations of community banks since the commencement of operation in 1990. A large proportion of these banks use the funds mobilised from small savers in the rural areas to execute projects in urban areas, which is a negation of the objective for establishing them (Ogunleye 1994). Furthermore, they channel the hard-earned savings of rural dwellers into the vaults of commercial banks based in the cities, thus using the resources of the rural poor to finance the conspicuous consumption of the urban class. These and other

activities seem to have impeded their efforts in providing credit for rural development, hence they need to exercise great prudence in the management of the funds at their disposal (Dabai 1999: 1).

In the light of the foregoing criticisms, we attempt to investigate the role of these banks in the supply of credit in the rural areas. More specifically, this study tests the null hypothesis, which states that community banks have not contributed significantly to the supply of credit in the rural areas of Nigeria. The hypothesis represents a consensus opinion that has not been empirically authenticated. We, therefore, proceed to do that by formulating and estimating a model that shows their contribution to the aggregate supply of credit in rural areas, relative to the contributions of the conventional banks, state credit institutions, and Non-governmental Organisations (NGOs). The estimation has been carried out, by using econometric techniques. A brief account of the Nigerian rural economy, which has agriculture as its major economic activity, has also been undertaken

The Rural Economy of Nigeria

The rural economy of Nigeria is predominantly large, with agriculture as the main source of livelihood. More than 80 per cent of the rural labour force is engaged in peasant farming, which contributes close to 50 per cent of gross domestic product (GDP) of the country, and also provides raw materials for agro-processing industries. Most of the food produced is for own consumption, while cash requirements are met from the sale of cocoa, groundnut, cotton, palm oil, or surplus food. Cocoa and palm oil are produced mainly in the southern region of the country, while groundnut and cotton are produced in the northern region. Nigeria attained political independence in 1960, and up to 1970 the rural economy buoyed with agricultural activities. The decade after 1970, however, saw a rapid decline in agriculture as the petroleum and service sectors began to expand and dictate the pace of growth of the national economy (Edo 2002: 337). This structural transformation did not augur well for the rural economy, as it encouraged rural-urban migration and de-population that considerably reduced economic growth rate of the country-side below the national average. As at 1985, an estimated 96 per cent of the core poor in Nigeria lived in the rural areas, plagued with diseases and high mortality .

In the same manner it happened in some developing countries, especially in Africa, the development strategies in Nigeria failed to stem the declining trend in economic life of the rural areas. The years of political turmoil aggravated the situation in three major respects. First, the government's ability to extend infrastructure to the rural areas was severely curtailed as many states of the country became isolated from the centre. Second, with decline in infrastructure, access to credit was impaired, which negatively affected efforts at modernisation of agriculture. But, probably the most serious factor was the lack of capacity of political leadership at the local level to mobilise people for the purpose of developing the area.

The provision of financial services is constrained in the rural areas by high cost of intermediation, poor knowledge of the socio-economic environment, and the scattered micro nature of rural enterprises. The inability of the banks to reach the rural population both for disbursement and recovery, and the rigid terms and conditions for agricultural lending, have minimised the impact of formal financial institutions on the rural economy. In recent years, a number of new private banks have been established, but this has not been able to reduce the urban bias of banking services. Commercial banks are located almost exclusively in larger urban centres, though over 80 per cent of the population live in rural areas. Sequel to this, the government continued to establish more rural credit schemes, to facilitate a fair distribution of funds in the area, but they failed to achieve this short-term objective. Instead, they became a source of cheap loans for politicians and government officials that were never repaid. The long-term objective of the credit schemes was to reduce poverty by enabling rural dwellers to engage in income generating activities, with emphasis on artisans, women, youth, and the disabled. In principle, the schemes were meant to provide seed money for the people to embark on sustainable productive ventures, which were in some cases implemented through local government institutions and non-governmental organisations (NGOs). The credit schemes have gradually tended to become mere extensions of political patronage with the revolving fund provision necessary for their sustenance often lacking.

A few other institutions have tried to bridge the resource gap in the rural areas by providing rural households with direct financial assistance, advice and market information, on a regular basis. These are essentially cooperative societies and NGOs. As experience from Bangladesh shows, these institutions have good access to grass-root infrastructure and a comparative advantage in rural finance operations because of low overheads and transport costs. Furthermore, they adjust to suit rural needs, and have a considerable rural bias in lending activities (Jain 1996: 79). However, these institutions have serious human and financial resource constraint that tend to limit the range of services offered.

Cooperative societies are relatively old institutions in Nigeria. They grew out of the need to mobilise farmers and ensure prompt delivery of products to the market, high quality of the products, and to limit farmer exploitation. Gradually, some cooperative societies became involved in financial intermediation in the rural areas to raise the level of credit supply. They have adequate knowledge of local environment, while a broad membership enables them to engage in lending, relying on peer pressure for loan recovery. As a result, they generally have lower intermediation cost than the conventional banks, and have thus become important in the rural financial structure. They are mostly constrained by political interference and inability to access funds from other sources.

The past decade has seen a sharp increase in the role of local and foreign NGOs in rural development in Nigeria. The most innovative ones have been able to design their own rural development programmes and have thus been complementing

the efforts of government and banks. A number of them are at present engaged in the execution of various rural development projects, while others are providing credit to the rural population. In the absence of banking facilities, they have served as an alternative means of linking rural households with conventional banks and government credit schemes. The activities of NGOs are also constrained by limited availability of donor funds, but a few of them have developed the capacity to survive on their own funds, although there has been considerable duplication of efforts in their operations. The success of any credit programme, to a large extent, may, therefore, depend on its capacity to mobilise funds needed to finance its operations (Graham 1992: 1233).

There also exist a variety of informal and unregulated financial activities in the rural economy of Nigeria providing credit to the people. These include the lending and borrowing activities of professional and non-professional moneylenders, private finance organisations, rotating savings and credit associations (ROSCAs), traders, landlords, households, etc. These informal transactions are somewhat difficult and complex to document. Nonetheless, existing evidence suggests that the activities of ROSCAs predominate. Available information also reveals that they account for 35 – 40 per cent of total credit in the rural economy. Again, the percentage ratio of informal to formal credit averaged about 38 per cent during the period 1980 – 2001. The average lending rate for the informal financial transactions is also relatively high due to the great risk associated with them. The transactions have some link with the formal sector by way of arbitrage and credit policy. In the first case, some moneylenders in the informal sector recognise the lending rate differential between the two sectors, so they borrow at low rate from the formal sector and lend at high rate in the informal sector, which provides them considerable profit margin. In this way, funds constantly flow between the two sectors. In the second case, the informal sector responds to changes in credit policy of the formal sector, which also affects the flow of funds between them. The importance of informal financial activities in the rural economy has continued to grow, and the policy-makers are exploring ways of integrating them into the formal sector of the economy

Finally, the formal and informal financial activities in the rural areas of Nigeria have so far failed to adequately provide required funds for the rural economy to achieve sustainable growth and development (see, Appendix 2). Over the years, the aggregate supply of credit to the rural areas has remained grossly below the national development plan estimates of credit required to facilitate its growth and development. This clearly creates resource gap that needs to be reduced, and it is on this basis that the introduction of community banks into the rural financial structure became imperative.

Profile of the Community Bank in Nigeria

The NBCB (1992) defines community bank as a financial institution that is self-sustaining, owned and managed by the community, or group of persons, for the purpose of providing credits, deposit banking, and other financial services to the members of the community, largely on the basis of their self-recognition and credit-worthiness. It is a unit bank that is under the authority and regulation of a statutory agency known as National Board for Community Banks (NBCB), and prohibited from operating branch network.

The bank has multiple objectives. First, it is meant to enhance banking habits in the rural areas, as well as generate credit from within the community for the development of productive capacities. Second, it is expected to formalise the use of communities as effective vehicles of rural change and national development. Third, it is aimed at promoting rural economic activities such as agriculture, commerce, cottage industries, etc. Fourth, it also aims at integrating a substantial proportion of the informal financial system into the formal sector of the economy. These are the major objectives as indicated in the community banking code. The bank is, however, allowed to pursue other objectives that are seen to be particularly beneficial to the community it serves. Based on the objectives of the bank, it performs several functions which include acceptance of deposits, investment in suitable ventures, provision of credit facilities to its customers, equipment leasing to assist customers who are farmers, provision of other associated services, as well as non-banking functions that could enhance development of the community and alleviate poverty.

The minimum paid-up capital for the bank is N3 million (three million naira), as against N500 million (five hundred million naira) for conventional commercial bank. The relatively small capital base explains its inability to meet transactions of large magnitude. Besides, it indicates high vulnerability to financial distress, because the low level of transactions may not adequately absorb operating losses of the bank. The ownership and capital structure include the community development association (CDA) which owns at least 30 per cent of the paid-up share capital, while the remaining 70 per cent or less is shared among trade associations, social clubs, corporate bodies, and individuals, all based in the community. No single group or individual is allowed to hold more than 50 per cent of the share capital. The number of promoting groups and individuals must not be less than 50 in number. The CDA is the predominant group in the ownership structure, because it is the organ of the community charged with the responsibility of facilitating development in such area, through interaction with government, organised private sector, non-governmental organisations (NGOs), wealthy philanthropic individuals within and outside the community, international agencies such as United Nations Development Programme (UNDP), World Health Organisation (WHO), and others that have a focus on grassroot development.

The bank is not affiliated to the Central Bank of Nigeria (CBN), which is the monetary authority of the country. Instead, it is allowed to maintain a correspondent relationship with commercial bank that carries out financial transactions on its

behalf with the CBN. This relationship is established through a legal agreement between the two parties. The community bank is, therefore, not privileged to enjoy all services offered by the CBN, especially the keeping of accounts and clearing of inter-bank cheques. The bank is thus left with the only viable option of maintaining a regular account with the correspondent commercial bank, to facilitate the clearing of cheques.

The policy making function of the bank rests with the Board of Directors consisting of two active members of the CDA and a few others spread across the shareholding groups and individuals in such a way that none of them has more than one member. On the other hand, the management of the bank comprising paid managers, carries out other routine duties. The lending rate charged by the bank is a matter of internal decision by the bank, but it should not be lower than the minimum rediscount rate of the CBN. The bank usually takes into account the position of its community in deciding what lending rate is best for the circumstances of its operating environment. The rate is generally low compared with what obtains in the conventional banking system. The spread between the lending rate and deposit rate is done in such a way that allows the margin to cover operational costs and provide some profit for the investors. In order to minimise risks, the maximum disbursement of loan for a single individual is fixed at 10 per cent of the paid-up capital of the bank. Whilst it is allowed for the bank to grant credit on the basis of self-recognition and credit-worthiness, this does not preclude request for collateral security or guarantor's commitment, hence the banks have increasingly adopted this approach to minimise the level of risk in their operations. As much as possible, local dignitaries are involved as guarantors in the process of granting unsecured credit. The target clients of the bank are rural farmers, traders, cottage industrialists, community project developers, etc.

Unlike the conventional bank wherein decisions are taken after passing through several levels of management, the community bank has the advantage of taking prompt action because of its simple decision making structure that involves only a few managers and directors. This flexibility is potentially good for the bank, as opportunities can be identified and quickly converted to enhance growth of the bank and the community.

A survey of the community banks by Anyanwu (1997: 1) reveals that a bulk of their credit has so far been granted for commercial activities. In 1993, commerce got 40 per cent share of the total credit, which increased to 43 per cent in 1994 and 46 per cent in 1995. On the other hand, agriculture had a share of 18 per cent in 1992, which declined to 17.4 per cent in 1993, 11.2 per cent in 1994, and 10.3 per cent in 1995. Since then it has continued in this downward trend indicating that the banks have failed to give adequate attention to this important activity that constitutes the economic mainstay of the rural areas (see, Appendix 2). This is an issue that has greatly undermined the performance of the banks in the rural areas. In terms of profit, the performance of the banks has also continued to exhibit downward trend overtime, leading to financial distress in at least 25 per cent of them, as at the end of 2001. This type of rural credit system is, however, not unique to Nigeria, as most

developing countries of the world have similar programmes that provide credit to the rural dwellers and the poor.

Analytical Framework

Credit supply in the rural areas of Nigeria comes from several sources, including Community Banks. In principle, the Community Banks encourage the growth of micro businesses in the rural areas by making additional funds available for new investments and the expansion of existing ones. The other major suppliers of credit in the rural areas of Nigeria are conventional banks, state credit institutions, and non-governmental organisations (NGOs). The conventional banks which include commercial banks, investment banks etc, are mainly private enterprises that accept deposits and provide loans for productive use. By virtue of their functions, they are obliged to provide credit to businesses in rural areas, although their performance in this regard has been described as unimpressive (Ojo 1995). State credit institutions are government financial schemes, which are established to grant loans to small-scale businesses, especially in the rural areas, in order to alleviate poverty and reverse rural-urban migration. The major characteristics of these institutions include high level of inefficiency, corruption and poor rate of repayment. Non-governmental organisations (NGOs) are also involved in the provision of credit facilities to the rural poor. Most NGOs are funded by foreign donors, and they have been playing an increasing role in alleviating poverty in the rural areas. They have well designed mode of operation that is lacking in state credit institutions, but they have limited funds, which explains their inability to cover all rural areas (Devarajan 1999). It follows from the foregoing discussions that aggregate supply of credit to rural communities in Nigeria depends on four major sources as indicated in the analytical framework presented below:

$$\mathbf{S} = \boldsymbol{AC^aB^bM^cN^d} \quad (1)$$

where **S** = aggregate supply of credit in the rural areas, **A**= autonomous supply of credit in the rural areas, **C**=community banks' supply of credit in the rural areas, **B** = conventional banks' supply of credit in the rural areas, **M**= state credit institutions' supply of credit in the rural areas, **N** = NGOs' supply of credit in the rural areas, ***a*** = coefficient of community banks' supply, **b** = coefficient of conventional banks' supply, **c** = coefficient of state credit institutions' supply, **d** = coefficient of NGOs' supply. The coefficients are measures of the relative contributions from individual sources. To facilitate the estimation of the coefficients, model (1) may be linearised and transformed, by taking logarithm of all the variables (aggregate and component supplies). Since aggregate supply changes from time to time, it is also appropriate to reflect it by introducing a lagged variable. We, therefore, re-state the model as follows:

$$\log\mathbf{S} = \log\mathbf{A} + \mathbf{a}\log\mathbf{C} + \mathbf{b}\log\mathbf{B} + \mathbf{c}\log\mathbf{M} + \mathbf{d}\log\mathbf{N} + \mathbf{e}\log\mathbf{S}_{-1} + \mathbf{u} \quad (2)$$

A priori signs: $a > o \quad b > o \quad c > o \quad d > o \quad e > o$

Where; $\mathbf{S}_{-1}$ = lag aggregate supply, and **u** = error term

Model (2) states that the aggregate supply of credit to rural communities depends positively on the contributions from community banks, conventional banks, state credit institutions and non-governmental organisation (NGOs). However, the prime focus of this study is on the relative contribution of community banks, which is represented in the model by the *a priori sign a > o*. In other words, how significant is this contribution to aggregate supply of credit in the rural areas of Nigeria? This issue is adequately addressed in the section that deals with empirical analysis.

Empirical Analysis

To determine the relative contribution of community banks to the supply of credit in the rural areas of Nigeria, model (2) is estimated, using quarterly data for the period 1991Q1 – 2004Q2 (see, Appendix 4). The sources of data include Central Bank of Nigeria (CBN), Federal Office of Statistics (FOS) and National Board for Community Banks (NBCB), while estimation is done, by using the technique of Ordinary Least Squares (OLS). A complementary estimation is done using Newton Raphson method, for the purpose of reducing the problem of serial correlation and the bias of relying on only one method of estimation. The estimation results have been reported in Tables 1 and 2.

Table 1: Estimation Results of the Model (OLS)

Regressor	Coefficient	t-value
A	40.21	0.94
C	0.05	1.07
B	0.17	2.6
M	0.32	3.01
N	0.09	0.93
S_{-1}	0.21	3.02

R_2 = 0.91, F -value = 88.65, SEE = 0.005, DW = 2.06, Durbin's h = 1.08

Source: Computer estimation (Microfit Software, 1991).

The indicators on the last row of Table 1 imply that the estimation results do not suffer from serious econometric problems. More specifically, R^2 indicates that all the regressors put together account for 91 per cent of variation in aggregate supply of credit in the rural areas within the given period. Furthermore, the F-value is significant at the 5 per cent level, which implies that the aggregate supply of credit maintained a relatively stable relationship with the regressors during the period. The standard error (SEE) is insignificant at the 5 per cent level indicating that the estimation procedure is quite good. Although there is a little serial correlation, as indicated by the DW and Durbin's h statistics, it is not serious enough to bias the results. To a large extent, therefore, the OLS results could be regarded as dependable, hence, we proceed to analyse the relative contributions of relevant variables.

A careful examination of Table 1 shows that all the coefficients bear *a priori* signs. Variable C has a coefficient of 0.05, which represents the relative contribution of community banks to aggregate supply of credit in the rural areas. As the t-value of 1.07 indicates, this contribution is not significant at the 5 per cent level. In the same vein, the variable N has a coefficient of 0.09, indicating the relative contribution of Non-governmental organisations. The t-value of 0.93 indicates that it is not significant at the 5 per cent level. On the other hand, variable B has a coefficient of 0.17, while variable M has a coefficient 0.32. The coefficients represent the relative contributions of conventional banks and state credit institutions, respectively. Their corresponding t-values indicate that both contributions are significant at the 5 per cent and 1 per cent levels respectively, indicating that state credit institutions contributed more significantly.

The main finding in this analysis, however, is that the contribution of community banks to aggregate supply of credit in the rural areas is not significant, which implies acceptance of the null hypothesis. Instead, conventional banks and state credit institutions made significant contributions to aggregate supply of credit.

Table 2: Estimation Results of the Model (Newton Raphson)

Regressor	Coefficient	t-value
A	33.06	0.83
C	0.11	0.97
B	0.15	2.52
M	0.22	3.36
N	0.07	0.72
S_{-1}	0.31	2.98

$R^2 = 0.93$, F -value = 94.91, SEE = 0.004, DW = 1.99

Source: Computer estimation (Microfit Software, 1991).

The results in Table 2 represent a considerable improvement on Table 1, as serial correlation (indicated by DW) is almost non-existent. The other indicators (R^2, F-value and SEE) also indicate some improvement, and all the coefficients satisfy a *priori* conditions, which require them to be positive. The contributions from community banks and non-governmental organisations are again observed to be insignificant at the 5 per cent level, while the contributions from conventional banks and state credit institutions are clearly significant at the 5 per cent and 1 per cent levels, respectively. From these estimation results, it is once more established that the contribution of community banks to aggregate supply of credit in rural areas is not significant, indicating acceptance of the null hypothesis. All things being equal, the use of two estimation methods to arrive at the same conclusion is a clear testimony that the community banks have actually failed to perform in the rural areas.

Policy Suggestions

The major finding of this study is that community banks in Nigeria has made insignificant contribution to the supply of credit in the rural areas. This can be attributed to several factors that can be identified through a field survey, which is beyond the scope of this study. Such factors are, however, contained in a survey conducted by Manasseh (1999). First, the total number is inadequate to cater to the teeming population of the rural communities, because community banks are prohibited from operating branch network. In addition, the legal procedure involved in the formation of community bank is long and cumbersome, such that some interested community members opted to abandon the proposal and continue with their communal system of money lending and borrowing. This is clearly shown by the fact that as at the end of the second quarter of the year 2001, over 2,000 applications which sought approval to establish new banks were still pending with the National Board for Community Banks (NBCB). Second, the banks have managerial constraints that impair credit supply, due to the poor quality of management staff. Third, the capital base of the banks is relatively too low to facilitate expansion and avoid financial distress. Four, the banks do not effectively promote their services to the people, which have made a large proportion of the community to be unaware of such services, hence funds are not adequately mobilised to provide credit for the people. Five, the bad debt syndrome in the banks has continued to rise, because some community members are unable to repay loans, thereby constraining the ability of the banks in providing credit. Other factors include interference in operations of the banks by local politicians, pervasive fraud by some stakeholders of the banks, etc. The trend exhibited by some of the factors is shown in Appendix 3.

There is the need to address these problems to enable the banks contribute meaningfully to credit supply in the rural areas. As regards the first problem militating against the performance of banks, we suggest that more of the banks should be licensed to operate, by reducing the time-frame for approving new ones and allowing them to open branches. To address the second problem, NBCB should design appropriate training programmes for the management staff of the banks, to enhance their skill in financial accounting, and encourage them to develop products that would suit the needs of the rural communities. In respect of the third problem, the NBCB should raise the capital base of the banks so that they can expand operations without running into financial distress. The fourth problem can be addressed by encouraging management of the banks to advertise their products to the community, in line with the tradition of conventional banks. The fifth problem of bad debt can be taken care of by mandating the banks to insure all assets and liabilities. The management of individual banks or NBCB can address other problems identified in the study, by using measures they deem appropriate for enhancing the performance of the banks.

Finally, this paper brings out that an enlarged and well-managed community banking system, in an enabling environment, will engender a significant increase in

the supply of credit in rural areas, which will, in turn, alleviate poverty and reduce rural-urban migration.

Summary and Conclusions

This study attempted to determine the relative contribution of the community banks to the supply of credit in the rural areas of Nigeria. The study was inspired by the persistent public criticisms of the banks, which were not backed by empirical investigation. The focus of the study, therefore, was to empirically investigate the assertion (hypothesis) that these banks had not contributed significantly to the supply of credit in the rural areas of Nigeria. To this effect, a model was designed and estimated to determine the contribution, relative to other major suppliers of credit in the rural areas, which included conventional banks, state credit institutions and non-governmental Organisation (NGOs). The estimation results reveal that the contribution was insignificant, which was in conformity with the null hypothesis. The contribution of NGOs was also found to be very insignificant, but the conventional banks and state credit institutions performed well by making significant contributions to the aggregate supply. Overall, the state credit institution made the most significant contribution to the supply of credit in the rural areas.

The major finding of this study, which is the insignificant contribution of community banks, may be attributed to the problem of shortage in the number of such banks required to cater to the teeming population of the rural areas, poor management, the low capital base of the banks, lack of promotional activity, bad debt syndrome, political interference, pervasive fraud, etc. These problems can be addressed simultaneously by reducing the time frame for approving new banks and allowing them to open branches, providing training programmes to enhance managerial capacity in the banks, raising capital base, promoting services of the banks in the communities, insuring assets and liabilities of the banks, as well as other devices the management of the banks and NBCB may deem appropriate for enhancing performance of the banks. There is no doubt that an enlarged and well-managed community banking system, in an enabling environment, will significantly boost the supply of credit in the rural areas, which is a *sine qua non* for poverty alleviation and other forms of development.

Appendix 1: Expected and Actual Credit Supply to the Rural Areas of Nigeria (in Millions of Naira).

Year	Development Plan Estimates of Credit Required for 6 Per cent Annual Growth Rate in the Rural Economy	Actual Credit Supply to the Rural Areas Credit Gap	Credit Gap
1980	5,769.9	30.9	5,739.0
1981	6,662.6	32.5	6,630.1
1982	7,614.4	35.9	7,578.5
1983	9,443.9	44.2	9,399.7
1984	10,988.1	58.2	10,929.9
1985	12,521.8	114.9	12,406.9
1986	13,934.1	373.6	13,560.5
1987	18,676.3	492.8	18,183.5
1988	23,249.0	659.9	22,589.1
1989	23,801.3	3,721.1	20,080.2
1990	29,651.2	4,730.8	24,920.4
1991	27,692.6	5,962.1	21,730.5
1992	34,641.8	6,895.3	27,746.3
1993	23,348.9	6,091.4	17,257.5
1994	26,460.6	7,602.2	18,858.4
1995	27,768.9	8,659.3	19,109.6
1996	34,603.2	9,411.2	25,192.0
1997	37,648.7	13,158.6	24,490.1
1998	42,458.6	15,852.7	26,605.9
1999	30,667.6	12,792.9	17,874.7
2000	32,841.5	10,949.8	21,891.7
2001	35,649.6	13,993.1	21,656.5
2002	31,435.4	11,498.1	19,937.3
2003	33,928.1	13,406.5	26,521.3
2004	36,190.9	12,964.1	23,226.8

Sources: (i) Central Bank of Nigeria Statistical Bulletin/Annual Reports (several issues)
(ii) Federal Government Annual Budget Statement (several issues)
(iii) Federal Office of Statistics Annual Abstract (several issues)

Appendix 2: Distribution of Community Bank Loans to Some Rural Economic Activities

(in Millions of Naira).

Year	Agriculture	Commerce	Food Processing	Transport Services
1990	20.3	36.5	15.6	23.1
1991	2.6	39.8	18.3	25.0
1992	23.7	43.7	20.1	28.8
1993	123.2	280.0	69.6	68.4
1994	125.3	461.2	82.7	152.3
1995	141.2	626.7	86.0	173.9
1996	146.2	658.3	77.3	175.2
1997	153.6	709.5	75.1	181.9
1998	166.1	775.9	68.3	183.6
1999	149.8	831.6	72.6	186.0
2000	150.3	926.1	75.2	191.2
2001	145.1	844.2	72.7	193.6
2002	140.2	850.1	80.1	195.0
2003	146.1	863.1	83.9	196.1
2004	151.2	880.2	81.2	198.2

Sources: National Board for Community Banks Annual Reports (various issues).

Appendix 3: Values of Selected Variables Influencing Community Bank's Performance in Nigeria.

Year	Number of Community Banks	Total Capital Base (Millions of Naira)	Funds Diverted to Urban Areas (Millions of Naira)	Bad Debts (Millions of Naira)
1990	285	397.0	51.9	102.4
1991	306	406.1	54.5	118.4
1992	334	554.9	120.1	326.6
1993	611	266.2	310.7	491.4
1994	902	2,111.6	355.0	354.3
1995	745	1,178.8	655.0	254.6
1996	693	2,137.1	153.8	390.4
1997	674	2,688.5	713.1	318.9
1998	552	1,951.1	736.2	402.8
1999	531	723.1	790.4	311.9
2000	498	626.2	801.3	556.2
2001	462	572.5	856.2	580.1
2002	374	762.1	887.1	496.2
2003	355	505.1	1,006.3	511.9
2004	326	694.0	1,344.2	562.0

Source: National Board for Community Banks Annual Reports and Central Bank Bulletin

Appendix 4: Quarterly Supply of Credit to Rural Areas in Nigeria (in Millions of Naira).

Quarter	Community Banks	Conventional Banks	State Credit Schemes	NGOs	Total Supply (Including Others)
1991Q1	812.3	1,200.1	3,510.1	42.0	5,618.6
1991Q2	916.2	1,806.2	2,915.1	41.9	5,703.2
1991Q3	977.1	1,828.1	3,940.6	39.6	5,811.0
1991Q4	981.2	1,994.0	3,988.2	38.2	5,982.1
1992Q1	1,002.2	1,552.6	3,582.1	35.3	6,225.6
1992Q2	1,480.2	1,966.2	3,133.1	32.1	6,509.2
1992Q3	1,693.0	2,018.9	3,002.1	21.0	6,731.6
1992Q4	1,731.6	2,002.3	3,103.1	52.9	6,996.2
1993Q1	1,816.3	2,066.2	2,629.6	103.2	6,728.5
1993Q2	1,840.1	2,098.1	2,661.2	96.6	6,596.1
1993Q3	1,902.0	2,066.9	2,505.6	57.2	6,403.9
1993Q4	1,988.2	2,061.2	2,204.2	69.8	6,381.5
1994Q1	2,230.5	2,874.0	1,270.9	72.3	6,453.1
1994Q2	2,351.7	2,145.1	2,224.1	81.4	6,980.2
1994Q3	2,298.9	2,007.6	3,006.2	90.2	7,509.0
1994Q4	2,456.9	2,134.2	3,122.1	93.1	7,932.1
1995Q1	2,669.3	2,102.8	3,130.4	96.3	8,009.6
1995Q2	2,891.2	2,019.1	3,350.6	102.5	8,563.0
1995Q3	2,946.1	2,907.3	2,380.3	105.9	8,741.9
1995Q4	2,996.8	2,062.8	3,640.2	108.3	8,982.5
1996Q1	2,862.1	3,077.1	3,120.3	110.1	9,117.3
1996Q2	2,753.8	3,100.0	3,400.1	112.9	9,591.9
1996Q3	2,810.3	3,016.2	3,512.8	113.6	9,722.6
1996Q4	2,675.6	3,095.7	4,005.1	116.2	9,970.8
1997Q1	3,193.1	3,006.9	4,030.4	112.0	10,335.2
1997Q2	3,262.9	4,001.0	4,113.6	100.5	11,438.1
1997Q3	3,684.5	4,551.2	4,600.3	114.8	12,960.3
1997Q4	3,769.1	4,564.3	5,370.8	180.2	13,861.9
1998Q1	3,811.7	5,008.1	5,205.2	183.6	14,228.3
1998Q2	3,799.2	5,220.9	5,643.1	202.1	14,981.0
1998Q3	3,898.5	5,296.5	6,450.8	208.7	15,863.2
1998Q4	3,937.3	5,008.2	6,525.6	213.1	15,998.9
1999Q1	2,297.1	4,997.6	5,460.3	220.5	13,003.1
1999Q2	2,796.0	3,622.2	5,304.1	232.2	12,102.3
1999Q3	2801.2	4,086.1	4,312.6	240.9	11,736.9
1999Q4	2898.9	4,234.3	5,590.9	236.3	12,993.2
2000Q1	2366.5	3,089.3	5,520.3	241.9	11,286.0
2000Q2	2799.2	3,335.2	3,456.1	205.2	9,817.3

Quarter	Community Banks	Conventional Banks	State Credit Schemes	NGOs	Total Supply (Including Others)
2000Q3	2922.1	3,088.1	4,024.3	198.1	10,266.1
2000Q4	2971.6	3,176.0	4,518.2	212.8	10,984.9
2001Q1	2,700.2	4,005.0	4,288.5	200.9	11,205.7
2001Q2	2,831.9	5,071.9	5,189.3	222.5	13,369.8
2001Q3	2,818.2	5,003.2	5,126.1	138.6	13,165.8
2001Q4	2,616.2	5,005.8	6,001.9	134.5	13,871.6
2002Q1	1,988.0	5,030.1	5,022.4	140.3	12,188.0
2002Q2	1,762.0	4,180.3	5,060.3	180.7	11,289.3
2002Q3	1,817.3	4,009.0	4,012.5	182.1	10,176.2
2002Q4	1,893.1	4,106.9	5,688.1	226.2	11,973.3
2003Q1	1,790.9	4,081.5	6,122.9	210.8	12,163.1
2003Q2	1,751.3	5,032.0	6,006.2	231.3	13,088.9
2003Q3	1,605.0	5,206.1	62,220.1	262.9	13,361.4
2003Q4	1,789.3	5,312.8	6,411.2	380.1	13,964.0
2004Q1	1,565.1	4,435.2	6,053.1	356.3	12,438.1
2004Q2	1,326.2	4,006.8	6,198.9	364.2	12,002.8

Source: National Board for Community Banks Annual Reports and Central Bank Annual Reports (various issues).

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Book Reviews

Deb Kumar Bose. *Essays on Environmental Economics*. Kolkata: K. P. Bagchi & Company. 2004. Pp.107. Rs.200.

Thanks to the increasing interest in environmental economics, there is also a growing number of good books on the subject including texts. The book by Professor Bose under review is a welcome addition to this growing literature and contributes to further clarifying and improving our understanding the subject. Though not strictly a text book as such because of its brevity, it is nevertheless fairly comprehensive and presents an insightful bird's eye-view of environmental issues in relation to economics. The presentation is lucid, charmingly simple, clear and straightforward, with mathematical jargon kept to the minimum. Young students who feel more confused than enlightened by complex and hefty tomes on the subject, will find it refreshingly useful to read this book. It will enable them to understand difficult texts better.

Professor Bose briefly reviews the development of economics from Adam Smith onwards mainly from the point of view of environment. Interestingly, he observes that though Adam Smith laid stress on self-interest of individuals as the driving force behind the market system, he was also aware of the limitations of the market and left the State to take care of activities and issues that could not be attended by the market. Smith was explicit about the role of the State in protecting the citizens from injustice, and did not separate ethics from his political economy. It was Neoclassical economics which not only separated the two, but also divorced economics from environment, and focussed only on the self-interest of individuals. In the bargain, even the collective interest was ignored; at best it was a mere summation of interests of individuals, and externalities were ignored. The attempt of Neoclassical economics to add environment in the production function only added to the confusion and did not help, according to Bose. Economics has now become aware of the need to incorporate environmental concern in its analysis, thanks to several perceptive economists like Geogescu-Roegen. But Professor Bose says that economic analysis is still not sufficient for policy decisions in dealing with environmental problems, since there are serious limits to economic accounting of environmental costs and impacts.

This should no doubt make economists feel humble, but why economists alone? Even on an extremely important issue of global warming, there is such a significant diversity of views as to make policy makers quite confused. Bose himself discusses how one school of scientists, checking with the history of human civilization from pre-history to recent periods, showed that culture and civilization which flourished during warmer periods were marked by decline during colder periods, but another school denied that there was any such association. Bose's own conclusion is that the costs of global warming far outweigh any local gains.

This points to the need for the economists to develop their skill and scope to incorporate up-to-date information from other sciences to come to an assessment.

Similarly, natural scientists need to come to grips with economic accounting and assessment concepts and techniques. It is high time to develop short-term courses in economic concepts and methodology for natural scientists to facilitate this process. The urgency of promoting increased openness and interaction between sciences and social sciences can hardly be exaggerated. Unless scientists come up with clear policy guidelines, politicians may feel free to adopt policies that are decided mainly on the ground of short-term and local political compulsions, rather than long-term collective interests of the community at large.

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Manoranjan Mohanty (ed.). *Class, Caste, Gender: Readings in Indian Government and Politics, Vol. 5*. New Delhi: Sage Publications. 2004. Pp.439. Rs.395.

Class, caste and gender have played a very prominent role in the history of India. Many scholars attempted to understand the dynamics and interrelation between these three concepts in the domains of polity, economy and society. However, the fact remains that a comprehensive and thorough understanding of them is elusive to scholars working on India. For various reasons, many scholars have studied these three concepts in isolation from each other; the current book under review is an attempt to fill the gap.

The book is part of a series on Indian Government and Politics and has a collection of seminal essays suiting contemporary times. It addresses the dynamics of interaction between class, caste and gender in terms of the prevailing social conflicts and political fragmentation in India. There is a growing democratic consciousness among the masses, in general and the downtrodden, in particular, resulting in a conflict with the existing power structures. This, in turn, is leading to assertion of social identities politically, further fragmenting the politics. On the other hand, there is a growing similarity in the economic policies pursued by various political groups. Thus, it is pertinent to understand the book under review against this background.

The introductory essay by the editor, Manoranjan Mohanty, briefly outlines the context of the book and argues that the complex interface between class, caste and gender is linked with the manner in which Indian capitalism has grown. He further argues that the bulk of the poor belong to SC, ST, and OBC, with women suffering the more. Hence, he sees the study of the interface of class, caste and gender as vital in understanding poverty in a comprehensive manner. The book is divided into three parts: Class Structure and the State; Caste Domination and Political Power; and Gender Inequality and Social Change.

In the first article, “Caste and Agrarian Class: A View from Bihar”, by Anand Chakravarti, in Part-I, illustrates how the traditional upper castes and the newly emerging dominant castes that have access to resources exploit the poor,

who also belong to the lower castes by birth. The case of Bihar is cited. Prabhat Patnaik *et al.*, in the second article on Indian capitalist class and economic reforms, analyse the changing character of the Indian capitalist class since the onset of economic reforms. They also explain the reasons for the Indian capital supporting new economic reforms, in spite of the benefits reaped from the earlier protection regime. Sharit K. Bhowmik ("The Working Class Movement in India: Trade Unions and the State") argues that the trade union movement in India often collaborated with the state and capital, apart from vehemently opposing both. He, further, laments that the trade unions failed to shape the overall course of the struggles, as they have been a derivative of party politics and thus functioned as mass fronts of political parties rather than as autonomous organizations. They further failed in integrating trade union movements with other questions like caste, gender, etc.

The inclusion of B.R. Ambedkar's article, "Castes in India: Their Mechanism, Genesis and Development" in Part-II, published originally in 1916, in this volume speaks of the relevance of Ambedkar's approach to caste and the persistence of caste problem in contemporary India. In this article, Ambedkar explains how caste originated in India as a product of both Brahmanic social structure as well as ideology. The second article, "Caste in Modern India," by M.N. Srinivas (published in 1962), highlights the concept of the 'dominant caste' and how they took to the new field of activity in the form of politics. This, the eminent sociologist argues, is a fallout of the manner in which the British transferred political power to the Indians. An overview of the dominant castes' behaviour and the subsequent impact on the political process of the region covers almost all the regions of the country. The article by Rajni Kothari, "Caste in Indian Politics" published in 1970 argues that a continuous churning process of the caste phenomenon is taking place. This process, he attributes to the constantly changing electoral politics, economic development, cultural change and the evolving ethos of equality. He fits this argument into the dichotomy between tradition and modernity of the Indian state.

D. L. Sheth's article, "Reservations Policy Revisited", brings out the unevenness of social representation in the state apparatus and makes a strong case for reservation as a necessary step to rectify the longstanding social inequalities. Kancha Ilaiah's article highlights the Dalit consciousness by looking at the Dalit struggles in Andhra Pradesh in the 1980s in the light of two prominent incidents – Karamchedu and Chundur. He argues that the two incidents have restructured the entire political discourse in the state and the major political parties adjusted their political strategy accordingly due to the widespread democratic protests and consciousness. He also points to the comprehensive transformation of Dalits – structure and culture levels, combating feudal, capitalist and Brahmanic institutions and ideas. The article, "The Language of Dalitbahujan Political Discourse," by Gopal Guru, traces the origins of the word 'Dalit' and its popular usage over the Gandhian concept of 'harijan'. The author points to the changing connotations of the word Dalit and how it acquired newer ideological and political meanings in the course of social movements and policy debates.

Uma Chakravarti's article, "Conceptualising Brahmanical Patriarchy in Early India: Gender, Caste, Class and State," in Part-III of the volume, throws light on the need for look afresh at our culture and history from a feminist perspective or for that matter from the vantage point of oppressed people. Neera Desai and Maithreyi Krishnaraj, in their article, give an overview of the status of women in India by assessing the performance of four decades of independence. Ilina Sen's "Women and People's Movement: A Space within the Struggle" looks at the linkages between class and gender. "Gender Equality and Women's Agency" by Jean Dreze and Amartya Sen, blame India's development process for discriminating and excluding women in the spheres of education, health and other social opportunities. The final concluding essay by the editor argues that freedom from a particular form of social oppression is incomplete without freedom from other forms of social oppression. He argues that without recognising the interconnections among the dimensions of power, the movements will remain exclusive.

The volume offers nothing new in terms of scholarship, but is nevertheless worth reading, as the seminal essays are put together. This again largely shows that contemporary India is persisting with the same problems that it had in the past.

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Sanjeev Prakash and Per Selle (eds.). *Investigating Social Capital: Comparative Perspective on Civil Society, Participation and Governance.* New Delhi/London: Sage Publications. 2004. Pp.315. Rs.550.

The concept of social capital has been invented and reinvented several times ever since its theorisation in the 1980s. Likewise, a range of methods has been used by social scientists to analyse social capital and political trust. Following Bourdieu and Coleman, Robert Putnam gave a new perspective to the concept. Social capital describes the pattern and intensity of networks among people and the shared values that arise from those networks. While definitions of social capital vary, its main elements are citizenship, neighbourliness, trust and shared values, community involvement, volunteering, social networks and civic participation. Civil society is the vital capital for any society. With trust, reciprocity and proper networking, a society energises itself towards development.

The book under review analyses the concept, causes and consequences. It draws on experience from different societies to present social capital in a manner that departs from the previous conventional pattern. The contributors give an account of the mechanism facilitating or obstructing the emergence of social capital.

In his introduction, Per Selle points out that social capital is embedded in a particular organisational context because there is no commonality in the ideas and models of civil society prevalent across societies. Civil society has both a negative

and a positive impact on society. It becomes negative when transactions among certain interest groups result in adverse consequences for other marginalised and socially excluded groups. Mario Diani holds a similar view of context specificity of social capital, showing little evidence for generalised trust, whereas specific kinds of associations may affect the levels of trust in the specific institutions.

Axel Hadenius, sharing Putnam's views, is concerned with the relationships between people and organisations. Organisations aggregate individual preferences, breed values, and generate identity for the members and the group as a whole. Organisational existence at the local level makes it easier for ordinary people to be a party to the decision-making, thereby paving the way for the process of democracy to occur. A strong pattern of organisational encapsulation can be a threat. One way of minimising such a threat is by enabling institutions to function neutrally and consciously, overcoming favouritism or discrimination.

A critical look at the arguments makes it clear that organisation is a necessary but not a sufficient condition for social capital. If the organisations are the beholder of the social capital then the question that arises is, how is social capital originated by the organisation different from social capital, in general?

Dietlind Stolle finds that the passive members of an association display a significantly higher level of competence than non-members. Passive members are important for associations because they are the source of strength and legitimacy that are essential in any democratic process. Associational life is the crux of civil society as it provides its members with the requisite knowledge, skills, and opportunities to exert political influence. Although passive, associational life may give rise to a sense of belonging and commitment towards a cause. However, not all associations have the capacity for mutuality and co-operation. Associational life makes people generous enough to appreciate each other, while at the same time making them self-regarding and parochial. Group conflicts can have further repercussions leading to ethnic conflicts and civil wars.

Paul Dekker argues that trust, norms, and networks, as hitherto perceived by scholars, have little empirical foundation. He calls for identifying characteristics of groups and personality types that are more inclined to contribute to the understanding of social capital.

Using Swedish data, Bo Rothstein argues that cross-country data do not show any reliable correlation between general social trust and trust in the institutions. Ideas such as the rule of law, fundamental rights, etc., in any state are rarely universal either in their construction or implementation. Rather, they are the dominant religious, ethnic groups etc., of society and those who seek to advance their own self-interests using the mask of other ideas. In such a case, the circumstances may not be congenial for social capital to emerge. The government, therefore, needs to implement the laws universally and neutrally such that social capital can be generated.

Douglas states that a high density of organisations can reinforce the value-homogeneity within the social network of persons having similar views. The

writer has taken note of other forms of relationships as distinct from the ones that are face to face. Locating the relationship between organisations and local government, he argues that declining active participation may not necessarily lead to the demise of social capital, for what is important is the continued membership in local organisations and the continued capacity of such organisations to represent the interests of the people in society. Political institutions influence social capital to a degree that it becomes either beneficial or detrimental to democracy. Dietlind Stolle finds in three Swedish regions that good experience at the local government is transmitted to the regional and national levels as well as the way generalised trust is constructed. The assumption here is that social capital is intimately related to the local governments and regarded as one of the conditions of development.

However, a few loopholes stare at the readers here. Douglas holds that declining active participation may not lead to the demise of social capital, while recognised circumstances continue membership in the organisation as representing the interests of the people. However, unless members of any organisation are actively participative, there is little scope for meaningful articulation, and aggregation of their interests. So, the very objective of the organisation may not be fulfilled. Likewise, Dietlind Stolle does not attach importance to affiliations by people with political parties and their ideologies. Even if the local government led by a particular party plays an ineffective role in the region, people may not lose their faith in that party and its members acting on a broader or national level. Hence, the generalised trust may not be a transmitted trust of the local experiences, as believed by Stolle.

Anirudh Krishna, on the basis of a case study in Rajasthan, too arrives at similar conclusions. Developmental performance is high when there is a high level of social capital, capable leaders, effective agency, and a high literacy level. Agencies provide information to the rural people towards collective action and help them to establish proper links with the state institutions and the market. Following Bourdieu's opinion on structural change as one of the important requirements of society for development, Gaute Torsvik notes that social capital facilitates the use of information, good will, and cooperation, and plays a positive role in decreasing the cost of opportunities and enhancing the stakes for individuals. With regard to Anirudh Krishna's view of the intimate relationship between social capital and development, it remains unclear how the development institutions or agencies help create social capital. Besides, the indicators mentioned by the author for development are not sufficient.

Tommy Tranvik, in the concluding essay, states that technological developments lead to drastic social changes. The Internet is transforming the world of communication and networking. It facilitates the 'top' to reach the real community. Cyberliberterianism, the ideology of the Internet, holds that it is an inherently democratic means of communication. Digital technology will change our notions of community, revitalise civic society and contribute to the rise of social capital.

This book, in spite of certain lacunae, does shed light on different dimensions of the concept of social capital, defies Putnam's argument on generalised trust, as it finds little evidence of the possibility of generalised trust in society. This

volume has carried the arguments on social capital a step ahead from its predecessors. The book undoubtedly adds to the knowledge of social capital.

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Sunanda Sen, *Trade and Dependence: Essays on the Indian Economy.* New Delhi: Sage Publications. 2000. Pp.316. Rs 475.

The protectionist policy in international trade of the seventies and eighties could not generate the desired growth rates in the trade sector. This was clearly reflected in the Forex reserves and the BOP problem at the beginning of the nineties. As a sequel to the macro-economic events during the late eighties, international trade assumed greater significance. It picked up further during the nineties following liberal trade policy reforms and emergence of WTO. But, prior to this eventful decade, the trade sector went through a subdued debate about the contribution of the sector to overall growth, and trade dependence of the economy under the shadow of a protectionist policy. This book is a collection of essays addressing to the themes during those years based on India's international trade in the context of dependence. These essays were written over a long period starting with 1967 and ending at 1994. Therefore, they provide an excellent reading for setting the background of the current trade policy changes in India. One must understand that these essays were written in the context that was far drawn from the present, but still have a live relevance if one allows some flexibility to the concept of 'dependence'. Understanding the constraint of time lapse, the author has revisited some of the essays and tried to give a fresh outlook to them.

India's trade policy has evolved through many stimulators that derive support from the political changes in the country. Priorities set in the Five-Year plans and the behaviour of domestic demand and supply were the major determinants. The development model adopted (rather surfaced) had trade as emerging more out of the surplus/deficit after satisfying the domestic demand. Thus, protecting the domestic market was the main concern and import substitution was the prime-protecting shield. The policy of import substitution presumed that the production efficiency in the domestic sector would improve as a result of industrialization through import substitution. Over-reliance on the policy of import substitution and failing on the count of export promotion made us technologically dependent vying for forex reserves and at the same time incurring international loans. Up to the mid-sixties, the entire attention of policy makers was focused on putting the house together due to destabilizing factors like China and Pakistan Wars and severe droughts and shortages in food sector. By the seventies, signs of change were visible in the policy initiatives drifting away from the closed import substitution to export promotion. The initiative came due to various market dominant factors.

In this book under review, Sen discusses the fiscal and other incentives including concessional measures relating to production and marketing of exports. These were largely initiated during the seventies after the Export Policy Resolution of the cabinet committee during 1970. That also set a tone for the possibility of increasing export growth and thereby enhancing the efficiency in trade. During that period three official Committees were appointed to look into the various aspects of trade policy, [Alexander Committee (1978), Dagli Committee (1979) and Tandon Committee (1980)]. These Committees suggested various export promotion measures, which included budgetary concessions on import licences, input price concessions, freight credit for working capital, capital goods and raw material, direct cash incentives to exporters and duty drawback in terms of exemption from taxes. The recommendations offered by these three official committees were incorporated in the subsequent long-term import and export policies of 1985-86 to 1990-91.

During March 1990, there were some changes in this EXIM policy framework due to the changes in political regimes. But, the general theme of liberalisation of imports, especially of capital goods and raw materials, continued to be one of the components. Among the policy measures, relaxation of licensing policy, foreign exchange availability, reduction in cash margins of imports, introduction of EXIM Scrips, the Special Import Licence Scheme, relaxation in export control marked the important steps. Export encouragement on the one side and import relaxation on the other formed the main theme of policy changes. Indications were clear that henceforth the Open General Licence (OGL) list of imports would expand and this would enhance exports through export-intensive imports. The move was clearly chalked out to confine the list of items under quantitative restrictions to a narrow range. Further, the trade policy that was earlier characterised only by short-term changes to combat exigencies was turned into a long-term consistent policy. But it also raised an important issue regarding the probable impact on the trends in export and imports of such changes. Sen, in the ninth chapter, strongly argues the ineffectiveness of export-link to import liberalisation on the count that such a link loses its purpose, especially with premium-based incentives to exporters, which are open to sharp fluctuations.

The five year EXIM Policy underwent modifications in the form of changes in the licensing policies, alterations in the list of items subjected to various trade restrictions, customs duty modifications, and procedural changes and list of QRs every year. The modifications to the Exim Policy declared by the Ministry of Commerce between 1st April 2000 and 1st April 2005 were very much in tune with the requirements of the WTO. These also marked India's decisive steps towards liberalisation and export-induced growth. For example, the decision of setting up of Special Economic Zones (SEZs) like China. The existing Export Processing Zones (EPZs) have been converted into SEZs. In order to boost the exports, the policy called for the involvement of State Governments in the national efforts. The policy changes during the nineties surely changed the context of 'dependence' as it was understood when the author penned some of these pieces. Now, dependence is more contextual for the trading partners and the competitive nations.

The book under review addresses many issues of importance from the trade policy perspective. The author has reviewed the changes in trade policies through the last four decades especially focusing on India's trade dependence. As stated earlier, this is a collection of essays written over a long period and ending at 1994 and therefore, misses the major events in the trade sector during the late-nineties. In the first chapter, the author tries to grapple with the dimensions of external economic transactions from a conceptual framework and that stands as an introductory chapter. Chapter two and three of the book deal with the balance of payment situation during the eighties. This is an important and probably the sole aspect responsible for policy changes that followed. The discussion includes the dimensions of external economic transactions. Further, the author analyses the balance of payment crisis during the early nineties elaborately and brings out very clearly the import dependence and the import led GDP compression. In addition to this, the sources of viability and vulnerability have been scrutinized in a quick analysis and therefore, the results are not rigourous enough.

Short-term indicators of international liquidity do not capture the developmental implications of international economic transactions for a developing economy. Even the available long-term, analytical forays fail to indicate whether the flow of net external finance available to the country in each period provided apparent inflow of real resources needed for development. Therefore, the real transfers, as an adjunct to the development process become inevitable. The author states that deficit in goods, and not factor services may thus overestimate the flow of real transfers from abroad. Sources of current earnings have, of late, been rising, relative to net current account deficits. This suggests an improved sustainability ratio defined as the proportion of own earnings to borrowed funds in the external accounts. Even though one agrees to these propositions in the context of time and economic situation prevailing then, the sea change during the late nineties cannot be overlooked, without which the arguments remain inconclusive.

The years preceding the decade of nineties were quite eventful in terms of the flow of private transfers to the country that had set in motion the future trends. It was during these years that the countries' debt stock rose significantly to more than 40 per cent of the GDP by 1990-91. The potential debt crisis was thus written very well on the walls by the year 1988-89. It is an interesting fact that the author had predicted the oncoming crisis of nineties through her writings that had appeared as academic articles during that period. However, the policymakers during those years had neglected this academic piece to the detriment of the BOP situation. It has been pointed out that the movement in credit ratings for India during these years also reflected an apprehensive pattern, especially stickiness of the ratings during 1992-95.

Foreign aid dependence was certainly an issue during the sixties and seventies. It was one of the important aspects discussed by most of the international trade specialists then. But, the situation has taken a dramatic turn and if the events of nineties provide a guideline, even the State governments are trying to compete

with each other for getting their share of the aid cake. Initially, the author has provided a conceptual frame, dealing with the gap models of foreign aid, and in particular, dealing with the liquidity gap, which is relevant in the context of institutional practice in loan tying. The author argues that liquidity or foreign exchange gap can constrain growth in the borrowing economies. The financially reclassification of India's balance of payment is provided in chapter six. Of course, this also has a reference to the situation during the seventies. Empirical tests reveal that India's imports during that period were responsive to foreign loans. The situation intensified by the late eighties. The imports constituted mainly the goods of urban consumption.

Finally, before closing the book, she has analysed the process of export led growth in a typical two-sector model of growth. That has its own limitations and therefore, the results have to be carefully understood. She has attempted an investigation into the possibilities of immiserising growth to set the guidelines for policy implications. The impact of import dependence in the foreign exchange constrained economy has been brought forth quite succinctly. Current reforms in India's trade policy provide a starting point for chapter ten of the book and after analysing the data, up to 1997-98, she concludes that liberalisation, which aimed to instill competitive efficiency in the economy thus failed to achieve a steady up trend in exports. However, the import propensity has been increasing, moving up from around six per cent to 9.8 per cent. The next two chapters are out of place in the book and deal with historical trends in Colonial dependence on trade. In supplementing her arguments, on the theme that trade as a handmaiden of colonialism, she has analysed the capital inflow data during the late 19th century, prior to First World War. The chapter written in historical context has some relevance even today but the author has failed to bring such relevance in the concluding part of the chapter.

This book is a collection on the themes written by the author spanning the period before liberalisation and essentially analyzing the situation prior to 1995. These contributions are academically quite strong, but the arguments are dated and one needs a hard search for current relevance of these arguments in the contemporary context. However, I am sure that these will help any reader to understand the historical background of the trade policy. These papers of the author were well known earlier and the publisher has tried to put them together, unfortunately without connecting properly and to any current themes. Therefore, it serves as a very good classroom reading and a reference, than a policy feedback material.

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A.P. Thirlwall. *Trade, the Balance of Payments and Exchange Rate Policy in Developing Countries.* Massachusetts (USA): Edward Elgar Publishing Inc. 2003. Pp.177. US $25.

This book is a synthesis of ideas and research that Professor Thirlwall has been carrying on for several years on trade, exchange rate and balance of payments with special reference to their monetary aspects. The synthesis connects the author's ideas and research in time and with developments in the profession.

In total, the book is organized in five chapters: Trade and growth; Trade and the balance of payments; Exchange rate systems and policy; What is wrong with balance of payments adjustment theory?; and A new International Economic Order. To help the readers, the author presents a succinct summary of each chapter in the introduction. In a way, the summaries read like technical abstracts in professional economic journals!

In essence, integration of balance of payments into the theory and empirics of international trade is attempted in the book. In the opinion of the author, this integration "*has a number of implications for important issues such as the sequencing of trade liberalization, the role of the exchange rate in achieving balance of payments equilibrium, the case for protection, for industrial policy, and for the way in which the importance of export growth is articulated – not from the supply side, but from the demand side by lifting a balance of payments constraint on growth*" (p.xii). These implications are of importance for rich and developed countries as well as for poor and developing countries. From this viewpoint, the entire analysis in the book is relevant for policy discussions in the context of new international economic order.

Professional economists presume that the subject matter and focus of this book should be subject to rigorous quantitative analysis to establish precise and generality of results. Professor Thirlwall does full justice to this presumption, but in a different way. That is, he presents the final analytical results, drawn from underlying quantitative economic theory, in a form and language that is understandable and appreciable by both professional economists and non-professional economists (e.g., policy makers and persons in trade, business and industry). Thus, the book does not present itself as a pure quantitative theory of monetary international economics. Or, as a pure empirical international economics with alternative estimations of monetary relationships and impacts with refined data and techniques of estimation.

Current status of topic/s in each chapter is analysed with its historical origins and evolution Thus, both historical and contemporary ideas and developments are best captured and sequenced throughout the book. For instance, Chapter 1 deals with trade and growth. It starts with the importance of trade from a historical quote from Alfred Marshall in 1890: "*the causes which determine the economic progress of nations belong to the study of international trade*" (p.2). On the static and dynamic gains from trade, the contributions of Adam Smith and

David Ricardo to Helpman and Krugman, Grossman and Helpman, and to Wacziarg are covered. In analyzing the relationship between exports and growth, both supply side factors (by Feder and Esfahani) and demand side factors (by McCombie and Thirlwall, and Nureldin-Hussain) have been presented with equal importance. To carry on this discussion further, the role of trade liberalization [i.e., "*ending discrimination within countries in favour of the production and consumption of domestic goods*", or "*elimination of all biases against exporting and importing*"(p.21)] is highlighted. A list of indicators for distinguishing trade liberalization in terms of trade openness and orientation has been presented as developed by institutions like the World Bank and International Monetary Fund, and by scholars like Sachs and Warner and Edwards. Empirical studies based on international data on these indicators by Dollar, Rodriguez and Rodrik, and others lead to a general conclusion that "*none of these countries could have grown as rapidly as they did without the rapid growth of exports. Apart from the externalities associated with trade and the encouragement of domestic and foreign investment, they simply would not have had the foreign exchange to pay for all the import requirements associated with rapid growth*" (p.34). This conclusion supports free trade and factor mobility as instruments for achieving rapid economic growth in open and globalising economies.

On the whole, the book presents both theory and empirics of monetary determinants and consequences of international trade in modern and reforming economies. The blend has been achieved in the presentation of main theoretical explanations and predictions, and empirics have been limited to highlighting the evidence with policy implications. Thus, the book is relevant for students of applied international economics, and trade policy makers and analysts in government, financial institutions, trade, industry and business. Proponents of economic globalisation will find this book as a source of analytical and empirical support to argue for further globalisation of all economies.

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Centre for Development and Human Rights. *The Right to Development A Primer.* New Delhi: Sage Publications India Pvt Ltd. 2004. Pp. 293. Rs 395

The right to development (RTD) has been a much debated concept since its inclusion as a human right by the UN in 1986. The debate is about whether it is an individual or collective right, people's or state's right and finally, whether it is really a right or merely a summation of other human rights. The primer, by the Centre for Development and Human Rights, introduces us to this controversial concept. Main themes dealt within this book are delineation of the concept, a survey of national and international legal-institutional framework and its application. A huge task indeed, one might say.

The first theme begins by mapping the conceptual framework of RTD. Stephen Marks' introduction is crisp. Marks accomplishes the twin task of tracing the evolution of the notion 'development' and human rights approach to it. Following this, an elaborate discussion of the RTD concept informs us that it encompasses not only the 'ends' of development but also the 'means' to achieving them. Such a broader notion links RTD to governance concerns by bringing within its ambit the principles of equity, non-discrimination, transparency, accountability, and participation as essential elements.

The vector approach and 'Development Compact' are novel. The vector approach to RTD projects it as a multi-relational phenomenon, comprising diverse rights. RTD is said to be realized if any or all the rights improve, while no other right deteriorates, thereby demonstrating the interconnectedness of rights. The Development Compact seeks to establish reciprocal conditionalities between donor and receiving states for effective RTD implementation.

The rights to food, education and health as important components of RTD are explained with reference to their conceptual underpinnings in Chapter 3. Criteria of evaluating these are availability, accessibility, acceptability and adaptability. State's obligations towards them and what constitutes their violation are sketched briefly, as also the interdependence of these rights with other human rights. Legal-institutional framework for the guarantee of human rights in India, as discussed in Chapter 4, encompasses the Constitutional provisions, role of the judiciary, the Human Rights Courts, and the National Commissions on women, children and minorities.

The coverage is extensive in Chapterss 3 and 4. However, it would have made better reading if the contents had not been split up into many repetitive sub-sections in Chapter 3. The issue of women's rights taken up in these two chapters is much too complex for a primer to deal with. Consequently, the authors' exploration is not without the risk of oversimplification. Since the Fundamental Rights in the Constitution are the foundation for human rights in India, explaining their relevance to RTD would have been welcome. This gap is notwithstanding the treatment of the issue in Chapter 6.

The theme of examining the application of the rights to food, education and health in India is dealt with comprehensively with regard to 'the facts and figures' of these rights. We are presented with data showing an improvement since Independence. Yet, we have many miles to go. With regard to the right to food, nearly fifty per cent of the children and adults suffer from malnutrition and chronic energy deficiency respectively. A brief section looking at the role of employment guarantee schemes intelligently links the right to work with right to food.

With regard to education, several schemes have been initiated by the Centre, resulting in considerable increase in the number of schools, teachers and the enrolment rate in 'primary and secondary education'. However, problems such as high dropout rates, poor infrastructure and quality of education plague the system. Higher education is considerably subsidised but only six per cent of the corresponding population is enrolled here.

In the field of health, life expectancy has increased and both infant and maternal mortality rates have declined — encouraging developments. The private sector plays a dominant role, accounting for 78 per cent of the expenditure on health. The public sector in health care is constrained by a host of factors like centralised and rigid planning, staff shortage, etc.

One would like to ask here: where is the 'right' part of the explanation with reference to food, education and health? Perhaps, a little more analytical probing into the dimensions of rights that are violated in the above contexts would be in place.

A welcome addition to the above theme is Chapter 6. It sketches the functioning of Public Interest Litigation, underscoring its positive role in enhancing the rights to food, education and health in India. The efforts of the authors to embody a holistic perspective of RTD are reflected here.

The primer fulfills its task of drawing a tidy portrait of RTD, outlining its conceptual and practical dimensions, although it seems to me that the hurdles facing the realization of the *'right'* are slightly underplayed. The 'boxes' in the book enhance its readability. The only note of discontent is its price. Yet, a good book for the uninitiated to get acquainted with the RTD concept.

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