JAMAICAN INFLATION 1959-1972

by

W. JOEFIELD-NAPIER

JAMAICAN INFLATION 1959-1972

INTRODUCTION

The objective of this ~~meeting address~~ paper is to focus the
attention of the participants in this seminar on one of the major
problems which Jamaica faces today, that is, inflation.

Although several statements had been made in the local
press and in other seminars as to the high rate of inflation that has
been evident in Jamaica for over two decades, that is, since the early
1950's, so far few rigorous attempts had been made to identify and
isolate the real causes of the inflationary spiral. In this context
it has been felt by many economists both in Government and University
circles that the inflationary spiral in Jamaica was caused by an in-
crease in the money supply. Hence an expansion in the money supply
had the effect of increasing effective demand at a period when there
was a relative decline in productivity in the Jamaican economy.

Other economists while not disagreeing with the preceeding
view felt that too great an emphasis was placed on increases in the
money supply in which case they held the view that the inflationary
spiral was due in the main to rapid increases in the cost of production
which was passed on to consumers. This high incidence of cost inflation
was attributed to two factors, firstly, to an exhorbitant increase in
the local wage bill due to vigouroustrade union bargaining and secondly,
to an all too rapid increase in the price of raw material inputs and
food which were mainly imported. Incidentally, because of the special
characteristics of the second contributory factor above, in some quarters
it is identified as a specific form of inflation, which is termed imported
inflation. A final school of economic thought in Jamaica held the view
that the inflationary spiral in Jamaica has been mainly due to the

structural imbalances that originated in the colonial era and still
persist to-day. It is important to note that cost inflation is thought
of as a specific form of structural inflation with the cost push being
initiated in the modern sector of the Jamaican economy and later being
transmitted to the traditional sector.

While we feel that inflation in Jamaica in recent times has
been an amalgam of the proceding forms, no attempt has been made to is-
olate the various contributory factors. Because of this we feel that
it is of utmost importance to determine whether or not inflation in
Jamaica had been caused by excessive wage demand by Trade Unions, or by
too rapid increase in public expenditure or by rapid price increase in
metropolitan economies, in addition to the structural rigidities which
are inherent in the Jamaican economy. In this short paper we shall
attempt to isolate some of the contributory factors. To be more specific
the objective of our exercise is threefold, firstly, to describe the
nature and extent of inflation in Jamaica from 1959-1972, secondly, to
investigate its origin in the factors influencing aggregate demand and
aggregate supply with specific emphasis on the role of the Government
sector, and finally to assess the view that arresting inflation is the
sine-qua-non for Jamaican economic survival. Our address will be
divided into two sections. Section 1 contains a review of different
theories of inflation in Section II we shall investigate the nature and
causes of inflation in Jamaica and here our main source of data would be
the consumer price index as published by the Department of Statistics.

SECTION I   THEORIES OF INFLATION

Before commencing our theoritical discussion we think
that it is appropriate for us to define the term "inflation". In general
the term "inflation" can be defined as a sustained increase in the
general level of prices.

This definition allows us to group the underlying economic
forces generating increases in prices into two broad and interdependent
categories, changes in costs on the supply side and changes in demand.
On the supply side by far the largest cost of production is composed
of wages and salaries. In 1959 labour income consituted up to nearly
three fifth of net factor cost. In view of the importance of labour
costs, it is evident that changes in wages and salaries can have an
important influence on Jamaican price levels. However, the magnitude of
the influence will of course be determined by changes in productivity,
that is, economic growth. Hence if the increases in wages equates that
of productivity, then there is unlikely to be an upward pressure on the
price level simply because unit labour cost will not increase. Indeed, if
the increase in productivity is greater than that of wages there will
most likely be a fall in prices almost simultaneous with an increase
in wages. A third important cost factor that must be considered is the
cost of imported goods and services in the case of Jamaica this had in-
creased from 44.5% of total expenditure to 53.4% in 1959 and 1972
respectively.

Because of their relative size, it is apparent that increase
in import prices can also exert tremendous upward pressure on the price
level in Jamaica. In this context, it is important to note that because

of the openness of the Jamaican economy a significant proportion of the
changes in import prices originated mainly in Canada, USA and the UK,
countries from which we buy most of our imports - and to a lesser
extent from changes in Jamaica's foreign exchange, for example, when
Jamaica devalued her currency in 1967 and 1972.

A fourth important cost factor to be considered in any
explanation of current price changes is the lagged effect of changes in
costs and prices in a preceding period. What we are intimating here
is that the full impact of any changes in cost might not be reflected
in prices instantaneously, instead the effect may take sometime before
it filters through the economy and thus being reflected in higher prices.
However, the extent to which changes in costs are passed on in the form
of higher prices depends upon demand conditions. It is conceivable
that if a great deal of surplus activity do exist in the economy any in-
crease in costs will most likely be absorbed by lower profits and rents,
hence its effect on the level of prices will be marginal.

On the other hand when demand conditions persist, an increase
                    /passed
in cost may be fully .   on in the form of highe. prices. However,
beyond some given point for many commodities the existing demand may be
so strong as to create a disincentive not to pass on cost increases,
in that it can lead to increases in profits and rents notwithstanding
the additional increase in the cost of labour and other factors. The
end of effect of all this is that there is established a self generating
process in which rising cost tends to induce increases in prices which
in turn tend to induce further increases in costs.

Perhaps, this inter-relationship can be seen more clearly

in a scheme for the analysis of inflation introduced by Professor

[9]

Machlup.   First he emphasized that an inflation of effective demand

is a necessary condition not only for a demand pull inflation of con-

sumer prices but also for a cost push inflation. Thus without an

expression of demand, the cost increases would result in less production

and less employment, not in a continuing rise in the level of consumer

prices. As the diagram below indicates, the expansion of demand may

be autonomous, in the sense, that it is not linked to previous or

expected cost increase.

DEMAND EXPANSION

Autonomous   Derivative

Induced   Supportive
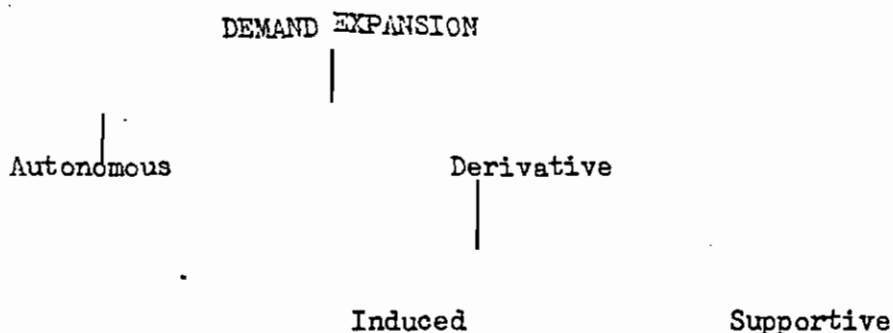
This then is the source of pure demand inflation. It is important to

note that an expansion in demand may be induced by a increase in costs,

that is, the expansion in prices is brought about by an increase in

wages. Other costs (in Machlup terminology, an "induced" increase in

prices) would occur when industrialised firms utilize cash reserves or

borrow from banks to finance wage increases granted under union pressure.

On the other hand "supportive" expansion is brought about by

actions undertaken by the monetary or fiscal authorities in order to

reduce or prevent unemployment arising from increases in wage cost.

As indicated by the succeeding diagram the analysis of cost

inflation is rather more difficult. As the diagram indicates,

"responsive" price increases (for example, wage increases) are those

that are demand induced, that is, they reflect conditions in the labour

market that would have led in any cases to higher wages.

COST INCREASES

INDUCED

PROFIT
INDUCED

IMITATIVE

RESPONSIVE   DEFENSIVE   AUTONOMOUS

AGGRESSIVE
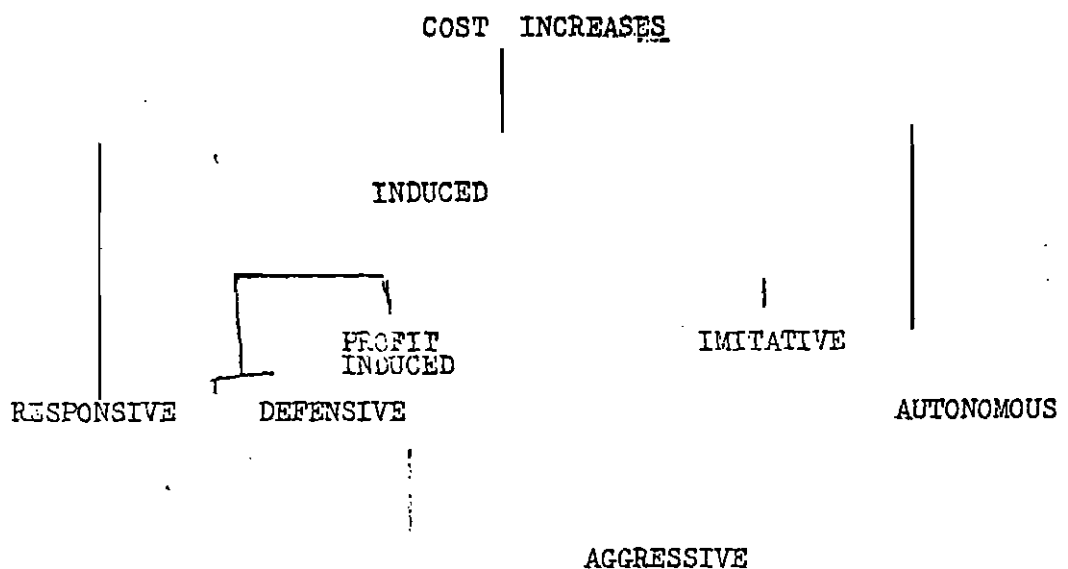
The extreme right of the diagram above indicates increases in

costs that are autonomous in nature, that is, they reflect purely the

exercise of market power by unions or employers. Certain types of in-

creases which are neither strictly autonomous nor responsive, Machlup

said were induced by changes in the relationship between economic entities.

In this context, a "defensive" wage increase may be demanded in order

to maintain real earnings as a consequence of a rapid increase in the

cost of living.

The other types of induced increases, together with those of

an "autonomous" nature he labels "aggressive" in that they represent a

response to increased profits or are "imitative" of wage increases secured

by other groups of workers. According to Machlup the basic model of a

"pure" wage push inflation can be stated thus "aggressive increases of

wage rates are followed by induced and/or supportive demand expansion

and by responsive increases of material prices and other wage rates". ( )

One of the grest merits of Machlup formulation is that it indicates not only the elements and sequence of cost inflation but also the great difficulty of determining its causation in actual situations.

TOWARDS AN EXTENDED FRAMEWORK FOR THE ANALYSIS OF INFLATION

As we indicated above a critical elements in the analysis of inflation in Jamaica must be the relationship that exist between a persistent increse in prices and the structural imbalances that are inherent in the economy. We feel however, that the traditional cost push demand - full scheme is too rigid and must be expanded to incorporate explicitly the rcle of the rate of interest and government's fiscal and monetary policies.

There are two set of theories of inflation that are in existence that we feel give a more plausible explanation of the phenomena in an open economy than the simple cost push demand - pull framework. The first set of theories are largely mechanical explanations of inflation. Mechanical in the sense that they provide an answer to the question, "when does inflation occur?" Thus these theories purport that inflation exist whenever there is a partial or general excess demand in the economy. It is important to note, however, that these theories emphasizes not so much the creation of an overall or partial excess demand in the economy by an expansion of output and employment, as the extent and speed of price increases for any given excess demand. In the literature the mechanistic school is amply represented by the works of Keynes and Enthoven, which [8] [3] will be explored in greater detail in a subsequent section of this paper. The second set of theories of inflation unlike the former emphasize the causal aspects of inflation. Hence this set of theories seem to be based on a hypothesis which attempts to give an

answer to the question, "why does a positive overall or partial excess demand occur?" It is obvious that in the cases of the "causal" explanation of inflation emphasis is place on factors or elements of economic growth which lead to an aggregate excess demand or to a composition of aggregate demand that ultimately lead to inflation.

THE KEYNES-HANSON VARIANT OVER ALL EXCESS DEMAND AS THE CAUSE OF INFLATION

This explanation of inflation originated with Keynes but was later popularized by Hansen.[6] Basically, the Keynesian explanation of inflation places emphasis on the role of aggregate expenditure and
in turn macro economic variables/are a function of the inflationary gap.
/which

Explicit in the formulation is the idea that the inflationary gap widens as the economy grow and reaches its peak when all resources are fully employed. Thus the theory indicates that a state of inflation is reached when investment exceeds exports savings (ex ante) at full employment or to put it differently, inflation develops whenever the overall monetary excess demand for goods and services in the economy is positive, that is when

$$\sum_{i=1}^{n} P_i \; X_i \; > \; 0 \qquad (1.1)$$

where P_i indicates the prices of goods 1, ..., n and X_i represents excess demand. According to the interpretation of Hansen the preceding equation (1.1) indicates "a monetary pressure of inflation" under the assumption that there are no net monetary excess supply in the market for productive services in the composite commodity market.

ENTHOVEN VERSION

Enthoven mechanistic interpretation was introduced into the literature in an attempt to eliminate some of the weaknesses of the

Keynes-Hansen formulation. In this respect Enthoven felt that the latter author's formulation was not "an unambiguous indicator of the direction of the movement of the price level." He then argued that the initial condition for an inflationary spiral can be represented by the sum of the weights of monetary excess demands weighted by their respected reaction coefficient and the product of these terms must then be positive. Mathematically such a relationship can be formulated as

$$\sum_{i=1}^{n} K_j \, P_i \, X_i \qquad 0 \qquad (1.2)$$

where "K" denotes the price reaction coefficients. Looking at the above equation it is evident that Enthoven incorporated the Keynes-Hansen interpretation of inflation into his model the reader may well ask what then was his contribution to the theory of inflation.

Basically Enthoven held the view that within any given economic system an individual will maximize a utility function and this in turn will be determined by the size and composition of his stock of asset, it then becomes possible for us to deduce the excess demand equations of each individual for each good as functions of current prices and of price expectations.

Excess demand functions were then obtained by Enthoven by making a few simplyfing assumption about the form of the consumer constrained utility functions. These functions were of the form 1.

$$X_i = X_i \left(P_i \, , \ldots\ldots P_n, \; P_i^e \, , A \right) \quad (i = 1, \ldots\ldots,n) \text{ for the "n" goods,} \tag{1.3}$$

where P_i indicates current prices, P^e indicates the expected prices of the commodity in question and A indicates the initial stock of assets and its distribution. We can eliminate A from the above equation by simply assuming that it is a constant. If this procedure is followed we

remain with 'n' equations in 3n variables, that is, X, P, P^e. But these
equations only provide the necessary conditions, to obtain sufficient
condition for equilibrum the assumption is made that demand equals
supply in each market and the expected prices equal current prices i.e.

$$X_i = 0 \qquad (1.4)$$

$$P_i = P_i^e \qquad (1.5)$$

The 3n equations (1.3) - (1.4), (1.5). By combining the excess demand
functions and the price reaction equations it is possible to determine
both the magnitude and speed with which price changes react to changes
in excess demand.

Such a relationship has been rigorously formulated by
Schultze as

$$\frac{\triangle P}{\triangle t} = P_i \; K_i \; \frac{X_i}{qi} \qquad (1.6)$$

$$\frac{\triangle P}{\triangle P_i} = K_i \; \frac{X_i}{qi} \; \triangle t \qquad (1.7)$$

where P, x and q indicates the initial excess demand and equilibrum
quantity respectively. Hence the preceding equations tell us that the
rate of increase in prices during a given period is proportional not
only to the magnitude of excess demand but also to the equilibrum
quantity. Thus we see that there are significant differences in Keynes-
Hansen and Enthoven theoretical framework. Only if the assumption is
made that only minor variations in timing or in reaction   speed exist
among the different commodities or services that the differences between
the both models are marginal.

On the other hand, if the assumption of stable aggregate demand
                                    /its
is made then changes in/composition could lead to price increases or price

reductions depending upon the magnitude of the reaction in expanding

as compared to declining sectors. A crucial institution is this analysis,

will then be trade unions whose action tends to prevent the downward

movement in prices. In fact the role of trade unions in the inflation-
ary process has been clearly identified by Schultze,[11] when he indicated

that "once we recognise that prices and particularly wages, are much

more rigid downward, than upward, a substantial shift in the composition

of demand necessarily tends to increase the price level, even if aggregate

demand is stable". In this context it means that the reaction coefficients,

K_j, will be positive for increases in aggregate demand and zero for any

fall in aggregate demand hence shifts in the relative shares must lead

to a rise in the price level.

In review the most apparent weakness of the Keynes-Hansen

theoritical framework for the analysis of inflation in developing
                                                        /it
economics such as Jamaica is that/was based upon the assumption of perfect

competition in both product and factor markets, in addition to the

assumption about the flexibility of prices. These shortcomings has been

eliminated by Enthoven for his modified theory does not rely on Keynes-

Hansen's basic assumption, hence it becomes possible within this modified

framework to investigate the speed of adjustment from market to market.

As we indicated earlier a major weakness of both approaches is that they

do not provide us with a criterion which can be utilized for the pre-

diction of future excess demand. We shall now look at a popular theory

of inflation that attempts to describe the conditions that lead to

partial overall excess demand.

CAUSAL EXPLANATION OF INFLATION : THE STRUCTURAL DOCTRINE

At the end of World War II, it was recognised by many

Third World economists (especially Latin American economists) that the
                                  /were
existing theories of inflation/inappropriate in explaining with rigor
the inflationary process that was evident in their economies. A
consequence of this was an elaboration of heterodox ideas with respect
to conventional theories which were monetary. A direct outcome of this
debate was the structuralists theory of inflation and the first major
                                                    [12]
exposition of the theory was given by O. Sunkel.

        Because of the critical role played by the export sectors
in developing economices these economists felt that substantial short
falls in export earnings may precipitate compensatory credit expansion
policies by government. However, because of the structural imbalances
between the sectors within such economies such policies can only lead to
price inflation. Obviously, this is not the case for developed economics
for there, a growth in income need not lead to an inflationary situation.

        In order to clarify the structuralist view on the causes
of inflation it becomes necessary for us to investigate the paths of
growth that is open to an economy that is heavily dependent on export
earnings for the propulsion of its economic development. The first path
that is open to such an economy is to tie its rate of economic growth to
the fluctuations of exports and export generated demand. It is then felt
that the most appropriate policy that can be pursued using this approach
is the traditional monetary policy. It is obvious, however, that the
major shortcoming entailed by following such an approach is that the nexus
of dependence between exports and the particular economy's growth re-
mains intact. In such a case the particular economy becomes very suscep-
tible to the vicissitude of the international economy and its economic

development is subordinated to the tempo and fluctuation of exports.

In the second approach the underdeveloped economy can choose
to pursue a policy which makes the rate of growth of its output partially
independent of the growth of exports. The mechanism by means of which
this is made possible is the expansion of credit that compensates for the
decline in aggregate demand which arisies as a consequence of a   fall
in exports. A major shortcoming of this approach however, is that it
sacrifices monetary stability and aggregate external disequilibrum in
order to maintain intact the structural defects in the economy and   so to
break the link between fluctuations in export earnings.

· Evidently, the switch to financing economic development by
means of credit during a period of decline in exports   comes as a
consequence of the structural inadequacies of the economic system and the
major inadequacy is a shortage of savings.

The high propensity to consume in most developing economies
ensures that any surplus of foreign exchange acquired during periods of
exports booms does not go towards savings, thus during periods of slump
the government usually resort to credit in order to maintain its invest-
ments at the highest level attained during the export boom. In such a
situation credit expansion compensates both for the decline in demand
due to the fall in exports and the fall in savings. Low savings coe-
fficient in turn can be attributed to two factors, firstly, it comes
about by shortcomings in the social structure, that is, the average per
capita income is low, the income distribution is regressive and the
prevailing patterns of consumption of the upper classes are unfavourable;
and secondly, it may be due to the structure of production and imports.
In the latter case the structure of the economy is unable to supply it-
self with an adequate supply of capital goods, in fact, a domestic

capital producing sector may most likely be non existent.

This existing situation means that the marginal increase in foreign exchange acquired during a down-swing in exports is mainly absorbed by increases in the purchasing of raw material and fuel imports which are essential for the smooth running of the manufacturing sector.

Now if a policy of compensatory credit financing is pursued within such an economy, we can identify, three independent price rises, and these in turn usually leads to a redistribution of income in favour of the well-to-do classes of society.

First, there is a price increase which is brought about by the policies of import substitution pursued by government in order to restore an existing external disequilibrium. However, as a result of the policies being pursued in such a case higher import and output prices are likely to prevail.

Secondly, a general increase in the price level can be initiated by the high price of agricultural products and this is due in the main to drastic falls in productivity, induced by an antiquated land tenure system, in addition to higher input prices caused by the higher costs of imported capital goods, fertilizers, etc. In many cases the increase in the price of agricultural products is initiated by very high wage rates paid to workers in other sectors of the economy, that is , because of the demonstration effect workers in agriculture may demand higher wages without a corresponding increase in their productivity.

The third factor that may be responsible for the rise in prices, is an increase in the rates of taxes and duties. The purpose of such increases will then be to channel surplus import demand into the domestic market thus influencing aggregate consumption because of the nature of the

economy. Thenet effect of all these factors then, that is, the increase in prices and compensatory increase in wages and salaries, is a substantial increase in the overall price level.

One may then ask what is the role of monetary policy is such a situation. In the context of structural inflation the role of monetary policy cannot be any other than passive, simply because inflation came about as a result of an inadequate or unsuccessful policy of rectifying the structural flaws in the economy. The most likely solution to the problem of structural inflation in an economy such as Jamaica necessitates a great deal of short term sacrifices.

As such these sacrifices entails programme which have as their objective continuous changes in the economic structure and this means not only consumption and production but also social. In such a context, then, any monetary policy initiated by the Government must lead to stability without being a hindrance to economic growth. From the preceding statemtn, it then becomes obvious that the objective of structural change is twofold, firstly, it allows the rate of development to exceed the limit imposed by exports and secondly, it allows the economy to utilize its resources fully without being adversely affected by the international economy.

SUMMARY

From the preceding analysis we see that structural change can only be initiated if greater emphasis is placed on savings creation. In cases where the proportion of savings is high, then most likely than not there will be a high volume of foreign exchange as a consequence of booms exports. Providing that adequate policies of structural of structural transformation is pursued by the Government, then such export earnings can be used during periods of slumps. In such a context

the government can finance its investments by borrowing rather than through credit expansion. By definition then the changes in the savings coefficients that must take place entails changes in the structure of production and imports in addition to changes in the social structure.

But this in turn would involve the redistribution of income and a change in the patterns of consumption in conjunction to either the domestic production of capital goods or easy access to capital goods produced outside the economy. Import substitution policies must be planned in advance and executed rationally, with compensating changes in tariff and taxes to prevent higher prices. If either the reducible margin of imports or savings potential is inadequate then resort have to be made to international organizations to eliminate the savings gap.

Finally, the output elasticity of agriculture has to be raised through land reform, mainly by changing the land tenure system, but also through productivity increases that would make it possible to absorb higher input prices.

Let us now proceed to our examination of the evidence of inflation in Jamaica over the period 1959 to 1972.

TRENDS IN THE CONSUMPTION PATTERNS OF JAMAICAN HOUSEHOLDS

As indicated by the figures in   Table I below there has been significant changes in the consumption pattern of Jamaican households since 1939. In this respect figures obtained from the working class budget survey of 1939 indicated that expenditures on food accounted for 52.63% of total household expenditure whereas expenditure on fuel and cleaning, clothin, rent and other expenditure accounted for 7.89%, 10.52%, 18.42% and 10.54% of total Household expenditure respectively.

The cessation of hostilities in 1945 did not seem to have caused significant changes in the aggregate expenditure on foods by Jamaican households, in fact, the proportion of total expenditure allocated to this category decreased marginally from 52.63% in 1939 to 52.09% in 1954 a fall of 0.54%. However, in the case of clothing and rent there occured significant decreases in the consumption of those items. In conjunction to the above changes, a rapid increase was also perceived in the expenditure on miscellaneous items purchased by the sample of Households chosen in the 1954 Budget Survey.

The significant changes in the consumption patterns of Jamaican Households that did occur between the period 1939 and 1954 can be attributed to two major factors. Firstly, it may have been due to the accumulation of purchasing power of Jamaican households over the war years. Thus at the end of the war the increased purchasing power of Jamaicans allowed then to purchase increased quantities and different varieties of goods and services. Secondly, the increase in the consumption of certain items was also encouraged by the greater availability of new commodities brought about by the switching of the productive capacity of the metropolitan economics from war production to the production of consumer goods both for their home markets and for exports.

The resumption of hostilities during the Korean War had an adverse effect on world prices for this conflict again caused a shift in the productive capacity of the developed economies to the production of supplies for the war effort. Be as it may by 1960 there occurred a significant fall in the proportion of Household expenditure that Jamaica allocated to food. This tendency was also evident in the consumption of fuel and cleaning but there was a marginal increase in the

proportion of household expenditure that was allocated to clothing and
rent.

T A B L E   I

SHARES OR VARIOUS COMMODITY GROUPS IN JAMAICA HOUSEHOLD BUDGETS

1939-1965   KINGSTON

ITEMS \ YEARS	1939	1954	1958	1965
Food & Drink	52.63	52.09	48.46	47.55
Fuel & Cleaning	7.89	7.59	5.97	3.82
Clothing	10.52	6.96	9.70	8.81
Rent	18.42	12.20	12.72	12.36
All Others	10.54	20.16	23.14	27.46
TOTAL	100.00	100.00	100.00	100.00

Note: Up to 1958 Household Budget Surveys were undertaken for
Kingston alone. Because of this we did not construct a
table showing expenditure shares in other parts of
Jamaica.

Several reasons had been adduced so far the fall in the expen-
diture on the above commodities between 1954 and 1960, the most interest-
ing of these being the availability of imported foodstuff and an in-
crease usuage of food preserving facilities. To many economists this
major shift from the consumption of necessities such   as food and cloth-
ing to luxuries such as foreign travel is not unexpected for over a
century ago a German economist by the name of Ernst Engel in a study
of Belgium working class households postulated and tested the hypothesis
that working class households tend to consume less necessities and more
luxuries as their real incomes increase. It is this hypothesis that we
now call Engel's law. Incidentally, various tests as to the validity
of various functional forms of the Engel curve has been undertaken by

Dr. Taylor, the speaker and many other economists in the case of Jamaica.

In the period after 1960, the Jamaican economy experienced rapid economic growth   and a concommitant of this was a rapid increase in the share in net factor incomes that accrued to Jamaican households. This increase is net factor incomes (mainly wages and salaries) that went to households, caused further reculocation of expenditures in the budget of most households. In fact, these changes were very pronounced in the Household Budget Survey of 1964.

In order to investigate the movements in domestic consumer prices both inter-temporarally and spatially we decided to utilise the existing data on con sumer price indices as published by the Department of Statistics. These indices pertained to both Rural and Urban Jamaica. Initially we thought of using annual data in this exercise, however, because we felt that a high degree of aggregation bias is likely to exist in annual data we resorted to the use of the quarterly data series.

Our analysis was then undertaken over the two time periods which we felt would capture most adequately the significant changes in prices that had occured both in the pre 1967 and post 1967 devaluation period. The first period extends from the 1st quarter 1959 to the 4th quarter 1967 and then to the 4th quarter 1972. The next step in our analysis was to calculate growth rates for each of the major commodity groupings included in the consumer price index using both the linear and geometric trend approach. The results obtained are given in Table A*.

/the

As indicated by the figures given in/Table the rate of growth of All Item Price Index for Kingston over the period 1st quarter 1959 to the 4th quarter 1972 was much more rapid than was expected averaging

* See Appendix A

0.97 per cent per quarter. That this rapid increase was not due to an
increase in the wage rates by aggressive trade union bargaining is
evident from the fact that the rate of growth of the wage index was
significantly lower than that of the All Item Urban Index being 0.74
per cent per quarter. This is shown on Table A.

While it is felt in some quarters that the rapid increase in
prices in an inflationary situation is dampened by an increase in imports,
this does not seem to be the case in Jamaica, instead we feel that the
rapid increase in the rate of imports as indicated by a growth rate in
the quarterly import index of 0.98 may have been responsible for a
large proportion of the domestic price increases.

Turning now to the components of the All Item price index
in the Urban Area (KMA) we see that there was a great deal of variations
in those components. In this context it is interesting to note that the
rate of growth per quarter of the various components of the All Item
Index were as follows:-

Food & Drink	0.97%
Housing	0.92%
Household Furnishing	0.50%
Clothing	0.77%
Personal Expenses	1.37%
Transportation	1.97%

Looking at the coefficients of variation the greatest fluctuation seem
to have occured in clothing (.019) followed by Housing (.015), food
(.014) and fuel (0.14) respectively).

In respect of the subperiod analysis of the Urban Price
Index, our estimates of growth rates indicated that the prices of all
of the components of the All Item Index grow at a much rapid rate for
the period 4th quarter 1967 to 4th quarter 1972 as compared to the

growth of prices for the period 1st quarter 1959 to 3rd quarter 1967.

In this context we see that while the price of food and drink in Kingston rose by only 0.57% per quarter between 1st quarter 1959 and 3rd quarter 1967, the growth rate more than doubled between the 4th quarter of 1967 and the 4th quarter of 1972. In the later period the growth rate of food increased by approximately 1.95% per quarter. This tendency towards a two to fourfold increase in the rate of growth of prices as between the both periods was also evident in the case of Fuel and Housing. In the case of Personal Expenses and Clothing the increases were not as significant varying from 1.25% to 1.32% and .55% to 100% respectively.

A notable exception to this pattern however, was the price of household furnishing whose growth rate actually fell from 1.60% in the first period to 0.85% in the past 1967 period.

To a large extent the results obtained for food, fuel and Housing was not unexpected seeing that a high proportion of these commodities were imported and Jamaica had changed her foreign exchange rates by the devaluation of 1967. The most plausible explanation for the trend in Household Furnishing seem to be the fact that the various governments of Jamaica had been pursuing vigorous policies of industrialization since the early 1950's, and it was precisely industries such as those producing household furnishings which were mainly nurtured. The net effect of these policies then seemed be an increase in the supply of those commodities on the domestic market and a subsequent lowering of prices.

TRENDS IN RURAL PRICES

The pattern of high rates of growth for food and clothing that was evident in Kingston also seemed to have persisted in Rural Areas. This is shown by the figures on Table A*. In this context, it is interesting to note that while the retail price index for food and fuel in Kingston area grew at the rate of 0.98% and 0.97%, for Rural areas the rates of growth were 1.77% and 0.92% respectively. One can very well understand the rapid rate of growth in the prices of fuel in Rural areas, in that it could have been due to rapid increase in the cost of transportation. However, in the case of food we felt inasmuch as Jamaica was

predominantly agricultural a large proportion of households would supply
themselves with a large part of the food they consume. In such a case the
impact of any increases in the prices of imported food items ought not
be felt by these households. That this was not the case seem to indicate
that the Rural consumer in Jamaica had just as sophisticated a taste
pattern as his Urban counterpart.

Looking at the other components of the All Item Rural price
index we see that the rate of growth of clothing was 0.90% as compared
to 0.77% in the Kingston Area. For housing and household furnishing the
growth rates were 0.71 and 0.65 respectively. In fact what we see is
that for almost all commodity groups, except fuel and personal expenses,
the rural growth rates were higher than those in Kingston. In the case
of the All Item Rural index the rate of growth was (by definition) also
higher than in Kingston being 1.04% per month as compared to 0.97% in
the latter location.

If we look at the various coefficients of variation it will
be observed that the commodity group "fuel" experienced the greatest fluctua-
tion being followed by "clothing" and "personal" expenses both having coeffi-
cients of variation of .0145. An examination of the coefficient of
variation for the different commodities over the subperiods again indicated
that the prices of non-durables such as food were rather more stable than
those of durables for example, housing.

Comparing the variations in all commodity grouping over the
period of analysis we can only conclude that their persistent variation
may be nothing more than a reflection of the inherent instability of the
Jamaican economis structure and social system. In terms of the intra-
period growth rates our calculations indicated that, the rates of growth
for the All Item price index and its components were consistently lower

in the pre 1967 devaluation period. Thus we see that while for the
period 1st quarter 1959 to 3rd quarter 1967, the rates, of growth of
food, fuel, clothing, housing and household furnishing were .014, .002,
.016, .017, and .008 respectively, in the period 4th quarter 1967 to
4th quarter 1972, the rates of growth were 2.03, 1.77, 0.81, 1.19,1.74
and 1.28 respectively.

So far our analysis of the trends in consumer prices in
Jamaica was based on data obtained from the various household budget
surveys undertaken by the Department of Statistics. To a large extent
the weight used and hence the results obtained were largely determined
by the prices of the various commodities which were included in the
representative "basket of goods" selected by the Department of Statistics
as being representative of the items chosen by an average Jamaican
household.

An apparent shortcoming of this approach stems from the fact
that in Jamaica, the practice has been to select the representative
household, from the lower income strata of the Jamaica society. To all
intent this practice may had been valid in the pre-1950 period when in-
comes in the Jamaican society was more evenly distributed and people's
tastes were not as sophisticated as it was over our period of analysis.
Of course the argument is usually put forth that in as much as house-
holds of the lower income groups forms the bulk of consumers in Jamaica,
any index derived from commodities purchased by these households must be
truly representative. There is some merit in this argument, but the
major factor that mitigates against its wholesale acceptance is the
fact that this type of consumer (lower income) may indulge in forms of
expenditure which may be mainly associated woth people of higher income

groups. To the extent that the latter type of consumer do not provide
information on this form of expenditure to the enumerator a particular
type of commodity may be given a very low weight in the constructed
price index.

Thus a major limitation of the consumer price indices seems to
be in its exemption of certain categories of consumers notably, consumers
of high income groups. Of course a possible solution to the problem
lies in the inclusion of middle and upper income households in the in-
dices. However, the undertaking of such an exercise is fairly expensive
as it may necessitate the inclusion of large number of households in
the sample chosen. An additional factor that is likely to exerbate the
problem is the fact that higher income households are often reluctant
to provide information to enumerators on their income and expenditure.

A possible solution to the problems enumerated above is to
attach certain income tax concessions and/or penalties to persons who
provide/or do not provide the relevant information to the Department of
Statistics.

THE ACTUAL & EXPECTED RATES OF INFLATION

Notwithstanding the apparent shortcoming of both Rural
and Urban consumer price indices we utilised them for the computation
of actual and expected rates of inflation over the period January 1,
1959 to December 31, 1972.

Before applying the various models to the data, it may
be wise to help the readers understanding by defining the terms " high
prices and the rate of inflation" As used in this paper the term " high
prices" simply means the highest level of prices that was attained at
some given point in time. On the other hand the term "rate of inflation"
indicates a sustained increase in the general level of prices. From

our brief definition of these two concepts, it is easy to see that a / rate of high price level is analgous to a stock concept whereas/inflation is akin to a flow.

To a large extent the rates of inflation that we estimated were determined by the assumptions made. In the case of the actual rate of inflation, we simply assumed that the rate of price increases in a given period was determined solely by prices in the preceding period. For the calculation of the expected rate of inflation we made the assumption that Jamaican consumers had some notion of what future price increases would be and their ideas about future price increases was derived from their past experiences about price increase.

While the assumptions of the price increase were easily incorporated in the emperical model used in the estimation of the actual rates of inflation this was not the case for the expectational model and the reason for this is easy to see. In the latter model, it is apparent that the expected rate of increase in prices was not an observable variable hence we resorted to the use of a proxy variable introduced into the literature on inflation by an American economist by the name of Cagan.[2]

Cagan in his seminal work on hyper-inflation assumed that the expected rate of change in prices is revised per period of time in proportion to the difference between the actual rate of change in prices and the rate of change that was expected. This relationship between the expected rate of change in prices and actual price he expressed as

$$E_t = (1-e^{-ce})/e^{ce} \sum_{x=0}^{t} (\triangle P/P)_x e^{xce}$$

, $t > 0$ where T the horizon is assumed to be settled in some period in the past, which allows us to assume that the expected rate of increase in price was equal to zero, Ce is interpreted as the coefficient of expectation and is the constraint of proportionality in the basic assumption. Basically, the value of the coefficient of expectation tells us the speed with which expectation adjust to changes in the actual rate of increases in prices.

From this one can infer that the higher the coefficient of expectation the higher is the proportion of current prices considered in the expectation formed by the economic agents. It is customary when

T A B L E   2

EXPECTED RATE OF INCREASE IN PRICES KINGSTON 1959 – 72 JAMAICA COEFFICIENT OF EXPECTATION 1959-70

YEAR	RATE OF CHANGE IN PRICES	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6
		EXPECTED RATE OF CHANGE IN PRICES							
1959	.259	.382	.364	.334	.291	.284	.251	.237	.214
1960	.242	.389	.337	.314	.298	.285	.276	.269	.263
1961	.076	.974	.498	.320	.233	.184	.153	.133	.119
1962	.076	.156	-.027	-.058	-.068	-.072	-.074	-.075	-.075
1963	.151	.547	.332	.254	.218	.197	.185	.176	.171
1964	.043	1.560	.989	.769	.633	.584	.538	.506	.483
1965	-035	.388	.187	.131	.101	.081	.069	.060	.054
1966	.150	.792	.389	.272	.226	.202	.189	.180	.173
1967	.241	1.566	.761	.476	.351	.290	.259	.243	.231
1968	.176	-3.271	-2.366	-1.625	1.117	-.769	-.527	-.355	-.231
1969	.509	6.211	4.461	3.274	2.503	1.984	1.623	1.363	1.173
1970	.315	2.660	1.205	.833	.666	.569	.506	.461	.429
1971	.805	3.470	2.132	1.634	1.377	1.219	1.115	1.042	1.039
1972	.645	3.903	2.067	1.467	1.182	1.021	.919	.851	1.541

forming the expectation to utilise 1/Ce periods, however, in general the coefficient of expectation must not exceed 10 for at that value the expected rate of change in price is equal to the actual rate of change in prices.

Because we feel that prices in the Rural Areas is to a larger extent determined by urban prices our analysis of the rates of inflation was based solely on data from the Urban Price Index. As the results indicate the actual rate of inflation fluctuated widely over the period 1959 to 1972. However, the period between 1960 and 1966 showed a marked decline in the inflationary spiral reaching an all time low of 0.035 points per month for 1965. Our figures also indicated that while there was a sharp increase in the rate of inflation between 1966 and 1967 (from 0.150 to 0.241 points per month) the rate of increase almost halved by 1968. A possible explanation for this series of events was that while there was an instantaneous increase in the general price level brought about by the devaluation of 1967, the importation of goods and services that were purchased before devaluation caused a fall in the price level in 1968. However, by 1969 the full brunt of the impact of the price increases brought about by the devaluation seemed to had been absorbed by the Jamaican economy. The net effect of this being a sharp increase in price level (15.09 points per month) in 1969. In 1970 the rate of inflation fell again, however, by 1971, it rose to an all time high of 0.805 points per month. In 1972 there was a slight fall in the price level from its peak of 0.805 to 0.645 points per month.

/extent

To a large/the fall in the rate of inflation in the post 1968 period may had been due to an increase in the productivity of labour and to the fiscal and monetary initiatives undertaken by the preceding government. The relative impact of these factors were examined in a subsequent section.

So far we had said very little about the expected rates of inflation, looking at the results obtained on Table 12 it is not difficult to see why. As will be observed on Table 12 there existed different values of expected rates of inflation for each of the coefficient of adjustment chosen, hence it was difficult to ascertain which was the most appropriate rate of inflation for the given period. To surmount the problem of determining the optimal rate of inflation we resorted to both economic theory and econometrics.

According to economic theory people move from cash into real assets during periods of rapid inflation, what we did then was to regress the dependent variable real cash balance on the rates of inflation associated with the different coefficients of expectation, we then chose as being optimal, that coefficient of variation (and hence rates of inflation) that gave the highest coefficient determinations or ...

STATISTICAL RESULTS

In order to see the correlation between the expected rate of inflation and real per unit of output we utilized the following fuctional relationship $M/P_o = e^{-a E + b}$

Basically the above equation indicates that the demand for real cash balances per unit of output is a function of the expected rate of change of prices per month. By a further process of lineraization derived by taking log transforms, we obtained the intercept terms 'a' and the slope coefficient 'b' that is, $\log M/P_o = {}^-a E + b$

While we had hoped to utilise an overall monthly model, the unavailability of monthly GNP series caused us to revert to an annual model, furthermore because we felt that the different interpretation of money stock will lead to different results we regressed our three definition of money stock[1] on the expected rates of inflation. The three best results in terms of low standard errors and/R^2 /high were chosen for each variant of money stock and for different values of the adjustment coefficient for real cash balances.

Naturally, in order to investigate whether or not the coefficient of adjustment shifted over time it would be necessary to investigate the movement between the rate of inflation and real cash balances in sub-periods. However, because we had to resort to the use of annual data, the limited number of data points we had our disposal prevented such an approach.

As indicated by our results on Table 3 the first variant of real cash balances when regressed on the various expected rates of inflation did not give a good fit as indicated by the low R^2 and high

T A B L E 3

Results simple regressions of the logarithm of the value of the money stock per unit of output (M/Po) or the expected rate of inflation (E)

Money Stock	Regression Equation			R^2	S_e	D.W.	Elasticity of M/Po with respect to E
(M/P₀) I							
(B- 0.2)	$(M/P_o)_I$	=	2.087 − 0.324 E (.131)	0.582	.109	0.714	+.457
(B =(1.4)	$(M/Po)_I$	=	2.137 − 0.135 E (.073)	0.472	.119	.344	+.499
(B= (1.6)	$(M/Po)_I$	=	2.148 −0.136 E (.063)	0.531	.114	0.514	+.413
(M/Po) II	$(M/Po)_{II}$	=	2.042 − 0.928 E	0.910	.102	1.442	+ 2.337
(B =0.2)							
(B =1.2)	$(M/Po)_{II}$	=	1.967 − 0.359 E (.110)	0.684	.181	1.161	+.751
(B= 1.6)	$(M/Po)_{II}$	=	1.934 − 0.351 E (.145)	0.744	.165	1.425	+.750
(M/Po) III	$(M/Po)_{III}$	=	1.504 − .997 E (.192)	.832	.161	1.747	+ 2.406
(B= 0.2)							
(B-1.2)	$(M/Po)_{III}$	=	1.413 − 0.364 E (.144)	.590	.235	1.190	+ .756
(B= 1.6)	$(M/Po)_{III}$	=	1.239 − 0.322 E (.157)	.582	.236	1.342	+ .721

Mean value of C.E. = 0.2 1.2 1.4 1.6
Expected rate of inflation 1.409   .392   .364   .399

degree of aerial correlation. For example with a coefficient of adjust-ment of 0.2 the value of the coefficient of the explanatory variable E was statistically significant at the 10% level, but when we increase the coefficient of adjustment it led to a further decrease in the explana-tory power of the various equations,   that is   , an increase in the coefficient of adjustment to 1.2 and 1.6 led to a fall in the explanatory power of the equations from 0.531 to 0.472 respectively.

That there existed a poor fit between real cash balance and the expected rate of inflation is not too /un-reasonable when we consider that the coefficient of adjustment that we chose may have been significantly different from the true coe-efficient of expectation, on the other hand the variation may have been due to the fact that there were other variables not included in our model which affected the demand for real cash balances. Naturally the next step in our analysis should have been to investigate whether or not the coefficient of adjustments did shift over time. But because such an exercise entail the use of sub-period analysis and further more because we had used annual data for our analysis the splitting of the data services into two seperate parts given the limited data points would have led to spurious results.

Seeing that the preceding results were unsatisfactory we then proceeded to use our more expansive variant of real cash balance, that is, MS II. The results obtained from fitting this variant of real cash balance on the various expected rates of infaltion were the best. For example, utilising a coefficient of expectation of 0.2 the expected rate of inflation in our estimated equation explain 91% of the variation in the real cash balances.

The high explanatory power of the equation was also evident when larger coefficients of adjustments are utilised, when we increase the coefficient of adjustment from 0.2 to 1.2 and 1.6 then our estimated equation explains 68.4% and 74.4% respectively of the variation in the real cash balances. In the case of our third variant of real balances the use of a coefficient of adjustment of 0.2 also gives a good fit as in-dicated by the high values of R^2 and Durbin Watson 'd' statistics, however,

1. The different variants of money stock were defined as:-
   M1 = Cash with the public + demand deposit; M2 = M1 + Time deposits
   M3 = M2 + Savings deposits.

the explanatory power of the equations fall as the coefficient of adjustment
is increased to 1.2 and 1.6. When the coefficient of adjustment is 1.2
the estimated equation only explain 59.0% of the variation in real cash
balance however when the adjustment coefficient is increased to 1.6 the
explanatory power of the equation correspondingly decreased to 58.2%. So
far what our statistical analysis seem to indicate is that with a coefficient
of adjustment of 0.2 there is a significant shift from cash to real
assets by Jamaican households.

Pursuing this area of analysis we took a detailed look at the
elasticity of demand for real cash balances per unit of output. From our
results on Table we see that for the Jamaican economy over the period
1959 to 1972 the demand for real cash balances per unit of output with
respect to the expected rate of inflation was **inelastic**. Demand was in-
elastic in the sense that a small increase in the expected rate of in-
flation led to a more than proportionate increase in the flight from cash.

The figures on Table 3 also indicated that the elasticity
of demand for real cash balances per unit of output for the best fitting
value MS I was 0.457. It is also interesting to note that for MS II and
MS III mean expected rates of inflation of 1.409 and .399 points per
month gave elasticity of demand for real cash balances per unit of output
of 2.337, .750, 2.406 and .721 respectively. A comparison of the
elasticity of M/P_o III with respect to the expected rate of inflation of
0.2 with those obtained in other countries seems to indicate that our
results /more/ vastly different. In this context we see that while the
elasticity we obtained had a value of 2.406 Brunner and Meltzer in a study
of inflation in South Korean and Brazil also obtained elasticities which
were less than one. A possible explanation for the apparent divergence of
the Jamaican result is the fact that this economy still has a large sub-
sistence section. The elasticities given above really tells that in the
case of MS an increase in the expected rate of inflation from a mean
value of 1.4% per month to 2.8% per month would lead to a fall in the level
of real cash balances by approximately 46%.

Extending this interpretation to M/P_o II we see that an in-
crease in the rate of inflation from .39 to .78% would lead to a decrease
in the level of real reserves from 2.8% to 4.8%. It has been shown by
Cagan that it is possible in a situation of hyper-inflation for there to

a significant shift from holding cash to holding real assets. In such a
condition for the
context the/inflationary spiral   to be self generating is for the
                the
product of/   two parameters 'a' and 'b' to be greater than one (and
here we may recall that 'a' in the coefficient of expectation and 'b'
the coefficient of the expected rate of inflation). Following Cagan we
undertook a test to see whether or not the necessary conditions for hyper-
inflation were satisfied in Jamaica over the period 1959 to 1972. Multi-
plying the coefficients 'a' and 'b' for each of the three equations chosen
as being the best fitting for all the variants of real balance, we see
that in each case the product obtained was less than one. It would seem
then that the necessary conditions for hyper-inflation did not exist in
Jamaica over the period 1959 to 1972.

AGGREGATE SUPPLY & DEMAND FACTORS & THE RATE OF JAMAICAN INFLATION

Budgetary deficits, large wage increases derived by effective
Trade Unions bargaining, external price increases reflected in the cost
of raw materials inputs and food stuffs were all cited as major sources
of inflation; we shall now try to examine the role of each of these
factors.   However, in order to do this as effectively as possible we
shall isolate the major influences on aggregate demand and the response of
aggregate supplies separately. The impact of aggregate demand for
domestic products through the government, private and foreign sectors has
been investigated by Jefferson [4] and Palmer [10] for the period up to 1968 how-
ever such an investigation has not been undertaken for the post 1968
period.   From these studies it is apparent that changes in the Govern-
ment expenditure, in the growth of bank credit and in the volume of
current receipts of export earnings all affect aggregate demand for
domestic products not only directly but through the multipler. However,
the size of the multiplier is largely determined by the leakages from
the new income stream into taxes, savings and imports. Jefferson assumes
that imports was the most important leakage in the Jamaican economy up
to 1968. In this context he estimated the marginal propensity to import,
government investment, exports and personal consumption expenditure to be
0.15, 0.60, 0.45 and 0.25 respectively. Thus his finding seem to in-
dicate that the quantitative and qualitative restrictions of imports and
foreign exchange control imposed by the Jamaican government up to the end

of 1968 was not effective in preventing the leakage overseas.
However, by the end of the 1960s another form of leakage in-
creased in its importance, this was the leakage into government taxes of
all forms. One form of leakage that did not seem to be important over
the period 1959 to 1972 was the leakage into savings and this situation may
had been due to the low levels and mal-distribution of income in Jamaica
over this period. Nevertheless in order to gauge the magnitude of the
various forms of leakages in the Jamaican economy we calculated the marginal
propensities to import, to draw funds in government revenue and to save
that is (1-D) for all sectors of the Jamaican economy over the period
1959 to 1972. The results obtained were given on Table 4 below.

As indicated by our estimates the marginal leakages (1-D) with-
in the Jamaican economy approximated 0.85 which of course meant that the
marginal propensity to spend locally was approximately 0.15.

Our results indicated that for the fourteen years covered by
our analysis, Government finance accounted for approximately 36%, the
banking sector 45% and the foreign sector 48% respectively of estimated
impact on aggregate demand through the three sectors. These values were
indicated on Table 5. To a large extent the inflationary impact of the
foreign sector may be attributed to the influx of foreign capital in the
early 1960s the devaluation of 1967 and the rapid increase in the domestic
price levels of our traditional trading partners, (U.K., U.S.A. and
Canada).

As indicated by the figures on Table 4 government deficit
financing also created a great impact on domestic price levels,
rising from an all time low of 2.21 in 1963 to 14.90 in 1964. However,
by 1971 it had reached an all time high of 70.56. What is also note-
worthy about our results is that it indicated that in association with
an expansion on Government's expenditure there was a corresponding in-
crease in extension of credit by the banking sector.

Miller in a study of Commercial Banks in Jamaica showed that a
substantial share in the loans granted by these banks did not go to the
sectors which could have contributed most to domestic production but to
indigeneous importers. In this context he showed that between 1961 and
1969 approximately 26.2% of total credit granted by these banks

T B B L E 4

.JAMAICA: CHANGES IN GOVERNMENT EXPENDITURES &N TAX RECEIPT CREDIT EXTEN-
TIONS & VOLUNTARY SAVINGS MOBILIZED BY THE BANKS.CURRENT RECEIPT FROM
EXPENDITURE ABROAD & GROSS NATIONAL PRODUCT

1960-1972

YEAR	E	T	BC	S	X	M	Y	1-D
1960	5.8	4.6	9.4	10.6	36.8	17.7	34.2	.96
1961	8.7	8.7	6.4	3.6	12.2	- 4.2	30.9	.26
1962	7.1	4.2	- 4.3	2.4	7.7	8.4	21.5	.70
1963	1.5	2.6	- 6.2	8.3	20.8	1.8	33.3	.38
1964	14.6	12.6	26.8	11.2	14.0	45.6	48.7	1. 53
1965	9.0	12.1	24.0	14.0	19 .2	- .2	48.4	.53
1966	15.9	6.9	9.2	5.8	45. 6	27.4	55.3	.72
1967	17.5	11.9	24.6	11.4	9.7	18.8	52.6	.80
1968	17.5	24.8	1.9	17.2	35 .9	67.8	76.3	1.44
1969	26.5	32.9	52.3	25.4	44.4	42.9	94.5	1.07
1970	49.3	15.8	51.7	15.1	25.5	74.5	99.9	1.05
1971	64.3	28.1	36.2	24.0	63.8	22.0	73.9	1.00
1972	28.4	37.1	94.5	28.3	30.1	33.5	108.2	.91

1 Year	2 Government Finance	3 Bank Credit	4 Blance of Payment	5 Change in Gross National Product
1960	5 . 99	9.15	40.09	34.2
1961	8. 66	6.93	15.11	30.9
1962	7. 59	- 5.49	17.54	21.5
1963	2. 21	- 8.87	24.14	33.3
1964	14. 90	29.50	8.26	48.7
1965	8. 40	25.70	22.61	48.4
1966	17. 46	9.78	48.69	55.3
1967	18. 44	26.88	8.02	52.6
1968	16. 12	- .86	30.01	76.3
1969	25. 24	56.90	44.49	94.5
1970	55. 14	58.08	16.58	99.9
1971	70. 56	38.25	71.07	78.9
1972	26. 72	106.04	29.37	108.2
TOTALS	277. 43	351.99	375.98	777.7
%	(35. 67)	(45.26)	(48.34)	

Source : Figures deviced from Table 2

T A B L E   6

JAMAICA: IMPORTS, EXPORTS & MOVEMENTS IN RESERVE 1959-1972

(JA $ MILLION)

YEAR	IMPORTS Cif	TOTAL EXPORTS	EXPORTS(f.o.b.) DOMESTIC	RE EX-PORTS	BALANCE ON VIS-IBLE TRADE	RESERVES AT END OF YEAR
1959	137. 3	92.2	90.5	1.7	-45.1	62.4
1960	155.0	113.4	111. 6	1.8	-24.8	62.6
1961	150. 8	123.1	121. 3	1.9	-27.7	65.2
1962	159. 2	129.7	124. 5	5.2	-29.5	66.4
1963	161. 0	144.0	140. 4	3.8	-16.8	84.8
1964	206. 6	154.6	151. 2	3.4	-52.0	83.4
1965	206. 4	153.0	149. 8	3.2	-53.4	80.6
1966	233. 8	196.2	193. 6	2.6	-37.6	60.0
1967	252. 6	196.8	194. 2	2.6	-55.8	67.8
1968	320. 4	207.1	203. 5	3.6	-113.3	100.6
1969	363. 3	243.7	238. 0	5.7	-119.6	98.2
1970	437. 8	283.1	277. 7	5.4	-154.7	116.0
1971	459. 7	283.9	276. 4	7.5	-175.8	137.4
1972	493. 2	300.3	292. 6	7.7	-192.9	117.8

Source : Jamaica Department of Statistics

    (i) External _ Trade of Jamaica

    (ii) Balance of Payment Report

    Various Issues

T A B L E 7

JAMAICA: REAL GROSS AGGREGATE & PER CAPITA PRODUCT 1959-72 (JA$ MILLION)

YEAR	Gross National Product at Factor Cost (1967-Price)	Changes in Real Gross National Product	PerCapita Gross Product at Constant 1967 Prices	Changes in Real Per Capita Product %
1959	469. 5	-	.293.7	-
1960	495. 8	5.3	304.5	3.5
1961	509. 4	2.7	311.9	2.4
1962	522. 0	2.4	314.5	.8
1963	540. 3	3.4	318.5	1.2
1964	584. 9	7.6	336.2	5.3
1965	627. 6	6.8	351.0	4.2
1966	646. 7	2.9	352.1	.3
1967	671. 2	3.6	357.7	1.6
1968	699.4	·4.0	378.9	5.6
1969	741. 1	5.6	401.5	5.6
1970	798. 7	7.2	427.3	6.0
1971	836. 3	4.5	439.9	2.9
1972	897. 9	6.9	464.6	5.3

Source: Department of Statistics
          National Income & Product

          Various issues

went to importers, 2.1% to serve government institutions, 6.1% to the
traditional export sectors and 19.1% to the manufacturing sector. To some
extent the pattern of lending of the commercial bank may be due to the
fact that for a substantial part of the period over which our analysis
spans there was no substantial control over the commercial banking system,
in fact as late as 1969 the Bank of Jamaica in its annual report admitted
that "monetary policy was assigned a much more positive and dynamic role
and it (the Bank of Jamaica) sought to guide and direct the banking system
more closely than ever before", in this context it was", .. the first time
the monetary authorities were able to make a few key decisions to sub-
stantially influence the direction of the Economy".

            This is not to say the Bank of Jamaoca did not have the legal
authority to exercise monetary control, however, the existing circumstances
in the Jamaican economy precluded its use. In this context it is also
important to hote that the reserve requirement as entrenched in the statute
creating of the Bank of Jamaica in 1962 was not employed as a counter-
flationary tool.
            Overall then the combined forces of demand given above let to
an inflationary spiral in the Jamaican economy. However, we were not able
to gauge the reaction in response to the rapid increase in aggregate demand
because absence of indices of production. However, from the fragments of in-
formation available presented in Table 6 and 7 it seemed that local pro-
duction was unable to meet the increase demand.

THE VELOCITY OF MONEY AND THE RATE OF INFLATION

            It has been recognised that one of the major factors in-
fluencing the rate of inflation has been the velocity of money. The re-
lationship between these two variables can be simply described as one where-
in any increases in the velocity of money lead to an aceleration in the
rate of inflation and conversely a fall in the money velocity leads to a
fall in the rate of inflation. Implicity in the preceding analysis is the
notion that small increases in price changes will not affect the velocity
of money appreciably. On the other hand, significant changes in the rate
of inflation can lead to significant changes on the money supply and this
can be measured. In a situation of rigid increases in prices, it is rele-
tively unattractive for an individual to hold cash balances vis-a-vis
other forms of assets. However, sany switch from normal to real cash

time. However, assuming, the same situation existed and individual
shifted to goods at the commencement of the year then such goods would be
worth 15% more at the end of the period and in this situation the in-
dividual would not lose anything due to inflation. What we see then is
that under a situation of rising perices people will hedge against signi-
ficant losses in their cash holdings by shifting to   other assets. It
is apparent that there are factors other than those outlined above which
affects money velocity. In this context Friedman indicated that there
exist an inverse relationship between in-come velocity, the expected rate
of inflation and the market interest rate for bonds, the market interest
rates for equities, ratio of non-human to human wealth, the price level
divided by money income, and finally consumers taste.

So far no one has shown whether there is a significant re-
lationship between the velocity of money and the rate of change in prices
in Jamaica. This type of analysis has been undertaken in many countries,
for example Cagan investigated the incidence of hyper-inflation in seven
European Countries after World War I and during World War II. His study
centered on the relationship between the velocity of money and the
expected rate of inflation.   Our aim here will be   to determine
whether there was a high correlation between changes in the expected rate
of inflation and changes in the velocity of money in Jamaica. The period
of analysis is precisely that used in the earlier part of the study.

The evidence as presented in Table 8   indicating that through
the 1960 the velocity of circulation in Jamaica reached a peak in 1952
and then declined is a bit surprising and this is especially so at the
end of the period when there was persistent inflation. In the post 1967
period under a situation of rapid inflation we would expect that the
public would have moved from money into goods, implying a decline in the

1959	384.1	56.2	60.8	100.2	6.8	6.3	3.8
1960	415.0	63.2	65.8	111.8	6.6	6.3	3.7
1961	443.2	59.4	66.2	112.0	7.5	7.0	3.9
1962	463.5	51.8	61.6	112.1	8.9	7.5	5.1
1963	494.4	54.8	70.9	129.6	9.0	7.0	3.8
1964	531.7	61.1	79.7	149.7	8.7	6.7	3.5
1965	575.5	62.7	82.4	162.4	9.2	7.0	3.5
1966	626.6	65.6	89.7	179.5	9.5	7.0	3.5
1967	671.2	71.0	102.0	203.2	9.4	6.9	3.3
1968	738.6	85.1	127.3	245.8	8.7	5.8	3.0
1969	816.0	107.8	162.2	306.0	7.6	5.0	2.7
1970	921.7	116.8	194.7	323.3	7.9	4.7	2.8
1971	987.7	131.4	242.0	424.2	7.2	4.1	2.3
1972	1090.9	158.3	290.0	501.2	6.9	3.8	2.2

Sources : (1) Department of Statistics: <u>Abstract of Statistics</u> , various issues

(2) <u>Bank of Jamaica Report</u>, various issues.

X NUMBERS FOR SELECTED SERIES OF ANNUAL FIGURES, 1959-1972 (1967=100)

:X OF :Y :K II	INDEX OF MONEY STOCK III	INDEX OF REAL OUT-PUT	INDEX OF MONEY STOCK PERUNIT OF OUT-PUT	INDEX OF THE REAL VALUE OF M.S. I PERUNIT OUT-PUT	INDEX OF MONEY STOCK PERUNIT OF OUT-PUT	INDEX OF THE REAL VALUE OF M.S.II PERUNIT OUT-PUT	INDEX OF MONEY STOCK PERUNIT OF OUT-PUT III	INDEX OF REAL VALUE OF M.S.III PER UNIT OUT-PUT
49.3	69.9	113.2	138.4	85.3	101.9	70.5	86.2	
55.0	73.9	120.4	143.8	87.3	104.3	74.4	88.9	
55.1	75.9	110.3	126.8	85.5	98.3	72.6	83.4	
55.2	77.8	93.7	105.5	77.6	87.4	71.1	80.1	
63.8	80.5	95.9	104.8	86.3	94.3	79.2	86.5	
73.7	87.1	98.7	108.6	89.7	98.7	78.8	86.7	
79.9	93.5	94.4	102.9	86.4	94.2	85.4	93.1	
88.3	96.3	95.9	99.0	91.3	94.2	85.4	93.1	
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
121.0	104.2	115.0	108.9	119.6	113.4	116.1	109.9	
150.6	110.4	137.5	124.9	144.0	130.8	136.4	123.9	
159.1	119.0	138.2	119.8	160.4	139.0	133.7	115.9	
208.7	124.6	148.5	125.7	190.4	161.2	140.5	119.0	
246.6	133.8	166.6	137.1	170.6	140.4	148.0	121.8	

the official estimates of GNP in 1967 prices.

/for
demand/money or a rise in the velocity of circulation. In a developing
economy such as Jamaica, the monetization of the subsistence sector could
have accounted for such a decline in velocity. But this does not seem
to be only reason for Jamaica's decline of income velocity.

Another possible reason appears to be a wide spread and in-
creaseing tendency to hoard cash induced by the financial uncertainity
that developed after 1967. The above interpretation seems to be a valid
/that
one when we look at the figures in Table 8 for they show/after 1967 there
was steady fall in the velocity of income. What our analysis implies
then is that after 1967 there was a growth in the precautionary demand
for money (hedging towards financial uncertainity) which prevailed over
any tendency towards a movement into goods (hedging against inflation).
/also
Nevertheless our results/seem to indicate that money illusion remained
strong enough to precluded any development of hyper-inflation. Thus hoard-
ing had a stablizing effect on the monetary situation, that is, it dampen-
ed the effect of a rapidly rising money supply on the price level and money
income. Implicitly the Government of Jamaica increased taxation of house-
holds was an attempt to tap the inflationary threat that was being posed
by the increased monetary hoards.

The figures of Table 9 indicated that between 1959 and 1972
the index of money stock was increased by over 300%, such high rate of in-
crease was also evidenced by indices of money stock II and money stock
III which increased by over 450% and 500% respectively. However, when we
observed the rate of growth of the index of real output we saw that it in-
creased by approximately 150%. The preceding analysis validated our
earlier findings that there had been an acceleration of cash hoarding in
the Jamaican economy between 1959 and 1972.

SUMMARY & CONCLUSION

From our study we were able to identify two major factors
that influenced the rapid increase in prices that occured in Jamaica in
recent years, these being firstly, an all too rapid increase in the price
of imported raw material inputs and foodstuff and secondly, Governments
fiscal and monetary policies.

Since it is the present Government's desire to contain
the high rate of inflation within reasonable limits, say less than 15% per
annum, we feel that it is unlikely to do so without undertaking a compre-
hensive analysis of the factors which influenced the persistent increase
in prices in Jamaica.

In this context while the partial analysis undertaken by
Brewster (1) Hall (4) and Hines (6) had exonerated Trade Unions as major
contributors to inflation in Jamaica, these studies did not investigate
(explicitly, that is) the extent to which price increases had been in-
fluenced by administrative price changes, for example, high mark up on
retailed commodities.

Seeing that Jamaican households only affect the persistent
increases in prices through their expectations as to further price increase,
we feel that Government should immediately undertake an investigation as to
its role and the role of both the foreign and business sectors in the in-
flationary process in Jamaica. It is also crucial for the Government to
examine the trade offs it must make between its objectives of low levels
of unemployment, stable prices, balance of payment equilibrium, rapid and
sustained growth, and greater equality of wealth, income and opportunity,

1. Brewster, H.   Wage price and productivity relations in
                       Jamaica, 1957-1962. Social & Economic Studies,
                       Vol.17, 1968: pp 107-132

2. Cagan, P.   The monetary dynamics of hyper inflation. M.
                       M.M. Friedman (ed). Studies in the Quantity
                       Theory of Money. University of Chicago Press,
                       1956: pp 25-117.

3. Enthoven, A.   Monetary disequilibrum and the dynamics of in-
                       flation Economic Journal, June 1956: p257

4. Jefferson, O.   The post war development of Jamaica. I.S.E.R.,
                       U.W.I., 1972.

5. Hall, M.   An analysis of the determinants of money wage
                       changes in Jamaica. Social & Economic Studies,
                       Vol. 17. 1968: pp 133-146.

6. Hansen, B.   Study in the theory of inflation. London,
                       Allen & Unwin 1955. Chap. VIII.

7. Hines, B.   Wages and price formulation in the Jamaican
                       economy, 1956-1972. Paper prepared for the
                       Government of Jamaica. 1972.

8. Keynes, J. M.   The general theory of employment. London,
                       McMillan & Co., 1936. pp 118-119.

9. Machlup, F.   Another view of cost push and demand pull
                       inflation, 1960.

                       The Review of Economics & Statistics, pp125-
                       139.

10. Palmer, R.   The Jamaican economy Federick Prager, New
                       York, 1968.

11. Schultze, C. L.   Recent inflation in the USA paper, US congress
                       Joint Committee, Study of Employment Growth
                       and Price Levels (1959).

12. Sunkel, O.   The inflacion chilena, un anforque heterodexo
                       El Trimestre Economicc, 25 pp 570-99.

APPENDIX TABLE A

FOOD & DRINK (K.M.A.) — 1st Qr. 1959–4th Qr. 1972

Linear Trend	$77.2491 + 1.0976t$	S. E. $= .9997$
		C. V. $= .0166$
Geometric Trend	$80.7814(1.0098)^t$	S. E. $= 0.8671$
		C. V. $= 0.0144$
		G. R. $= 0.98$

FUEL (K.M.A.) — 1st Qr. 1959–4th Qr. 1972

Linear Trend	$76.6340 + 1.0622t$	S. E. $= 0.9157$
		C. V. $= 0.0158$
Geometric Trend	$79.9045(1.0097)^t$	S. E. $= 0.7951$
		C. V. $= 0.0137$
		G. R. $= 0.97$

HOUSING (K.M.A.) — 1st Qr. –4th Qr. 1972

Linear Trend	$76.2485 + 0.9168t$	S. E. $= 0.8505$
		C. V. $= 0.0151$
Geometric Trend	$77.7742(1.0092)^t$	S. E. $= 0.8116$
		C. V. $= 0.0148$
		G. R. $= 0.92$

HOUSEHOLD FURNISHING (K.M.A.) — 1st Qr. 1959–4th Qr. 1972

Linear Trend	$86.9094 + 0.5162t$	S. E. $= .4313$
		C. V. $= .0075$
Geometric Trend	$87.5921(1.0050)^t$	S. E. $= 0.4158$
		C. V. $= .0072$
		G. R. $= 0.50$

CLOTHING (K.M.A.) — 1st Qr. 1959–4th Qr. 1972

Linear Trend	$79.7751 + 0.8034t$	S. E. $= 1.0591$
		C. V. $= 0.0190$
Geometric Trend	$81.5929(1.0077)^t$	S. E. $= 1.0232$
		C. V. $= 0.0183$
		G. R. $= 0.77$

PERSONAL EXPENSES (K.M.A.) — 1st Qr. 1959–4th Qr. 1972

Linear Trend	$64.4505 + 1.4007t$	S. E. $= 0.5202$
		C. V. $= 0.0090$

Geometric Trend $68.9562(1.0137)^t$ S.E. = 0.3549
C.V. = 0.0061
G.R. = 1.37

ALL ITEMS (K.M.A.) - 1st Qr. 1959-4th Qr.1972
    Linear Trend $76.9881 + 1.0541t$ S.E. = 0.8621
C. V. = 0.0145

    Geometric Trend $80.0794(1.0097)^t$ S.E. = 0.7459
C.V. = 0.0125
G.R. = 0.97

FOOD & DRINK (K.M.A.) - 1st Qr. 1959 -3rd Qr. 1967
    Linear Trend $85.7280 + 0.5423t$ S.E. = 0.4265
C.V. = 0.0132

    Geometric Trend $85.9992(1.0057)^t$ S.E. = 0.4233
C.V. = 0.0131
G.R. = 0.57

FOOD & DRINK (K.M.A.) -4th Qr. 1967-4th Qr. 1972

    Linear Trend $103.7454 + 2.4497t$ S.E. = 0.7389
C.V. = 0.0275

    Geometric Trend $104.9248(1.0195)^t$ S.E. = 0.7994
C.V. = 0.0297
G.R. = 1.95

FUEL (K.M.A.) - 1st Qr. 1959- 3rd Qr. 1967

    Linear Trend $84.3004 + 0.5655t$ S.E. = 0.4046
C.V. = 0.0127

    Geometric Trend $84.4194(1.0061)^t$ S.E. = 0.4253
C.V. = 0.0133
G.R. = 0.61

FUEL (K.M.A.) - 4th Qr. 1967-4th Qr. 1972
    Linear Trend $101.9852 + 2.3748t$ S.E. = 0.4572
C.V. = 0.0182

    Geometric Trend $103.3712(1.0190)^t$ S.E. = 0.4199
C.V. = 0.0167
G.R. = 1.90

HOUSING (K.M.A.) -1st Qr. 1959-3rd Qr. 1967

    Linear Trend $78.2695 + 0.8066t$ S.E. = 1.1884
C.V. = 0.0530

Geometric Trend $77.9172(1.0093)^t$ S.E. = 1.2218
     C.V. = 0.0545
     G.R. = 0.93

HOUSING (K.M.A.) - 4th Qr. 1967 - 4th Qr. 1972

Linear Trend $101.1060 + 1.6155t$ S.E. = 0.2845
     C.V. = 0.0115

Geometric Trend $101.6848(1.0139)^t$ S.E. = 0.3325
     C.V. = 0.0135
     G.R. = 1.39

HOUSEHOLD FURNISHING (K.M.A.) - 1st Qr. 1959-3rd Qr. 196_

Linear Trend $88.7733 + 0.4017t$ S.E. = 0.5299
     C.V. = 0.0115

Geometric Trend $101.6848(1.0139)^t$ S.E. = 0.5525
     C.V. = 0.0135
     G.R. = 1.39

HOUSEHOLD FURNISHING (K.M.A.) -1st Qr. 1959-3rd Qr. 1967

Linear Trend $88.7733 + 0.4017t$ S.E. = 0.5299
     C.V. = 0.0158

Geometric Trend $88.7791(1.0042)^t$ S.E. = 0.5359
     C.V. = 0.0160
     G.R. = 1.60

HOUSEHOLD FURNISHING (K.M.A.) - 4th Qr. 1967 - 4th Qr. 1972

Linear Trend $100.8528 + 0.9423t$ S.E. = 0.3569
     C.V. = 0.0154

Geometric Trend $101.1481(1.0085)^t$ S.E. = 0.3443
     C.V. = .1149
     G.R. = 0.85

CLOTHING (K.M.A.) - 1st Qr. 1959- 3rd Qr. 1967

Linear Trend $82.4085 + 0.6611t$ S.E. = 1.4952
     C.V. = 0.0469

Geometric Trend $83.3004(1.0065)^t$ S.E. = 1.4806
     C.V. = 0.0467
     G.R. = .65

CLOTHING (K.M.A.) - 4th Qr. 1967 -4th Qr. 1972

Linear Trend $98.2203 + 1.7355t$ S.E. = 1.7737
     C.V. = 0.3966

Geometric Trend $99.1251(1.0150)^t$ S.E. = 0.3284
C.V. = .0135
G.R. = 1.00

PERSONAL EXPENSES (K.M.A.) (K.M.A.) - 1st Qr. 1959 - 3rd Qr.1967

Linear Trend $69.0076 + 1.0777t$ S.E. = 0.4122
C.V. = 0159

Geometric Trend $70.0164(1.0125)^t$ S.E. = 4340
C.V. = .0166
G.R. = 1.25

PERSONAL EXPENSES (K.M.A.) -4th Qr. 1967-4th Qr. 1972

Linear Trend $111.9558 + 1.7087t$ S.E. = 0.4870
C.V. = 0.0180

Geometric Trend $112.7445(1.0132)^t$ S.E. = 0.4452
C.V. = 0.0164
G.R. = 1.32

ALL ITEMS (K.M.A.) - 1st Qr. 1959 -3rd Qr. 1967

Linear Trend $84.0025 + 0.5574t$ S.E. = 0.5521
C.V. = 0.0168

Geometric Trend $84.1179(1.0064)^t$ S.E. = 0.5661
C.V. = 0.017_
B.R. = 0.64

ALL ITEMS (K.M.A.) -4th Qr. 1967- 4th Qr. 1972

Linear Trend $103.4982 + 2.2177t$ S.E. = 0.3762
C.V. = 0.0142

Geometric Trend $104.6740(1.0178)^t$ S.E. = 0.3639
C.V. = 0.0138
G.R. = 1.78

R U R A L

FOOD & DRINK (RURAL) - 1st Qr. 1959- 4th Qr. 1972

Linear Trend $70.5182 + 1.2764t$ S.E. = 0.9315
C.V. = 0.0159

Geometric Trend $75.0275(1.0117)^t$ S.E. = 0.7
C.V. = .01
G.R. = 1

FUEL (RURAL) - 1st Qr. 1959-4th Qr. 1972

Linear Trend $\quad\quad 80.1973 + 1.0497t$

S.E. = 1.0830
C.V. = 0.0189

Geometric Trend $\quad 83.5715(1.0092)^t$

S.E. = 0.9593
C.V. = 0.0168
G.R. = 0.92

HOUSING (RURAL) - 1st Qr. 1959-4th Qr. 1972

Linear Trend $\quad\quad 82.1456 + 0.7206t$

S.E. = 0.5059
C.V. = 0.0088

Geometric Trend $\quad 83.3259(1.0071)^t$

S.E. = 0.4980
C.V. = 0.0087
G.R. = 0.71

HOUSING FURNISHING (RURAL) - 1st Qr. 1959-4th Qr. 1972

Linear Trend $\quad\quad 83.1306 + 0.6814t$

S.E. = 0.6100
C.V. = 0.0107

Geometric Trend $\quad 84.5372(1.0065)^t$

S.E. = 0.5587
C.V. = 0.0098
G.R. = 0.65

CLOTHING (RURAL) - 1st Qr. 1959-4th Qr. 1972

Linear Trend $\quad\quad 75.3398 + 0.9508t$

S.E. = 0.9172
C.V. = 0.0161

Geometric Trend $\quad 78.1716(1.0090)^t$

S.E. = 0.8296
C.V. = .0146
G.R. = 0.96

PERSONAL EXPENSES (RURAL) - 1st Qr. 1959- 4th Qr. 1972

Linear Trend $\quad\quad 68.8750 + 1.1372t$

S.E. = 0.8972
C.V. = 0.0163

Geometric Trend $\quad 71.3628(1.0116)^t$

S.E. = 0.8024
C.V. = 0.0146
G.R. = 1.16

ALL ITEMS (RURAL) - 1st Qr. 1959-4th Qr. 1972

Linear Trend $\quad\quad 73.7958 + 1.1107t$

S.E. = 0.8387
C.V. = 0.0149

Geometric Trend $\quad 77.2336(1.0104)^t$

S.E. = 0.6980
C.V. = 0.0124
G.R. = 1.04

FOOD & DRINK (RURAL) - 1st Qr. 1959-3rd Qr. 1967

| Linear Trend | $78.4842 + 0.7577t$ | S.E. = 0.3762 |
| | | C.V. = 0.0142 |

Geometric Trend	$79.0783 (1.0083)^t$	S.E. = 0.3639
		C.V. = 0.0138
		G.R. = 0.83

FOOD & DRINK (RURAL) -4th Qr. 1967- 4th Qr. 1972

| Linear Trend | $103.4173 + 2.5963t$ | S.E. = 0.6049 |
| | | C.V. = 0.0234 |

Geometric Trend	$104.9647 (1.0203)^t$	S.E. = 0.2947
		C.V. = .0092
		G.R. = 2.03

RURAL (RURAL) - 1st Qr. 1959 - 3rd Qr. 1967

| Linear Trend | $90.5466 + 0.3478t$ | S.E. = 0.6049 |
| | | C.V. = 0.0234 |

Geometric Trend	$90.6505(1.0036)^t$	S.E. = 0.5931
		C.V. = 0.0023
		G.R. = 0.36

FUEL (RURAL) - 4th Qr. 1967 - 4th Qr. 1972

| Linear Trend | $107.1878 + 2.2888t$ | S.E. = 0.6835 |
| | | C.V. = 0.0250 |

Geometric Trend	$108.4277(1.0177)^t$	S.E. = 0.6544
		C.V. = 0.0239
		G.R. = 1.77

HOUSING (RURAL) - 1st Qr. 1959- 3rd Qr. 1967

| Linear Trend | $84.1376 + 0.5836t$ | S.E. = 0.4900 |
| | | C.V. = 0.0153 |

Geometric Trend	$84.1755(1.0064)^t$	S.E. = 0.5161
		C.V. = 0.016
		G.R. = 0.64

HOUSING (RURAL) - 4th Qr. 1967-4th Qr. 1972

| Linear Trend | $105.8705 + 0.9267t$ | S.E. = 0.9829 |
| | | C.V. = 0.0406 |

Geometric Trend $\qquad$ $105.9600(1.0081)^t$

S.E. = 1.0000
C.V. = 0.0413
G.R. = 0.81

HOUSEHOLD FURNISHING (RURAL) 1st Qr. 1959- 3rd Qr. 1967

Linear Trend $\qquad$ $87.7590 + 0.3742t$

S.E. = 0.5710
C.V. = 0.0174

Geometric Trend $\qquad$ $87.8359(1.0039)^t$

S.E. = 0.5693
C.V. = 0.0175
G.R. = 0.39

HOUSEHOLD FURNISHING (RURAL) - 4th Qr. 1967-4th Qr. 1972

Linear Trend $\qquad$ $101.2961 + 1.3489t$

S.E. = 0.3042
C.V. = 0.0133

Geometric Trend $\qquad$ $101.8547(1.0117)^t$

S.E. = 0.2630
C.V. = 0.0115
G.R. = 1.17

CLOTHING (RURAL) - 1st Qr. 1959- 3rd Qr. 1967

Linear Trend $\qquad$ $81.1761 + 05822t$

S.E. = 0.2483
C.V. = 0.0083

Geometric Trend $\qquad$ $81.5029(1.0064)^t$

S.E. = 1.5262
C.V. = 0.0082
G.R. = 0.64

CLOTHING (RURAL) - 4th Qr. 1967- 4th Qr. 1972

Linear Trend $\qquad$ $97.7129 + 2.1129t$

S.E. = 1.5262
C.V. = 0.0558

Geometric Trend $\qquad$ $99.3335(1.0174)^t$

S.E. = 1.4654
C.V. = 0.0536
G.R. = 1.74

PERSONAL EXPENSES (RURAL) - 1st. Qr. 1959- Qr. 1967

Linear Trend $\qquad$ $71.7776 + 0.9445t$

S.E. = 1.4774
C.V. = 0.0525

Geometric Trend $\qquad$ $71.7990(1.0112)^t$

S.E. = 1.4860
C.V. = 0.0528
G.R. = 1.2

PERSONAL EXPENSES (RURAL) - 4th Qr. 1967- 4th Qr. 1972

    Linear Trend $105.1307 + 1.5545t$ S.E. = 0.3961
                                                                  C.V. = 0.0164

    Geometric Trend $105.8369(1.0128)^t$ S.E. = 0.3485
                                                                  C.V. = 0.0144
                                                                G.R. = 1.28

ALL ITEMS (RURAL) 1st Qr. 1959 -3rd Qr. 1967

    Linear Trend $80.7533+ 0.6538t$ S.E. = 0.5415
                                                                 C.V. = 0.0183

    Geometric Trend $81.0724(1.0071)^t$ S.E. = 0.5415
                                                                 C.V. = .0183
                                                                G.R. = 0.71

ALL ITEMS (RURAL) - 4th Qr. 1967- 4th Qr. 1972

    Linear Trend $103.1593 + 2.1974t$ S.E. = 0.4275
                                                                  C.V. = 0.0163
    Geometric Trend $104.3350(1.0174)^t$ S.E. = 0.4059
                                                                  C.V. = 0.0154
                                                               G.R. = 1.74

1. IMPORT INDEX -1st Qr. 1959-4th Qr. 1972

    Linear Trend $75.8726 + 0.9817t$ S.E. = 1.2293
                                                                  C.V. = .0184

    Geometric Trend $78.5281(1.0098)^t$ S.E. = 1.1561
                                                                  C.V. = .0121
                                                                G.R. = 0.98

2. EXPORT INDEX - 1st Qr. 1959- 4th Qr. 1972

    Linear Trend $90.4926 + 0.8413t$ S.E. = 1.2407
                                                                  C.V. = 0.0199

    Geometric Trend $92.2448(1.0072)^t$ S.E. = 1.2048
                                                                  C.V. = 0.0193
                                                                G.R. = 0.72

3. WAGE INDEX - 1st Qr. 1959- 4th Qr. 1972

    Linear Trend $113.3953 + 1.0870t$ S.E. = 1.8470
                                                                  C.V. = .0233
    Geometric Trend $115.4833(1.0074)^t$ S.E. = 1.8148
                                                                  C.V. = 0.0229
                                                               G.R. = 0.74

4. GOVERNMENT SALARIES - 1st Qr. 1959- 4th Qr. 19⁻2

Linear Trend	$113.1827 + 1.0836t$	S.E. =	1.8407
		C.V. =	0.0232
Geometric Trend	$115.2648(1.0074)^t$	S.E. =	1.8085
		C.V. =	0.0229
		G.R. =	0.74

5. EMPLOYMENT INDEX - 1st Qr. 1959 - 4th Qr. 1972

Linear Trend	$95.3471 + 0.2124t$	S.E. =	0.8569
		C.V. =	0.0155
Geometric Trend	$95.3175(1.0020)^t$	S.E. =	0.8364
		C.V. =	0.0165
		G.R. =	.20

A P P E N D I X   B

Where Δy = the change on aggregate expenditure resulting
from government finance, bank credit and balance of payments.

Δ E =   the change in goverment expenditures
Δ L =   the change in credit grants,
Δ X =   the change in current receipts from abroad,
   D =   the marginal propensity to spend domestically on the non-
government sector (1-D = total leakages from   y).
Δ T =   the change in tax recipts,
Δ S =   the change in voluntary savings through the banking system, and
Δ M =   the change in current expenditure abroad

$$1-D \quad \frac{\Delta T + \Delta S + \Delta M}{\Delta y}$$

NOTE :   S·E = STANDARD Error

CV = Coefficient of Variation

GR = Growth Rate