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CONTENTS

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Contents **Page**

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INTEREST RATE POLICIES AND ECONOMIC DEVELOPMENT: THE SRI LANKA EXPERIENCE SINCE 1977

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Introduction

The role of the interest rate in the economic development process in developing countries has been a subject of considerable academic interest during the last 30 to 40 years. It was Keynes in his essay entitled "General Theory of Employment, Interest and Money", published during the great depresson in the thirties, who first recognized the significance of the interest rate in economic development.[1] Analysing remedies to overcome economic depression, Keynes advocated a low interest rate policy as a strategy to promote investment. To increase aggregate demand in the economy, he prescribed the use of fiscal policies, i.e., an increase in government spending to stimulate expenditure in the economy, or a cut in taxes, to increase consumer spending on goods and services.

In the fifties, the Keynesian theories did not seem to hold quite well In most developing countries, monetary policies derived from the Keynesian analysis led to inflationary tendencies, slower economic growth and management problems.[2] Meanwhile empirical research on the causes of

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1. The earlier economists, usually known as classical economists, attributed no specific significance to either the interest rate or to the quantity of money in the process of economic development. They held the view that the quantity of money could only affect prices; it has no influence on either output or employment.

2. It should be noted that Keyne's primary consideration was the economic recession of industrial countries during the thirties and his analysis was not developed to address the development issues peculiar to developing countries. However, his policy prescription was adopted in a number of developing countries mainly due to the lack of an alternative policy approach specifically designed for developing countries in the fifties and sixties.

inflation carried out in Latin America in the early fifties, revealed a positive relationship between money supply and inflation. These efforts subsequently led to a new doctrine called "monetarism", emphasizing the need to control money especially as a means of economic stabilization. In this, approach, the role of the interest rate has not been explicitly considered but the monetarists advocated that the demand for money is stable in the long run and thus the demand for money is very inelastic to changes in the interest rate. According to the monetarists, a change in money supply will only have a short run effect and that is also if the economy is operating at less than full employment.[3] The Keynesian analysis, on the other hand, implies a very low elasticity of the investment function with respect to changes in the interest rate.[4]

The countries which experienced high inflation particularly following the application of the Keynesian model, began to focus on the monetarist approach. The International Monetary Fund (IMF) also began to emphasize the appropriateness of the monetarist thinking for developing countries with difficult management problems. Since the late sixties, the IMF stabilization program highlighted the need to maintain a rate of increase in money supply close to the rate of real output growth and the nominal interest rate above the rate of inflation in order to keep the real interest rate positive. As the focus of the monetarist approach was essentially economic stabilization, it also suffered from many shortcomings as it did not specifically address the issues to a developing context.

As neither of these approaches directly dealt with the issues concerning developing nations, research efforts since the early 1970's began to focus on monetary and interest rate policies with more direct application to developing countries, within the context of their money market characteristics and development priorities. New thinking, pioneered by McKinnon and Shaw, emerged in the seventies placing a greater emphasis on financial liberalization and financialization of savings. This view contends that if authorities in developing countries repeal all forms of financial repression by adopting, non-interventionist policies in the financial market, a real positive interest rate can be maintained which will in turn act as an inducement for higher savings. Increased savings enable more investment, particularly on high yielding projects, leading to a higher economic growth rate. This view, postulates that a given quantity of savings mobilized via the financial system can be utilized more productively than the same quantity of savings mobilized via informal channels (Roe, 1982).

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3. This doctrine, pioneered by Milton Friedman, has been greatly influenced by the views held by classical economists particularly Irving Fisher.

4. See Ghatak, Page 25.

This approach has been further refined by Gurley-Shaw and Goldsmith. These refinements also support a higher nominal interest rate, in order to ensure a positive real interest rate, particularly at the early stages of financial intermediation. As the money and capital markets become better organized, the range of financial assets tends to become diversified and bonds, shares etc., become alternatives to holding savings in the form of deposits in the banking system. At this stage savers can opt for a diversified savings portfolio which could minimize the risk and uncertainty involved. The rate of interest will reflect the market conditions for the supply and demand of money and accordingly, the need for interventionist policies does not arise when the financial markets reach the maturity stage.

One important difference between the McKinnon and Shaw approach and the Gurley-Shaw and Goldsmith approach is that the latter focuses on the channelling of surplus savings of one sector to another where the investment demand is greater than the savings that can be mobilized within that sector. The savings that are channelled through the financial system require a better mix of investments which will ensure a higher rate of return than the rate of interest on savings. This approach allows the rate of return on certain projects to be lower but on average the rate of return on total investments should remain above the rate of interest. This implies that the investment portfolio of the economy as a whole should include a significant proportion of more productive projects.[5]

Against this background, the purpose of this paper is to analyse the role of the interest rate in Sri Lanka with particular reference to the period after 1977. A review of the interest rate trends in Sri Lanka since 1977 provides a case study to investigate the role and effectiveness of the interest rate in promoting savings, allocating investment more productively towards a higher economic growth and controlling inflation. The rest of the analysis is divided into several sections. Section II briefly reviews the interest rate mechanism in savings and investment behaviour. Section III outlines the main characteristics of the financial markets in developing countries in order to draw parallels between Sri Lanka and other developing countries. Section IV analyses the trends in interest rates since 1977, examining their effect on savings and investment patterns. Section V assesses the effectiveness of the interest rate in controlling inflation. Section VI brings together the major conclusions of the analysis.

Interest Rate Mechanism on Savings and Investment

The interest rate when broadly defined, is the price or the cost of money. From a savings perspective, the interest rate is thus equal to the income that will be forgone, if the money is held in the form of cash holdings instead of cash

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5. See Khatkhate (1982) and Coats and Khatkhate (1984).

bearing assets such as time and savings deposits or bonds and securities. Theoretically, a higher interest rate stimulates more savings than a lower raten and an upward adjustment of the rate of interest usually gives the signal of the need for increased mobilization of savings. A downward adjustment of the rate of interest is pursued when the level of domestic investment is to be raised.

From a borrowing perspective, the rate of interest is the cost of borrowing. If the interest rate is kept too high, the cost of borrowing increases. In a situation where a considerable part of private sector borrowings comes from the banking system, higher interest rates cause higher production costs and reduce the marginal rate of return from investments.

In a free market economy, the interest rate is determined by the demand for and supply of money. If the interest rate is lower than the equilibrium interest rate, which is defined as the rate of interest which equates the supply of money to the demand for money, an execss demand for money emerges relative to the supply of money. Stated differently, at a lower interest rate, a greater investment is anticipated due to the lower cost of borrowing. However, a lower interest rate may not attract sufficient savings to meet the borrowing requirements of the economy. Accordingly a savings investment gap emerges which is eventually corrected through an upward adjustment in the rate of interest, causing a reduction in the demand for money while the level of supply is increased. On the other hand, if the rate of interest is above the equilibrium point, the supply of money is likely to exceed the demand for it. In order to eliminate this excess, a downward adjustment in the rate of interest is required.

Financial Markets and Interest Rate Determination In Developing Countries

Recent research into the money market characteristics in developing countries has led to the identification of financial dualism in developing countries which presents itself in the form of organized and unorganized money markets (Ghatak, 1976). The organized sector includes commercial banks, savings institutions, insurance corporations, finance companies and development banks and the unorganized sector includes money lenders, businessman, relatives and landlords. A major distinction between the organized and unorganized sectors is that while the organized sector mainly looks after the interests of the urban commercial industrial and service sectors, the unorganized money market essentially caters to the rural agricultural and farm population.

Another distinction is that the organized sector is subject to the rules and regulations of the monetary authorities while the unorganized sector is not. The interest rate, which remains high in the unorganized money market, relative to the interest rate in the organized sector, is determined by a variety of factors including risks, types of assets owned by the borrower and the understanding and relationship between the lender and the borrower.

Analyzing a survey carried out in 1976 on rural credit and indebtedness in Sri Lanka, Sanderatne(1981) noted a decline in the importance of the informal sector in rural lending. In 1957, the informal sector was responsible for nearly 92% of rural borrowing and in 1969 it accounted for 75% of rural borrowing. In the 1976 survey the share of rural lending by the informal sector has dramatically dropped to 45%. He concludes that the decrease in the overall magnitude in informal lending in the rural sector is indicative of the fact that institutional sources have become a significantly competitive lender in the rural market. While this certainly indicates a significant shift towards organized money markets, from predominantly unorganized money markets in the past, the informal sector is still an important source of rural financing.[6]

In most developing countries the rate of interest is administratively, determined or institutionally set on both saving and borrowing and not determined by market forces. The interest rate that results from such interventions will be usually below the equilibrium interest rate compared with the interest rate determined by free market forces. This concept is linked to the Keynesian approach which stresses a low interest rate as a strategy towards investment promotion.

When the interest rate is administratively determined, an excess demand for credit is usually developed due to a savings investment gap; it arises from lower savings with financial institutions relative to the demand for institutional lending. The reduction in household savings with the financial system leads to hoarding and acquisition of real assets such as gold and land as hedges, against inflation. Lower interest rates could also influence the direction of household savings towards unorganized financial markets.

A lower lending rate, on the other hand, supports projects which would not have been undertaken if the rate of interest was determined by market forces. This strategy is also promoted by governments in developing countries as a mechanism to finance large budget deficits. As Fry points

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6. This survey revealed that about 65% of lending by the informal sector was at annual interest rates of 25% or less; about 37% between 21-50% and about 4% above 100%. The interest rate on lending maintained by financial institutions during the 1975-77 period varied between 81/2% to 14% per annum.

out, the interest rate ceilings are also set deliberately below the equilibrium rate so that credit can be allocated on non-price criteria. In this way, the private sector can be persuaded to undertake the planned investment even though these projects might well be unprofitable at the free market equilibrium rate of interest (Fry, 1982). This form of intervention policies in developing countries are the ones that Mckinnon and Shaw identify as major characteristics of financial repression. However, Lanyi and Saracoglu (1983) find that in a number of developing countries there is a tendency towards the removal of such controls. They conclude that these countries have begun to realize that these controls inhibit financial integration and economic development.

The operation of Sri Lanka's financial system before 1977 and between 1970 and 1977 in particular, reflects the outcomes of extensive government intervention in the financial system. The interventionist policies, which were put into operation through the regulation of interest rates and foreign exchange markets, became necessary to support the government's growing budget deficit. Khatkhate observes that such interventionist policies have led to financial disintermediation with high currency holdings by the public particularly between 1970 and 1975 relative to the period before. Moreover reduced rates in economic growth, high inflationary tendencies and foreign, exchange shortfalls, the characteristics that describe the economy during the 1970 - 77 period were either directly or indirectly linked to the interventionist policies of the 1970 - 77 regime (For detail discussion, see Khatkhate, 1982).

Trends in Interest Rates Since 1977

In 1977 the government, as a part of its liberalized development strategy, removed the interest rate ceilings to enable the interest rate to move close to the market rates. From 1977 until 1985, there has been a general tendency towards higher interest rates. Several upward adjustments took place during the 1980 and 1983 period when the banking system was faced with a critical liquidity problem.[7] In early 1985, the interest rates on both lending and saving were subject to downward revisions and this has been attributed to (a) excess liquidity in the banking system, and(b)lower inflationary expectation. This revision has also been warranted by the need to promote private sector investment.

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7. The liquidity situation defined as the ratio of loans and overdrafts to total deposits in the banking system increased from 75% in 1979 to 84% in 1980 and to 95% in 1981. It dropped to 80% in 1982 but went up again to 84% in 1983. It came down to 81% in 1984 and according to current estimates, to less than 80% in 1985. When the ratio is high, the banking system experiences a tight liquidity situation particularly with a higher reserve requirement.

(a) Interest Rates and Savings Behaviour

A substantial increase in the rate of interest is one of the policy changes that was introduced in 1977 as an incentive for higher domestic savings. This was effected through an upward revision of the Bank Rate from 6.5% to 8.5% in April 1977 and to 10% in August 1977. Bank Rate, which is the interest rate charged by the Central Bank when it provides advances to commercial banks for their temporary liquidity purposes, generally sets the trends in interest rates in the banking system. Bank Rate went up to 12% in 1980 and to 14% in 1982. From 1983 to December 1985, it remained at 13% when it came down to the current rate of 11%. Once the trend is set by Bank Rate of the Central Bank, the banking system is generally free to set its own policies with regard to interest rates. In addition to Bank Rate, the Central Bank employs other mechanisms such as reserve requirements to influence the interest rates in the commercial banks. Although financial institutions such as the National Savings Bank (NSB), Development Finance Corporation (DFCC), etc., maintain close coordination with the Central Bank, their policies are not strictly governed by the Central Bank. They have a certain degree of freedom with regard to borrowing and lending policies. However, their policies should fall within the financial regulations of the Ministry of Finance and Planning.

The increase in Bank Rate was immediately followed by an increase in the rates of the National Savings Bank (NSB) and the entire commercial banking system. In 1977, the NSB increased its interest rate on term deposits from 7.5% per annum to 12% for 6 months term deposits and to 15% for 12 months deposits. These rates were subject to further revisions in subsequent years. The highest rates on both 6 months deposits (15%) and 12 months deposits (20%) were paid during the 1980-82 period, which coincided with the period of unprecedented inflationary tendencies in the country. The rates of interest were reduced to 14% in 1983 and to 13% in 1985 on 6 months deposits. In the case of 12 months term deposits, the rate declined to 18% in 1983 and to 15% in 1985. The NSB interest rate on savings deposits increased from 7.2% to 8.4% in 1977 and to 12% per annum in 1980. It has remained at this level to date (Table I).

Although the nominal interest rates remained relatively high, the real interest rate, when deflated by the Colombo Consumers' Price Index (CPI), has not been positive throughout. The real interest rate on savings has been negative between 1978 and 1981 and 1983 and 1984. It was positive in 1977, 1982 and 1985. In the case of 6 months deposits it fluctuated between positive and negative values. Apart from a negative rate of 6.1% in 1980, the real interest rate on 12 months deposits has been positive and ranged from 13.8% in 1977 to 1.4% in 1984, while the average for all time deposits has been, positive with the only exception in 1980 where the real interest rate was estimated at — 7.8%. The NSB interest rates on fixed deposits were supplemented by

tax subsidies and accordingly, the effective interest rate on NSB savings was higher than the nominal rate of interest in the case of tax paying deposit holders with the NSB.

Interest rates on savings and time deposits in the commercial banking sector were also raised in 1977 followed by several revisions thereafter. Table II provides this information in more detail on both savings and fixed deposits. A general observation is that the interest rates offered by commercial banks remained slightly higher than the interest rates offered by the NSB, perhaps to match the effective interest rate on the savings rate of the NSB. This appears to be the explanation for a significant movement in time and savings deposits from the NSB to the commercial banks as observed by the Central Bank in 1980. While the real interest rate on term deposits again remained positive, with 1980 as the only exception, it fluctuated between positive and negative values in the case of savings deposits.

(b) Savings Responsiveness

Empirical research on interest rate policies and savings behavior in developing countries has led to the general conclusion that while the interest rate is an important determinant in household savings decision, household incomes and the availability of banking facilities also play equally important roles. In this section, following a brief review of the trends of these three variables, a regression model is developed to explain the savings behaviour in Sri Lanka.

Table III provides data on savings of the NSB and commercial banks for 1973, 1977 and 1985, to enable a comparative assessment of savings with the period before 1977, during which the interest rate has been kept low through interventionist policies, and the period after 1977 where there has been a tendency for higher rates following the financial reforms adopted in 1977. Although these reforms did not fully liberalize the financial markets, they reflected, as the Central Bank noted, "a complete departure of maintaining a low interest rate strategy or a cheap money policy as in the past."

Between 1973 and 1977, total savings with the banking system increased from Rs. 2,555 million (Rs. 1,793 million savings and Rs. 762 million time deposits) to Rs. 6,140 million (Rs. 3,572 million savings and Rs. 2,568 million time deposits) or by an average annual increase of 35% during this four year period. Time deposits increased from Rs. 762 million to Rs. 2,568 million or by an annual rate of 59% in savings deposits, from Rs. 1,793 million to Rs.3, 572 million, or by an annual rate of 25%. During the eight year period between 1977 and 1985, the total savings with the banking system experienced more than a five fold increase or by an average annual increase of 84%. Again the amount of savings in time deposits has increased at a much faster rate than the rate of increase in savings deposits.

In real terms, that is when deflated by tee CPI, the volume of savings between 1973 and 1977 has increased by 96% or by an annual average rate of 24%. The growth in savings during the 1977-85 period in real terms has been 181% which works out to an annual average rate of 23%. The comparison of the two average rates of 24% and 23% for the 1973-77 period and the 1977-85 period respectively, suggests that the real growth in savings has remained the same during both periods. The explanation underlying this is that the nominal interest rate is the principal contributory factor in household saving decisions and the real interest rate whether it is positive or not, was not all that important. As such, the nominal interest rate as opposed to the real interest rate is used as an explanatory variable in the model.

Household income as an important determinant of savings originates from Keynes who regarded savings is a function of income. Given low per capita incomes, the mobilization of savings is usually regarded as very limited in a developing country. However, Keyne's general conclusion that as the household incomes increase, the level of savings also increase does have direct application to developing countries. During the 1971-84 period, per capita incomes in current prices have increased rapidly. From Rs. 1,062 in 1971, the per capita incomes in current prices increased to Rs. 2,489 in 1977 and to Rs. 9,219 in 1985. Given the relationship between income and savings per capita income has been employed as another explanatory variable,

The spread of banking facilities is another important mechanism to increase the flow of savings towards the banking system. This is particularly important in developing countries where there is a large rural population In the absence of banking facilities in rural communities, banking habits, within the rural population cannot be promoted and the proportion of trade or output that is traded for money, cannot be improved. While the former is usually referred to as financial deepening, the latter is defined as monetization. Thus, the geographical spread of banking offices is both an inducement to financial deepening and a response to the broadening of credit financed production (for detailed treatment on these aspects see Chandavarkar, 1977). This expansion is usually measured in terms of banking density. In 1971, the banking density[8] was around. .15 and this progressively increased to .52 by 1978.

However, since 1979, the banking density has taken a downward trend due to the closure of a large number of agricultural service center (ASC), branches and merger of a number of bank branches with larger ones by the People's Bank and the Bank of Ceylon. In 1979, the banking density declined to .40 and it stood at .39 in 1985.

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8. Ths index measures the location of banks per 10,000 of population. With a .39 ratio in 1985, for example, each bank in the country serves a little over 25,000 people.

Using the data of these three variables from 1971 to 1984, four regression estimates were carried and the results are shown in Appendix 1. In all four regressions, only the per capita income is significant at 5% level implying that only the per capita income of the population contributes to the savings behaviour of the people in Sri Lanka. Although interest rate in equation 1 has the correct sign, it is not statistically significant. In all other equations the interest rate has the wrong sign or describes a negative contribution to, household savings. Using equation 3 for example, if the nominal interest rate on NSB time deposits is raised by 1%, the volume of time deposits goes down by 3.4%, which is meaningless in terms of economic theory. In the case of equation 2, the independent variable on banking density also has the wrong sign. In three out of four, the income elasticity of savings (EP) is above 1 indicating that savings is highly elastic with respect to income. The results on interest elasticity of savings (EI) are not clear.

Despite conclusive evidence, it is difficult to totally eliminate the contributions of the interest rate and the expansion and the availability of banking facilities on savings. As a rate of return on money, the interest rate can exert a considerable influence on savings. Similarly, the expansion of banking, facilities is another useful means of bringing household savings, particularly from the rutal population, into the banking system. It appears however, that in the above regressions estimates, their roles were over shadowed by the strong influence of per capita income on savings.

On the other hand, these results may lead to the conclusion that they are indicative of the less sophisticated and less diversified nature of financial, markets in Sri Lanka and the limited availability of alternative financial assets to savings and time desposits that the public could acquire with their surplus of income over expenditures. The underlying reasons for this observation is the fact that the regression estimates do not lead to the conclusion that the interest rate, whether nominal or real, has any significant contribution to savings.[9] Thus, irrespective of the rate of interest, the holdings of financial assets with the banking system increase along with the increases in household or per capita incomes. The time and savings desposits are still the principal form of financial assets held by the people and as such there is continuing, preference for such forms of savings. Although the capital market has become active since the early eighties, it is still in a very rudimentary stage.

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9. This can be further supported by the savings behaviour of the public with the finance companies. Despite a considerably higher nominal interest rate offered by the finance companies, relative to the commercial banks, the public is less keen to keep their savings with the finance companies. The total deposits of Rs. 2,452 million in finance companies in 1985 accounted for less than 6% of the total deposits in the NSB and commercial banks in 1984.

(c) Interest Rates and Bank Lending

Interest rates on borrowings by lending institutions vary from purpose to purpose as well as from institution to institution. The NSB lending in the public sector is entirely for housing and its interest rates ranged from 9% to 13% between 1978 and 1980, 12% to 17% between 1981 and November 1985 and 12% to 21% since November 1985, depending on the amount of the advance. While housing construction is again a principal area of lending by the State Mortgage Bank, it also offers long term credit facilities to acquire agricultural properties, and for agricultural property development and improvement. Its lending rate varied betweeen 5% to 12% up to 1978, 12% to 24% from 1978 to June 1985 and 10% to 24% thereafter. The Development Finance Corporation of Ceylon (DFCC) and the National Development Bank (NDB) are the two institutions which provide most of the long term financing for agricultural and industrial development. The interest rate of the DFCC has remained between 11% to 14% since 1983 while the NDB charged between 9% to 14% from June 1983 to June 1984 and its current interest rate on lending is between 7% to 14%.

The commercial banks offered lower interest rates on banking credit to sectors which came under the Central Bank re-finance facility scheme. There were three categories under this scheme : (a) approved agriculture and industrial projects at 6.5% up to 1980 and 8.5% thereafter, (b) projects with tax holidays in business trade and commerce at 7.5% up to 1980, 9% between 1980 and 1981 and 11% thereafter, (c) other projects (with refinance facilities) at 10% up to 1981 and 12% since 1981.

Commercial bank lending outside the refinance scheme has been classified into (a) commercial including export handling and import credit, (b) agriculture, (c) industry, (d) construction, (e) hire purchase, (f) tourism and (g) consumption. The interest rates that the commercial banks charge for lending for these purposes are higher and have varied over time and across different categories.

Table IV provides a classification of commercial banking credit by purpose and by repayment period in terms of short, medium and long terms. As can be seen, the short term credit with a repayment period of less than one year, clearly dominates borrowing from the commercial banking system. In 1978, short term credits accounted for Rs. 6,551 million or 74% of the total commercial banking credit of Rs. 8,847 million and in 1984 its share stood at Rs. 25,222 million accounting for 72.2% of the total banking credit. During the 1978-84 period, the share of short term credits averaged 71%. With more than 50%, the principal user of short term credits has been the commercial sector followed by the industrial sector whose share has been about 26%.

The medium term loan facilities provided by the banking system has remained static around 20%. In the case of long term loan facilities, the banking system's contribution has marginally increased from 5% in 1978 to about 9% in 1984. Out of the total banking credit under medium and long term, the combined share of agriculture and industry has been less than 30%. Thus it appears that the banking system has been essentially catering to the commercial sector for their short term credit requirements. Although the industrial sector has been getting a reasonable share under short term facilities, as Roe (1982) points out, such facilities have been primarily used by the industrial sector to meet its short term capital needs.

The lending trends of the commercial banking system thus leads to the conclusion that the interest rate policy has not been an effective monetary instrument in the allocation of resources among productive users and switching resources to more productive areas from less productive users. This is despite the concessions granted to agriculture and industry under the Central Bank refinance scheme. Although this scheme has helped a number of industrialists and agriculturalists to undertake new development projects and to facilitate improvements and expansion of existing ones, it has been of limited significance, when viewed from the perspective of the overall utilization of banking resources.

When the interest rate remained relatively low up to the late 1970's for example, the credit facilities were largely demanded by the commercial and business concerns and the import trade. After the interest rate went up from 1980, this sector became even more important in the utilization of banking credit. The implication of higher interest rates on lending has been essentially to increase the cost of borrowing.

In 1977, nearly 50% of the bank lending was at a rate less than 10% and this share has declined progressively overtime to about 9% by 1984 (Table V). In contrast, bank lending at an interest rate higher than 20% increased from less than 1% before 1980 to about 63% by 1984. The average interest rate on commercial bank lending in 1977 was about 9.5% and it progressively increased to 20.5% by 1987. Although the credit granted by the commercial banks cannot be classified in terms of lending rates, a comparison between the allocation of commercial credits by interest rate classification (Table V) and the allocation of commercial bank credit by purpose and maturity (Table IV), clearly demonstrate that short term borrowings account for most of the commercial credit at higher interest rates.

The lending decisions of the commercial banks are mostly governed by the availability of resources with the banking system and the cost of raising funds for lending purposes. Resources available to the banking system for lending purpose come from different sources as shown by the following, equation :

$$TT + DD\ (1-g) + TD\ (1-g) + SS\ (1-g) + CBA\ (1-g)$$

Where : TT — Resources available for lending
DD — Demand deposits held by the government (g), public sector corporations (c) and private sector (p)
TD — Time deposits held by g, c and p
SS — Savings deposits held by g, c and p
CBA — Central Bank advances to the banking system

As this equation reveals, the total resources available to the banking, system is equal to the sum of demand deposits, time deposits, savings deposits and Central Bank advances less the reserve requirments in each case. The reserve requirements can either increase the funds available to the banking system (lower reserve requirements) or reduce it (higher reserve requirements). A higher reserve requirement, a frequently adopted strategy of the Central Bank to control money supply, reduces the loanable funds of the commercial banks as well as their income from lendings[10].

As the commercial banks are profit oriented institutions, the spread between borrowing and lending rates of the commercial banks is reasonably wide. This spread is likely to increase with higher reserve requirements and high default rates. In 1978, this spread was estimated to be around 3% and the estimate for 1984 was around 5%. As a relatively high spread is usually maintained by all commercial banks, a higher savings rate immediately translates into a higher lending rate which in turn results in an increase of borrowing costs of the users of bank credit. This upward revision is usually followed by a re-allocation of resources in the banking system towards the users who could pay such high interest rates. Most of them are users of short term credit facilities.

Even the long term credit from the commerial banks as well as other lending institutions that is specifically geared to providing credit facilities to development oriented activities appears to play only a very limited role. Although long term credits for different purposes, such as agriculture, industry, construction, tourism, etc., shown in Table VI, have increased from 7.8% in 1978 to 14.8% in 1984 and in the case of long term loan facilities for agricultural and industrial development from 3.22% in 1978 to 7.0% in 1984, the long term loans as a proportion of total domestic credits still account for a very insignificant share. This is despite the interest rate subsidies and other tax concessions that have been provided in these sectors.

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10. For example, the higher reserve requirement that came in to effect in September 1985 reduced the loanable funds of the banking system by over Rs. 900 million. This policy of higher reserve requirements enabled a reduction in the rate of increase in the money supply by about two percentage points.

In some cases the justification of such subsidies and tax concessions is questionable. A case in point is the credits provided by the State Mortgage Bank (SMB) for housing development. The SMB provides loans to the, housing sector under varying interest rates depending on the loans requested by individuals[11]. While subsidies are important to promote housing construction and to create employment in the housing sector, they must be, designed in such a manner to at least produce a break even interest rate. This appears to be not the case under the current lending practices of the SMB. Assuming an average cost of 14% of its resources, the lending rates of between 10% to 12% up to Rs. 200,000 result in a negative interest rate. However this is still justifiable if the overall interest rate is above the cost of borrowing. Unfortunately, the lending above the Rs. 200,000 limit to individuals is frequently associated with tax concessions such as interest rate deductions from the assessable income and capital payment deductions up to one third from taxable income. As a result, the effective interest rate on borrowings above Rs. 200,000 could also be less than the cost of SMB borrowings. The most appropriate solution to this problem is to limit such concessions to below Rs. 200,000.

The forgoing analysis of the lending trends thus suggests that a revision in the interest rate itself will not result in switching of resources to, more growth oriented activities. As the McKinon and Shaw model envisages interest rate policies in developing countries should be well cordinated with economic development policies to ensure that a considerable share of resources from the banking system is diverted towards more productive oriented activities with fairly widespread multiple effects. Unfortunately, the lending trend in the banking system appears not to conform to this approach.

Interest Rate Policies and Inflation

The interest rate is also considered to be an effective monetary instrument in controlling inflation, particularly if inflation is esssentially a monetary phenomenon, i.e., rapidly increasing money supply. The concept of a positive real interest rate as an inducement to encourage domestic savings is in fact linked to the inflation rate. In an open economic system, without restrictions on capital flows, a negative real interest rate, i.e., when the ratio of nominal interest rate to the inflation rate is less than one, results in capital out flows while a positive real interest rate i.e. a ratio greater than one, helps to reverse the capital flow or at least to prevent the capital outflow. This is defined as, interest arbitration.

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11. The SMB provides loans for housing at the following interest rates : (a) at 10% up to Rs. 50,000, (b) at 11% up to Rs. 100,000, (c) at 12% up to Rs. 200,000, (d) at 16% up to Rs. 300,000, (e) at 18% up to Rs. 400,000, (f) at 20% up to Rs. 500,000, and (g) at 22% up to Rs. 1 million.

In economies with restrictions on capital flows, whether such restrictions are institutional or otherwise, the principal focus of a positive real interest rate policy is to encourage savings and to reduce the rate of increase in money supply, which, according to the monetarist explanation, is the leading cause of inflation. If nominal the interest rate is not attractive enough, the cash holdings or other liquid assets in the hands of the public could increase. The reasoning behind, this is that if money is held in the form of assets in the banking system, because of higher nominal rates in lending associated with a higher nominal rate on savings, the resources allocation will favor projects with high returns to investment. If this principal is violated there is no impact, on maintaining higher nominal interest rates on the money supply.

The monetarist model in the explanation of inflation has been tested in a number of developing countries. In the case of the Latin American countries, the tests proved to be reasonably satisfactory. However, the monetarist model tested by Saini (1982) for six countries in Asia (India, Philippines, South Korea, Sri Lanka, Taiwan and Thailand), concluded that his research did not lend strong support to the monetarist model. He noted that "The specification of the monetarist model, however elaborate, is perhaps too rigid for analyzing the inflation experience in developing countries where structural and institutional changes may make part of the monetary growth indigenous. From the policy perspective, the findings of this study suggest that the monetarist framework is not a viable guide to policy formulation in moderate inflation cases."

Modifying the regression model developed by Harberger, Saini tested the relationship between inflation with a number of common explanatory variables such as growth of money supply, growth of real income, cost of holding money and the behaviour of prices of imported goods. By using these variables, he carried out a number of tests for the 1971-1980 period for, the six Asian countries.

The Saini's regression model is re-tested in this study covering the period from 1971 to 1984. Four regression tests have been carried out : Equation 1 tests Saini's complete model with narrow money (Ml); equation 2 excludes two years lagged money supply growth (Ml) and rate of increase of prices of imported goods; equation 3 again tests the Saini's complete model with (M2); equation 4 is the same as equation 2 but employs M2. Appendix II reports the results.

The regression results presented clearly indicate that the explanatory power of all four regression equations is extremely poor. All ratios in the four equations are not significant at 5% confidence level or, in otherwords, the variables included make no contribution statistically to the behaviour of inflation. In addition, the corrected R ratio's are between 20% to 43% meaning that they explain between 20% to 43% of the variation

in the changes in the CPI index. Moreover, in most cases the independent variables depicted the wrong signs. This means that variables which positively contribute to the rate of increase in inflation such as money supply, cost of holding money and the index on import prices should have positive coefficients while the growth of real income should have a negative coefficient since an increase in real income brings down the rate of inflation. Only the equation 4 has the correct signs in all the variables included in that equation.

The general conclusion on the basis of these results is that there appears to be no noticeable impact of money supply on inflation which is measured in terms of the CPI[12] In other words, the rate of increase in inflation is independent of the rate of increase in money supply. This means a positive real interest rate or a higher reserve requirement, the two monetary measures considered to be useful in containing money supply growth, have not been very effective in controlling inflation during the 1971 to 1984 period. These results should be interpreted very cautiously as they do not mean that a relationship between inflation and the variables included in this regression analysis does not exist under all circumstances. It appears, however, that the explanation of inflation requires the inclusion of other variables such as the size of the budget deficits, the amount of financing of the budget deficit from the banking system, and the price ratio of imported inputs to total inputs in domestic production. The characteristics of GDP composition and household expenditure trends are other important features which should be considered in the design of a model explaining inflationary tendencies.

Further analyses of these results on the other hand lead to the observation that they reflect the implications of the lending preference by the banking system. As noted earlier, over 70% of the commercial banking facilities have gone into commercial type borrowings of a short term nature. As the commercial sector necessarily passes the high cost of borrowings to the consumer through higher prices, the lending rates appear to have been an important source of inflation. In other words, the interest rate policy pursued by the government particularly since 1977, has led to the cost push inflation due to less effectiveness of interest rate policy in switching resources to more productive uses. This may explain the reason of the movement of lending rates and the Colombo Consumers' Price Index generally in the same direction.

Conclusions

This analysis of the interest rate policies of Sri Lanka with particular reference to the period since 1977 reviewed the role of interest rate on savings, investments, and inflation. The findings indicated that per capita income

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12. When the GNP implicit deflator was employed as the dependent variable (P), the results became very poor. In the test using GNP deflation, the correct R^2 remained closer to zero or negative.

was a better indicator of explaining the growth of household savings with the banking system. The influence of interest rate on household savings decisions remained very poor. There was also no noticeable contribution of the spread and availability of banking facilities on savings. The results also indicated less diversified characteristics of financial markets in the country and the absence of alternative forms of financial assets for the households to acquire a diversified savings portfolio. Accordingly, a significant part of additional incomes of households, as revealed by the regression estimates, went into deposits in the banking system. Although the results do not lend much, support to the effectiveness of interest rate on savings, if the interest rate dropped drastically, households may become indifferent between holding deposits or cash.

On the investment side, the interest rate policy has also failed to impact upon the reallocation of banking resources. Irrespective of the rate of interest the commercial sector dominated the borrowings from the banking system and only a marginal improvement was seen in the case of long term lending to agriculture and industry. The reasons for the lack of any major shift in the allocation of banking resources include (a) increasing consumer demand in the economy following a period of imports and trade restrictions, (b) liberalization of the import trade, (c) availablity of funds from the banking system without much restriction, (d) quick returns from commercial activities and (e) less attractive incentives in industry and agriculture. The latter concern suggests that there was no strong linkage between the interest rate policies and the economic development policies pursued by the government.

The interest rate policy also had no discernible effect on inflation. This again leads to the previous conclusion that there was no linkage between interest rate policies and economic policies. In fact, the lending policy appears to have been a contributory source of inflation. The overall conclusion of the study is that interest rate policy alone is unlikely to bring about any change in either savings, investments or inflation. It must be implemented within a framework of sound financial and economic policies.

Summary

Upon its election in 1977, the government removed prevailing interest rate ceilings to allow the interest rates to move closer to market rates. This was implemented to mobilize increased savings, to control inflation and to allocate resources available from the banking system to promote economic development.

The analysis shows that per capita income is the principal determinant of household savings behaviour. The interest rate, whether real or nominal, was not shown to be a major factor in savings mobilization. Another finding is that, because of the less diversified nature of financial markets in Sri Lanka, households have very limited alternatives to the savings in the form of time and savings deposits in the banking system.

The interest rate policy also appears to play no major role as a mechanism of resource allocation. Despite the rate of interest, the demand for financial resources from the banking system has been from the users of short-term credits such as the commercial sector. The role of long term financing, particularly in the agricultural and industrial sectors, has been very limited.

On the basis of regression results, inflation is not greatly influenced by the changes in money supply. This means that a higher interest rate policy, usually adopted to control money supply, is not likely to bring down the rate of inflation while it could be a source of higher inflation through higher consumer prices. The overall conclusion of the analysis is that interest rate policy by itself is not effective in achieving desired goals. It should be implemented within a framework of well defined and sound economic development policies.

TABLE 1

NATIONAL SAVINGS BANK — TIME AND SAVINGS DEPOSITS (1977 - 1985)

	1977	1978	1979	1980	1981	1982	1983	1984	1985
1. Time Deposits									
(a) Total Deposits (Rs. Million)	772	1,265	2,194	2,759	3,146	5,137	6,546	8,323	9,492
(b) Interest Rate on 6 Months Deposits	12	12	12	15	15	15	14	14	13
(c) Interest Rate on 12 Months Deposits	15	15	15	20	20	20	18	18	15
(d) Average[1]	14	14	14	18.3	18.3	18.3	16.6	16.6	14.3
2. Savings									
(a) Total Deposits (Rs. Million)	1,727	1,825	2,030	2,146	2,251	2,494	2,887	3,278	3,729
(b) Interest Rate	8.4	8.4	8.4	12	12	12	12	12	12
3. CPI (%)	1.2	12.1	10.1	26.1	18.0	10.8	14.0	16.6	1.5
4. Real Interest Rate									
(a) Term Deposits	12.8	1.9	3.2	—7.8	0.3	7.5	2.6	0.0	12.8
(b) Savings	7.2	—3.7	—2.4	14.1	—6.0	1.2	—2.0	—4.6	10.5

1. Average is computed by assuming that 1/3 of term deposits constitute 6 months deposits and 2/3 12 months deposits.

Source : Central Bank of Ceylon and own computation.

TABLE II

COMMERCIAL BANKS — TIME AND SAVINGS DEPOSITS (1977 - 1985)

		1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	**Time Deposits**									
	(a) Total Deposits (Rs. Million)	1,796	3,180	5,200	8,094	11,690	15,196	17,821	20,606	22,838
	(b) Interest Rate on 3 Months Deposits	8.5	8.5	8.5	13.0	16.0	13.5	15.5	14.5	13.0
	(c) Interest Rate on 6 Months Deposits (%)	11.5	11.5	11.5	15.0	18.0	15.5	19.5	16.0	14.0
	(d) Interest Rate on 12 Months Deposits (%)	14.5	14.5	14.5	20.0	21.0	18.5	20.5	18.0	14.0
	(e) Average	12.4	12.4	12.4	17.1	19.1	16.6	19.2	16.7	14.5
2.	**Savings**									
	(a) Total Deposits (Rs. Million)	1,645	1,846	2,308	2,509	3,203	5,089	7,039	8,985	11,155
	(b) Interest Rate (%)	7.5	7.5	7.5	12.0	12.0	12.5	12.5	12.5	12.0
3.	**CPI** (%)	1.2	12.1	10.8	26.1	18.0	10.8	14.0	16.6	1.5
4.	**Real Interest Rate** (%)									
	(a) Term Deposits	12.2	0.3	1.6	—9.0	1.1	5.8	5.2	0.1	13.9
	(b) Savings	6.3	—4.6	—3.3	—14.1	—6.0	1.7	—1.5	—4.1	10.5

1. Average is computed by assuming that 20% of term deposits constitute 3 months deposits, 30% 6 months deposits and 50% 12 months deposits.

Source : Central Bank of Ceylon.

TABLE III

SAVINGS TRENDS IN THE BANKING SECTOR (Rs. Million)

		1973	*Annual Change %*	1977	*Annual Change %*	1985	*Annual Change %*
I.	National Savings Bank	1,143	—	2,499	30	13,221	54
	(a) Savings Deposits	1,043	—	1,727	17	3,729	15
	(b) Time Deposits	100	—	772	166	9,492	141
II.	Commercial Banks	1,412	—	3,441	36	34,382	112
	(a) Savings Deposit	750	—	1,645	30	11,552	75
	(b) Time Deposits	662	—	1,796	43	22,830	146
III.	Total	2,555	—	6,140	35	47,603	84
	(a) Savings Deposit	1,793	—	3,572	25	15,281	41
	(b) Time Deposit	762	—	2,568	59	32,322	145
IV.	CPI	165.4	—	203.2	6	561	22

Source : Central Bank of Ceylon.

TABLE IV.

COMMERCIAL BANK CREDIT BY PURPOSE AND MATURITY (Rs. Million)

	1978	1979	1980	1981	1982	1983	1984
1. Commercial							
(a) Short Term	3,259	4,725	6,950	8,272	9,790	12,619	14,501
(b) Medium	674	873	1,466	1,559	1,800	2,078	2,341
(c) Long	95	125	356	350	529	565	522
Total	4,028	5,723	8,772	10,181	12,119	15,262	17,365
2. Agricultural							
(a) Short Term	1,109	1,270	1,504	1,690	1,731	1,942	2,260
(b) Medium	278	239	609	923	1,164	1,250	764
(c) Long	28	55	158	165	158	226	361
Total	1,415	1,764	2,217	2,778	3,053	3,418	3,385
3. Industry							
(a) Short Term	1,828	2,480	2,847	3,357	4,512	6,166	6,631
(b) Medium	459	456	767	952	1,251	1,390	1,365
(c) Long	109	147	223	314	408	477	609
Total	2,396	3,083	3,837	4,623	6,171	8,033	8,605
4. Total							
(a) Short Term	6,551	8,938	12,030	14,467	17,400	22,305	25,222
(b) Medium	1,808	2,316	3,636	4,382	5,599	6,410	6,489
(c) Long	488	662	1,471	2,147	2,264	2,703	3,208
Total	8,847	11,916	17,137	20,996	25,263	31,418	34,919
1 (a) as a % of 4 (a)	49.7	52.9	57.8	57.8	56.3	56.6	57.5
2 (a) as a % of 4 (a)	16.9	14.2	12.5	11.7	9.9	8.7	9.0
3 (a) as a % of 4 (a)	27.9	27.7	23.7	23.2	25.9	27.6	26.3
4 (a) as a % of 4 (d)	74.0	75.0	70.2	68.9	69.0	71.0	72.2
1 (a) + 2 (a) + 3 (a) as a % of 4 (a)	70.0	71.1	65.9	63.4	63.5	66.0	67.0

Source : Central Bank of Ceylon.

Notes : Short Term — Less than one year
Medium Term — Between one year and five years
Long Term — More than five years.

TABLE V

PERCENTAGE DISTRIBUTION OF COMMERCIAL BANK LENDING BY RATE OF INTEREST (1977 — 1984)

Rate of Interest	5–10	11–15	16–19	20–23	24–27	28 & *over*	*Total* (%)
1977	46.9	39.8	12.9	.4	—	—	100.0
1978	29.9	46.7	22.7	.7	—	—	100.0
1979	21.5	44.3	33.5	.7	—	—	100.0
1980	13.1	19.7	41.9	16.3	4.4	4.6	100.0
1981	11.6	16.4	31.7	20.4	12.1	7.8	100.0
1982	12.7	9.4	21.0	26.0	19.4	10.5	100.0
1983	7.7	10.8	18.2	32.0	19.9	11.4	100.0
1984	8.9	6.1	22.4	31.7	19.7	11.2	100.0

Source : Central Bank of Ceylon.

TABLE VI

ALLOCATION OF LONG TERM CREDITS BY LENDING INSTITUTIONS

	1978	1979	1980	1981	1982	1983	1984
Development Finance Corporation	149	207	278	370	499	592	656
National Development Bank	—	—	73	275	457	682	935
National Savings Bank	61	65	71	84	103	126	148
State Mortgage Bank	—	114	128	164	219	196	513
Commercial Banks	488	662	1,471	2,147	2,264	2,703	2,2 08
Of which :							
(a) Agriculture	(28)	(55)	(158)	(165)	(158)	(226)	(361)
(b) Industry	(109)	(147)	(223)	(314)	(408)	(477)	(609)
Total : Long-Term	698	1,048	2,021	3,040	3,541	4,499	4,460
Total : Lending	8,996	12,302	17,867	21,889	26,539	33,107	36,658
Long Term as a% of Total	7.8	8.5	11.3	13.9	13.3	13.3	14.8
Long Term Agriculture and Industry as a % of Total	3.2	3.3	4.1	5.1	5.7	6.0	7.0

1. This includes short term, medium term and long term loans granted by all lending institutions.

Source : Central Bank of Ceylon and own computation.

APPENDIX I.

The results of the tests are as follows (t ratios within brackets and *refers to t statistics which are significant at 5% confidence level.)

1. $CBTD = -248.4 - 0.18211PIt + 2.376INTt$
$(13.78)^*$ $(.378)$

$R = .977$ $DW = .70$

$EP = 1.45$ $EI = .056$

2. $CBSD = 38.40 + 0.0990It - 22.391INTt - 66.187BBt$
$(16.047)^*$ $(-.267)$ $(-.8605)$

$R = .98$ $DW = 2.479$

$EP = 1.78$ $EI = -.85$

3. $NSBT = -94.267 - 0.0778PIt - 3.414INTt$
$(16.953)^*$ (-1.012)

$R = .95$

$EP = 1.79$ $EI = -0.23$

4. $NSBS = 81.0 + 0.0155PIt - .45115UNTt$
$(5.433)^*$ $(-.1513)$

$R = .92$

$EP = .442$ $EI = .031$

Where :

CBTDt	=	Commercial bank time deposits/population
CBSDc	=	Commercial bank savings deposits/population
NSBTt	=	National Savings Bank time deposits/population
NSBSt	=	National Savings Bank deposits/population
PIt	=	Per capita income in current prices
INT	=	Nominal interest rates offered by NSB or commercial banks on time or savings deposits
BB	=	Banking density (number of banks x 10000)/ population
EP	=	Income elasticity of savings
EI	=	Interest elasticity of savings.

APPENDIX II.

The specification of Saini's model was as follows :

$$P = a_0 + a_1 Mt + a2M_{t-1} + a_3 M_{t-2} + a_4 Yt + a_5 P^1 + a_6 Pm$$

Where :

a_0	=	Intercept
a_1 to a_6	=	Regression coefficients
Mt	=	Growth of money supply at time t
M_{t-1}	=	Growth of money supply lagged by one period
Mt_{-2}	=	Growth of money supply lagged by two periods
Yt	=	Growth of real income
P^1	=	Proxy for the cost of holding money which has been defined as (P_{t-1} — P_{t-2}) where P is the rate of increase in consumer prices
Pm	=	Rate of increase of prices of imported goods.

The results of the four regression equations, using Saini's model, are as follows :

1. $P = 3.7 — 0.38_{Mlt} — 0.19 —_{M't-1} — 0.78_{Mlt-2} + 6.3Yt + 0.44$
(—1.57) (—0.70) (—1.61) (2.10) (1.26)

— 0 . 01PM
(0 . 12)

R^2 = . 259 DW = 1 . 79

2. $P = 3.73 - 0.163Mlt + 0.103_{Mlt-1} + 1.79Yt + .122p^1$
(0.20) (0.21) (1.17) (0.29)

R^2 = . 20 DW = 1 . 41

3. $P = 4.2 - 0.124M2t + 0.187_{M2t-1} + 0.338_{M2t-2} - 0.189Yt +$
(0 . 516) (. 67) (1 . 51) (—0 . 08)

0 . 22P^1 — 0 . 026PM
(0 . 73) (—0 . 287)

R^2 = . 305 DW = 1 . 97

4. $P = 3.5 + 0.138_{M2t} + 0.345_{M2t-1} - 0.61Yt + 0.277P^1$
(0.66) (1.71) (—0.349) (1.67)

R^2 = . 428 DW = 1 . 78

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DEMOGRAPHIC TRANSITION AND DEVELOPMENT POLICY IN SRI LANKA

N. L. SIRISENA

Introduction

In the seventy five year period from 1871 to 1946 the Sri Lankan population had increased by 120 per cent, from 2.4 million to 5.3 million. The annual average growth of the population had been about 56,800 persons per year. On the other hand, in the next twenty five years from 1946 to 1971, the Sri Lankan population increased by 140 per cent, adding over 241,000 per year. During the ten years 1971 - 1981, population increased by 16 per cent, adding 216,000 persons per year. In short, during the 110 years between 1871 and 1981, the population in Sri Lanka increased by more than four times, from 2.4 million in 1871 to 14.8 million in 1981. Moreover, during 1953 - 1984 the population in Sri Lanka almost doubled (93 per cent increase), resulting in a rapid population growth.

The proximate variables of population growth are the natural increase which is the difference between birth and death rates, and net migration. In Sri Lanka, like in a number of other countries, net migration has played an important part in the past, contributing to as much as 58 per cent of the population growth during 1871 - 1901; and about 16 per cent during 1901 - 1946. On the average, during the entire period of 1871 to 1946, migration had contributed to about 27 per cent of the increase in population.

The significance of net migration in population growth in Sri Lanka diminished after independence due to restrictions on migration. It is estimated that, of the total population increase between 1946 and 1963, 20 per cent was due to migration. After the Srima - Shastri pact of 1964, net migration has been a negative factor in population growth and hence the total population increase is slightly less than the natural increases. The accelerated population growth observed since independence is primarily a result of the accelerated natural rate of increase.

The changes in the natural increase of population observed for the period 1871 - 1984 can be analysed according to the theory of demographic transition* which explains the demographic transition process through four phases. The higher birth and death rates and lower rate of natural increase had been the main characteristic of the period between 1871 and 1901, which seems to fit into Phase 1 of the demographic transition.**

It seems that people had desired high fertility to overcome the risk of high mortality. The infant and maternal mortality rates which influence the total mortality rate had been significantly high during this period. Limited availability of public and private medical facilities, low nutritional standards and the general state of chronic under-development in the economy could explain Phase I of the demographic transition.

It appears that since 1901 Sri Lanka had gradually entered the Phase II of the demographic transition which is characterized by low death rates and high birth rates. By 1948, Sri Lanka had definitely entered Phase II of the demographic transition. In 1901, the birth rate was 38 per thousand while the death rate was 28.7 per thousand, giving a natural increase of less than 1 per cent. However, in 1948, the birth rate was 39.7 per thousand, an increase over the 1901 level, and the death rate was 13 per thousand, giving a natural increase of 2.67 per cent. By 1971, the crude birth rate had declined to 32.7 per thousand while the death rate had declined to 8.2 per thousand. There was only a negligible decline in the rate of natural increase.

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*. The demographic transition is the name given to the shifts in population from a stable population with high birth and death rates to one with low birth and death rates. Usually this transition process is characterised by four phases :

Phase (I)	—	birth and death rates are high and hence a more or less stable population;
Phase (II)	—	death rate falls, but birth rate continues at its previous level contributing to a rapid expansion in the population;
Phase (III)	—	death rate continues to decline but slowly, while birth rate declines faster; therefore the population increases less faster, compared with phase II; and
Phase (IV)	—	both, birth and death rates level-off, resulting again in a more or less stable population.

**. In 1871, birth and death rates were 27.9 and 23.8 per thousand respectively, giving a natural increase of 0.41 per cent. The birth and death rates in 1901 were 38 and 28.7 per thousand which gave a population increase of 0.93 per cent.

A slow beginning of Phase III of the population transition could be seen from 1973 onwards. The crude birth rate which was over 32 per thousand in 1971, declined to less than 28 per cent in 1973, and to 24 per cent by 1984. The fertility decline between 1972 and 1984 had been substantial as could be seen from Table 1.

TABLE 1

DEMOGRAPHIC TRENDS
(Per Thousand Population)

Year	1972	1973	1982	1983	1984
Crude Birth Rate	30.0	28.0	26.8	26.2	24.8
Crude Death Rate	8.1	8.7	6.1	6.1	6.5
Natural Rate of Increase	21.9	21.3	20.7	20.1	18.3

Source : Dept. of Census and Statistics and Registrar General's Dept.

Although it appears that Sri Lanka had entered the third phase of population trnsition by 1973, a rapid expansion of the population is still being experienced. The crude birth rate is still around 25 per thousand of population. The expected characteristic of the third phase of demographic transition, i.e., a fast declining birth rate, a slowly declining death rate and the consequent decline in the natural rate of increase has not yet being realized to a significant extent.

Hence, there is a need for policy initiatives to accelerate the demographic transition process. However, macro data on demographic transition such as crude birth and death rates are of limited use in analysing relevant policy. Therefore, in this article we shall concentrate on analysing field data which were collected in 1982 specifically for the purpose.

Determinants of Fertility

The decline in the birth rate in Sri Lanka, which has been observed in recent years, is a result of a complex of factors. In an attempt to analyse the fertility trends in Sri Lanka, at least four types of hypotheses could be formed. One is the welfarist hypothesis which attempts to explain birth rate trends through the spread of welfare measures, such as education and health. The essence of this hypothesis is that spread of education has promoted, modernization, while greater utilization of health programmes has reduced mortality rates, thereby creating the motive for a smaller number of births. The economic development hypothesis attempts to explain the fertility trends

largely as a result of changes in economic variables. It argues that development programmes create major socio-economic changes through generation of employment and income. The demographic hypothesis argues that factors such as age at marriage and size of the never married population could explain at least a part of the trend. The population policy hypothesis is that there has been a family planning programme from 1953, which expanded in later years and it has contributed towards the declining fertility trends in Sri Lanka, particularly in recent years.

One may argue that the changes in age at marriage and marital fertility could be the combined result of welfarist and economic policies. Although the family planning programme was undertaken on a very limited scale until recently, it has expanded in recent years, hence it could have a significant impact on current fertility. While admitting the inter-relationships between various factors in the causation of fertility change, the motivating factors of fertility behaviour in Sri Lanka seems to be primarily socio-economic.

It is generally agreed that education is a major influence on human behaviour and hence on fertility levels. However, the impact of education on fertility in Sri Lanka has not yet been clearly defined and evaluated. The view that education requires longer schooling years and consequently affects fertility through postponement of marriage, could be true only in the case of higher education. For instance, if a person had 15 years of education he/she would find it difficult to marry in the teen ages. However, it is essential to recognize that only a small fraction of the females, less than two per cent, had higher education in Sri Lanka. Hence the impact of education on fertility through reduced fecundity due to to a long period of education is obviously insignificant.

Education is a modernization force. Its impact is widespread and it influences the general attitude towards marriage. Married females in the age group of 10 - 14 years have almost disappeared. The number of married females in the 15 - 19 years age group too has declined rapidly. Education in a general way would have contributed towards the disappearence of early marriage and the norm of a small family.

The mean age at marriage for remales has been 21 years in the 1930s, 22 years during 1940-1960, and 22 years thereafter. In the 1970s, the female average age at marriage was about 23 years. This apparent increase in the age at marriage for females would have had some effect on reducing fertility. However, its significance should not be over-stressed. In any case, it would be of less significance in future as the age at marriage is no longer increasing. On the other hand, the proportion of never married women in the fertile age groups, which seems to be increasing, appears to be more important for future fertility. In 1953, 75.7 per cent of the females in the age group of 15 - 19 years had not been married and this has increased to 89.7 per cent in 1981.

During the same period never married females in the 20 - 24 year age group had increased from 29.4 per cent to 55.3 per cent, while the never married in the 25 - 29 year age group has increased from 11.9 per cent to 30.1 per cent. The increase in the never married population certainly would have reduced the total fertility in the country.

Longer periods of training or education extending to about 15 years may have an effect on the age at marriage. However, primary or secondary education is unlikely to have any significant influence on the age at marriage. The increasing number of never married females in the age groups of over 20 years could not be explained by primary or secondary education.

A rapidly growing female labour force as well as a declining trend in fertility has been observed in Sri Lanka. Therefore, the question of a causal relationship between these two variables seems crucial for any study on the determinants of fertility. The question becomes complicated because of the hypothesis that fertility and female labour force participation are mutually affecting each other. However, it has been argued that in developing countries, increasing female participation often leads to reduced fertility when associated with longer years of education. In other words, females who participate in economic activities outside the home for income seem to have less children. On the other hand, females who work in traditional agriculture and other manual occupations generally having more children in spite of the fact that they are employed. In other words, the causal relationship between labour force participation and fertility is not a general one.

The distinction between employment outside the family farm and working as a helper in the family farm is significant. The former type of employment which always generates income also provides a greater degree of economic and social independence compared with the latter. Therefore, females who work outside the home economic activities could have a greater motivation for a lesser number of child briths.

In some districts of Sri Lanka relatively higher female participation rates have been observed. This is particularly true of dry zone districts. However, the fertility rates in those districts too are relatively higher. The nature of the work they do is largely agricultural labour which does not interfere with the work as a mother. Similarly, in the estate sector, participation rates are high, but fertility rates are not relatively low. Even among the female groups where lower fertility rates are observed, school teachers and health workers have higher fertility rates compared with office workers of similar educational background.

A corner stone of the economic development policy in Sri Lanka has been the irrigation development projects which allowed settlement of farmers in new areas. By the end of the year 1976, a total of 59,672 allotments of

various sizes, ranging from 8 acres to 3 acres had been distributed among, landless families. Between 1977 - 1985 over 121,000 had been distributed, bringing the total to over 180,000. Assuming an average family size of 5.5, a total population of over one million are living as settlers in these schemes. However, the number of illegal settlers who are known as encroachers are over 500,000. Therefore, a population of over 1.5 million or about 10 per cent of total population is living in the new settlement schemes.

Fertility indices such as the crude birth rate, age specific fertility rates as well as age specific marital fertility rates, indicate that the fertility levels in these land settlements are higher than in the rest of the country. The greater demand for labour and ready access to basic food commodities such as rice, vegetables and fish seems to have prevented the settlers from realizing the need for smaller families. Therefore, until the second and third generation, problems became serious, the motive for smaller families had not been widely realised in the settlement schemes.

The adoption of labour saving production techniques, such as tractors. started around 1960. Once the new technologies were adopted, the settlers began to realize that unemployment was creeping in particularly among the young. The apparent realization of population pressure, mainly through unemployment, seems to have motivated the second and third generation settlers to have smaller families. The result of this realization could be seen from the early 1970s in the older settlement schemes.

The agricultural pricing policy mostly benefited the dry zone farmers, The attractive prices offered by the Guaranteed Price Scheme, which had been active since independence, helped the dry zone farmers to improve their incomes. The Guaranteed Price Scheme which involved a certain amount of income transfer from the rest of the economy, gave a measure of economic prosperity to the food producing farming community. This would have contributed to the slower decline in fertility which has been observed in paddy surplus districts.

The supply of electricity to rural areas was started in 1961. However, the number of villages that were supplied with electricity has rapidly increased since 1976. Although electricity has been made available in many villages, only a fraction of households has made use of it for lighting.

The number of households that utilize electricity is about 13 per cent of the total households in the country. However, the supply of electricity to villages has made a significant impact on social and economic development. Electrification has helped the growth of small industries and other economic activities which provide employment opportunities, particularly to females. The data collected on fertility rates of households with electricity shows that they, had low fertility compared with the rest of the population. This

difference in fertility is difficult to be attributed to the electrification programme alone. However, the impact of electrification on economic and social. development at the community level and, thereby, on fertility appears strong.

Impact of Fertility Determinants on Current Fertility Trends

In the previous section, we examined the four hypotheses which could possibly explain the recent changes in fertility levels in Sri Lanka. In this section we shall analyse them using the statistical data collected through the FID study of 1982.*

TABLE 2

A COMPARISON OF FERTILITY LEVELS

Development Programme	*Mean Parity (15-49 age)*	*Completed Parity (45-49 age)*	*Fertility during 1978—1982*	*Direct Effect of Dev-Programme on Fertility (Std. regression co-efficient)*
Land Settlements	4.0	6.4	1.01	0.03**
Guaranteed Price Scheme	3.7	6.1	0.74	0.09
Rural Electrification	2.7	3.9	0.75	0.10
No of Development Programmes	3.7	4.7	0.96	
Overall (1982)	3.5	5.5	—	
CPS (1982)	3.4	5.0	—	

Source : Sirisena, N.L. Fertility Impact of Development in Sri Lanka, CDSS, Colombo, 1984, and Contraceptive Prevalence Survey, Dept. of Census and Statistics, Colombo 1982.

Note : ** Nonsignificant.

The land settlement programme which concentrated on developing land for agricultural production and settling farmer families in those areas, created agricultural employment for both males and females. As one could see

* The Population Council, New York, sponsored a data collection programme in 1982 under its Fertility Impact of Development (FID) project.

from Appendix Table 1, the labour force participation rate is highest in land settlement schemes. However, the proportion of labour force in non-agricultural employment is very small. The lack of diversity in employment is a reflection of the limited range of economic activities in land settlements. The high level of un-employment particularly, among the second and third generations of settlers, confirms that very little additional employment has been generated within these settlements.

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As the FID study reveals, the dominance of paddy cultivation, even in lands which are more suitable for other crops, is a major constraint to development. Since marketing facilities available for other crops have been limited, farmers produce non-paddy crops only to a limited extent. This has prevented the improvement in income of farmers as they adopt a non-optimal cropping pattern due to lack of market incentives. This has been observed particularly in the Gal-Oya Scheme. In most of the LS, the non-availability of electricity has prevented the growth of agro-processing industries. The limited cultivation of vegetables and fruits too could be largely explained by this constraint.

The educational and health facilities provided in most of the settlements are very limited and this seems to have had the effect of limiting social development in the community. The limited availability of infrastructure facilities, such as roads, transport and communication, have prevented the growth of market centres and townships which are critically important for economic development.

The study also reveals that the communities in land settlements have special social problems. For instance, the status of the female in LS has suffered compared with other communities. The government policy of generally selecting males as the receipients of lands has created an asset ownership disequilibrium that discriminates against females. The husband of a family owns the land and he has the right to transfer that land to a person of his choice. This virtual exclusion of females in the first generation from the ownership of properties seems to have reduced the status of the female. The limited ownership of real and financial assets by females in land settlements reflects this situation. When settlements get older, with the oncoming of new generations the asset ownership seems to improve slightly.

Since women in land settlements generally do not have the lease of the land, they are invariably excluded from the institutional credit facilities provided by the banking system. Institutional credit for cultivation purposes is given only to those who have some rights over the farm land by way of,

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* Sirisena, N.L., Fertility Impact of Development in Sri Lanka, CDSS, Colombo, 1984, Pages 182-186.

ownership, lease or tenancy. This lack of any rights over land also precludes women from participating in some organisations, such as the co-operative societies and cultivation committees.

Female labour force participation rates are higher in land settlements. However, the largest proportion of women are employed as agricultural workers in family farms. The agricultural workers in family farms are not given a substantial independent income and, therefore, their personal income is much lower.* One clear way of improving the personal income of females in land settlements is to abandon the practice of selecting the husband as the lessee of the allotment and declare that both husband and wife jointly own the farm.

Another factor leading to high fertility in land settlements has been the faster growth of the nuclear family system. The settlers in large land settlements have been selected from all over the country among the landless. Since parental families of both husband and wife live a considerable distance away from the land settlement, pregnant mothers find it difficult to go to their parents for child birth and post-natal care (which often involves staying away from the husband for several months). In addition to the considerations of distance and travel costs, the difficulty of making alternative meal arrangments for husbands prevent young mothers in land settlements from going to their parents. It seems that the policy makers have not realized the fertility impact of this apparent breakdown of the traditional maternity care system in land settlements. It has led to shorter child spacing since breast feeding as well as use of contraception have been lower in land settlements.

Community data show that a lesser number of family welfare officers (FWOs) are available in land settlements compared with other communities. When the long scattered nature of land settlements and the absence of traditional family care systems are taken into account, the dimensions of the social problem created by the absence of traditional maternity care could be understood. The desirable development would be to increase the number FWOs and the availability of contraceptive facilities. Since the new Mahaweli Development Programme would involve setting up of a greater number of land settlements, policy makers ought to recognize the need for special policies in old as well as new land settlements.

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*. In the case of casual workers, it has often been reported by field investigators that the female income is often used up by other family members particularly by the husband. In land settlements, it appears that this practice is institutionalized since family farm workers are not paid in money.

The Fertility Impact of the Guaranteed Price Scheme

The guaranteed price scheme, which has been an important market promotion mechanism for Sri Lankan agriculture, has an important income improving effect on the rural community. It has monetized the rural economy while promoting intensive cultivation of paddy. Transplanting, the use of fertilizers, weed control methods and high yielding varieties of paddy have been encouraged by the GPS. The income generation and the greater labour use promoted by the GPS seem to have led to a significant improvement in income and employment of females. The fertility impact of this improvement could be particularly seen when a comparison is made of the fertility rates about 15 years ago and the current ones. About 15 years ago, the fertility rate in GPS communities was 28 per cent higher than the rate in rural electrification communities. However, the current fertility rates (3 years and 5 years) are the same as the rural electtification communities.

The main fertility checks in the GPS communities have been the traditional ones, since use of modern contraception is not wide-spread. The extended family system should have exerted a limited check on fertility. Yet the effectiveness of traditional checks is very limited and they are meant to prevent families from getting larger than what the food supply would permit. Since food supply has impvroved as a result of the GPS, the limits imposed by the traditional checks should have been more relaxed compared to communities that have experienced limited food supplies. Therefore, the rapid decline in fertility observed in the GPS communities has to be understood mainly in the context of socio-economic development.

On the whole, during the last 30 years, the guaranteed price scheme has done a great service to the paddy sector and the rural population through its market promotion. It had contributed to the paddy sector expansion as well as to fertility decline. The present role of the GPS as a floor price scheme for paddy seems to be adequate since paddy marketing is already at a developed stage. However, in regard of other agricultural commodities, as we have seen in respect of land settlements, marketing arrangements are grossly inadequate. Therefore, it is primarily in respect of other agricultural commodities that market promotion is urgently needed.

The Effect of Rural Electrification

The fertility impact of rural electrification is probably overstated in the current fertility rates. In RE associated communities, most of the other fertility reducing factors have been present for sometime, particularly education. Moreover, non-agricultural employment opportunities are present in these communities not necessarily due to the availability of electricity. In other words, since electricity has been made available to most of the communities recently, much of its employment effect would not have been felt yet. In the first few years of electrification, a substitution of electrical

power for human and animal power seems to take place and at this stage; electrification would not create new employment opportunities, rather it, reduces employment. At the second stage of rural electrification new industries would contribute to provide additional employment opportunities.

Since electricity belongs to the category of basic infrastructure needs, its continuous availability at a stable voltage is important. The study reveals major defects in respect of both these aspects, i.e., continuous availability and an adequate voltage. In a number of areas, elctricity is not available, continuously and in the dry seasons of the year electricity is not available in many parts of the country for a number of hours. This has been an annual feature in the recent past. The entrepreneurs, therefore, are reluctant to start manufacturing industries that depend on electricity alone.

Another defect of the electricity supply is the non-availability of high voltage electricity. In most rural electricity schemes, the power supply is adequate only for household use. Industrial use requires 3 phase electricity which is not available in most communities. In other words, as at present, rural electrification in Sri Lanka is not helping rural industrialization to any substantial extent.

Employment data indicates that even in communities, where electricity is available, only a small fraction is employed in industries that make use of electricity. In RE communities, only about 2 per cent of females are employed in industrial enterprises. In other communities, female employment in industries which use electricity is negligible. Therefore, at this stage, rural electrification is not a significant factor in increasing employment opportunities for females. However, the potential significance of rural electrification for promoting non-agricultural employment needs to be recognized. Moreover, from the policy point of view, the following aspects need to be emphasised for the development of the manufacturing sector.

Electricity is, undoubtedly an important promoter of manufacturing sector development. However, there are a number of other factors that should receive the attention of policy makers. Among them (a) technological assistance to entrepreneurs, (b) making available credit through institutions for the purchase of capital eiquipment and other requirements (c) providing information on market potential, appear to be critically important. In these respects, the present policy has major limitations as shown by the slow progress in the development of the rural manufacturing sector in Sri Lanka. Moreover, the electrical energy supply needs to be improved in two important respects, the continuity in the supply and a stable voltage.

Table 3 gives the estimated fertility reducing impacts of employment, education, age at marriage and use of contraception. The estimates confirm that the four hypotheses examined in an earlier section are collectively, responsible for the fertility decline observed in recent years.

TABLE 3.

IMPACTS ON CURRENT FERTILITY OF 1978 - 82 AND 1980 - 82
(Standardized Regression Coefficients)

Variable	1978 — 82	1980 — 82
1. Female Employment (In wage earning occupations)	— 0.13	— 0.14
2. Male Employment (In non-agricultural occupations)	— 0.09	— 0.09
3. Female Education	— 0.03*	— 0.04
4. Male Education	— 0.01*	— 0.02*
5. Age at Marriage (Female)	— 0.46	— 0.49
6. Use of contraception by Females	— 0.24	— 0.04

* Non-significant

Source : Table 1 in Appendix

The fertility reducing impact of female employment is less in land settlements than in the older agricultural communities represented by the guaranteed price scheme. In land settlements, although the head of the, household is given the ownership rights, all family members have to work in the farm. Consequently, a good proportion of females cannot make use of the opportunities to work for wages. Secondly, since the average farm size in land settlements is larger than those in the older agricultural communities, there is a greater demand for family labour.

Appendix Table 2 indicates that in land settlements 51.4 per cent of the respondent females are employed in income earning occupations. On the other hand, in older agricultural communities, 64.8 per cent of the respondent females are employed in paid occupations. The employment impact of rural electrification has not been felt in most of the communities, largely, because of its recent origin. It is important to note that in communities where there has been no important development programme, female unemployment rate is very high. Over 77 per cent of the female respondents in no development communities are engaged in non-paid activities.

According to the statistical estimates, female employment has significantly contributed to fertility decline during 1978 - 82 as well as during 1980 - 82. The relevant standardized coefficients are 0.13 and 0.14 respectively. If not for the lower female participation in paid economic activities, the fertility

reducing impact of employment could have been much greater. In other words, development programmes that create greater opportunities of paid employment for females have had the largest fertility reducing effect.

Female Education

The contribution of female education to decline in current fertility is much less than what was expected. In respect of fertility decline during 1980-82, female education is significant. However, the standardized, coefficient is. 0.4. When the reference period is extended to cover the 5 years 1978 - 82, the contribution of female education is statistically non-significant.

One reason for this lower contribution by education is the uneven spread of educational facilities in Sri Lanka end the consequent wide disparity in educational attainment levels. In land settlements 18.1 per cent of married females in the fertile age group had no formal education. The share of the illiterates in the older agricultural communities (GPS) has been 15.4 per cent. A negligible illiterate rate of 2.2 per cent could be found only in the relatively developed communities where electricity is available. (Appendix Table 3)

In land settlements, 41.7 per cent of married females had only primary education. The comparable figure for GPS communities is 37.5 per cent. On the other hand, in communities with electricity 79.3 per cent of respondent females had primary education. The difference between the illiterate and the primary educated may be a marginal one, when considering the fact that even within the category of the primary educated a large proportion had only a few years of education.

Although there is disparity in per capita income levels, the disparity in the availability of educational facilities seems to be the main reason for the variation in the utilization of education. In land settlements, for a population of 5344, there is only one primary school while in GPS communities for a population of 4584 there is one primary school. When the spatial distribution of households and the scarcity of public transport facilities are taken into account, a child in land settlements or GPS communities has to walk about two to three miles to reach a school. The severity of the shortage of educational facilities of post-primary levels is greater. (Appendix Table 4).

Age at Marriage and Use of Contraception

The main explanation in the demogtaphic hypothesis is that increased female age at marriage reduces the length of the fertility period. Although aggregated national data on age at marriage indicates a declining significance of this variable, the data collected by the FID study confirms the existence of significant differences in the age at marriage. In land settlement schemes, female age at marriage is 18.9 years. In the older agricultural communities

represented by the guaranteed price scheme, the female age at marriage is 19.3 years. In communities where there has been no specific development programme, female age at marriage is 20.2 years. Only in rural electrification communities one notes an increased female age at marriage which is higher than the national average. (Appendix Table 5)

When current fertility data are analysed, the disparity in the female age at marriage comes up as a significant variable. As regards fertility data In respect of the years 1978 -82 the significance of the female age at marriage is estimated by a standardized coefficient as high as 0.46. In respect of the period 1980 - 82 the coefficient increases to 0.49. As we know, the female age at, marriage is determined by socio-economic factors. In view of the under-developed socio-economic status of the females in land settlements and GPS communities, a lower age at marriage is being observed.

The use of modern family planning methods,* although a fairly recent development, is prevalent in almost all parts of Sri :anka. (Appendix Table 6) In land settlements, about 26 per cent of married females use modern contraception while in the older agricultural communities (GPS) about 20 per cent of married females use modern contraception. In communities with electricity, about 30 per cent of females use modern contraception. The impact of the use of modern contracept ion in reducing fertility levels during the years 1978 - 82 and 1980 - 82 has been found to be significant. The standardized coefficients are 0.24 and 0.09 for 1978 - 82 and 1980 - 82 respectively.

The availability of modern contraception facilities at various community levels is indicated in Appendix Table 6. The proportion of high risk married females in each of the communities is also given in the same table. The data indicates the existence of a wide gap between the actual use of contraception and the potential use, reflecting the need for greater policy efforts to narrow this gap between actual and potential users.

In Sri Lanka, modern contraceptives are largely propagated through female Family Welfare Officers (FWOs). The data given in Appendix Table 6 shows the wide divergence in the number of families each FWO has to serve. In land settlements one FWO has to severe a populat'on of 5906. In GPS communities a population of over 8000 has to be served by one FWO. The FWOs would be able to provide a better service, if the size of the population for each officer is reduced to about 2000 in developed areas and 1000 in less developed rural areas.

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*. This is in addition to the traditional family planning methods prevalent in these communities.

Conclusions :

On the whole, development policies followed in Sri Lanka have had a considerable impact on the demographic transition of the country. Of the three economic development programmes analysed in this study, the Guaranteed Price Scheme (GPS) has had a large impact in reducing fertility in recent years. In fact, these old agricultural communities traditionally had high fertility levels as shown by cumulative fertility rates. The economies of traditional paddy surplus communities exprienced an expansion due to the market promotion effect of the GPS. In other words, the GPS has been instrumental in promoting the green revolution in the paddy sector in Sri Lanka. Hence, it has effectively expanded paid employment for females.

As the study reveals the land settlement policy has not had an effect on reducing fertility. In fact it had a positive impact on fertility, although the coefficient is statistically non-significant. Historically also land settlements had high fertility as shown by cumulative fertility rates. One reason for this high fertility could be the impact of discrimination of females in the distribution of lands. The ownership of lands were given primarily to the male members of households. This created a major bias in asset ownership in favour of males. It also had the undesirable effect of reducing the socio-economic status of the female in land settlements. Moreover, the female members had to work as unpaid helpers in the family farm. In short, the reduced socio-economic status of the female along with the need to engage in non-paid economic activities seem to have prevented the realization of fertility decline in land settlement schemes.

Another reason for high fertility in land settlements is the relative absence of non-farm occupations for employment. Agro-processing and other manufacturing activities have not yet been started in land settlements. Consequently, wage employments of a regular nature are scarcely available.

It is suggested that corrective measures be taken in both respects. The socio-economic status of the female could be restored by distributing land ownership to both husband and wife equally. This may also have the effect of promoting greater labour productivity. For the purpose of promoting economic diveristy in land settlements, rural electrification programmes could be used as a major policy instrument. In other words, household lighting benefits should not be the main justification for providing rural electricity, but rather the potential for economic expansion. In land settlements, there seems to be a large potential for new production activities both in agro-processing and related manufacturing activities.

Socio-economic and fertility impacts of the rural electrification programme have not yet been felt in most of the communities.

However, in communities where electrification had existed for about ten years, significant employment and fertility impacts have been realized. In other words, the potential significance of rural electrification in promoting socio-economic development and fertility decline is much greater than what the statistical data reveals. Hence, it is suggested that rural electrification should be implemented in as many communities as possible. However, as we have already noted, land settlements and other agricultural communities could benefit more by electrification in view of their apparent potential for greater economic expansion.

The study shows that the utilization levels of education is lower, both in land settlements as well as in other agricultural communities. This is the main reason for the limited fertility reducing impact of education. The majority of females in both types of communties had only a few years of formal education which is below the completed primary level. Consequently, their educational ability was inadequate for functional literacy. Hence it is suggested that universal primary education which would provide functional literacy, be given priority in educational policy. Since the majority of adults are effectively illiterate (i.e., those who never attended school and those who are functionally illiterate), adult education needs to be made an integral part of the programme to spread primary education.

Sri Lankan policy of integrating family planning as part of the primary health care is commendable. However, the primary health care facilities available in rural communities, such as land settlements and older agricultural communities, are grossly inadequate. Therefore, the policy emphasis should be to increase facilities and the cadre of personnel, particularly the Family Welfare Officers (FWOs) at the rural community level.

TABLE 1

IMPACT OF SOCIO — ECONOMIC VARIABLES AND USE OF CONTRACEPTIVES ON FERTILITY

(Standardized Regression Coeffcients)

Independent Variaqles	*FERTILITY*								
	BR5	*BR3*	*BR1*	*BR5*	*BR3*	*BR1*	*BR5*	*BR3*	*BR1*
Duration of Marriage	—.47	—.52	.74				—.43	—.47	.71
Female Education	—.03*	—.04	.03*						
Male Education	—.01*	—.02*	—.01*						
Age at Marriage				—.46	—.49	.73			
Use of Contraception				—.24	—.04	—.05			
Female Employment (NHO)							—.13	—.14	.11
Male Employment (NAO)							—.09	—.09	.09
R2	.46	.50	.73	.49	.50	.72	.48	.52	.74
R	.21	.23	.54	.24	.25	.51	.23	.27	.55

Note : * Non-significant

Source : Sirisena, N.L.; Ibid

NHO = Non-Household Occupation
AO = Agricultural Occupation
NAO = Non-Agricultural Occupation

BR 5 = Fertility During 1978 - 82
BR 3 = „ „ 1980 - 82
BR 1 = „ „ 1982

TABLE 2

DISTRIBUTION OF MARRIED FERTILE FEMALE WORKFORCE

(Percentages)

Community type	*Permanent*	*Casual*	*Housewife*
Land Settlements	2.0	49.4	48.6
Guaranteed Price Scheme	1.4	63.4	35.2
Rural Electrification	14.2	2.2	83.6
No Development Programmes	6.4	16.0	77.6

Source : Sirisena, N.L., Ibid.

TABLE 3

EDUCATIONAL ATTAINMENT (IN YEARS) OF MARRIED FERTILE FEMALES AND THEIR HUSBANDS

Number of Years	*Females*				*Males*			
	0	1 - 6	7 - 11	12+	0	1 - 6	7 - 11	12+
Land Settlements	18.1	41.7	36.9	1.1	7.7	*49.3	*41.2	*0.6
Guaranteed Price Scheme	15.4	37.5	45.7	1.4	6.4	40.8	50.7	2.1
Rural Electrification	2.2	9.9	79.3	8.6	1.4	11.4	77.7	9.5
No Development Programmes	22.8	30.6	45.9	0.7	13.3	35.5	50.3	0.9
Average	14.6	29.9	52.0	3.0	7.2	34.3	55.0	3.3

Source : Sirisena, N.L.; Ibid.

TABLE 4

AVAILABILITY OF EDUCATIONAL FACILITIES

Community Type	*Population Per Primary School*	*Average Number of Students Per Primary School*	*Population Per Secondary School*	*Average Student Population Per Secondary School*	*Illiterate Percentage of Males and Females*	*Monthly Income Rs.*
Land Settlements	5344	482	6681	1209	29.0	707
Guaranteed Price Scheme	4584	319	9168	907	21.9	810
Rural Electrification	4280	311	6419	988	3.5	875
No Development Programmes	2187	195	9844	560	36.6	512

Source : Sirisena, N.L.; Ibid.

TABLE 5

AGE AT MARRIAGE (IN YEARS)

OF FERTILE FEMALES AND THEIR HUSBANDS

Development Community	*Age at Marriage (Female)*	*Age at Marriage (Male)*
Land Settlements	18.9	25.8
Guaranteed Price Scheme	19.3	25.4
Rural Electrification	23.4	29.4
No Development Programme	20.2	25.8

Source : Sirisena, N.L., Ibid.

TABLE 6

AVAILABILITY OF FAMILY PLANNING FACILITIES

Community Type	*Mean Parity*	*Population Per FWO*	*Percentage Using Contraceptives*	*Percentage of High Risk Females**
Land Settlements	4.0	5906	26.3**	46
Guaranteed Price Scheme	3.7	8157	20.3	43
Rural Electrification	2.7	4280	30.8	31
No Development Programmes	3.5	6713	18.9	53

Note : * Females who do not practise any fertility control excluding those currently pregnant.

** In 1981 a large family planning programmes was started in the Uda-Walawe Scheme. It has affected the 1982 data which are presented here.

Source : Sirisena, N.L., Ibi

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LABOUR USE AND EMPLOYMENT IN THE TEA SECTOR IN SRI LANKA*

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Introduction

Tea industry plays an important role in Sri Lanka's economy. In terms of land use, nearly 598,000 acres, which amount to about 14 per cent of the country's agricultural land area, are reported to be under tea cultivation. As shown in Table 1, the industry accounted for 2 per cent of the Gross Domestic Product (at 1970 constant factor cost) and 9 per cent of the value added in the agricultural sector in 1982. Also it accounted for 30 per cent of total export earnings and 9 per cent of the total tax revenue in the same year. Estimates on the direct employment in the tea industry differ widely and according to one estimate it amounted to 468,600[1] in 1978 or 70 per cent of the estimated total direct employment in the tree crop sector which includes rubber and coconut as well, in addition to tea. The Tea Master Plan estimated the direct employment in the tea industry in 1978 at 700,000.[2] The industry's contribution to the national economy is much higher than what is indicated by these figures since it makes a great deal of indirect contribution as well to the economy.

In view of the importance of the tea sector in Sri Lanka's economy, particularly from an employment viewpoint, this study attempts to analyse several aspects of employment in the tea sector. Emphasis is placed on past trends in employment and the sector's potential to generate additional productive employment in future. Also, an attempt is made to identify broad areas in which policy measures are required to generate such employment together with existing constraints on additional employment creation.

At the outset it is useful to note several problems one faces in discussing employment aspects in the tea sector. Firstly, comparable employment data on a time series basis are difficult to obtain. Secondly, the figures that can be obtained are of poor quality. Employment data collected and published by the Department of Labour (Colombo) refer to the number of persons registered in the pay roll and not to the number of persons

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* This paper was written in early 1984 and is published without revisions.

TABLE 1.

IMPORTANCE OF THE TEA INDUSTRY IN THE SRI LANKA ECONOMY

		Year	*Percentage*
1.	Tea Industry's share in GDP (at 1970 factor cost)	1982	2
2.	Share of the tea industry in total value added in the agriculture sector	1982	9
3.	Share of tea exports in total export earnings	1982	30
4.	Tea Export earnings as a percentage of total export earnings from tree crops	1982	62
5.	Share of tax revenue from tea industry in total tax revenue	1982	9
6.	Direct employment in tea industry as a percentage of total work force	1980	13
7.	Tea land area as a percentage of total agricultural land	1980	14

Source : Central Bank of Ceylon.

actually employed in a given period. Thus, they reflect the supply situation rather than actual employment or labour use. These data problems are a serious limitation of the study. Thirdly, data on either employment or production in the smallholder sector are not available.

Size and Ownership Distribution of Tea Lands

Sri Lanka's tea cultivation is characterized by a relatively small number of plantations and a large number of small holdings. As shown in Table 2 plantations accounted for only 3 per cent of the total number of holdings in 1982 but their share in total extent under tea amounted to 78 per cent in contrast, small holdings accounted for 97 per cent of the total number of holdings while their share in total extent was only 22 per cent. Holdings below 2 acres in extent account for bulk of the area under small holdings.[4] Another salient aspect of the size distribution is that within the plantation sub-sector larger plantations over 500 acres in extent account for a relatively larger share-about 41 per cent — of the total extent under tea. This indicates clearly the importance of large plantations in Sri Lanka's tea cultivation. Although a land reform programme affecting the tea sector was implemented

in Sri Lanka in 1972 and 1975, this programme did not lead to a significant change in the size distribution of tea lands in the country.

TABLE 2.

SIZE DISTRIBUTION OF TEA LANDS, 1982

Size Category	*No. of Holdings*	*% Distri-bution*	*Extent (Acres)*	*% Distri-bution*
Small Holdings below 10 acres	136,269	97.24	131,293	21.9
10 — 50 acres	2,650	1.89	57,109	9.5
50 — 100 acres	381	0.27	29,471	4.9
100 — 500 acres	503	0.36	134.833	22.5
Over 500 acres	334	0.24	245,640	41.2
Total	140,137	100.00	598.346	100.0

Source : Sri Lanka Tea Board.

Immediately prior to the land reform programme of 1972, approximately 27 per cent of the area planted with tea was owned by Sterling Companies (companies registered in the United Kingdom), while Rupee Companies (companies registered in Sri Lanka) owned about 35 per cent of tea lands. Ceylonese individual ownership of estates amounted to about 26 per cent and Ceylonese small holdings to about 18 per cent of the extent. Only 2 per cent of the total extent under tea was owned by the State by this time and the balance 98 per cent was owned by the private sector. However, as a result of the land reform programmes of 1972, and 1975, tea land ownership underwent a structural change. As may be seen from Table 3, in 1982, the State accounted for 62 per cent of the total tea lands in the country. The importance of the State is even greater within the plantation sub-sector since it owns 78 per cent of the extent under plantations.

Management of Tee Lands

The early tea plantations were either managed by owners themselves or hired-managers resident on the plantations. The importance of hired-managers increased with the growth of corporate ownership of tea lands in the country.

From the early days, the plantation companies obtained the services of agents to market their crops and obtain necessary inputs, including, sometimes, working capital. These agents operating in Colombo gradually developed into corporate bodies called Agency Houses. With the increasing relative importance of company-owned plantations over the years the Agency Houses became an integral part of the structure of the plantation economy The plantation companies which had their head offices in London, contracted out the management function of the estates to these Agency Houses because direct management by the companies themselves was logistically not possible.

TABLE 3.

DISTRIBUTION OF TEA LANDS BY OWNERSHIP — 1982

	Extent (Acres)	*Percentage Distribution*
State Sector	365,436	61.074
Land Reform Commission	338,137	56.512
Sri Lanka State Plantations Corporation	20,705	3,460
Government Agents	5,671	0,948
Sri Lanka Tea Board	731	0.122
Bank of Ceylon	27	0.005
Public Trustee	67	0.011
Small Holdings Owned by State Agencies	98	0.016
Private Sector	232,910	38.926
Ceylonese Individuals	95,422	15.948
Non-Ceylonese Individuals	4,703	0.786
Ceylonese and Non-Ceylonese Individuals	1,592	0.266
Small Holdings Owned by Ceylonese Individuals	131,193	21.926
Total	598,346	100.000

Source : Sri Lanka Tea Board.

Even the locally incorporated plantation companies (i.e. Rupee Companies) with their head offices in Colombo preferred to contract out the management function of their estates to the Agency Houses because "to employ the service, of an already established Agency House, was considered by most of these newly formed companies to be far more economical".[5]

In 1970, 47 per cent of the total registered extent under tea and 57 per cent of the total extent under tea plantations was under the management of the Agency Houses. The estates under the Agency Houses accounted for 62 per cent of the total tea production in 1970.[6] Prior to independence, the Agency Houses were predominantly owned by British nationals. The Agency Houses gradually acquired shares in the plantation companies and then increased their ability to control the plantations that were under their management. The management of plantations was organized in a hierarchical pattern by the Agency Houses. The Resident Manager was at the top of the estate hierarchy while several Assistant Managers worked under him. At the bottom of the hierarchy were labourers. In between there was a group of intermediary level supervisors. The estates managed by the others such as proprietors themselves and small private companies were also organized along the same lines.

Management of tea lands by the Agency Houses terminated with the land reform programmes of 1972 and 1975, but the new management institutions which replaced them continued the hierarchical pattern of management.

Immediately after the land reform programme there was a proliferation of management institutions of nationalized (or "reformed") tea lands. At one point in 1976, more than ten different public sector or semi-public sector institutions were directly involved in tea land management. In 1977 and 1978, an attempt was made to consolidate management functions under a few selected institutions such as the JEDBs and SLSPCs. This process of consolidation was combined with measures which resulted in regionalization of management. As may be seen from Table 4, in 1982 eight state-owned corporate bodies functioning under two Ministries, namely the Ministry of Janatha Estates Development and the Ministry of State Plantations managed about 57 per cent of the tea lands in the country (65 per cent of the tea plantation lands), while the small holder extent is managed, as earlier, by the owners themsleves.

Work Force on Tea Lands

Historically, tea cultivation was first developed in Sri Lanka, during the colonial period and largely depended upon labourers imported from South India. Their descendents known as Indian Tamils, in ethnic terms, continue to be the majority of the labour force — about 80 per cent — on the estates even at present. Indian Tamils (descendents of the imported labourers) are

more predominant on high and mid-grown tea plantations. They are resident on the estates while Sinhalese, who constitute about 20 per cent of the total number employed on tea estates almost entirely fall into the category of non-resident labour. Small holdings are almost entirely owned by, and cultivated with, Sinhalese labour.

TABLE 4.

ESTATES AND SMALLHOLDINGS CLASSIFIED ACCORDING TO MANAGEMENT, AS AT END OF 1982

Management	*No. of Estates*	*% of Distri-bution*	*Extent (Acres)*	*% of Distri-bution*
1. Janatha Estates Development Board	309	0.22	185,359	30.98
2. Sri Lanka State Plantations Corporation	351	0.25	156,541	26.16
3. Cooperative Societies	133	0.09	11,343	1.89
4. Land Reform Commission	53	0.03	6,096	1.02
5. National Agricultural and Diversification Settlement Authority	14	—	3,362	0.55
6. Other State Agencies	59	0.04	2,735	0.46
7. Ceylonese Individuals	2,887	2.06	95,420	15.95
8. Non-Ceylonese Individuals	72	0.05	4,703	0.79
9. Ceylonese & Non-Ceylonese Individuals	9	—	1,592	0.27
10. Smallholdings Owned by Ceylonese Individuals	136,250	97.22	131,192	21.93
Total	140,137	100.00	598,543	100.00

Source ; Sri Lanka Tea Board.

Overall Trends in Employment and Labour Use

Tea cultivation in Sri Lanka has been a highly labour intensive activity from the beginning. Although processing of green leaf into made tea is based on capital intensive technology, processing accounts for less than 10 per cent of the total labour requirements per acre of tea.

In tea cultivation, labour is required to perform various cultivation operations. Since tea is a perennial crop with a productive life span of 60 - 70 years the bulk of the labour is spent on maintaining the tea bushes and harvesting leaves. Harvesting (often referred to as plucking) is the most labour intensive activity accounting for 55 - 65 per cent of the total labour requirements per acre of tea. Hence, there is a very high positive correlation between the production of tea (more specifically production of green leaf) and labour use in the tea sector.

Although available macro level employment data, as mentioned earlier, are of questionable quality and should be used cautiously, a number of broad inferences may be made from them. As shown in Table 5, total employment in the tea sector grew by 6.8 per cent during the period from 1953 to 1963. This works out to about a 0.6 per cent average rate of growth per year. The increase in total employment during this period stemmed from two factors : the increase in yield per acre and prouction on plantations and the rise in cultivated extent in the small holdings subsector. The picture revealed by these macro level employment data is consistent with the labour use situation implied by production and yield trends durtng the same petiod.

According to the same source of data, the level of employment, however, declined by 6.3 per cent between 1963 and 1971. This decline may be explained in terms of the fall in production since 1965. Although employment data are not available separately for plantations and small holdings sub-sectors for this period, given the fact that the extent under small holdings rose by about 16,700 acres while that under plantations declined by about 6,900 acres, it may be argued that the decrease in employment may have been largely concentrated in the plantation sub-sector. Undoubtedly, the post-1965 period was characterised by a lower level of labour use and increasing unemployment and under-employment in the tea sector.

TABLE 5.

EMPLOYMENT IN THE TEA INDUSTRY (NUMBER OF PERSONS), 1953, 1963 AND 1971

	1953	1963	1971
Acreage cultivated :	574,250	587,735	597,171
of which-plantations	504,469	497,539	490,602
Smallholdings	69,781	89,836	106,569
Employment	550,191	587,785	550,711
Change in employment over the previous period	—	+ 37,594	- 37,074
Employment per acre of tea	0.96	1.00	0.92

Source : Census and Statistics Department, Colombo.

A major development in the post-1965 period upto about 1977 was the drop in actual area under cultivation. It has been pointed out that there is a wide gap between the registered extent and the actual extent under tea cultivation, and the registered extent appears to be an overestimate.[7] a The adjusted figures indicate a decline of nearly 52,000 acres in actual area under cultivation between 1965 an 1d977. This decline, no doubt, must have dampened labour use in the tea sector. If one assumes a lower labour co-efficient of 0.4 per acre for the area which went out of production, employment would have dropped by 20,800 labour units between 1965 and 1977.

The impact of the decline in production during the post — 1965 period on labour use for plucking may be estimated on the basis of a simple assumption that plucking labour productivity remained unchanged over time. The data presented in Table 6 shows that labour use for plucking dropped by 14 per cent in the high grown areas and 27 per cent and 15 per cent, in the mid and low grown areas, respectively, as a result of the drop in production between the two periods. Thus, it is clear that the fall in production had more severely affected the labour use in mid-grown areas. Since, plucking tea leaves in Sri Lanka's tea sector is largely a female job this deterioration in labour use may have reflected largely in a drop in female labour use.

TABLE 6.

LABOUR USE FOR PLUCKING (MAN YEARS)

Regions	1965 — 1968 (*Annual Average*)	1979 — 1982 (*Annual Average*)	*Change*
High Grown	124,074	106,474	— 14
Medium Grown	114,645	84,009	— 27
Low Grown	84,615	72,346	— 15

Source : Author's Estimates Based on Production Data.

Similar adverse effect on labour use stemmed from the fall in fertilizer use in the tea sector. Fertilizer application in the tea sector declined significantly during the post — 1965 period until 1977 and thereafter fluctuated at a low level. This decline had a two-fold adverse effect on labour use. The direct effect was that a lower number of man days was required for application of fertilizer. The indirect effect was felt through the adverse impact of the drop in fertilizer application on production. Given the average number of man days required for applying a ton of fertilizer, the direct effect on labour use may be easily estimated. Results of such an exercise presented in Table 7 show that labour use in the tea sector dropped as a result of the fall in fertilizer application.

TABLE 7.

LABOUR USE FOR FERTILIZER APPLICATION

Period	*Amount Applied (annual average in '000 M.T.)*	*Labour Use* (man years)*
1965 — 1968	150	5,769
1979 — 1982	104	4,000

Source : Author's Estimate.

* Estimated at the rate of 10 man days per ton.

It is interesting to compare the employment performance in the tea sector with that of the paddy sector. The paddy sector, in contrast, showed a high degree of dynamism both in production and labour use and reported a continuous improvement in the level of employment. While paddy output rose by an average annual rate of 2.24 per cent during the period from 1953 to 1963, employment rose by a much higher average rate of 5.9 per cent per year. During the period from 1963 to 1971, output and employment in the paddy sector grew by an annual average rate of 4.0 per cent and 3.19 per cent, respectively. The paddy sector again showed an impressive growth during the period from 1977 to 1982 registering an average annual growth rate of 4.7 per cent in output. This high growth rate must have undoubtedly led to a continued growth in labour use and employment in the paddy sector.

TABLE 8.

EMPLOYMENT IN PADDY SECTOR

	1953	1963	1971	1978
1. Total employment ('000)	378.3	623.9	802.8	987.0
2. Annual cropped area ('000 acres)	1,048.2	1,561.9	1,793.6	2,163.1
3. Annual production (Mn. bushels)	21.9	49.2	66.9	90.8
4. Employment per acre	0.36	0.40	0.45	0.46
5. Output per worker (bushels)	57.9	78.9	83.3	91.8

Source : Census and Statistics Department.

The increase in unemployment and under-employment in the plantation sector (including rubber plantations) further substantiates the deterioration of employment situation in the tea sector. Richards and others argued that unemployment rose between 1963 and 1969 in the estate sector. They estimated the number of unemployed in 1969 at 110,000.[8] The Consumer Finance Survey reported an increase in open unemployment from 7.5 per cent in 1963 to 12 per cent in 1973.[9] Given the fact that tea production, declined between 1963 and 1973 by 4 per cent, while rubber production rose 48 per cent during the same period, it may be concluded that the poor employment performance was confined largely to the tea plantation sector.

Rising under-employment too reflected the worsening employment situation in the tea sector. The ILO employment mission to Sri Lanka concluded in 1971 that "almost one quarter of the agricultural work force on estates is under-utilized."[10] Partly due to the increase in under-employment government had to intervene to ensure that registered workers on estates would get a reasonable number of work days per year. Thus, in 1975 a regulation which stipulated that every registered worker should be provided with a minimum of 120 days of work for six months was imposed. It is important to note that the employment performance in the tea estate sector would have been more unsatisfactory had it not been for the repatriation of nearly 177,000 persons from the estate sector during the period from 1969 to 1975.[11]

A multitude of factors account for the unsatisfactory employment situation in the tea estate sector. The deterioration in producer margins in the tea sector put many estates on a 'maintenance' management basis leading to a lower level of expenditure on several labour consuming cultivation practices such as weeding and fertilizer use. This deterioration in producer margins resulted from the rising eost of production amidst more or less stagnant or declining prices of tea. The threat of nationalization of foreign owned tea estates which became a reality by 1975 also had a dampening effect on labour use since investment on capital development dropped to a low level, as a result.

Although land reform programmes were implemented in 1972 and 1975 with a primary objective of promoting productive employment on lands, the first phase of the land reform programme undoubtedly depressed productive employment in the tea sector. The 1972 programme affected about 139,000 acres of tea lands and the bulk of them was mismanaged for a long period since 1972, thereby depressing production and productive employment. Although some estate land was redistributed among villagers, the redistribution did not create additional permanent productive employment partly because no ancillary services were provided to the land receipients.[12]

The second phase of the land reform in 1975 also initially had a depressing effect on labour use on tea estates. However, unlike in the case of the first phase the adverse effects of the second phase appear to have been a temporary phenomenon. After a few years characterized by frequent changes and severe management problems the second phase appears to have resulted in greater productive employment. However, there is no doubt that labour use and employment in the tea sector has not yet reached the peak level of 1965.

During the post land reform period an important structural change appears to have occurred in employment in the tea plantation sector. Employment of village labour has increased to a significant extent on public sector estates. The unemployment problem in the villages, political importance of village votes coupled with the state-ownership of a significant extent of tea lands since 1972 explains this rising trend in village labour absorption. Repatriation of labourers of Indian origin under the Indo-Ceylon Agreement of 1964 also undoubtedly facilitated this process.

With the rising trend in village labour absorption the relative importance of resident labour in total employment had dropped dignificantly on certain estates (see Table 9). This appears to have important implications for production activities on tea estates. The outturn of village labour indicates a higher degree of seasonality and, on the average, it is significantly lower when compared with the resident labour. Therefore, tea estates on which the relative importance of resident labour has decreased, have become more vulnerable to a labour force on which they cannot safely depend upon to meet their labour requirements.

TABLE 9.

COMPOSITION OF THE LABOUR FORCE, 1975 AND 1978

(*Percentage*)

Estate	1975 (*pre-reform*)		1978 (*post-reform*)	
	Non-resident Sinhala	*Resident Tamil*	*Non-resident Sinhala*	*Resident Tamil*
Allerton	15	85	22	78
Helbodde	9	91	14	86
Delta	11	89	17	83
Kelliawatte	0	100	20	80
Passara	2	98	8	92
Dickwella	14	86	25	75

Sources: Tea Master Plan Study; Central Bank of Ceylon.

Seasonality in Labour Use

Although, tea production is an year-round activity in Sri Lanka, monthly output fluctuations are still important. There are two peaks in a tea crop each lasting for about three months. Though there are regional variations the first peak occurs in the second quarter and the second peak in the fourth quarter of each year. The labour use, fluctuates in a similar pattern owing to the high labour requirements for tea plucking During the peak periods work is available for about 22-25 days a month while during the slack periods it drops to about 15 days a month. Since harvesting tea leaves is largely a female activity a peak crop period means a higher level of female employment and slack period a lower level of female employment. The low labour use in slack periods is largely a reflection of the lack of alternative economic activities, particularly in the case of plantations. The plantation system in the country was such that alternative activities were not developed by the plantation managers as an integral part of the production unit partly because the cost of under-employment was borne by the labourers themselves and not by the owners of the plantations. The heavy reliance on tea as a monocrop has to be changed if seasonality in labour use is to be reduced.

III

Factors Affecting Labour Requirements and Labour Absorption

The total labour reqirements of a tea estate are made up of the labour required for field operations and factory operations. In addition, labour is required for service activities such as transport. However, this latter component constitutes a negligible proportion of the total labour requirements. Field labour requirements may be divided into two types: labour required for maintaining current green leaf production and increasing it in the short-run and labour required for capital development work such as replanting, new planting, infilling and soil conservation measures.

Field labour requirements for current production activities may be again divided into several categories : requirements for plucking, weeding, fertiliser application, pruning and other sundry work such as lopping shade trees. Thus, field labour requirements for current production of an estate vary with the cultivation practices adopted which in turn are influenced by the level of management and availability of funds to meet expenses involved. Activity-wise distribution of total labour requirements per acre of tea is given in Table 10, on the basis of several assumptions of yield and labour productivity.

Labour Requirements for Plucking

The chief factor which influences field labour requirements per unit of land is the yield. Since plucking tea leaves has not been mechanised, as in the case of sugar cane harvesting in many countries[13] it continues to be the most labour intensive activity in tea cultivation both in plantations and small holdings. In general, plucking accounts for about 60 per cent of the total labour required per acre of tea. Labour requirements for plucking, however, varies with a number of factors, the major factor obviously being the yield. Bush density, terrain, efficiency of pluckers and type of plucking also influence plucking labour requirements.

TABLE 10.

LABOUR REQUIREMENTS FOR TEA CULTIVATION, PER ACRE BY ACTIVITY

Activity	*No. of man/woman days*	%
Plucking	155	62
Weeding	45	19
Forking	08	03
Fertilizer Application	06	03
Pest & Disease Control	08	03
Pruning	06	03
Other	15	07
	243	100

Sources : JEDB;
SLSPC;
Sri Lanka Tea Board.

Note : Average yield per acre is assumed to be 4,500 lbs. of green leaf.

Assuming that plucking productivity remains constant, labour requirements per acre increases directly with the level of green leaf yield. Plucking productivity is, however, influenced by level of yield, wage rate, terrain, experience of the plucker, bush density and type of plucking. When yield

level increases plucking productivity increases to some extent, but other factors seem to set the upper limit to plucking productivity. Similar relationships may be observed between the wage rate and the plucking productivity. In high grown estates where terrain is difficult, plucking productivity is, in general lower than that of low grown estates. In low elevations less steep land makes plucking easier, therefore, productivity is higher.

TABLE 11.

OBSERVED PLUCKING PRODUCTIVITY BY ELEVATION

Elevation	*Average Yield Per Acre (Green Leaf in lbs.)*	*Average Amount of Leaf Plucked Per Plucker lbs.*
High	5,170	27
Mid	3,990	26
Low	4,230	35

Source : Tea Master Plan Study : Position Paper 1, 1979.

The type of plucking also influences the plucking productivity. Fine plucking is more time consuming than coarse plucking. Therefore, if a plucker resorts to fine plucking he may pluck a less amount of leaf when compared with the amount he may pluck, if he resorts to coarse plucking. As shown in the above table, low grown areas report a relatively higher plucking productivity despite a lower average yield per acre, when compared with the high grown areas. This is partly due to the fact that coarse plucking is more widely practised in low grown areas.

Another important factor which affects plucking productivity is the bush density per unit of land. Lower bush density contributes to loss of plucking time and results in lower productivity.

In Sri Lanka, the average plucking productivity in the plantation sector ranges between 25-30 lbs. of green leaf per plucking day. It is difficult to compare this with what is achieved in other countries owing to differences in factors such as terrain, and wage rate. Nevertheless, it appears to be low compared to that of Kenya (55 lbs. per day) and Indonesia (35 lbs. per day). Also, it has been observed that there has been a significant decline in plucking productivity over the past decade. Lack of an effective system of supervision together with the relatively higher percentage of inexperienced pluckers in the labour force partly explain this drop.[14] Another important reason for this fall may be the significant deterioration of bush density per unit of land over the past decade. In fact, the Tea Master Plan (1979) has identified this as

one of the most important factors affecting the drop in average yields over this period.[15] Therefore, given the close relationship between bush density and plucking productivity decline in bush density has undoubtedly contributed to the observed drop in plucking productivity.

Labour Requirements for Weeding

Weeding is the other most labour-intensive component in field labour requirements. Labour requirements for weeding are mainly a function of two factors : method of weeding to be adopted (manual or chemical) and the bush density. The traditional method of weed control on tea estates in Sri Lanka is the use of scrapers of various sizes and a considerable number of estates still use this method despite several disadvantages of the method such as high risk of soil erosion. Weeding is done on a contract basis under this method and resident workers and their family labour including small children over 7 or 8 years in age are used for the purpose. Labour requirements for manual weeding are estimated on the average, at 45 man-days per acre.

However, it has been found that chemical weeding is more effective and less costly. Also, chemical weeding is less problematic from a labour management point of view. Therefore, many estates have a greater preference for this method. However, from an employment generation viewpoint chemical weeding is less satisfactory since this method requires about 10 man-days per acre, about one-fourth of the labour required for manual weeding. Nevertheless, given the disadvantages of manual weeding it is questionable whether tea estates should resort to manual weeding purely for employment generation. From a productive employment viewpoint too manual weeding may be counterproductive since it may lead to lower yields and therefore a lower level of labour absorption in the long run.[16]

As mentioned earlier, the other major factor influencing labour requirements for weeding is the bush density. Higher bush density leads to less weed since a better cover of the ground by tea bushes prevents adequate light reaching the ground and thereby controls growth of weed. Conversely, high rate of vacancies exposes land to sunlight and promotes growth of weed. Thus, when there is a good cover of tea, less labour is required for weeding. Therefore, better managed estates require less labour for weeding than those estates which are poorly managed and one may, thus, observe an inverse relationship between the average yield and the number of man-days required for weeding.

Labour Requirements for Fertilizer Application

Since fertilizer application on tea plantations in Sri Lanka is entirely a manual operation, labour requirements for this task obviously depends on the amount of fertilizer applied which in turn is influenced mainly by level of

yield, weather conditions, type of tea (seedling or VP) and fertilizer/tea price ratio. In addition, terrain also has some bearing on the labour requirements for fertilizer application. On state-owned plantations, however, fertilizer application appears to be influenced more by the first three factors rather than by short-term fluctuations in fertilizer/tea price ratio. On privately owned estates and small holdings, short-term fluctuations in fertilizer/tea price ratio too are an important variable affecting fertilizer use. Higher level of yield calls for higher amounts of fertilizer since more soil nutrients are taken away by the higher yield. Similarly, VP tea requires more fertilizer than seedling tea since yield of the former is more responsive to fertilizer use than the latter. Once the amonnt required per unit of land is determined by these factors, the actual amount used will be influenced mainly by the economic factor, fertilizer/tea price ratio and the weather factor. A lower fertilizer/tea price ratio leads to a higher level of application (of course subject to technical factors mentioned above) and vice versa. Adverse weather conditions like excessive rains and droughts lead to a lower application. On the average, 06-08 man-days per acre is required for fertilizer application. This estimate does not include the man-days required for supervising fertilizer application. When it is added, about 8-10 man-days may be required per acre.

Labour Requirements for Pruning

Pruning is another manual operation in tea cultivation. Labour requirements for pruning varies with the elevation and type of pruning. Pruning intervals (usually known as pruning cycles) vary over elevation. Ideally, at low elveations, bushes should be pruned every 1 1/2 to 2 years while at medium and high elevations, it should be done every 3-4 years and 5-6 years, respectivly. Therefore, more labour is required for pruning an acre of tea cultivated in low elevation when compared with that of medium and high elevations. Labour requirements for 'clean' pruning is higher than that of light pruning simply because the former involves cutting of more branches per bush. It is estimated that clean pruning is about 1 1/2 times more labour intensive than light pruning. The average labour tequirments for the latter is estimated around 6 man days per acre.

Labour Requirements for other Field Operations

The amount of labour required for activities other than plucking, weeding, manuring and pruning constitutes a very small proportion of total field labour requirements per unit of land. Their relationship with yield per land unit is also remote.

Labour Requirements for Capital Development Work

There are three major capital development activities which are fairly labour intensive : replanting, new planting and infilling. Replanting involves a series of labour intensive activities such as uprooting old tea, rehabilitation

of soil, planting new tea and maintaining tea fields until maturity. Labour requirements for replanting, however, vary over elevation. In low grown areas, labour requirements are lower than in medium and high grown areas. It is also important to note that though total labour requirements for replanting is significantly high it is distributed over a period of years aud limited just for that period. As may be seen from Table 12 replanting in high grown areas require a total of about 1,600 man-days phased over a period of 5 years. Highly uneven distribution of this total is noteworthy. The first year of replanting accounts for about 42 per cent of the total amount while very much less labour (about 7 per cent) is required in the second year during which soil on uprooted land is rehabilitated. Again, the third year accounts for a sizeable proportion of the total and thereafter it begins to decline. In an employment promotion strategy, importance of replanting lies more in its long term effects on labour use. Since replanting leads to a higher level of yield in the long run it enhances labour absorptive capacity on a more permanent basis.

TABLE 12.

ESTIMATED LABOUR REQUIREMENTS FOR REPLANTING

(Man-days per Acre)

Year	*High Grown*	*Medium Grown*	*Low Grown*
1. Uprooting	668	475	425
2. Rehabilitation	107	76	74
3. Planting	363	307	271
4. Upkeep (1st year)	259	167	130
5. Upkeep (2nd year)	203	132	—*
Total	1,600	1,157	900

Source : Janatha Estates Development Board.

* No second year upkeep.

Labour requirements for new planting too vary over elevation and it is less labour intensive than replanting because preparation of land for planting is relatively easier. However, as in the case of replanting labour requirements for new planting is distributed over a few years with the same char acteristic of unevenness in distribution, some years accounting for a greater share of the total amount of Iabour required.

The extent actually replanted and new planted depends on several factors such as the level of the state subsidy for, and cost of, these activities, including income foregone during the gestation period and the size of the capital budget of the estates for these activities. In the smallholding sector replanting is influenced more by the smallholder's capacity to forage a portion of current income and raise sufficient funds to commence replanting work until he receives the state subsidy. Usually the smallholder's capacity to forage a portion of his income is low and they do not have easy access to institutional credit sources to finance initial expenses involved. Therefore, their participation in replanting appears to be relatively poor.

Although soil conservation is also an important capital development activity, very little labour is required for this task when compared with replanting and new planting.

Infilling may be considered as another impcrtant capital development activity in the tea sector. The importance of infilling has increased over the last few years simply because bush density has gradually decreased. However, it is difficult to make a precise estimate of labour requirements for infilling since it varies mainly with the terrain and the number of plants to be infilled. Like replanting infilling increases labour requirements directly (for infilling per se) as well as indirectly (by improving yield and financial capacity to undertake other improved cultural practices in the future). Thus, infilling has been described as 'an initial step towards a self-sustaining higher labour absorptive tea cultivation.[17]

Labour Requirements for Processing

Factory labour demand is determined by the type of machinery and the extent of automation and the quantity of green leaf available for processing. In general, one man-day is required to process 356 lbs. of green leaf. Availability of green leaf for processing depends on the green leaf output of the estate and the amount of leaf purchased from outside sources in a given day. Many factories in the mid and low-elevation areas purchase leaf from outside sources. Therefore, the amount supplied by these sources is an important factor affecting labour demand.

In Sri Lanka, a majority of the tea factories are still working with old machinery. Only a few have been modernised to a notable degree. Modernization to some extent has reduced the labour requirements for processing. Table 13 outlines the conventional technology together with new technologies available for processing in various stages. New technologies are available for every stage of processing. But each one of these does not depress labour requirements. A significant adverse effect on labour demand is generated by the substitution of troughs for tats, use of automated conveyors to transfer green leaf and use of mechanised sifters and

auto tea bulkers instead of manual operation of these. However, since the factory labour component is less than 10 per cent of the total labour requirements per acre even a total automation of the factory operations would not have a severe adverse effect on total employment in the tea industry.

TABLE 13.

TEA PROCESSING TECHNOLOGY

	Operation	*Conventional Technology*	*New Technologies available*
1	Pre-withering (transfer of green leaf from factory gate to withering room)	Carried by manual labour	i Manually operated elevators ii Automated conveyors
2	Withering	i Jute hessian tats ii. Nylon netted tats	i Withering troughs ii. Drum withering
3.	Rolling	Orthodox rollers	i. Rotorvane rollers ii. "Crushing, tearing and curling" roller (CTC roller)
4	Roll breaking	Vibratory roll	Rotary roll breaker
5.	Firing and drying	Conventional ECP drier	Fluid bed drier
6.	Grading, sifting and packing.	Manual	Auto tea bulkers

Labour Use in the Smallholder Sector

Labour use in the smallholder sector is much different from that of the plantation sector. However, there are no macro-level data on employment or labour use in the tea smallholdings sector, despite its importance, particularly for rural development. This lack of data may be explained in terms of several factors. First, most of the smallholdings do not employ permanent labour as in the case of the plantations. Secondly, collection of data on a regular basis

rom smallholders is difficult. Thirdly, most of the smallholders do not maintain records of their work or cultivation expenses. Fourthly, cultural practices, yields, and therefore, labour use differ widely among smallholdings.

In 1982, there were 136,269 smallholdings accounting for 131,045 acres of tea lands. This constituted 21 per cent of the total extent of tea in the country. If one assumes an average labour coefficient of 0.4 per acre (this coefficient is about 40 per cent of the average coefficient for the tea plantation sector) for the smallholder sector, direct employment in the sector amounts to about 52,400 labour units. This is about 10 per cent of the estimated direct employment in the entire tea sector. An alternative estimate based on production data revealed that in 1977 the tea smallholder sector directly used about 65,000 man-years.[18] Though this estimate is sensitive to the assumption on which it is based, it indicates the smallholder sector's importance and contribution to employment in the tea sector.

When compared with the plantation sector, the lower level of labour use per unit of land in the smallholder sector is a direct result of the lower level of output per unit of land in this sector. The average yield per acre in the smallholder sector is in the range of 2,700 lbs. to 3,150 lbs. of green leaf while that in the plantation sector is 4,500 to 4,950 lbs. of green leaf. The ower yield directly depresses labour use in plucking and therefore, total labour use.

Given the high degree of heterogeneity in the smallholder sector as to cultivation practices and yield, labour use also shows a high degree of variability. In general, labour use is comparatively low on small-holdings in the Kandy district owing to lower average yield while it is very much higher in Galle and Matara districts where average yields are higher.

Table 14 presents data on activity-wise labour requirements per acre in the smallholder sector in Galle and Matara districts. When compared with the plantation sector, labour use in small-holdings in these two districts is not very much different. However, small-holders in these regions appear to spend more labour than plantations on weeding partly due to the fact that they do not use chemicals for this purpose.

There are no district-wise data on either average yield or labour use on small-holdings. Not even micro-data are available for districts other than Galle and Matara. However, levels of yield and labour use on small-holdings in the Southern Province may be considered higher than the average levels in the other regions.[19]

TABLE 14.

ESTIMATED LABOUR REQUIREMENTS PER ACRE OF TEA

Activity	*Labour (a) Requirements (Man-days)*	%
Plucking	138 (b)	54
Weeding	72 (c)	28
Manuring	06 (d)	02
Pruning	05 (e)	02
Lopping shade trees	04 (f)	01
Leaf transport	12 (g)	05
Sundry work	20 (h)	08
Total	257	100

Notes : (a) Average yield is assumed to be 5,500 lbs. of green leaf per acre (1,220 lbs. of made tea).
(b) 40 lbs. of green leaf per man-day.
(c) 6 man-days per month.
(d) Half a day per cwt. of fertilizer.
(e) 10 days per acre, 2 year cycle.
(f) 2 days per six months.
(g) 1 day per month.
(h) Maintenance of terraces, roads, etc.

It is generally assumed that tea smallholdings are worked primarily with family labour supplemented by hired labour during peak seasons while plantations entirely depend on hired labour. However, the available data tend to reveal, that bulk of the small-holdings rely to a significant extent on non-resident hired labour. In general, the proportion of hired labour in total labour requirements increases along with the size of holdings, holdings over about 5 acres relying almost completely on hired labour.

The distribution between family labour and hired labour is influenced by a complex set of factors. No doubt, that the primary factor affecting the distribution between family labout and hired labour is the size of the family labour force. Sex composition of the labour force too influences the demand for hired labour. It has been generally observed that males are reluctant to engage themselves in plucking tea leaves. Therefore, those families whose labour force does not consist of an adeqeate number of female labour resort to hired labour for plucking. Another important reason for using hired labour for plucking is that it has to be finished within a certain

period of time and failure to do so would lead to a loss in crop because tea leaves may be too mature for plucking after this period. Thus, stretching the available family female labour over a number of days for plucking is not possible. In a small sample survey undertaken in a tea colony in the Southern Province, where the average size of holding was about 2 acres, hired labour accounted for nearly 50 per cent of the labour used for plucking.[20]

Hired labour is widely used for weeding too in the tea smallholder sector. It has been observed that smallholders show a strong preference for males for this activity when labour is hired. The demand for hired labour for weeding is influenced to a significant extent by the farm-gate price of green leaf. When the farm-gate price is lower the demand for hired labour for weeding tends to be low. It appears that when leaf prices drop the first cut in their farm budget is made on hired weeding labour.

The available limited scattered evidence tends to show that hired labour is used primarily for plucking, weeding and pruning in the case of holdings below, about 5 acres, while holdings over 5 acres use hired labour for more or less all cultivation activities.[21] The proportion of family labour used for each cultivation activity in the latter category of holdings appears to be very low. This may be partly due to the fact that big smallholdings are owned by middle class people who are reluctant to use family labour for cultivation. Also the owners of such holdings or their family members may either have. full-time off-farm employment or are willing to play the role of a farm manager

Another factor which influences the demand for hired labour is the wage rate. Given other factors, higher wage rates should discourage the use of hired labour. Yet, the relationship between wage rate and demand for hired labour tends to be too complex when other factors such as price of green leaf vary. For instance, a higher wage rate may persuade a farm family to sell its labour in the matket rather than work on its own farm.[22] Therefore, it is difficult to establish a definite casual relationship between the wage rate and the demand for hired labour.

Bulk of the tea small-holdings do not provide a dependable, permanent source of employment and income for rural wage labour. Therefore, those who hire themselves out as wage labour on tea small-holdings appear to depend on a variety of other sources as well for employment and income. In certain areas, it has been found that hired labour originate from amongst the tea small farmers themselves in the area. Those farmers whose holdings do not generate sufficient income and employment to support their families hire themselves out as wage labourers because it becomes a more viable proposition for such farmers. A vigorous development of the tea smallholder sector would have significant labour market implications to the extent that more productive small-holdings have relied on less productive holdings for their labour requirements.

The demand for hired labour is also linked to the availability of, and farmers' access to, credit facilities. Often those small-holders who depend almost entirely on income from their tea holdings tend to maximise the input of family labour. However, their ability to finance sufficient amount of hired labour depends on their resource position and the access to credit facilities. Thus, for those farmers who are without adequate resources of their own credit may be a critical constraint on production expansion which promotes labour use. Often the bulk of small-holders who cultivate holdings of two acres or less in extznt fall into this category of credit constrained farmers, and the demand for hired labour originating from such farmers for activities other than plucking are relatively low. In general, lack of easy access to institutional credit depresses labour use by limiting systematic development of the bulk of the small-holdings.

A similar adverse effect on labour use is exerted by the marketing constraint faced by many smallholders. In Sri Lanka, the green leaf market is characterized by a high degree of im,erfections and bulk of the small tea farmers are in the 'grip' of the middlemen who collect leaf at discounted prices. Thus, development of a more competitive market structure would have a significant effect on farmers' income and, therefore, on their capzcity to invest which in turn enhances labour use.

Plantations are not subject to the two constraints referred to above, namely credit and lack of a competitive leaf market. For developmental purposes plantations have easy access to institutional credit often at subsidized interest rates. Also unlike smallholdings the leaf market does not pose problems for the plantations. In fact a typical plantation consists of both a tea cultivation unit and a processing factory. Therefore green leaf harvested from such plantations is not fed into the leaf market.

IV

Potential for More Productive Employment

Logically there is potential for productive employment expansion in the tea sector in Sri Lanka simply owing to the fact the tea sector as a whole has not reached the production fronteir implied by the known level of technology. The state of development in the tea sector has deteriorated over the last two decades despite the advancements in knowledge that have taken place in the fields of crop cultivation and management. Although high yielding VP tea has been available since the early 1960s only 17 per cent of the total extent was under such varieties by the end of 1982. There was scope for significant improvements in yield even without VP teas if other cultivation practices were adopted systematically. Thus transformation of this declining industry into a dynamic sector would enhance labour use.

Potential for more employment exists for quite a different reason as well. Currently land in the tea plantation sub-sector is used inefficiently and. emphasis on cultivation of tea as a mono-crop has depressed labour use.[23] Also the low level of development in social infrastructure such as water, housing, health and education facilities, in the tea plantation sector and the need to improve them indicates further avenues of potential productive employment in the plantations.

Undoubtedly, of these potential avenues, improvement of currently the low yield assumes a greater importance. A yield improvement programme consists of both short-term and long-term measures. Short-term measures includes promotion of fertilizer use and adoption of other improved cultivation practices such as timely weeding and pruning. While long-term measures include replanting with high yielding VP tea, infilling and soil conservation. As shown in Table 15, there is a close positive relationship between level of yields and labour requirements. Hence, the scope for yield expansion means potential for a higher level of labour absorption.

TABLE 15.

RELATIONSHIP BETWEEN YIELD AND LABOUR REQUIREMENTS IN TEA CULTIVATION

Source of Data	*Year*	*Yield per Acre (lbs.)*	*Labour Requirements per Acre (Man-years)*
Ten Year Plan	1957	780	1.10
	1968	1,600 (Projected)	1.90 (Projected)
A leading Agency House		750	0.80
	not reported	1,800	1.70
FAO Committee on Commodity Problems, Ad Hoc Meeting on Tea, Nuwara Eliya (Sri Lanka)	1968	below 1,100	1.0-1.15
		1,300-1,800	1.3-1.50
Manager, Helbodde Estate	1978	1,000	1.15
		1,250	1.25
		1,500	1.50
		1,750	1.60
		2,000	1.60

Sources : National Planning Council, Ten Year Plan; Colombo.
ILO, Matching Employment Opportunities and Expectations Technical Papers (Geneva : 1971);
Central Bank of Ceylon.

Although several labour consuming cultivation practices and capital development work may be promoted on vast extents of tea land this has to be done in stages depending particularly on the availability of funds. Also, measures such as replanting, infilling and soil conservation bear fruit only after a certain period. Therefore, employment potentials are realized over a period of time.[24]

The potential employment effects of several short-term measures are summarized in Table 16 and detailed calculations are presented in the Appendix Table 1. These short-term measures have a potential to raise employment by about 14,600 man-years by the end of the 10 year period.

Potential effects of replanting may also be estimated similarly. Data presented in Table 17 indicate that leaving aside the indirect employment effects of replanting resulting from incremental output, replanting per se has a very high potential of enhancing employment in the tea sector. It is pertinent to note, however, that the employment potential given here represents end estimates which have to be achieved in stages over a period of about 15 years. Although replanting per se raises employment, the economic significance of replanting even from an employment point of view lies in that it enables to sustain a higher level of productive employment in the tea sector over a long period through its impact on yield.

It may be safely assumed that a systematic development programme involving both short and long-term measures referred to earlier is capable of increasing yield in each region within the next 5-8 years to the levels indicated in Table 18.

TABLE 16.

POTENTIAL EMPLOYMENT EFFECTS OF SELECTED CULTIVATION PRACTICES[a] (MAN - YEARS)[b]

	YEAR									
	1	2	3	4	5	6	7	8	9	10
1. Promotion of Fertilizer Use	385	577	769	1,154	1,538	1,923	2,308	2,308	2,308	2,308
2. Intensive Weeding	519	692	866	1,212	1,558	2,250	2,943	3,635	4,328	5,153
3. Better Pruning	19	38	58	96	135	173	212	212	212	212
4. For Harvesting Incremental Output	495	927	1,385	1,854	2,596	3,462	4,154	4,896	5,934	6,181
5. Additional Work Resulting From Above[c]	71	112	154	216	291	390	481	553	639	695
Total	1,489	2,346	3,232	4,532	6,118	8,198	10,098	11,604	13,421	14,589

Source : Author's Calculations.

a. Details of these calculations are presented in Appendix Table 1.

b. 1 man-year = 260 man-days.

c. Additional work is taken as 5 per cent of the sum of the first four items. Additional work may include transport of leaf, processing, labour etc.

TABLE 17.

POTENTIAL EMPLOYMENT EFFECTS OF REPLANTING (END ESTIMATES)

Region	*Extent to be Replanted (acres)*	*Man-days Required per acre*	*Direct Employment Generated (man-years approx.)*
High Grown	10,000	1,600	61,500
Mid Grown	20,000	1,150	88,450
Low Grown	30,000	900	103,850
Total	60,000	—	253,800

Source : Author's Estimates.

Notes : It is assumed that 6,000 acres will be replanted every year for 10 years. Indirect effects of replanting on employment are not included here.

TABLE 18.

EXPECTED YIELD

Pounds (of made tea) per acre

Region	*Current Average Yield on Plantations (approx,)*	*Expected Average Yield for Plantation and Smallholdings Together*
High Grown	1,100	1,500
Mid Grown	850	1,000
Low Grown	940	1,300

Source : Author's Estimates.

In order to achieve the regional output levels reported in 1965 at the projected levels of yield a lower extent of land than that currently under cultivation may be required, as shown in Table 19.

TABLE 19.

REGIONAL DISTRIBUTION OF TARGET PRODUCTION AND ESTIMATED EXTENT OF SURPLUS LAND

Region	*Projected Average Yield (lbs. per Acre)*	*Target Production (Mn. Lbs.)*	*Extent Required*	*Extent in Cultivation (Acres)*	*Surplus Extent*
High	1,500	201	134,000	192,000	58,000
Medium	1,000	174	174,000	238,000	64,000
Low	1,300	128	98,000	167,000	69,000

Source : Author's Estimates.

Thus, a significant extent of tea land in each region will have to be diverted to other uses in the future if a large scale tea development programme is implemented. A development programme of this nature would also have interesting effects on labour absorption. As shown in Table 20, total employment in the tea sector may be estimated around 550,000 at the end of the development programme. Although this is not very much different from the current level of employment, it is important to note that the workforce in the tea sector is highly under-employed at present. Thus, a major effect of a large-scale development programme will be to reduce the under employment of labour and increase productive use of labour in this sector. Thus, when the expected decline in under-employment is taken into account a development programme would improve the level of employment considerably.

TABLE 20.

PROJECTED EMPLOYMENT IN THE TEA SECTOR

Region	*Acres*	*Fabour-Coefficient*	*No. of labour units*
High	134.000	1.5	201.000
Medium	174,000	1.2	209,000
Low	98,000	1.4	137,000
Total	406,000		547,000

Source : Author's Estimates.

In fact, the regional distribution of both the acreage and therefore employment may be somewhat different from what is indicated in Table 21, in that mid-grown areas will have even a lesser extent under cultivation while low-grown areas will have a greater extent. Since, mid-grown tea is likely to face more severe marketing problems with higher production while markets for low-grown teas may continue to expand in the future, the potential for productive employment is relatively greater in low-grown areas.

As shown earlier, increases in yield release some land currently under production for other purposes. Employment effects of the programme will be intensified to the extent the released land is used for labour intensive crops. Such diversification potentials exist particularly in the mid-grown areas where a considerable extent of land suitable for a variety of other crops may be released by the tea sector.

In the tea sector, particularly in the plantation sub-sector, there is scope for improving labour use by systematic development of ancillary economic activities, such as poultry farming and cultivation of food crops on home gardens. There is a significant extent of unutilised land about 10 per cent of the arable land, on tea estates which can be used for purposes of this nature. Assuming that about 20,000 acres could be brought under cultivation of food crops and a labour coefficient per acre is 0.3 man-years, about 6,000 man-years of work may be created through the programme. The impact will be even higher when labour use on related activities such as marketing is added to this.

The development of social infrastructure is also likely to have a considerable favourable impact on employment in the tea sector. It has been well documented that social amenities such as schools, worker housing, creches and water supply on tea estates are at a very low level of development. The policy makers have recognized the need to improve these facilities and already a multitude of programmes are underway to achieve this objective. The social infrastructure improvement programme comprises, among others. building of new twin-type houses for labourers, renovation of old barrack-type line rooms, and upgrading of old creches. Since these are labour intesnsive construction activities the programme has considerable employment potential. Depending on the annual targets, 4,000-5,000 workers may be fully employed annually for about the next two decades under this programme. Though the potential for greater labour use in this area is immense, financial constraints on adopting a large scale programme to improve worker housing and educational facilities limit realization of much of the potentials in this area.

Hitherto the discussion focussed on the employment potential in the tea sector, is general. However, since the smallholder sub-sector has different characteristics it is useful to discuss potentials in that sector separately.

Available evidence suggests that tea smallholdings in Sri Lanka are capable of providing more productive employment opportunities. This is particularly true in the case of smallholdings in the Southern Province of the country where labour use, in general, compares favourably with that of the plantations. However, this depends largely on the sector's ability to increase its yield per unit of and. When compared with the plantations the small size of a tea holding does not necessarily lead to a lower yield per unit of land when compared with big plantations. Therefore, a systematic development programme in this sector may be able to push the production frontier of the smallholders significantly with consequent favourable effects on the productive use of labour.

Table 21 presents data on actual labour use on a well maintained. smallholding of 2 1/4 acres in size. The holding is located in the Matara district in the Southern Province. The average yield on this holding which consisted entirely of VP tea was 18,360 lbs. of green leaf per acre in 1981. The total labour use amounted to 473 man-days and plucking alone accounted for 363 man-days or 77 per cent of the total. This is a much higher than the average level of labour use on big plantations which is in the range of 250-280 man-days per acre. Though, it is, undoubtedly, difficult to achieve yield, levels of this magnitude in the smallholder sector in general, in certain regions, particularly in the Galle and Matara districts, there is potential to improve average yield on smallholdings to about 75 per cent of the level reported by this particular smallholding. However, a key element in achieving higher yields leading to more labour use is the shift from low yielding seedling tea to high yielding VP tea. This means that the promotion of labour use is closely linked with the facilities provided to, and the actual rate of, replanting in the smallholder sector.

TABLE 21.

ACTUAL LABOUR USE PER ACRE

(Man-days)

Activity	*Labour Use*(a)	*% of Total*
Plucking	363	77
Weeding	68	15
Manuring	05	01
Pruning	14	03
Lopping Shade Trees	07	01
Leaf Transport	10	02
Sundry Work	06	01
Total	473	100

Note :(a) The actual average yield on this holding in 1981 was 18,360 lbs. of green leaf per acre.

It is important to note that a vigorous development of the tea smallholder sector would create employment opportunities largely for females simply because harvesting tea leaves has traditionally been the job of females. Unless the existing unfavourable attitude of males towards leaf harvesting is changed this is likely to create pressure on wage rates and perhaps, in certain regions harvesting labour shortages may emerge.

In certain areas, big plantations draw labour from the tea smallholders sector. In such areas, plantations may experience a further decline in already low outturn of labout with a systematic development of smallholdings. Within the smallholder sector too, there may be shortrun dislocations to the extent more productive smallholdings have relied on less productive holdings for their labour requirments. In a microlevel study in the Matara district it was found that those farmers whose holdings do not generate sufficient income to support their families hire themselves out as wage labour in more productive units because it is a more viable proposition for such farmers.[26] This was an important source of labour supply for the productive farmers in the area. In such areas, a comprehensive smallholder development is likely to result in structural changes in the labour market and patterns of labour use.

As may be clear from the foregoing discussion that there is ample room for promoting productive labour use in the tea sector in Sri Lanka, particularly by reducing the current high level of under-employment in the sector.

Production may be improved considerably in the long run by shifting to VP tea. Since in Sri Lanka tea is primarily as export-oriented commodity and only about 10 per cent of the production is absorbed by the local market, export markets have to grow with the increasing production. Thus, the extent to which her exports can be increased at a remunerative price sets an upper limit to employment expansion in the tea sector through intensification of cultivation practices.

Data on the quantity of tea exports for the period from 1965 to 1982 reveal that the highest quantity that had been exported in any year during the period was 495 million lbs. exported in 1965. The next highest amounts exported during this period were 478 million lbs. in 1968 and 469 million lbs. in 1975.[27] The annual average quantity of exports during the three year period from 1980 to 1982 was 403 million lbs. Given this picture, it is clear that sluggish growth in exports may act as a constraint on employment promotion in the tea sector.

There are severe constraints on the achievement of a higher growth rate in replanting as well. The cost of replanting has increased considerably over the past few years and this rising trend would continue into the future. Thus, in order to accelerate the rate of replanting a progressively higher level of state subsidy may be required in the future. The public sector land management institutions — JEDB and SLSPC — have been suffering from a liquidity

crisis in recent years and they continued to report losses since 1978 (except a small profit made by SLSPC in 1980). Though the situation improved in 1983 owing to exceptionally favourable export prices it is doubtful whether the rate of replanting can be increased well beyond the historical annual average level (1979-1982) of 5,750 acres. The private tea land owners are unlikely to speed up replanting activities on their lands unless the state-subsidy is enhanced considerably to cover the actual cost of replanting which includes income foregone during the gestation period.

As in the plantation sector, there are constraints on rapid development in the smallholder sector. In this sector much depends on the farm-gate prices of green leaf. The farm-gate prices are determined by several factors. The price of made tea, processing cost and market structure of green leaf are the three crucial factors affecting farm-gate prices. Of these three, the first is determined largely by external factors. It is difficult to contain the processing cost within reasonable limits owing to rising prices of energy. Thus, improvement of farm-gate prices may be obtained largely through improving the market structure which is difficult to achieve in the short-run.

Policy Measures

Achievement of employment potential in the tea sector depends largely upon the introduction of an appropriate set of policies. These policies are related to management, institutions and marketing.

A crucial policy measure, which is long overdue, is the introduction of an appropriate incentive system for all employees on the public sector tea estates. Thus, the Central Bank noted in its Annual Report for 1981 ".....the management of the state-owned estates has to be improved considerably through a proper incentive structure for all the employees of the industry. Without such an incentive structure, the increases in capital investment including borrowed resources from abroad would fall short of desired objectives."[28] Under the private ownership prior to the take-over of tea lands in 1972 and 1975, there was a close relationship between performance and reward which is not found now on state-owned tea estates. This relationship has to be re-established to achieve desired production levels on these estates.

Also, it is equally important to strengthen the institutions dealing with the tea sector. First, an effective regionalization of decision making power is a long felt need for better performance on public sector tea estates. Secondly, as pointed out by the Central Bank in 1980, service institutions catering to the tea smallholder sector have to be strengthened as soon as possible.[29] Although the Tea Small Holdings Development Authority (TSHDA) was set up in 1975 the Authority has neither the resources nor adequate authority and staff to deal with problems of smallholders. This situation should be remedied by granting more resources to the TSHDA to play a dynamic role in removing the constraints faced by the smallholders.

As pointed out elsewhere in the report, improvement of the highly imperfect green leaf market structure will have a tangible effect on the farm-gate prices of leaf and hence production and labour use on smallholdings. Policies should be introduced for this purpose soon by the TSHDA.

It was shown that employment expansion in smallholdings calls for, among other things, a shift from seedling to VP tea through replanting. Though there is a subsidy scheme for the purpose, it is less useful for the smallholders partly due to difficulties in obtaining funds under the scheme and partly owing to the fact that funds are released only after a stipulated task is over. Since smallholders have difficulties to mobilize funds to commence work, a bridging financing scheme may be very useful to step up replanting in this sector.

In the tea smallholder sector, the bulk of the farmers do not have easy access to institutional credit and remain outside the institutional credit network. Therefore, policies are required to improve the availability of institutional credit to this category of farmers since informal sources in general, do not provide medium and long term credit to this sector.

Another area where policy measures are necessary is marketing. Considerable changes have occurred in the export markets of tea and our marketing policies do not appear to have been successful in coping with these changes. Not only have we lost a significant share of our traditional markets such as the UK and Australia to our competitors, we have also failed to develop new markets for the same type of tea or different kinds. The western tea market consists of largely tea bags though we have not been able to penetrate into the tea bag market successfully. Although the Middle East market is bouyant currently, it demands almost entirely low-grown teas. Therefore, policies should be aimed at increasing markets for high and mid-grown teas.

Summary and Concluding Remarks

Although its relative significance has declined over the years the tea industry continues to play a major role in Sri Lanka's economy in numerous ways. Its contribution to employment over the last two decades cannot be considered adequate given its high potential for promotion of productive labour use. A review of employment trends in this sector highlights a declining trend in overall employment in the sector when compared with the employment levels achieved in the early 1960s.

There is potential to arrest this declining trend and promote labour use in this sector. The paper indicates several areas in which such potential exists. Both in the plantation sub-sector and smallholder sub-sector there is tremendous scope for improvement of yield per land unit through both short-term measure and .long-term measures. Intensive and more efficient application of fertilizer and weeding constitute two important short-term

measures while replanting and infilling together with soil conservation fall under long-term measures in a yield improvement programme. These measures leading to higher yields would not only reduce the high degree of under-employment existing in the tea sector, but also would create productive work for new entrants to the labour force in the tea sector. Promotion of ancillary economic activities and development of social infrastructure on the estates too would add to the employment opportunities in the tea sector.

While potentials are immense, there are important constraints on achieving these potentials. Among these, the lack of adequate funds for implementing a large scale development programme and marketing constraints are important. Also, in the case of smallholdings, the lack of easy access to institutional credit and the imperfect green leaf market situation appear to be important constraints. Removal of these constraints through appropriate policy measure is required to realize the employment potential in the tea sector.

NOTES AND REFERENCES

1. Department of Labour, Colombo.

2. Tea Master Plan Study "Historical and Future Perspectives", Position Paper No. 1, (Colombo : 1978).

3. Growth of the tea industry during this period is briefly reviewed in W. N. A. Fernando, Continuity and Change in Plantation Agriculture — A Study of Sri Lanka's Land Reform Programme on Tea Plantations, Ph.D. Thesis (Madison : University of Wisconsin, 1980).

4. See Tea Master Plan Study "Smallholder Development", Position Paper No. 9.

5. Republic of Sri Lanka, Report of the Commission of Inquiry on Agency Houses and Broking Firms, Sessional Paper, No. XII (Colombo : 1974) p. 15. This report presents an interesting account of the growth of Agency Houses.

6. Ibid, p. 2.

7. Central Bank of Ceylon, Annual Report 1981, p. 24.

8. P. J. Richards, et. al., Employment in the Estate Sector Repatriation of Persons of Indian Origin (A preliminary analysis), Mimeograph. Ministry of Planning and Employment, (Colombo : March 1971).

9. Central Bank of Ceylon, Survey of Sri Lanka's Consumer Finances 1973, Colombo, 1974.

10. ILO, Matching Employment Opportunities and Expectations, Technical Papers, Geneva, 1971, p. 87.

11. The Indo-Ceylon Agreement of 1964 provided for repatriation of 525,000 persons (along with their natural increase). The agreement was amended in 1974 to repartriate a further 75,000. The Sri Lanka Government agreed to grant Sri Lankan citizenship to 375,000 altogether (300,000 under the agreement of 1964 and another 75,000 under the 1974 amendment). For details of the agreement of 1964, see S. U. Kodikara, Indo-Ceylon Relations since Independence (Colombo : 1965).

12. See for a detailed account of the employment effects of the land reform programme in the tea sector. Nimal A. Fernando, Land Reform and the Plantation Sector — Effects on Employment and Income, paper presented at the National Seminar on Productive Employment Promotion in the Plantation Crop Sector of Sri Lanka, Colombo. 14-16, December, 1982.

13. Process of mechanization and its effects on employment on sugar, plantations in several countries are discussed in W. N. A. Fernando, Continuity and Change in Plantation Agriculture.

14. See C. Munasinghe and K. L. Chandratilake, Identification of Appropriate Strategies in Recruiting Indigenous Labour to the J.E.D.B. Estates — Nuwara Eliya Region, Part II, Final Report (Colombo : October 1979) p. 57.

15. See Tea Master Plan Study, Position Paper, No. 1 The J.E.D.Bs recently reported the following rates of vacancies on their tea lands.

VACANCY RATES

Region	%
Hatton	3.5
Nuwara Eliya	18.0
Kandy	21.0
Avissawella	22.0
Kegalle	21.0
Nawalapitiya	22.0

Source : JEDB, Medium Term Investment Programme, undated, p. 11.

16. See M. Jayakumar, Weed Control, Tea Bulletin Vol. 1 No. 1. Tea Research Institute (Colombo : June, 1981).

17. Nimal Sanderatne, Potential for Raising Employment and Income in tne Estate Sector. Paper presented at the National Seminar on Productive Employment Promotion in the Plantation Crop Sector of Sri Lanka, 1982, p. 17.

18. It has been estimated that in 1977 the Smallholder Sector accounted for nearly 82.8 million pounds of made tea. The green leaf equivalent of this is 372.5 million pounds. If one assumes plucking productivity to be 10 pounds per man-day, on the average, 9,312,975 man-days would have been spent for plucking this quantity of leaf. Assuming a 260 man-days per man-year this amounts to 35,819 man-years. If plucking accounts for 55 per cent of total labour use then total labour used in the smallholder sector in 1977 works out to about 65,000 man-years.

19. A Committee appointed by the Ministry of Plan Implementation made the following estimate of the labour requirements in the smallholder sector which may be considered too high since it is based on an average yield of 1,200 lbs. per acre (made tea).

LABOUR REQUIREMENTS PER ACRE

Activity	*No. of Man-days*	%
Plucking	240	68
Weeding	48	14
Fertilizer application	06	02
Leaf transport	13	04
Pruning	08	02
Other	40	10
Total	355	100

See : Ministry of Plan Implementation, Tea Smallholdings Sector, Study on Constraints and Problems (Colombo : 1980).

20. Unpublished data, Department of Economic Research, Central Bank of Ceylon, Colombo.

21. Evidence gathered by the authors during their field visits in the smallholder areas in Kandy, Galle, Matara and Ratnapura districts.

22. Job aspirations of the members of the family labour force is another factor affecting demand for hired labour. There may be youths in the family who are reluctant to do agricultural work on family land thereby creating a demand for hired labour. This again is related to the probability of such youths finding off-farm jobs and the attractiveness of such jobs.

23. This aspect of sub-optimal use of land and labour resources on tea plantations in Sri Lanka is briefly discussed in Nimal A. Fernando, Needed Redirections in Analysis of Efficiency of Plantations and Smallholdings in Tea Cultivation, *Staff Studies*, Central Bank of Ceylon, Colombo, Vol. II Nos. 1 & 2, April/September, 1981.

24. In its Medium Term Investment Plan (Tea) (1984-85), the Ministry of Janatha Estates envisages to achieve the following targets in replanting, infilling and soil conservation :

			(Acres)
	Replanting	*Infilling*	*Soil Conservation*
High grown	3,540	4,990	47,000
Mid grown	2,350	26,610	43,000
Low grown	385	4,190	9,760
Total	6,275	35,790	99,760

Source : Ministry of Janatha Estates Development.

25. For an interesting discussion on this issue see, S. B. D. de Silva, The Political Economy of Underdevelopment (Routledge & Keegan Paul, London), 1982.

26. See Nimal A. Fernando, Study of Tea Smallholdings in Kalubowituyana (Matara District), Central Bank of Ceylon, Colombo, June, 1982.

27. Central Bank of Ceylon, Colombo, Annual Report, Various issues.

28. Central Bank of Ceylon, Annual Report, 1981, p. 26.

29. Review of the Economy, 1980, p. 25.

EMPLOYMENT EFFECTS OF SELECTED SHORT — TERM MEASURES IN SRI LANKA TEA SECTOR

	Year	1	2	3	4	5	6	7	8	9	10
1.1.	Increase in fertilizer use over 1982 level (MT)	10,000	15,000	20,000	30,000	40,000	50,000	60,000	60,000	60,000	60,000
1.2.	Man-years required for application at 10 man-days per ton	385	577	769	1,154	1,538	1‘923	2,308	2,308	2,308	2,308
2.1.	Acreage to be weeded intensively	3,000	4,000	5,000	7,000	9,000	13,000	17,000	21,000	25,000	30,000
2.2.	Employment generated at 45 man-days per acre (man years)	519	692	866	1,212	1,558	2,250	2,943	3,635	4,328	5,193
3.1.	Extent to be brought under better pruning programme (acre)	1000	2,000	3,000	5,000	7,000	9,000	11,000	11,000	11,000	11,000
3.2.	Employment generated at 05 man-days per acre (in man-years)	19	38	58	96	135	173	212	212	212	212
4·1.	Incremental yield per acre over 1982 level (green leaf lbs.)	450	563	630	675	788	900	945	990	1,080	1,125
4·2.	Extent on which yield improvements occurs (acres)	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	50,000
4.3.	Total incremental yield	4,500,000	8,437,000	12‘600,000	16,875,000	23,625,000	31,500,000	37,800,000	44,550,000	54,000,000	56,250,000
4.4.	Man-days of plucking labour	495	927	1,385	1,854	2,596	3,462	4,154	4‘896	5,934	6,181

Source : Author's Calculations.

1. 1 man-year .. 260 man-days· Plucking productivity is assumed to be 35 lvs. per man-day.

PUBLIC ENTERPRISE AND THE PRIVATE SECTOR

H. N. S. KARUNATILAKE

Public Enterprise in the Historical Context.

The state has participated in economic activity in Sri Lanka, particularly in the provision of essential services, from the middle of the nineteenth century. The government started the postal service in 1832 and introduced telegraphs in 1858 and it took over the railway in 1845,[1] when the private company which had commenced construction went bankrupt. Between 1871 and 1878, the government constructed an artificial harbour in Colombo to accomodate the increasing trade between Sri Lanka and other countries. In 1929, the government took over the supply of electricity from private firms and embarked on the development of hydro-power resources.

At the turn of the last century, irrigation boards were set up for advice on the restoration of irrigation works, which were later carried on by the Irrigation Department. The major part of the restoration of the large tanks and the ancient irrigation systems was handled entirely by the government. The transformation of the earlier feudal economy in the early part of the mid nineteenth century, therefore, involved state participation in many spheres of activity. Private business activity at that time was confined to the plantations and the export, import and retail trades. Except for the plantations, the other areas of private sector activity did not involve large scale investment. Even in regard to the plantations their were heavy concealed government subsidies in the form of land sales at ridiculously low prices, the construction of roads, railway, harbours, and the active encouragement of immigration of cheap South Indian labour from the eighteen forties onwards. The private sector would not have progressed without this kind of assistance.

After 1931, there was an increased emphasis on state participation in economic activity and this was associated with the greater self rule which the country was progressively gaining after the Donoughmore reforms. There was also much more awareness among the people of the need for economic

1. The state exercised monopolies in gems, pearl fishing, elephants, salt and cinnaman in the nineteenth century.

development. Even in the services sector, for example in the field of banking there was state participation, which began with the establishment of the State Mortgage Bank in 1931,[2] for the provision of long term capital for the country's development. This was followed by the establishment of the Bank of Ceylon in 1939 with government capital. The Agricultural and Industrial Credit Corporation, which was established in 1943, was also a government institution. It will be seen that, to some extent, the sphere of government influence even extended to the plantation sector which was entirely private owned with the establishment of the Tea Research Institute in 1925, followed by the Rubber Research Institute in 1930 and the Coconut Research Institute in 1931.

In 1931, the government set up a Ministry of Labour, Industry and Commerce whose policy was to promote industries, mainly in the public sector, through research and the construction of model factories and the provision of finance. Industrial development was taken seriously by the government and in 1939 it established the Department of Commerce and Industry. Under its auspices the first state industry in Sri Lanka, the plywood factory was set up. As a part of its promotional work and with expatriate technical expertise, the prospects of setting up various industries were examined. Thus in the late nineteen thirties there was a shift in the emphasis towards public ownership of industries. After the out break of the second world war shortages of consumer goods occurred in Sri Lanka and the Department of Industries responded by initiating several small scale industries under state ownership and these included the plywood factory, which was primarily for making tea chests, a steel rolling mill, a leather factory, a ceramics factory and an acetic acid factory for the rubber industry. The paper factory which was to recycle waste paper, a glass factory, a quinine and other drugs factories and a carpentary workshop were also set up.

These small scale industries were the first attempts at public enterprise in industry in Sri Lanka and all these institutions were administered by the Department of Commerce and Industry. The industries which were established during the war years came in for severe criticism on the ground that they were all ill conceived projects. It was not only the exigencies of war that led to investment but, for instance, the decisions to establish the plywood and leather factories were taken in the late twenties and early thirties and the prospects for a cement industry were examined as early as in 1922. The Executive Committee of Labour. Industry and Commerce stated in 1946 "in selecting industries to be adapted a policy of selecting those which had expert advice from the point of view of availability of national resources was vital. We were assured that permanency of their establishment was quite within realization."[3]

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2. Report on Industrial Development Policy, Sessional Paper 15 of 1946.
3. See Report of the State Mortgage Bank Committee, Sessional Paper 21 of 1929.

Throughout the twenties and thirties there was a great reluctance on the part of the private sector to participate in industrial development. The expatriate firms that were entrenched in the plantation and trading sectors were not interested in industrial production. The Sri Lankan entreprenuers on the other hand had very little financial resources and found it extremely difficult to obtain credit from the expatriate banks that dominated banking business at that time. Traditionally, the Sri Lankans had been a land owning business community and showed little or no interest in manufacturing enterprise even though the British administrators were prepared to encourage industry. For instance, in the case of the plywood factory, the government prepared the land and offered the project to the private sector from which no response was forthcoming. At that time, apart from the issues already indicated, the reluctance of the private sector was understandable in the context of the free trade policy that was pursued and the pre occupation of the private sector with plantation agriculture and the import and export trade.

The one area where the private sector reigned supreme was in the field of internal transport. The free growth of private road transport seriously affected the government owned railway which had started incurring deficits from the year 1935, despite concerted efforts to keep the expenditure low. In 1938, restrictions were applied on the private bus companies and they were made to operate on certain given routes. But the enforcement of this policy was a failure and the bus services continued to deteriorate. However during the war, in 1942, about 500 private bus companies were merged into sixty companies under war time regulations and the government decided to introduce a system of exclusive licensing of monopoly operation on specific routes.

State enterprise in trading commenced during the war when the private trade was largely disrupted. The Co-operative Wholesale Establishment was established in 1943 to make available goods to the network of co-operative retail outlets which became the principal chsnnels for the supply of conumer goods.

The Post Second World War Period.

In the post war years there was much more government participation in the production and provision of economic services. A large number of colonisation schemes were established by the coordinated work of several governments departments. The Gal Oya Board was established in 1949 to start work on the first major river valley development scheme in the post war years. In 1965, the Gal Oya Board was converted to the River Valleys Development Board in order to enable it to undertake large scale multipurpose water resources development projects. For the purpose of irrigation and water resources development, one of the most recent public sector authorities created for this purpose was the Mahaweli Development Board in 1970. The government entered the field of heavy construction direct by establishing the State Engineering Corporation in 1962, followed by the State Development and Construction Corporation in 1971.

The early public enterprises in Sri Lanka, mainly before 1950, came under the government control directly, and functioned primarily as government departments as exemplified in the case of the railway, electricity and salt manufacture. Most of the vital services such as posts, telegraphs, telephones, water and electricty have always been under government control even though a subtle distinction was made between public utility and commercial departments and other service departments by using different accounting procedures. For instance, the railway department depreciated its assets by making provision for "annuities" payable to the government. This method was useful in costing and pricing these services to the public, a function which other government departments did not have to perform.

In the post war period the first major public sector, industrial enterprisese emerged in the fifties. As seen from the foregoing, earlier public enterprises had mainly existed in the public utilities. area. In the fifties many of the state owned industries which had started functioning in the pre war years were converted to public enterprises and among them were the leather, ceramics and chemical factories. At the end of 1953 there were nine state owned undertakings run by the Department of Industries. Thereafter, acting on the basis of the Report on Commercial Undertakings of 1953, the government passed, the Government Corporations Act, No. 19 of 1955, which provided for the establishment of state undertakings as corporations as a part of the long term plan to divest the state of direct control of industry.

The Six Year Investment Programme 1954-59 stated that the main objective of the industrial strategy was to reduce the state's direct involvement and to encourage the private sector. The Industrial Research Act of 1955 and the Development Finance Corporation Act of 1955, were both passed to provide the private sector with substantial technical and financial support. The Government Sponsored Co,rporations Act of 1955 envisaged the transfer of all state enterprises to the private sector through the sale of government shares to the public. The direction of this initiative changed with the policies adopted by the People's United Front government which replaced the United National Party in 1956.

The Shift of Emphasis with Political Change after 1956.

During the period 1956 to 1965, one of the objectives of the industrial policy was to use direct state intervention in order to alter the structure of industry to satisfy certain social objectives such as the creation of more employment. The new government introduced the State Industrial Corporations Act, No. 49 of 1957, which empowered the government to establish and operate industrial undertakings, or takeover any corporation already established under earlier legislation. The main objectives behind the establishment of state industrial undertakings has been to fulfil certain political, social and economic objectives. To meet these objectives, the government

took active steps to expand key industries such as cement, steel, plywood and chemicals, through direct state investment and control. The implementation of the provisions of the Act of 1957 resulted in the share of output accounted by industrial corporations rising appreciably. Corporations were afforded substantial means to protect themselves from imports, and the restrictions on imports which came into operation from the beginning of the sixties and other controls that were in operation in the economy helped these state industrial undertakings to develop and progress.

From the late fifties onwards public enterprises began to emerge in the services sector as well. The nationalisation of the bus services, the take over of the distribution of petroleium products, the insurance business and the unloading operations in the ports were significant land marks bringing important activities in the services sector within government control. This was followed by the nationalisation of the Bank of Ceylon and government taking the majority share holdings in the People's Bank which was established in 1961.

The new administration emphasised the need for the state to play a dominant role in industrial development. The areas of operation of public enterprises were demarcated fairly clearly. Certain basic and strategic industries were reserved for the state sector, and these were cement, chemicals, fertilizers, salt, mineral sands, sugar and alcohol. Investment by the private sector would be largely confined to consumer goods industries to include, textiles, ceramics, tyre, paper and light engineering, where even the state can participate. The third category consisted of several categories of small industries which were reserved for the private sector. The industrial Corporations of Act 1957, which superceded the Government Sponsored Corporations Act of 1955, was the basic legislation for the establishment of several state enterprises in the fifties. These included, salt, sugar, textiles, small industries, steel, tyre, hardware and fertilizer.

In contrast to the Six Year Investment Programme of 1954-59, in which industry constituted only five per cent of the total capital programme, the Ten Year Plan of 1959 - 1968 of the United Front Government gave the industrial sector high priority, allocating about twenty per cent of the capital budget. This policy emerged at a time, when due to balance of payments difficulties, restrictions were applied on imports. A large number of import substituting industries appeared in the private sector after 1958, and these industries received special treatment through high tariffs, tax holidays and other fiscal incentives. Most of the industries that fell into this category were light consumer goods industries with private ownership. Between 1960 and 1963, over 1000 new private industries were granted approval compared to about 500 industries that were set up between 1945 and 1960.

The United National Party which came back into power in 1965 re-emphasised the role of private enterprise and encouraged small and medium scale projects in the private sector. Although the large projects that had

been initiated by the previous government were completed, the UNP did not start any new state sector projects between 1965 and 1970, but encouraged the private sector. Several export incentives were introduced which included tax holidays lasting three years on export profits, rebates on customs duty, and exemption from the business turnover tax and income tax and a scheme of export vouchers. The UNP government showed an interest in attracting foreign investment and its policy was embodied in the White Paper in 1967 which guaranteed free remittance of profits, dividends and interest on investments. In 1968, the FEEC scheme was introduced with a view to promoting exports.

Expansion of the Public Sector After 1970.

The most striking outcome of the policy of the People's United Front which came to power in 1970 was the creation of a large scale public sector, Value added in public enterprise grew at about 30 per cent from 1961 to 1970. and in 1970 contributed 31.7 per cent of the total industrial output. In contrast, the growth of value added in the private sector averaged only 1.8 per cent in this period. The expansion of the public sector occurred not only through new projects, but also, with the nationalisation of enterprises in the private sector. Between 1970 and 1976, many vital and large sectors of the economy came under state ownership and the most important of these were the plantations. In 1972, the private estates were taken over with a ceiling of 50 acres being placed on individual holdings; and in 1975 the company owned estates were vested in the state. As a result, the share of the public sector in total economic enterprise rose sharply contributing as much as 30 per cent to the GNP and including about 40 per cent of the total labour force.

The public industrial sector in Sri Lanka, in particular, has been dominant in major industrial activities since the late fifties. In 1976, it accounted for 62 per cent of the total industrial output and 60 per cent of the value added and 70 per cent of exports. The public sector also included the largest 20 per cent of the economic units in the island, and on the average, public enterprise have been ten times more capital intensive than those in the private sector.

The private sector could never have undertaken such large manufacturing investments, and due to the difficulties in operating them, private businessmen have always been reluctant in entering into investments in such areas as plywood, steel, tyre, hardware and fertilizer. Although public sector enterprises in industry, agriculture and services have achieved major social objectives and have contributed to diversify the economy and make it less dependent and have provided a large volume of employment, they have been subjected to severe adverse and often unwarranted criticism.

The first such criticism by an international group was made by the IBRD mission in 1952; the State Commission on Commercial Undertakings in 1953 also did not look upon industrial ventures with much favour. Today, the

foremost critics of public enterprise are the IMF and the World Bank. These two institutions have not only been critical of public enterprises as a whole, but have singled out for criticism corporations that are not doing well financially. These two organizations do not concern themselves with the deficiencies in the private sector enterprises nor have they drawn attention to loss making concerns in the private sector and applied the same standards of judging performance. They are not critical of private firms and business concerns that do not make a contribution to tax revenue. They are not averse to recommending financial concessions, tax holidays and other incentives to the private sector. However they have not shown a willingness to extend the same concessions to the public sector. These international organisations have been judging the performance of public corporations in narrow financial terms mainly from an accounting standpoint, and on many occasions they have come to various conclusions despite the fact that sufficient financial and economic information have not always been available to assess the economic efficiency of these enterprises.

Change in Policy on Public Enterprise After 1977.

With the political changes in 1977 and the coming into power of the UNP government, industrial policy was again oriented towards the open and outward looking economic policies which have had as its constituent components the relaxation of controls and encouragement of private industry. Broadly, this was to be in the context of a mixed economy with the continuing but a less significant role for public enterprise. Under the UNP the emphasis shifted to certain narrow commercial objectives, and non commercial objectives were downgraded. On advice tendered by the IMF and the World Bank the emphasis however shifted to the development of industry mainly in the context of the need to promote the rapid growth of exports. The present government has made efforts to promote export growth by the private sector to which it has attached considerable importance, but the results have been very disappointing. The performance of the private sector in production for exports and the promotion of exports has been poor. It has been unable to increase the quantum and quality of export products and has not been very successful in exploring new markets overseas.

After 1977, the liberalization of imports, the relaxation of controls and the activation of market forces provided an impetus to the growth of manufacturing industry. But industrial growth rose moderately to 10.2 per cent in 1978 and averaged 6.3 per cent for the period 1978 to 1981. However this was far below the higher rates of growth that could have been attained had a higher level of investment taken place in industry and with less emphasis being given by UNP government to the expansion of the services sector. The relatively poor industrial performance since 1978, reflected the slow growth

in capacity utilization and in the industrial base in general which was partly due to the competition that domestic industries had to face in the context of free imports of manufactured goods. Capacity utilisation in manufacturing after increasing from 60 to 70 per cent between 1977 and 1979, resulting from the liberalisation of imports of raw materials, thereafter rose only to 73 per cent by 1980. This slow growth is largely a reflection of the relatively low level of investment in manufacturing, competition from imports and also the considerably higher returns that have been available particularly in the services sector activities such as tourism, trade, financial investment and real estate.

Although the present government has attached high priority to private investment and has provided a wide range of incentives for both foreign and domestic investment, the record however is unsatisfactory. The major part of the private investment after 1977 in industry took place in the Free Trade Zone, primarily in the textile and garments industries, with a relatively low value added. Foreign investors mainly came into the Zone with speculative intentions and to maximise profits through the extensive concessions offered by the government, which were however not made available to garment exporters outside the Zone. In any event, the bulk of the garments industries already existed outside the Zone and their rate of expansion was determined by the garment quotas allocated to Sri Lanka. Even without the Free Trade Zone investments in the garment factories, the industry would have expanded to the maximum permissible levels. Many of the new investors from Asian countries came to Sri Lanka to take advant ge of the cheap labour, tax concessions and the quotas that had not been utilized up to that time.

After 1977, too much emphasis has been given to attracting foreign investment through export processing zones and for other investments such as the construction of luxury hotels, high-rise office buildings, large construction projects and for pet schemes of politicians, rather than in developing a broad investment framework designed to create a stable and high level of self sustaining economic expansion in all sectors. In regard to the Free Trade Zone it may not been necessary to provide such generous incentives to get foreign businessmen to invest in the country, particularly in garments factories. The net benefits to Sri Lanka may have been diminished further by the fact that large expenditures were incurred in developing the infrastructure in the Zone in roads, buildings, electricity, telephones and water service etc. It must be recalled that a large number of garments factories have been set up over the years outside the Free Trade Zone with no assistance for investment by the government, especially in the provision of infrastructure. Very often these local businessmen have had to create the necessary infrastructure at their own expense.

Foreign investment outside the Investment Promotion Zone has been largely concentrated in tourism and construction and not in manufacturing industry. The foreign investment policy of the present administration and

the campaign launched by the GCEC authorities and the government to put Sri Lanka on the map has undoubtedly, up to a point, generated a favourable outlook by the international community, yet the international investment community has been rather lukewarm in the decisions to invest in Sri Lanka in the manufacturing sector as a whole, with the exception of the garments industries.

An important feature of the new economic policy of 1977 was the decision of the government not to further promote the growth of public enterprises in all sectors of the economy and this policy has been confirmed by its present actions. The only large manufacturing unit in the public sector that went into production since 1977, was the fertilizer manufacturing plant, which was not a product of the UNP government, but had been negotiated and approved by the previous S.L.F.P. administration.

However, by 1977 the public enterprises had accounted for about 38 per cent of the manufacturing value added, 40 per cent, of employment and about 40 per cent of the gross output. As of 1980, there were approximately 140 public sector boards and corporations of which 92 fell into major economic sectors. These 92 corporations accounted for 97 per cent of the revenue and about 90 per cent of the public corporation profits. The contribution of public corporations to GDP had increased from 7 per cent in 1973 to about 11 per cent in 1979. Their contribution to total employment had risen from 6 per cent in 1973 to 16 per cent in 1980. Even with the virtually negligible level of investment in public sector manufacturing by the UNP government, in 1983, public enterprises contributed 10 per cent of all manufacturing and exports in value terms. Despite this contribution to the country's progress the World Bank has repeatedly stated that "Their overall performance according, to financial and efficiency indicators was poor."

The Role of Public Enterprise.

Despite the policy of attaching less importance to public enterprises they continue to play a major role in the economy today. In this context the question arises as to what are the distinctive objectives they are expected to fulfil in contrast to the private sector firms? The report of the Parliamentary Committee on Public Enterprises (COPE) stated "These public enterprise ventures had a long gestation period, a high risk element and required tremendous venture capital. These reasons would have muffiled any private sector interest in investing in them." The COPE report went on to state that "the inability of the private sector to enter such ventures was due to its immaturity in either technical or financial matters." It further added that "Sri Lanka has limited entreprenurial capacity and that the government possesses the ability to intervene to compensate for this entrepreneurial deficiency."

The operational obectives of public enterprises include 1) income distribution; for instance the Sri Lanka Transport Board has provided cheap transport and contributed to economies in the private sector. (2) regional development; as an example, the location of the ceramic factory in Balangoda and the paper factories at Valaichenai and Embilipitiya. (3) price regulation of essential products; the CWE and Salu Sala have made available goods at the controlled or much lower prices than in the open market. (4) employment; the training of Sri Lankan in industrial skills; all public sector industries have provided training for operatives. Under the pre 1977 S.L.F.P. government, non financial objectives were accorded primary importance as a part of the overall strategy based on government intervention in major economic activities. The public sector was seen as a driving force in the economy with resource allocation being determined by the government. With the change of government in 1977, resource allocation under the open economy policy came to be determined mainly by market forces. Even within this overall strategy, the government echoing advice given by the World Bank has emphasised that public enterprises should concentrate on pure financial objectives in an effort to relieve the government of continuously having to provide budgetary support. It was hoped that by relieving the public enterprises of their non financial objectives that this would help to improve the efficiency of public enterprises which would emerge through increased market competition.[4]

The strategy of the open economy policy was to boost the private sector and by various incentives to resuscitate a private sector that had been dormant for some time. The UNP government has continued to lay considerable emphasis on production for exports and in the light of the relatively free import policy sufficient weightage has not been given to import substitution. Much of the present criticism against public enterprise has been levelled against those that are providing goods or services for the local consumer.[5] Loss making enterprises which are engaged in exports have not been subject to criticism. It is known that when tea price are low, as they are, now, the State

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4. In this connection the World Bank report for 1986 states "Apart from the exchange rate policy which encouraged industrialists to lobby for higher tariff protection, public enterprises constitute another force opposing the reduction in tariffs. A decade after liberalisation, progress towards increasing the efficiency with which public enterprises operate has been limited and, therefore, tariff protection is necessary to keep a number of them afloat."

5. This extract from the 1986 World Bank report on Sri Lanla is relevant "In essence the issue of public sector efficiency remains an important one, and one which the government is fully aware. Failing to address it will jeopardize progress in rzducing tariffs and furthering the opening up of the economy. As mentioned before, this slow progress to date reflects the difficulties of countering the pressure of vested interests developed over three decades".

Plantation Corporation and the Janatha Estate Development Board are both making heavy losses. But there is no criticism levelled against them and this is because, firstly, they are producers of primary agricultural products and secondly, they are very largely export oriented. The international organisations are normally favourably disposed towards primary producing agricultural enterprises, even if they are in the public sector, as long as they are export oriented. Industrial enterprises in the public sector producting for the domestic market ate evaluated by a different yard stick. Public enterprises that export their products are looked upon with great favour while they are given a low rating as producers of consumers goods for the domestic market.

National economic profitability considerations have been seldom applied in the evaluation of public enterprises in the reports of various international organisations that have been consistently critical of public enterprise. Their arguments are based on the ground that they are overstaffed, inefficient and are running at a loss. Consideration has not been given in the evaluation of public enterprises to the impact of location in non urban areas and distant parts of the country which contributes to employment generation and social upliftment in the less developed parts of the Island and the transfer of technology and expertise. The examples that could be quoted are the cement ceramics, paper, chemicals, sugar and mineral sands factories. More specifically some of the national advantages can be listed as follows :—

1. That these industries exploit domestic natural resources and manpower which would remain unexploited if the final product had to be imported.

2. They act as insulators against international price changes which would result in an increase in costs and they contribute to make the economy less dependent on overseas sources of supply and external commodity price fluctuations.

3. That they use locally generated hydropower especially now at a time when there is a surplus of power.

4. They have progressively contributed to the transfer to the country of superior technologies, and the training offered in these industries would form a nucleus of staff in other industries where advanced technology may be required.

5. The saving in foreign exchange that results by producing goods locally than importing them. This is particularly true of enterprises which largely use local raw-materials and human resources.

6. Manufacturing industry could contribute to the greater vertical integration of industry and interdependance among units within the country and thus reduce external dependence.

7. Profits and surpluses generated by the enterprises would not flow out of the country and would be available for both budgetary purposes and reinvestment.

Problems in the Public Enterprise Sector.

Capacity Utilisation.

In a large number of corporations there has been continuing under utilisation of capacity due to frequent machine breakdowns as in the case of the Cement Corporation, the State Hardware Coporation and the Oils and Fats Corporation. There have also been severe shortages of raw materials as in the case of the Plywood Corporation, the Cement Corporation, the Steel Corporation and the Sugar Corporation. There has been a high level of absenteeism in several corporations which include the National Textile Corporation, the Cement Corporation, the Plywood Corporation, the Fisheries Corporation and the State Hardware Corporation, most of which have worked at more than fifty per cent under capacity.

Then there have been market constraints which have curtailed maximisation of capacity utilization. The Mineral Sands Corporation had to adopt its production programme to meet overseas demand and the price of illmenite was determined accordingly. The Leather Products Corporation faced a highly competitive domestic market which was dominated by private firms and multinationals and its equipment and salesmanship were not up to private sector standards to enable it to expand production. The quality of products of the State Hardware Corporation were such that any increase in production would have only added to already accumulated unsaleable stocks

Employment

Most governments have looked upon the state sector as a means of employment generation and indiscriminate recruitment to industries took place on a large scale and this was true even of governments that looked upon the private sector with favour. Employment in many corporations took place at a much higher rate than the rate of increase in production, and a classic example was the National Textile Corporation. There was also gradual deterioration of public corporation autonomy. Various government financial regulations and controls such as tender boards procedures and the requirement of prior approval of the Ministry of appointments above a certain salary, virtually converted public enterprises into government departments and this made the operations of these enterprises less flexible, Controls were intensified over loss making corporations, and invariably in these matters, directions from the ministry and the Treasury tended to increase The Chairmen and directors were political appointees who were totally. unaware of good management procedures and they continued to recruit more staff on the directions presumably of senior members of the government.

Accounting and Control Procedures.

A comparison of economic data of the corporations is hazardous, as the corporations do not always adopt uniform and consistent accounting procedures for the presentation of financial statements and other significant data series. Many corporations entered into the field of import trading in a controlled market and they were able by combining the trading accounts with the manufacturing accounts to cross subsidize manufacturing losses by import trading profits. For instance the Paranthan Chemicals Corporation covered its manufacturing losses from the monopoly import and sale of caustic soda. Many corporations had a monopoly in import trading in a controlled market. The other public sector corporations, particularly the public utilities, transport, agriculture, fisheries, land management, area development authorities, trading corporations, financial institutions and research and training institutions, present even greater problems in the evaluation of performance because the performance and financial data are not comparable. Inter sectoral comparisions have little meaning since these institutions perform such diverse functions and provide vital services under varying degrees of competition and monopoly.

Public utilities and transport undertakings are decreasing cost industries with social, obligations in that their pricing systems have to be descriminatory and must necessarily favour the consumer. Agricultural and land development institutions cannot be judged fully on the basis of profits or surpluses because they carry heavy social responsibilities. Financial institutions continue to depend heavily on the monetary policy of the state, and they seldom operate in a market in a way where their financial results could be used for evaluation. Trading corporations are usually state monopolies and their results would depend on the turnover which is determined by policies of the state. Research and training institutes seldom engage in commercial activity and there is no known yardstick to evaluate the effectiveness or efficiency of research and training.

The Ceylon Government railway is over one hundred and thirty years old and its investment has been shown at historical cost. Its competitor the Sri Lanka Transport Board is only thirty years old and although its capital investment is shown at historical cost it also contains an element of inflation in recent times. A comparison of the railway and road transport is not possible because the railway runs on its own tracks, which it has to maintain, while the Transport Board is not required to maintain the roads. The taxation of fuel of road vehicles is said to contain a cost element for road transport users which is used to finance road maintenance and construction. But here again the successful intervention of government in fuel and vehicle taxation for revenue purposes virtually obliterates the road use aspect of fuel and vehicle taxation. The complete lack of freedom of the railway and the transport

services to determine a rational pricing policy. while the privately owned road transport industry, which has more flexibility than the railway, has the freedom to determine its own prices and this has tended to complicate matters.

The supply of electricity which is almost entirely monopolised by the Ceylon Electricity Board has not had to face the problem of technological obsolescence due to the plentiful availability of hydro power and the systematic utilisation of these resources. The development of power resources has been possible because the Board has been permitted to adopt a suitable pricing policy such as a multiplan tariff system successfully followed in other countries. The low plant utilization capacity at present appears to reflect inadequate peak power consumption through its rural electrification programme.

The existing conventional accounting procedures and financial evaluation have not been able to quantify the social benefits accruing from public enterprises. The power of accountability has proved in practice to be ineffective because of the lack of uniformity in the administration reports, which were very often considerably delayed, and most of these contained very little useful enonomic and financial information. Since some departments came to be actually absorbed into ministries, as in the case of the Department of Industries merging with the Ministry of Industries, the new ministries were not obliged to publish annual reports.

In the case of public corporations the publication of annual reports and the accounts were not obligatory, except in the case of such corporations as the Port Cargo Corporation and the Ceylon Transport Board which were modelled on British statutes. Further-more, the form and content of the corporation reports were not specified. The nature of the reports that were published were such that it was not possible to make a realistic assessment of current performance. Though they gave information of future plans there was little said on performance, and the statistics were not of a continuous and comparable nature. Most reports were padded with irrelevant information.

The Parliament has been assisted in ensuring accountability by the Auditor General, who has frequently highlighted unsatisfactory features in the accounts and operations of public enterprises in his reports, and these reports were examined by a Parliamentary sub committee. The directions of the Public Accounts Committee were frequently not followed and they often ended up with publishing treasury minutes. The control in practice of corporations thus came to be exercised by the minister and his officials. The minister's power of appointment to boards and their removal, the power to appoint special committees of inquiry and the power to make regulations gave the minister wide ranging authority over government corporations. Treasury control was exercised by the control over finance. But this form of indirect control derived from the financial regulations made the secretary of the ministry subject to the directions of the Treasury.

It was only in 1971 that an attempt was made to systematize control procedures of public enterprises and this was done through the Finance Act No. 38 of 1971 entitled "Financial Control of Public Corporations." It was stipulated that it was the duty of all public enterprise to conduct business so that they break even over five years and should generate a rate of return stipulated by the minister. There was provision to exempt non-profit making institutions, such as research institutes and the Central Bank from these financial controls. Every corporation was required to prepare a budget three months before the commencement of the year which will give projections of income, expenditure and resource availability.

Furthermore, corporations could make new investments and transfers only with the permission of the relevant authorities and the Ministry of Finance. Corporations were directed to maintain accounts in a manner specified by the appropriate minister and the Finance Minister. The Auditor General was to be auditor to be all corporations. These accounts were to be submitted to the Auditor General within four months of the year, along with a report on the accounts. Every corporation was to prepare an annual report of activities, to include its policies and programmes and a statement of any directions given by the minister. The minister could direct any corporation to give effect to recommendations of the Public Accounts Committee. Limits could be set by the minister with the concurrence of the Minister of Finance. Corporations can be liquidated by Parliament on a resolution by the minister. Penalties were stipulated in the event of non compliance with these rules.

The main objectives of this legislation was to ensure that all corporations break even and to ensure that the presentation of the budget and accounts were done on time.Considerable powers for control were vested with the Finance Minister who even contemplated presenting a consolidated budget for public enterprises. The whole exercise of the evaluation of performance was left with Auditor General, the Finance Minister and the minister in charge; all of whom were ultimately responsible to the Parliament.

So far in regard to public sector enterprise, the intervention by the government in the national interest has not been quantified as far as possible. These enterprises could receive state support of subsidies by general taxation if the benefits accrued to the nation as a whole. This is a reason why any evaluation of public enterprise should be related to the objectives for their establishment. If state intervention in industry was to create a necessary impetus to promote industrialization by creating a demonstration effect and to make it the source of basic materials for industry, then some value should be imputed to these larger social objectives.

Unlike in the private sector there is much more bureaucratic control over investment decisions in the public sector which tends to often compound problems. Project proposals have to pass through two stages. The first

stage is where the project is approved in principle by the committee of development secretaries. In the second stage a government committee of officials prepares a feasibility study of the project. This feasibility study is reviewed by the National Planning Department of the Ministry of Finance and passed on to the committee of development secretaries and is finally placed before the Cabinet for approval. The extent of control over public enterprise capital expenditure, is therefore, considerable. This protracted system of investment approval and economic appraisal has resulted in a situation where managers do not have to take any initiative in new investment.

With the attempts recently to withdraw budgetary support by government, it is not clear how the necessity to have government approval for investment by public corporations can be justified. The present government's policy is to force all public enterprises to fund their capital expenditure from their own surpluses, public share issues and commercial borrowings. If the government is no longer providing the capital the investment decisions should switch to the bankers, shareholders and the mangement of corporations that take the risk. Since very often the chairmen and the senior managers are political appointees often without appropriate qualifications, the government sometimes has no option but to interfere in all decisions in regard to investment and financial outlays. The frustrations associated with these procedures and the absence of financial incentives have aggravated problems. Most public enterprise managers avoid confrontation with government by not taking the initiative with regard to future investment in plant and equipment. Control of investment decisions also extend to the government owned business undertakings and textile mills under management contract. Government owned undertakings under competent authorities have been made autonomous in management with a view to freeing them from direct government intervention, but in practice the converse is true.

There is no doubt that the government itself has been responsible for the present crisis in public enterprises. The chairmen, competent authorities and managing directors of public enterprises are all political appointees with poor technical and management skills. The government for instance has appointed a large number of lawyers to top management positions. Although they may be competent in their profession, they make poor managers and even worse financial controllers. The top executives are often well qualified and the direct intervention of politicians has complicated managerial problems which are disadvantageous to public enterprise.

The job security of qualified men are determined by political considerations rather than the profitability of the enterprise. Qualified and honest men have been got rid of by this government and victimised for no valid reasons other than those which are primarily political. As a result, mediocre men who patently are corrupt and dishonest and who are yes men to ministers and incompetent politicians have got the top jobs in the public sector. Some of

the directors are paid salaries as working directors and have been provided with various perquisites of office which encourages them to keep away from work or make use of their executive positions to openly engage in malpractices.

There is little opportunity for low level managers within a public enterprise to rise in the hierarchy as the financial incentives offered to lower level managers are very limited. Below the executive level, recruitment is restricted mainly to the job bank, and job bank comprises of unemployed and often illqualified people nominated by government politicians. This makes the employees feel that the improvement in their position is not dependent upon managers in the factories or on the organizations and on the assessment of their performance, but on the loyalties that exist outside the enterprise. Government has also at various times directly intervened in the structure of the salary scales. These pay scales are applicable accros the enterprises and remuneration is not geared to the high level of skills, specialization and job differentials in different enterprises.

Economic Efficiency.

An analysis of the industrial and other public enterprises shows that conventional accounting profits of public enterprises could not be used as indicators of efficiency. Accounting conventions and practices are not uniform from one enterprise to another and various financial indicators and statistical series are not available in time. The use of historical cost of capital results in an unfair advantage to older firms, the latter firms having to revise their costs due to subsequent inflation. The prevalence of monopolistic power makes the profit or surplus only an indication of such power. No public enterprise is free of government intervention and this invariably results in waste, misallocation of funds and social subsidies in the form of lower prices, additional employment and in general upliftment of backward areas. These costs and benefits are hidden in the conventional accounts and as a result a relative comparison of the performance of similar enterprises is rendered fruitless.

Public enterprises produce tremendous non monetary and non quantifiable benefits on the environment, the people, and the nation and these cannot be expressed in financial or accounting terms. The absence of commercial autonomy due to increasing bureaucratic controls and restrictions on managerial decision making further complicates the evaluation exercise Sometimes, the managers have no operational guide lines to follow as profit maximization is not to be an objective of a public enterprise. However higher profits are not indicators of greater efficiency, but are a reflection very often of the special concessions afforded to the corporation and the fact that it is trading in commodities for which there is widespread demand and where flexible pricing policies could operate.

There are two basic concepts of economic efficiency that needs to be considered, managerial and technological efficiency and secondly resource allocation efficiency. Managerial and technological efficiency relates to the relationship between inputs. For instance, enterprises should employ production techniques which minimise inputs. Managerial efficiency refers to measures taken to eleminate waste, increase labour productivity, effect economies, maximize output and sales, and the exploitation of new technological and market opportunities. The assessment of such managerial and technical efficiency is the main preoccupation of accountants, engineers and management consultants. The latter should have developed various criteria for their measurement in a reasonably accurate and acceptable manner and so far this does not seem to have been done in Sri Lanka.

These two efficiency concepts cannot be considered in isolation and it is important to bear in mind the inter relationships between these two concepts of efficiency. Allocative efficiency implies a high level of managerial and technological efficiency. but the managerial and technological efficiency does not always necessarily lead to allocative efficiency. Managerial efficiency is necessary but not a sufficient condition for economic or allocative efficiency For example if an industry is technologically inefficienct, but uses labour intensive processes it would be possible to improve technology and re-allocate labour to another industry thereby achieveing technological efficiency and allocative efficiency, as no one is made worse off. But if the improved technology leads to considerable unemployed labour, allocative inefficiency could result, leading to mass unemployment and an inquitious distribution of income.

Profitabilty.

Particularly since 1977, presumably on W orld Bank advice, the government has given over riding consideration to commercial profitability. This means that there should always be an excess of trading surpluses over the cost of interest, depreciation and provision for taxation. This is the outcome of the conventional notion that profit is the principal indicator of efficiency in the private sector. Today many inefficienct private sector concerns make profits through non acceptable trade and manufacturing practices, illegal subsidiary operations, or through particular advantages that they can secure through favours and link ups with the government in power. The government has itself been the greatest critic of loss making enterprises in a system where it wants to make private enterprise the predominant form of business. The government has not however criticised loss making private sector enterprises. Air Lanka which is a private company, has up to 1986, a cumulative loss of over Rs. 5 billion, but the government continues to subsidise it.[6] The annual subsidy to Air Lanka is more than the government's total outlay on the food stamp scheme.

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6. In the financial votes for 1987 a sum of Rs. 1117 million was provided under Head 39 Ministry of Defence Project Vote 107 as "Contributions to the Capital of Air Lanka Limited." See page 206 Vol. I of Estimates.

Loss making public enterprises are undoubtedly a drain on government finances which have to be raised either through taxation, borrowing or met out of the profits of other public enterprises. But these losses are often the result of certain social and financial benefits which the public enterprise brings directly to the people or indirectly to firms and organisations in the private sector. For instance the relatively low fares charged by the Sri Lanka Transport Board helps thousands of commuters in the private sector through the subsidy that the government provides to the SLTB to keep fares low.

Given the planned investment expenditure of a public enterprise the larger is its deficit the greater must be the taxation or borrowing for budgetary purposes. But on the other hand the large profits generated by private sector enterprise through low transport fares and other similar charges could contribute to additional revenues which would help to keep the public utilities subsidised. Profitability of public enterprise is today taken as an indicator of managerial and technological efficiency. This is understandable in the present growing climate where private sector oriented administrations, in Sri Lanka and in some other developing countries, are unduly concerned with business administration standards which are advocated by leading business schools in affiuent countries but are inappropriate in the Sri Lankan context. Especially in the developing countries, which includes Sri Lanka, far too much attention is being paid to the training of managers who are more often conditioned by the theories enunciated in text books and courses which are applicable to the western business communities, rather than on the application of thought to the practical problems associated with given situations in the local context which are quite different.

Strangely enough, hundreds of training courses and seminars to upgrade the quality of managers have been held in Sri Lanka, business administration has been taught in many universities in the country and personnel sent for training abroad, but all this has not produced good managers and yet Sri Lanka is short of good managers, particularly for its public enterprises.

In Sri Lanka where public enterprises such as the S.L.T.B., the Leather Corporation, the Building Materials Corporation, the Mineral Sands Corporation and state owned land management institutions compete with the private sector firms these issues are relevant. But wherever monopolistic conditions prevail, and in the absence of any price restraint, a public enterprise could achieve high monopoly profits which need not infuse any motivational factors in the managerial staff. In other words profit targets need not stimulate efficiency unless they are accompanied by appropriate policies and conditions which would make profit the driving force.

Pricing policy of public enterprises have an important bearing on profitability and consequently on managerial and allocative efficiency. Very little attention has been paid to this aspect so far. Replying to a query made

in 1966 to the Rajendra Committee on the pricing policy of public enterprises the Permanent Secretary to the Ministry of Industries replied that "no general policy directives have been issued to the corporations in regard to the pricing of goods produced by these industries. Special directives have been issued in regard to pricing of goods of certain corporations but the prices are generally fixed on the basis of the cost of production plus a reasonable margin of profit". Maximization of profits is however not a guiding factor and need not be so in state owned enterprises which provide vital services to the people. Considerations of national economic profitability should receive greater consideration over pure commercial profitability. The Rajendra Committee found that prices were arbitrarily fixed by ministers and there was a lack of consistency in policy. It recommended that government should give clear general directives on pricing. It also recommended the revaluation of the assets of public enterprises in order to have a sustained capital base to calculate the rate of return.

Operating guide lines were laid down for public corporations for the first time, in the Finance Act No. 38, of 1971, Part II. Section 7 of this statute stated that public corporations should conduct their business in such a manner that the surpluses generated were sufficient to cover the deficits over a period of five years or such other period as may be determined by the Minister of Finance. Therefore, the key factor which determines the pricing policy of a corporation has been the rate of return which the minister has to determine. In actual practice the rate was determined as an absolute figure on the basis of past profits of corporations and such stipulations were made only in respect of loss making corporation.

As a result, the rate of return in effect become a tax or a levy on a corporation that was often unrelated to the desired rate of return based on government's cost of borrowing capital, or rates prevailing in competing firms in the private sector. Under section 17 of the Act, three months after the accounting year, the corporations could claim a payment of subsidy to meet any losses incurred in the performance of uneconomic obligations imposed on an enterprise by any government decision or ministerial directives. In this context the National Milk Board, the Oils and Fats Corporation and few others that had social obligations of a economic nature made claims to receive a subsidy.

Unlike in the case of a number of businessmen who take decisions in their own interest, a public enterprise is in a situation of delicate choice making because decisions have to be taken in the national interest. The problem of control is therefore largely the problem of ensuring that decisions are taken in the national interest. A set of rules and regulations and the necessary organisational framework has therefore to be an integral part of a control system. In the case of government departments in addition to the ministerial directives they are subject to control by Parliament to ensure that decisions

in the national interest are implemented. But in the case of public corporations such direct controls have not been looked upon with favour as they are said to be contrary to efficient commercial operations.

Performance of the Private Sector Since 1977.

The case for the privatisation of public sector enterprise must be reviewed in the background of the performance of the private sector in the last nine years. The government has assumed that the private sector has done exceedingly well and therefore the case for privatisation is a strong one. If the private sector has contributed significantly to economic growth the principal indicators to judge its performance would be the level of capital formation in several key sectors of the economy and the amount of employment generated by private enterprise. Additionally, it should have also provided for a substantial increase in the level of exports.

Figures have not been published separately of capital formation in the private sector. Since the volume of capital formation in the public corporations under the present government has been quite low or negligible, the bulk of the new investment could therefore be attributed largely to the private sector. However, since 1978 a considerable amount of the private capital formation has been in the building and other construction sectors which were very profitable and with high short term returns. The private sector has not invested in agriculture, industry and in agro based industries which are not only productive but would generate considerable amount of permanent employment. In 1982, of the capital formation of Rs. 25.3 billion in the private sector and public corporations Rs. 8.9 billion was in building and construction, Rs. 8.3 billion in plant and machinery and Rs. 7.0 billion on transport equipment; while investment in other capital goods was Rs. 2.6 billion.

In 1983, there was even more concentration in building and construction when out of the total capital formation of Rs. 29.3 billion, Rs. 12 billion or 41 per cent was in building construction, Rs. 241 million or 1.4 per cent in planting and replanting and land development, for plant and machinery Rs. 9.4 billion or 31.8 per cent and for transport equipment Rs. 4.2 billion or 14.3 per cent. This pattern of fixed capital formation has prevailed over the last nine years. In 1984, total fixed capital formation in the private sector and public corporations was Rs. 32.4 billion, of which building and construction absorbed Rs. 13.7 billion or 42 per cent, transport equipment absorbed Rs. 3.52 billion or 13.4 per cent and plant and machinery Rs. 8.4 billion or 26 per cent.

Private sector investment in the last nine years have been in areas which have been afforded generous tax and other financial concessions. The private sector has avoided the risky and more productive sectors with relatively long gestation periods. The private sector is unwilling to initiate new investments

but is prepared to take over on going enterprises. The attempts by the present government to privatise public enterprise means in effect that the government is transferring on going industrial enterprises to the private sector which has been only willing to take over established concerns after fully evaluating the advantages involved. On the other hand, if the record of government fixed capital formation is examined the bulk of the government investments have been in agriculture, forestry and fishing and industry. In regard to exports, the overall performance of the private sector has been poor; the total increase in exports in the eight year period upto 1985 has been only 1.3 per cent as against the target laid down by the Export Development Board of 11 per cent.

Employment creation is a major objective of economic policy and under the economic strategies of the present government the bulk of the new employment must necessarily come from the private sector. But the available data does not support this contention. The data from the employees Provident Fund, which largely covers the private sector, although several public corporations are members of the Fund, shows that the total number of new employments have not increased appreciably since 1981, despite the efforts made by the government to promote the private sector. In fact, since 1980, there has been a decrease in the total number of new employments and new employees registered by the Employees Provident Fund. In 1981, the total number of new employments registered was 5289 and the total number of new employees 50927. The total number of the new employments in 1982 was 4019 and new employees 31976 and in 1983 the corresponding figures were 4596 and 36621. In 1985 the new employments registered were 3477 and the number of employees 27927. Employment data is a very good indicator of business activity, and these figures show that investment activity in the private sector has not been able to sustain the momentum in new employment generation.

This can be further substantiated by investment approvals in respect of the private sector made by the Local Investment Advisory and the Foreign Investment Advisory Committees. Figures have been published regularly of the appro vals of new industry by the Local Investment Advisory Committee and the Foreign Investment Advisory Committee. The local Investment Advisory Committee appr oved 699 units in 1980 with an employment potential of 15371 by, 1984 the number of approvals had decreased to 474 and had come down further to 344 by 1985. Even in regard to the Foreign Investment Advisory Co-mmittee there has been a sharp fall in approvals from 151 units in 1981 with an employment potential of 14415 to 54 units in 1985 with an employment generation capacity of 4359. It will be seen that investment approvals by this committee which are in respect of the private sector have fallen sharply and this is a further indication that the level of business activity in the private sector has declined sharply since 1982 and continues to fall even further.

The government this year has presented a bill for the conversion of public corporations or government owned business undertakings into public companies. This bill has been the outcome of the policy of the present government to privatise public enterprise. This has been largely influenced presumably by the pressure brought to bear by the IMF and World Bank to privatise a large number of government owned enterprises and undertakings. Privatisation seems to have been made a condition for assistance from these two organisations and they have indicated that donor countries are anxious to see that this policy is implemented. However, this policy has been put into effect without taking into consideration the unfavourable economic effects and social costs of privatisation. Government has also ignored the initial costs which it has to bear in transferring ownership from the government to the private sector. The liabilities of the ventures that are being privatised fall upon the government and not on the new owners. When the government hands over an undertaking to the private sector it has very often to compensate the workers who are being displaced from that enterprise and to meet all liabilities to credit institutions. Sometimes the total cost of these liabilities are higher than the subsidies annually provided to the corporation in the preceding five years. Very often the price paid by the private entrepreneurs are insufficient to meet these claims because these enterprises change hands at very low figures.

In several enterprises which were handed over to the private sector the workers were compensated and these payments had to be met by government. This amounts to a large subsidy to the private company, which is taking over the business. It is not only able to get valuable land and physical assets from the government at very low cost but to start operations it has no investment problems and no liabilities. In the same way the government could have given all these initial outlays prior to privatisation to the corporation that is being given to the private sector to put its affairs in order. Very often the government has used the word to "restructure" instead of privatise when it has taken a decision to hand over an industry to the private sector. In fact when the Milk Board was replaced by a private company the Ministry referred to this operation as "restructuring". About 80 per cent of the employees in the Milk Board were given compensation and this was out of government funds.

Since 1954 the Milk Board has been operating in a satisfactory manner and it has been responsible for the reorganisation, rationalisation and the diversification of the milk industry in Sri Lanka. It has also provided wholesome milk at reasonable prices. The argument for the so called "restructuring" was based on the view of the government that it was no longer in a position to subsidise the Milk Board to an extent of about Rs. 40 million per year. Rs. 40 million in terms of current costs and levels of expenditure on projects is a mere pittance. Since the Milk Board provides a vital service to the nation in helping to maintain nutrition standards among the poor

children a subsidy of Rs. 40 million should have been reviewed against the annual subsidy of Rs. 1.5 billion given to Air Lanka which provides a service only to a few affluent Sri Lankans and tourists.

Privatisation of the Milk Board like many other ventures particularly in the industrial field was done on the basis of a report by a World Bank team. A major consideration was that after the present government came into power the operations of the Milk Board declined sharply and the output of its main products like milk, butter, youghurt and cheese had fallen considerably. One reason for the decline in performance of the Milk Board was that it had to compete with liberal imports under the open economy policy where about Rs. 55 million worth of milk products were being imported annually by the private sector. The privatised M lk Board has as its collaborators some of the major milk importers to the country and undoubtedly this is not a satisfactory arrangement in the national context.

The private omnibus services are another example of unregulated and unco-ordinated operations of a public utility. There has been a marked decline in the quality of the transport services since private buses have been allowed to compete with the Sri Lanka Transport Board. Although bus commuters do not now have to wait in long queues, they and the citizens, nevertheless, have had other problems with attendant heavy social costs. Dangerous and reckless driving has been the hallmark of their operations with hundreds of ill trained drivers at the wheel. The vehicles are sub standard and are very poorly maintained, and are a great risk to pedestrians and commuters. There has been a total break down of discipline and driving standards in the public transport service and the roads are no longer safe for people and vehicles. The police will prosecute innocent drivers of private vehicles for frivolous offences, while the private bus drivers get away scot free. Private bus operations have encouraged corruption, thuggery and bribery on a large scale. The government has not taken any action to counter these dangerous trends in public transport.

In endevouring to hand over public enterprise to the private sector often unsatisfactory procedures have been adopted. The government has not publicly advertised that the enterprises are being handed over to the private sector and has not called for competitive bids or quotations. There has been a considerable amount of secrecy about privatisation and the procedures that have been adopted. While some ventures that are being privatised have been advertised, about others no information has been given. Private arrangements seem to have made to hand over enterprises to particular companies and individuals who are close to the administration. Some of these are now being operated by close relatives of politicians.

Recently proposals have been made to privatise the telecommunication services which have been a major source of revenue to the government over a long period time. The annual revenues to government have exceeded Rs. 1.5 billion in the last few years. The services recently have improved considerably

and most parts of the country are now under direct dialling. In areas where new cable networks have been laid the service has improved considerably with a very low rate of faults. The privatisation of this service will mean that foreign multinationals will secure a good part of the present profits and a large part of it will go out of the country. Also the private company and collaborators will presumably provide in some areas of the country a vastly improved service with modern equipment and new cable networks. Although it is likely that the service might improve yet a large share of the higher profits that would result would leave the country and much of these profits could be from improvements that were affected prior to the takeover. There are also security aspects that needs to be considered. Telecommunication services in private hands could act to the advantage of groups and organisations that work against the national interest.

In regard to economic policy on private enterprise and public enterprise, it is important that the government should be pragmatic in outlook and actions and not be guided by advice from overseas which necessarily tends to promote business interests outside Sri Lanka. The Finance Minister in his 1987 Budget Speech stated that the government policies were based on pragmatism and went onto say "the operation of public enterprises has been, in some cases, a drain on the Budget and in other cases their contribution to the Budget has been less than commensurate, with the investment. There have been several studies on ways and means of improving the performance of these enterprises. Some non viable enterprises have been closed down some have been sold to the private sector, while some others have been brought under private management. The government is committed to improving the efficiency of these enterprises through all means including privatisation where feasible. It is my expectation that during the next three year period this sector will be rationalised and be able to make a significant contribution to easing the budgetory burden."

The standard argument used by the Finance Minister is that several public enterprises do not contribute to the Budget. It must be remembered that contributions to the Budget do not come in the profits of enterprises alone, even more significant are the turnover and other sales taxes and customs duties that public enterprises pay to the government. Manufacturing enterprises in the public sector in 1985 paid turnover and other taxes to government which amounted to Rs. 530 million while the private sector paid Rs. 600 million. With regard to agriculture, public sector tax receipts were Rs. 561 million in 1985 while the private agricultural sector paid only Rs. 456 million. In regard to banking, in 1986, the public sector institutions paid Rs. 500 million and the private sector institutions Rs. 400 million. Total tax revenue from the public sector in 1985 was Rs. 2740 million and from the private sector Rs. 1521 million. These figures show that the charge that public enterprises do not make a contribution to the Budget is incorrect and this charge seems to be more applicable to private sector industries, where a large number them are thriving under substantial tax shelters.

PRODUCTIVITY AND EMPLOYMENT IMPLICATIONS OF SMALL-SCALE FARMING IN SRI LANKA

A. D. V. de S. INDRARATNA

I. Introduction

Sri Lanka is an agricultural economy. Of its total land area of 6 1/2 million hectares (16 1/4 million acres), nearly 1/3 is cultivated. The two main export crops of tea and rubber together with coconut occupy slightly less than half of the cultivated area while paddy, the major domestic crop[1] and minor crops occupy the rest. The agrarian sector comprising agriculture, forestry and fishing contributes 30% of the Gross National Product of the country, providing nearly half of its total employment. Of the country's total population of 151 /2 million, more than 3/4 (78%) are rural, the bulk of whom are dependent for their livelihood on some activity connected with agriculture. Rural employment accounts for more than 3/4 of the total employment of the country of which more than 1/2 (55%) is provided by agriculture, forestry and fishing.

Of the four major crops of Sri Lanka, tea and rubber are cultivated on a large scale mainly in estates of 20 acres or more, while the other two, coconut and paddy are produced mainly on a small scale in holdings of less than 20 acres. According to the 1982 census of agriculture 3 1/2 million acres or about 3/4 of the cultivated area comprise this small holding sector with 1.8 million operational holdings. While the average size of holdings is 0.80 hectares holdings of less than 2.08 hectares constitute 3/5 of the total.

Small scale farming accounts for more than 2/5 of the total gainful employ ment of Sri Lanka and involving more than 90% of the farmers of the country. Cultivation of food crops belongs almost entirely to the peasant economy. The

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1. Although coconut is usually classified as an export crop, it really falls in between export crops and domestic food crops. Unlike in the case of tea and rubber, more than half of its output is domestically consumpe and it is characterized by small holdings and homesteads.

dominance of small holdings is one of its chief characteristics. As far back as 1952, of the cultivated area under food crops, the area with holdings of 2.08 hectares or less was 70% and the number of holdings of less than 2.08 hectares constituted 96% of the total number of holdings.[2] This position in 1952 has worsened today for paddy and cocount the two main food crops and other minor crops. According to the Census of Agriculture 1982, (Table I) of the total estimated area of land under coconut paddy and minor crops, 75%, 98% and 93% respectively are small holdings, whereas in the case of tea and rubber they respectively account for only 20% and 40%.

Paddy and coconut contribute to slightly more than 1/10 of the G.N.P. or 1/3 of the total Gross National Product derived from agriculture. With self-sufficientcy in rice as one of the development goals and the limitations placed on the expansion of the asweddumized land, it became necessary in the sixties to place greater emphasis on new varieties of seed and new technologies for greater production — the ushering - in of the "Green Revolution." New High-Yielding Varieties (NHYV), technology adoption and mechanization would have had a significant impact on both productivity and employment in small-scale farming particularly rice.

II. Scope of the Paper

The scope of the present paper is to briefly analyse the trends and changes in productivity and employment, the technologies which contributed to them, the impact of government policies and institutional reforms in their adoption and the implications of the past experience for future action.

Our analysis in this paper will be confined to the two crops coconut and paddy not only because of their overwhlming importance as food crops, but also because there is better statistical information regarding them than other crops. Hardly any studies have so far been undertaken on productivity and employment implications of small-scale farming in Sri Lanka. There are also no separate statistical data on yields or volume of employment in the small holding sector. Due to these is limitations, our analysis in this paper has to be largely based upon what can be deduced from the experience of domestic agriculture of paddy and coconut in general for which some information is available.

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2. Sessional Paper 13 of 1952 : Report of the Survey of Landlessness. Department of Census and Statistics, July, 1952.

TABLE I.

EXTENT OF LAND UNDER CULTIVATION

Crop	*Area (in acres)*			(2) *as* % *of* (3)
	(1) *Large*	(2) *Small*	(3) *Total*	
Tea	416,677	106,630	523,307	20.4
Rubber	275,982	181,590	457,572	39.7
Coconut	254,823	781,020	1,035,852	75.4
Paddy	21,236	1,222,140	1,243,376	98.3
Other	92,206	1,183,820	1,276,026	92.8
Total	1,060,933	3,475,200	4,536,133	76.6

Source : Census of Agriculture — 1982

III. Temporal and Spatial Trends in Productivity and Employment

There are no direct statistical data relating to temporal and spatial trends in productivity and employment in small-scale farming of paddy and coconut. Data relating to production of coconut and paddy, however, clearly indicate that while there has been a marked rising trend in productivity in paddy in the last two decades, productivity in coconut has been falling first and then rising. As shown in Table II, the average yield of paddy per hectare has been secularly rising from 2000 kilograms in 1963 to 3600 kilograms in 1983. This nearly two-fold rise in productivity within the last two decades can be attributed to the new high yielding varieties of seed, the various technologies introduced and the impact of government policies and institutional reforms. This increase in productivity of paddy farming is also evident from the increase in rural incomes over these years. The average two months (arithmetic mean) income of an income receiver of the rural sector from agriculture and forestry has risen more than eight-fold from Rs. 243.00 in 1963 to more than Rs. 2000 in 1981/82. Even after due allowance is made for inflation during this period, the increase in real income must be several fold and must be largely due to increased productivity in small-scale farming which characterizes the rural sector.

TABLE II.

PRODUCTIVITY CHANGES IN PADDY AND COCONUT

(1)	(2)	(3)	(4)
Year	*Coconuts Nuts per hectare*	*Paddy Average yield kg. per hectare*	*Income 2 months mean* *
1963	4820 (1950)	2000 (810)	243.00
1973	4320 (1750)	2300 (930)	436.00
1983	6050 (2450)	3600 (1460)	2154.00 f

Note : 1. f — rural sector as a whole & for 1981/82.

2. * — income from Agriculture & Forestry, Rural Sector.

3. Figures within brackets are per acre.

Source : (2) & (3) — Statistical Pocket Books.

(4) — Consumer Finance Surveys, Central Bank.

In the case of coconut, the average number of nuts per hectare had been declining from 4820 in 1963 to 4320 in 1973 and then rising to 6050 by 1983. This increase in the average pick must be owing to not only the closure of uneconomic holdings but also to measures effected for productivity improvement. For the increase in the average pick was significantly higher than the 10% closure of uneconomic holdings.

No evidence, as given above in respect of productivity, can be, presented with regard to employment changes in the sector of small-scale farming. However, evidence of employment in the whole sector of agriculture and forestry indicates that the volume of employment in small-scale farming too would have increased. In 1963 (1963 Census), for example, the total employment in the agricultural sector was 1.682 million; this had increased to 1.824 million in 1971 (1971 Census) and still further to 1.864 in 1981 (1981 census showing a growth rate of 1.45% annually). It can be reasonably assumed that much of this increase would have been in the small holding sector where labour-saving technologies and mechanization would have been much less practised than in the estate (large holding) sector. Such increases in employment in the agricultural sector, however would not be sufficient to solve the serious unemployment problem.

IV. Policies on Land Settlement and Institutional Reforms

Colonization Schemes

With the outbreak of the first World War, the country went through a severe of food shortage. With the onset of the depression (1931) there was a slump in the prices of the principal export commodities. This reduced employment in the wet zone and brought about the necessity for development of the dry zone. With the introduction of state aided colonization schemes in 1932 and the enactment of Land Development Ordinance No. 19 of 1935, the government actively pursued a policy of settlement of peasants on the land. The rationale for the establishment of these state aided colonization schemes was to afford work for the surplus population, increase food production and to reduce landlessness. As land suitable for cultivation in the wet zone was scarce and what remained was comparatively inaccessible, the existing demand for land could not be fully met without the utilization of the resources of the dry zone.

With the outbreak of the war, colonization ion was speeded and the following inducements were given to colonists :

(1) A dwelling place for the colonist and his family;

(2) A subsidy for ridging or slumping his paddy allotment after his first harvest while the government continued to do the clearing;

(3) A small subsistence allowance to enable him to get on his feet;

(4) Implements and buffaloes which were made available on loan, but could become outright grants if the colonist showed he was improving his allotment;

(5) Arrangements made for marketing his products;

(6) The completion of building of houses and ridging on paddy allotments before handing over to the colonists.

The general policy of the government was to establish the peasant on a unit of holding consisting of irrigated land and also a highland area to enable him to settle on the land as well as derive from it an income sufficient to maintain himself and his family under reasonable circumstances. In the earlier schemes the irrigation land unit was five acres and three acres of highland. Since 1953 the unit was reduced to three acres of irrigated land and two acres of highland. At present it is fixed at two actes of irrigated land and one acre of highland.[3] How the land area and the number of allotees increased during the period 1953 to 1971 under these schemes is shown in Table III.

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3. It was proposed to reduce this to 2 1/2 acres in the Mahaweli Scheme.

TABLE III.

LAND UNDER MAJOR COLONIZATION SCHEMES

	1953		1963		1971	
District	*Land Area (acres)*	*No. of Allottees*	*Land Area (acres)*	*No. of Allottees*	*Land Area (acres)*	*No.of Allottees*
Colombo	—	—	1510	604	—	—
Kalutara	—	—	4807	1101	—	—
Kandy			8207	2066	4590	1093
Matale			4930	1059	16177	4471
Nuwara Eliya	—	—	—	—	—	—
Galle	—	—	—	—	—	—
Matara	—	—	—	—	—	—
Hambantota			3366	600	5253	1659
Jaffna	2186	394	17530	3718	31202	6094
Kurunegala	1395	310	14403	3168	17073	3962
Puttalam	—	—	5047	865	8870	1768
Anuradhapura	5530	1048	33994	7494	60646	14716
Mannar	—	—	1965	393	2200	440
Vavuniya	—	—	6083	1328	10324	2849
Batticaloa	—	—	2751	306	15857	3572
Amparai	—		24884	4949	42999	10481
Trincomalee	6081	1271	19668	4489	26460	6165
Polonnaruwa	—	—	61020	9559	76842	13022
Badulla	1589	265	6755	1512	13824	3842
Moneragala			3872	724	4500	881
Ratnapura	—	—	6931	1427	1697	552
Kegalle	—	—	—	—	—	—
Total — (Acres)	16781	3288	227723	45442	338514	75567
(Hectares)	6980		94727		140813	

Source : Administration Reports of the Land Commissioner.

Village Expansion Schemes

Unlike large land colonization schemes in the dry zone which necessitated large inter-district transfer of people, the village expansion schemes provided land to the landless peasants in the same district. Most of the land for expansion was found in the wet zone and the hill country where landless agricultural workers were predominant. In the case of village expansion schemes, government land or land acquired from privately owned individuals or companies were given to landless villagers. In same cases, the landless forced themselves into unutilised crown land and the government later handed this land over to them. The major purposes of the village expansion schemes were (a) relieving extremee presure on land in the developed areas of the island, (b) providing employment for the unemployed people in their own villages and (c) increasing the food supply. A total of 126250 hectares were alienated under this scheme upto 1955 and 93750 hectares between 1955 and 1966.

Land Reforms

The first in the series of tenurial reforms that was effected in Sri Lanka was the Paddy Lands Act of 1958. This Act ensured the tenant farmer security of tenure. The rent was fixed as one-quarter share of the crop. The tenancy rights were made hereditary unless the owner himself wanted to cultivate the land. The Act also made provision for farmers' organisations at the village level to develop and manage the paddy sector.

The system of tenancy that prevailed before the introduction of the Paddy Lands Act was not conducive to growth in productivity, as adequate incentives for cultivation were lacking and the landowners were ultimately receiving the major share of the crop. The Act not only gave the tenants security but also gave them a three-quarters' share of the crop, thereby relieving them somewhat of their poverty and indebtedness.

A major change in land reforms came in 1972 with the enactment of the Land Reform Law. As discussed earlier, the problem of landlessness in the high density areas had been tackled mainly by the resettlement of peasants in the dry zone. This was a slow process, however, and most of the population, especially in the south-west quadrant of the country, suffered from severe landlessness in the midst of the large estates in the plantation sector. A drastic change in agricultural land policy therefore became a matter of high priority. As a result, the Land Reform Law was enacted in August 1972. It stipulated a ceiling of 10.4 hectares of paddy or 20.8 hectares of all agricultural land. Any land in excess of this ceiling was vested in the Land Reform Commission, which was created to implement the law.

The total land declared to the Land Reform Commission (LRC) under the new legislation was estimated to be above 1 million acres, of these 266,250 hectares were under the major crops tea, rubber, coconut, cocoa

and paddy. Of these, paddy which is mainly grown in small holdings accounted for only 23540 hectares. Nearly 50000 acres of the land vested in the LRC were distributed in small units of 1/2 to 1 acre. Most of these lands were used to build dwelling places for the allotees and their families rather than for agricultural development. Therefore, their productivity and employment implications were negligible.

V. OTHER INSTITUTIONAL REFORMS

Introduction

Land settlement discussed above increased the extent of land under small scale farming. Therefore, the government had to introduce various othe- policies to encourage the farmers to adopt new agricultural practices so as to increase the productivity of these small farms and thereby raise rural incomes.

Guaranteed Price Scheme

One such institutional arrangement was the Guaranteed Price Scheme (GPS). In order to encourage the small farmer to maximize his output two things were necessary: financial assistance to increase his inputs into the land and an adequate price to increase his marketed surplus, while maximising his output. The GPS covering paddy and eighteen minor crops was introduced in 1948 to achieve the latter. Its avowed objectives were to provide an incentive to local production and a measure of income support to small producers. The guaranteed price for paddy per bushel (= 20.87 kgs.) which was fixed at Rs.8.00 in 1948 was increased to Rs. 12.00 in 1952, to Rs. 14.00 in 1967, Rs. 18.00 in 1973, Rs. 25.00 in 1974, Rs. 33.00 in 1977, Rs. 40.00 in 1980, Rs. 50.00 in 1981, Rs. 57.50 in 1983 and then to Rs. 62.50 in 1984. During 1960-65 the GPS was slightly higher than market price and hence the GPS served as a ceiling rather than a floor. The tremendous rise in paddy production after 1976 was mainly because of the high level of real price of paddy. Both imports and GPS procurements fell drastically to record levels. The farmer was expected to respond to the real price of paddy in deciding how much of the land to sow. The guaranteed price scheme also raised rural incomes by increasing productivity of the farms.

Other Institutional Arrangements

Government also introduced a fertiliser subsidy for paddy and coconut to encourage small farmers to increase their inputs of fertiliser and thereby increase productivity. This fertiliser subsidy scheme which was introduced in 1951 was modified from time to time, mainly varying the amount of subsidy in accordance with the variation of fertiliser price. The consumption of fertiliser, as a result of this subsidy, increased several fold. From 1957 to 1971, for example, it increased from 14,000 tons to 90,000 tons.

It is noteworthy that fertilizer consumption rose markedly during 1961-1981. It reached a peak of 70 kg/hectare sown in 1973. There was a slight drop then but it picked up to rise to 90 kg/hectare in 1980. In addition to the fertiliser rubsidy, a replanting and new planting subsidy was also given to coconut, to promote replanting, underplanting and new planting. Although fertiliser subsidy seems to have encouraged greater fertiliser use, the planting subsidy has not resulted in the any increase in the acerage under coconut. On the contrary, as mentioned earlier, between 1973 and 1983, it has decreased by about 10%.

Crop Insurance was first introduced in 1958/59 on a pilot basis and was extended to those who followed specified practices such as row sowing and transplanting. This scheme was further broadened in 1975/76 to cover all irrigated paddy to insure against the risk of crop failure which was inhibiting paddy cultivation on irrigable land.

The government also facilitated *credit* for the small farmer through (i) the Cooperative Credit Societies, (ii) the Peoples' Bank and (iii) the *Central Bank*. The *last* scheme begun in 1973 was called *the Comprehensive* Rural Credit Scheme and, with a 75% guarantee by the Central Bank, it was designed to meet all the requirements of the rural sector predominated by the small farmers. There was an appreciable increase in the number of people using institutional credit after the inauguration of this scheme and in the first year of 1973 itself, Rs. 80 million was loaned to paddy cultivation alone. After 1973, the flow of credit rose threefold. In 1977/78 a quantum jump in paddy loans took place and Rs. 423 millions were disbursed. In general, however, the default rate was very high and this was mainly due to a poor institutional foundation.

Another arrangement which was instituted to help the diffusion of new technology was the *agricultural extension service*. With the release of the District Agricultural Extension Officer entirely for extension work in 1973, this service was progressively streamlined. But there is no empirical evidence to show what specific role it played in the promotion of new technology.[4]

The policies and institutional reforms discussed above, as a whole, would have had a significant impact on the selection of new vareties of seed and new cultural practices in small-scale farming in Sri Lanka. The more important facets of this technology adoption and its implications for productivity and employment will be examined next.

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4. For details see Chambers and Wickremasinghe "Agricultural Extension : Myth, Reality and Challenge" in Farmer, B.H. (edt.) Green Revolution. Macmillan, 1977.

VI. TECHNOLOGY ADOPTION

Introduction

Productivity can be taken as the volume of output per unit of input. In small-scale farming, as in agriculture in general, this can be measured by the volume of output per unit of labour or unit of land. Simply, the latter can be converted in paddy to the number of kilograms, and in coconut to the number of nuts or annual pick, per hectare/acre.

Technology Adoption and Size of Farms

Changes in productivity occur mainly as a result of technological change. These changes relate to the use of (i) the new varieties of paddy, such as the BGs, LDs etc. (ii) system of land preparation, such as manual ploughing, animal ploughing or tractor ploughing, (iii) cropping pattern such as multple-cropping, relay cropping and inter cropping, (iv) degree of input use, suich as water and fertilizers and (v) system of weeding such as hand weeding or chemical weeding. The extent to which different technologies can be adopted depends in turn upon the size of farms. The important relationship between the size of land holding and agricultural productivity in developing countries is still debated intensly. Many empirical studies on farm productivity in peasant agriculture indicate an inverse relationship between output and farm size.[5] Also due to differences in relative factor intensities, more labour is used in smaller farms. Thus in general small farms generate more employment and also higher productivity. An inverse relationship between land size and productivity for Sri Lanka has also been found.[6]

In small farms, family labour is normaliy preferred to hired labour and, when selected, the former is used in larger volume than the latter. Similarly, agricultural practices such as transplanting and hand weeding, both generate more employment and higher productivity than broadcasting and chemical weeding. Manual or buffalo ploughing is equally more labour using than tractor ploughing which can be economically used only in large farms, but their relative productivity implications are not so clear. Again, new systems of cropping such as intercropping (particularly on coconut lands) multi-cropping, and relay cropping made possible by NHYV and availability of irrigation water are both productivity-enhancing and more labour absorbing. They also generate more employment by increasing the labour input needed for transplanting, fertilization, weeding, harvesting or picking or threshing as the case may be. Increase in productivity and thereby in the volume of output further creates more ancillary employment in activities such as husking and milling.

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5. Herath, H. M. G. (1983). Production Efficiency Returns to Scale and Farm Size in Rice Production . Evidence from Sri Lanka, Agricultural Administration Vol. 12, pp. 141-153.
6. Griffin, Keith, The Political Economy of Agrarian Change, 1974, Cambridge University Press, London.

In which direction the productivity and employment implications of technology adoption work thus depends upon the size of farms and the specific technologies used. How this phenomenon has worked in small-scale farming in Sri Lanka will be briefly examined below.

VII. NEW TECHNOLOGIES IN SRI LANKA

Adoption of New Varieties of Seed and New Cultural Practices

High Yielding Varieties

H_4 was the first high-yielding variety that was introduced in Sri Lanka. It was a result of cross breeding between improved traditional varieties and some high-yielding foreign strains. H_4 was first released in 1953 and by 1969 more than 3/4 of the farmers in Polonnaruwa district, one of the major paddy districts of Sri Lanka was growing it. H_4 was followed in the seventies by H_7, H_8 and H_{10}. IR8 which was introduced at the same time did not become popular mainly because of disease and pests. H series referred to as old HYV, however, predominated with A-8 and Pt 16. New varieties were more recently developed by using high-yielding local varieties with dwarf varieties of IR8 and TN1 in order to overcome the tendency of H_4 to lodge particularly with increased application of fertiliser and under wet weather conditions. New High-Yielding Varieties (NHYV) used in Sri Lanka fall into three categories depending upon whether they take 3, 31/2 or 4-4 1/2 months for maturity.[7]

These NHYV have yielded as much as 100-150 bushels of paddy (2090-3130 kg. per acre or 5160-7740 kg. per hectare) in certain areas. If you take the average yield indicated by these figures, it is almost twice as much as the present average yield. In order to realize their full potential, however, a package of other conditions such as fertilization and use of weedicides and pesticides must be fulfilled. Even without this full package, yield is likely to increase with NHYV. A survey of the Polonnaruwa District has revealed that cultivation of NHYV coupled with more labour intensive techniques in themselves can give higher yields even under rather relatively low levels of purchased input application like that of fertiliser.[8] Within the last ten years, rice production in Sri Lanka had increased by 53%. The greater part of this increase was the result of increased productivity and not increased acerage

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7. For details please see DIAS, H. D. "Selective Adoption as a Strategy for Agricultural Development : Lessons from Adoption in S.E. Sri Lanka" in Farmer, B. H. (edt.) Green Revolution. Macmillan. 1977.

8. ARTI — Agrarian Studies relating to paddy cultivation in five selected districts of Sri Lanka — 1975.

of asweddumized land, but for which self-sufficiency in rice could not have been reached at the end of the decade, as had happened. As shown in Table IV, in 1973, the domestic production of rice could meet only 3/5 of Sri Lanka's requirements. With the increase of 18% in the country's population within 10 years thereafter, the increase in rice production required for self-sufficiency was 58% over and above the 1973 level. Only about 1/3 of this increase (20%) could have been obtained from the increase in asweddumized land. The remaining 2/3 or 33% of the increase in production in 1983 had been achieved by the increased yield or productivity. It is not possible to determine how much of this was due to HYV and how much was due to improved cultural practices. One can, however, be certain that without HYV, such an increase in production would not have been possible.

TABLE IV.

COMPARISON OF RICE PRODUCTION WITH THE RICE REQUIREMENTS IN SRI LANKA

		1973	1983	2000 (estimated)
(1)	Mid year population (in, 000)	13,091	15,416	19,492
(2)	Rice requirements (in, 000 kg.)	1,510,177	1,778,389	2,248,597
(3)	Paddy production (in, 000 kg.)	1,312,000	2,477,000	3,306,760
(4)	Rice equivalent (in, 000 kg.)	892,160	1,684,360	2,248,597

Note :— 1. (11) at 103 kg. of rice per head + 12% for seed and wastage.

2. (111) paddy requirement to be self sufficient in 2000.

3. (f) at 68% extraction.

4. Average yield per hectare used in the estimation is

$$\frac{\text{(Maha harvest)} \times \text{(Maha yield)} + \text{(Yala harvest)} \times \text{(Yala yield)}}{\text{Total harvested hectares}}$$

Source : Statistical Pocket Books for (1) and (3) and average yield.

Quick high yielding varieties (3 to 41/2 months) have implications for employment in the small holding sector. They may provide regular employment to the hired or family labour thereby obviating the necessity to look for off-season employment elsewhere. Very high yielding varieties, through increased productivity, will also increase employment, but if they are weed resistant, may displace the labour normally required for hand weeding. On the basis of findings of field surveys, Chinnappa[9] (North Arcot, India) and Silva (Hambantota, Sri Lanka) and others have concluded that HYV require, on the whole, substantially more labour for the whole package of operations than TV. According to Dias,[10] Sri Lanka seems to have had remarkable success in both getting the message of the high yielding package across to the cultivators and persuading most of them to accept it. Farm size has not been an obstacle in introducing the HYVS.

Tractorization

Both 4 wheel and 2 wheel tractors have been used in the Dry Zone settlements. As seen from Table V, 2 wheel tractors have been more popular than 4 wheel tractors. Tractorization is labour-saving. It is estimated that tractor ploughing uses 8 man days, and tractor threshing 2 man days, per acre, less than buffalo ploughing and buffalo threshing respectively[11] Although no proper estimates are available, it is evident that tractors have reduced employment in the Dry Zone. There is also growing evidence that they have not compensated by raising output.[12] In general about 100-150 man days are required for cultivation of a crop of rice. This labour requirement drops to about 50 man days when tractors are used for preparatory tillage. In Sri Lanka tractor imports were very heavily subsidized in the early 1960s. This has resulted in the importation of a large number of tractors along with the Green Revolution Technology. The importation was also facilitated by an overvalued exchange rate. There is also evidence in Sri Lanka that the importation was not caused by the Green Revolution.[13]

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9. Chinnappa, B. N. and Silva, W. P. T. "Impact of the Cultivation of High-Yielding Varieties of Paddy on Income and Employment" in Farmer. op. cit.
10. Dias, in Farmer. op. cit.
11. Harris, Barbara "Tractors, Profits and Debt, in Hambantota District, Sri Lanka" In Farmer (edt). op. cit.
12. Ibid. Also the conclusions of Farrington and Abeyratne in regard to the impact of tractorization on employment and productivity in farming are very similar. See Farm Power and Water Use in the Dry Zone — Part I. ARTI — July, 1982.
13. Iftikhar Ahmed, Green Revolution With or Without Tractors. ILO Review, 1974.

TABLE V.

TRACTOR SALES

Upto	1975	1976	1977	1978	1979	1980	1981	1982
Four Wheeled	10151	400	786	2494	1941	2529	316	342
Two Wheeled	4583	—	3000	3000	1704	1312	2453	2203
Total	14734	400	3786	5494	3645	3841	2769	2545

Source : Ministry of Agriculture & Food.

Transplanting

Transplanting was introduced in Sri Lanka as a yield increasing measure because broadcasting was found not only to retard the optimum growth of the plant but also to make weeding more difficult. Transplanting increases yields particularly with improved traditional varieties and early HYVs (H series). It has been found that transplanting prevents lodging, and therefore, H_4 and NHYV are almost identical, with regard to yields, whereas under broadcast conditions H_4 yields only about 60% of the yield of IR8.[14] With the coming of NHYV, however, it has been possible to dispense with transplanting. This has had an unfavourable effect on employment because additional labour of about 18 man days per acre required in transplanting is then dispensed with. Transplanting requires water and this is thus widely practised in major irrigation schemes.

Cropping Pattern

Before the introduction of the HYV, far too little paddy land had been double-cropped.[15] Their introduction accompanied with a regular supply of water through irrigation (in the Dry Zone) and fertiliser and replanting subsidies have all contributed to the changing cropping pattern and made both multi-cropping and inter-cropping possible and profitable. 3 to 3 1/2 month varieties have made even three crops per year possible provided that there is proper water management. Coconut takes low priority as an employment generating crop. As a mono crop, a coconut small holding

14. Dias, op. cit.

15. See ARTI — Agrarian Studies Relating to Paddy Cultivation in Five Selected Districts of Sri Lanka — 1975 & also ILO—Matching Employment Opportunities & Expectations : A Programme of Action for Ceylon : Working Papers. Geneva, 1977.

does not provide regular employment to more than 2 persons while another 2-4 persons may be occassionally employed for plucking and fertilising. There is very little inter-cropping on coconut land. For example, in the district of Kurunegala, one of the key coconut districts, inter-cropping has been undertaken in less than 2% of the coconut lands.[16] Inter-cropping with such crops as coffee, cocoa, pepper, pineapple and banana can generate more employment as well as higher productivity per unit of land. Higher productivity would in turn create more employment also in ancillary services such as paddy milling, coconut processing and coir making. Inter-cropping and multi-cropping have tremendous implications for productivity and employment. Inter-cropping is not so popular due to marketing problems and lack of extension and credit facilities. A subsidy is given which, at present costs, is inadequate.

Weeding

The last component of the technology package which is discussed in this section is weeding. Chemical weedicides are being made popular. Chemical weeding, instead of hand weeding, displaces labour. The scope for this, however, depends on the costs of chemicals which have been rising since the oil crisis of October, 1973 on one hand, and the availability of labour and water on the other. Shortage of family labour and or hired labour and water scarcity hampers hand weeding. For this reason chemical weeding has been more widely practised than hand weeding in the Anuradhapura district.[17]

III. IMPLICATIONS FOR THE FUTURE

Introduction

In the two decades between the Census years of 1953 and 1983, the population of Sri Lanka has almost doubled from 8 million to 15 1/2 million. The land/man ratio has halved to 0.4 hectare per head, one of the lowest in South East Asia. With the projected population of 19 1/2 million in the year 2000, this ratio will go down to a fraction of an acre (4/5). Because of this declining land/man ratio, the land alloted to settlers of newly irrigable land has also been gradually reduced from 3.3. hectare to 2.08 hectare and then to 1.25 hectare and now proposed to be reduced to 1 hectare in the Mahaweli Scheme. As a result, the small holding farming sector has been growing in size with the corresponding small holdings increasing in number. On the other side, there are more mouths to feed and more jobs to find every year with the rising population.

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16. ARTI — op. cit.

17. ARTI — op. cit.

Expansion of the cultivable area is subject to increasing limitation The solution to the twin problem of more food and more jobs should be sought in increasing productivity both in small as well as large farms.

We are concerned only with small farms. The technology adopted in small-scale farming should be such as to allow increase in productivity without reducing the volume of employment. Some techniques of production, though productivity raising could be labour saving. Such techniques should be avoided in a country of surplus labour and very low incomes. It is noteworthy in this context that the experience of Sri Lanka as well as other neighbouring countries like Philippines has shown that it is possible to increase labour productivity with new varieties of seed and new "intermediate" technology without having to decrease labour input.[18] The triangular relationship between technology, productivity and employment must always be borne in mind in recommending appropriate policies for small-scale farming. There should be further impetus to develop bio-technology for rainfed areas as well in order to increase productivity in rainfed agriculture.

Future Strategy

The settlement of allotees in Stage C of Mahaweli has already commenced. The other stages are expected to be also completed shortly. With the successful launching of the Mahaweli and other irrigation settlement schemes more and more small farms will be established and small-scale farming will become more and more important. With the provision of a regular supply of water by these schemes, the scope for multi-cropping will be enhanced. Increasing technology adoption will be needed to increase productivity as well as employment. Labour intensification with more transplanting, hand weeding and fertilisation in multi-cropping in paddy as well as inter-cropping in coconut seems to offer the best solution to productivity and employment in small-scale farming in Sri Lanka. The extension system should be more strenthened to facilitate the diversification of cropping in small-scale agriculture.

There may be certain areas in the Dry Zone where the peasant may not get the benefit of the new major irrigation schemes but would have to continue to depend on minor village tanks. These tanks will have to be rehabilitated in order to store water, as it is being done already in the case of some. The twin national goal of income generation and employment creation demands a greater effiniency and intensity of resource use in small-scale farming in the rural sector, particularly in the Dry Zone. The productivity of "Chena Lands" there during the fallow period is almost nil. Restoration of village tanks and storage of water coupled with their better management would,

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18. I.L.O. op. cit., ARTI op. cit., and Philippines' Country Study on Productivity and Employment Implications of Small-scale Farming.

enable the replacement of shifting cultivation on some land with two regular (may be even three) crops, thereby increasing the efficiency and intensity of land use. It should then be possible to even replace dry crops with paddy, if it will be "a more profitable crop to both cultivators and agricultural labourers".[19] Weed management and fertility management should be the other key components of this technology for developing a sustainable high land farming system in the Dry Zone where, widespread introduction of water management practices should have significant implications for productivity and employment in small-scale farming.[20] There is also emphasis on integrated farming which should enhance productivity and employment.

Some future action

NHYV require a complimentary package to realize their full potential. Proper water management, weeding and fertilization for production and proper distribution network and guaranteed minimum prices for marketing are their major components. It is because of the inadequacies in the provision of this complimentary package that the policies and institutional reforms effected earlier, like land settlement policies and and reforms, had not been successful in increasing productivity and employment.

Cooperatives have been very popular with small farmers for obtaining credit for their production and facilities for marketing their produce. For example in 1974/75, 3/4 of the farmers in Anuradhapura district had obtained their fertilizer and agro-chemicals through cooperatives while almost all (93%) had utilized them for marketing their produce and nearly 2/3 (63%) had made use of loan facilities provided by them. Provision of agricultural credit and marketing facilities through cooperative credit societies and other institutional arrangements thus become vtail for intensified land use particularly of small holdings. Provision of these facilities is as important as the provision of physical facilities such as land. Without them, the farmer may not be able to fully exploit the market or utilize the guaranteed price scheme.

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19. Chinnappa & Others. op. cit. At present paddy may be more profitable. But if there is a surplus in production it may not be so.

20. How the yield has increased with increased cropping intensity by the adoption of NHYV using this technology in the Walagambahuwa Project is described in Upasena, Sikurajapathy and Seneviratna "A New Cropping System Strategy for the Poorly Irrigated Ricelands of the Dry Zone" in Tropical Agriculturist Vol. 136 (1980). Department of Agriculture, Peradeniya, Sri Lanka. This technology is now referred to as the "Walagambahu" technology.

Without credit, for example, he will not be able to purchase the necessary inputs of fertilizer and seeds. The credit system is one of the weakest. Most farmers avail themselves of non-institutional credit. These constraints will act as a disincentive and should be removed by the provision of credit in the right quantity, the right time and the right terms to which the small farmer can conform. supervised credit with technical advice is one possible measure Similarly marketing facilities for selling produce must be provided by guaranteeing an economic price and adequate collection centres.

The situation is not as good in small-scale coconut cultivation as in paddy. Replanting programmes, fertilizer application and adoption of soil moisture conservation measures need much more intensification there. There should be greater awareness among the small holders of the facilities available under the Coconut Rehabilitation Scheme. Ten years ago (CIRCA 1974) the position was very bad: there was not much dialogue between coconut small holders and relevant official agencies, nearly 2/3 of the small farmers had not applied any fertilizer. Neither did they have the money to purchase fertilizer themselves nor had they known of the concessionary facilities available for their purchase. These deficiencies must be overcome by creating better dialogue between the small holder and government agencies on one hand and effecting improvements in the network of distribution of fertilizer and seedlings for replanting. A scheme can be successfully implemented through the cooperative societies.

Inter-cropping in coconut lands is now negligible. It should be actively promoted with cocoa, coffee, pepper, betel, fruits and vegetables. Banana and pineapple would be ideal for inter-cropping with coconut in small farms; their returns are quicker and higher; they need less capital and simple technology. Etherington and Karunanayake go to the extent of recommending that the spacing of new coconut plantings should be so designed as to specifically allow inter-cropping throughout the life of the palm.[21] Inter cropping also overcomes the income deferment problem in replanting.

The new production technologies introduced in the dry zone districts of Anuradhapura, Polonnaruwa and Hambantota had been successfully adopted by those who had some capital as well as proper dialogue with the extension workers. Reference has been made in the preceding paragraph to the need for reinforcing the cooperative credit societies to provide production capital to the farmers. This will not be enough without the strengthening of the extension system. According to the ARTI survey, 60% of the farmers of the district of Polonnaruwa had not grown

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21. ARTI — Agrarian Studies in Relation to Paddy Cultivation in Five Selected Districts of Sri Lanka — 1975.

high yielding varieties because they could not obtain seed paddy, while 30% had no knowledge at all about these varieties; in the Anuradhapura district, the position was better where 4/5 of the farmers had obtained technological information from extension personnel.[22]

Tractorization — Tractorization, it has been mentioned, replaces labour but does not compensate by increasing productivity. Where family labour or hired labour or a combination of both is available, tractorization should be avoided. The survey of Polonnaruwa district shows that for land preparation, transplanting, harvesting and threshing, about 3/4 of the agricultural operators used the family and hired labour combination. "Inspite of the large average holdings in the district, the widespread use of buffalo for preparatory work" was significant. Transplanting fertilization and hand weeding also created additonal employment while raising output at the same time. However, for realizing their full potential water management is crucial. The survey of agrarian conditions in Sri Lanka had confirmed that of the three variables of HYV, technology adoption and supply of water, the last was the most important factor that influenced management levels and productivity.[23]

Conclusion

Sri Lanka has now reached self-sufficiency in rice. She has not only to sustain this position but even improve it by making Sri Lanka a rice exporting country. The estimated population of Sri Lanka in the year 2000 will be 19 1/2 million (Table IV). In order to have this population self-sufficient in rice, either the asweddumized land area must increase from about 699,000 hectares to about 783,000 hectares, an increase of 12%, or with the present area of asweddumized land, the yield must increase by 18% from about 3600 to 4300 kg. per hectare.

Mahaweli and other irrigation schemes are bringing more than 162,000 hectares (400,000 acres) of new land under irrigation, about a quarter more than the present extent. The NHYV have a yield potential of 5160 to 7750 kg. per hectare, almost 80% more than the present yield.[24] It seems, therefore, quite feasible to sustain self-sufficiency and go even beyond, either by increasing the land under cultivation or the yield per hectare or a combination of both.

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22. A. D. V. de S. Indraratna —"Agricultural and Food Marketing System for Acce.erated Rural Development with Special Reference to Sri Lanka" in German Foundation for International Development (Edt.) Marketing and Rural Development. Berlin. 1980.
23. ARTI — Sri Lanka Journal of Agrarian Studies — Vol. 2 (1981) No. 1.
24. ARTI — The Agrarian Situation in Relation to Paddy Cultivation in Five Selected Districts of Sri Lanka. op. cit.

In the past twenty years, nearly 2/3 of the increase in rice production was due to better yields resulting from the adoption of new varieties. Of the new varieties adopted, H4 was found to be most acceptable to the small farmer. Although it was not as yield increasing as the of IR8 or BG 11-11, it was more robust and its adoption less costly than the NHYV. These varieties combined with manual or buffalo ploighing, transplanting, hand weeding and buffalo threshing can be best adopted in small farms. The past expetience both from Sri Lanka and other neighbouring countries also shows that the yield is highest in the small holdings of less than 5-6 acres, the yield bearing an inverse relationship with farm size, except where holdings are far too small (may be less than 1 acre) to be economic.

Wherever there is a regular supply of water or proper water management, high yielding varieties should be adopted with appropriate technology as described earlier. Multi-cropping and inrer-cropping should be increasingly practised in paddy and coconut lands respectively. In highland where water management for paddy is difficult, if not impossible, the potential of market-oriented cultivation of other field crops should be fully exploited, a detailed discussion of which was not within the scope of this paper. If these measures were adopted in regard to small-scale farming in Sri Lanka, it would be possible to increase productivity substantially, while at the same time absorbing a certain proportion of the increase in the labour force over the next two decades.

There is a need to strengthen the institutional set up, particularly agricultural credit and input supplies. At present although NHYVS are available, their potential cannot be realized due to inadequate and untimely input availability specially fertilizer. As the demand for food productivity and employment will be even higher in the future, a systematic reappraisal and reorganization of the institutions serving agriculture is an imperative. This will bring small farmers into the main stream of development and would enable the country to tap the enormous potential that lies within this sector.

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