

The Inflationary Effect of the Income Redistribution
Process during Inflation
The Cases of Israel and France

Esther Alexander
University of California, Los Angeles (U.C.L.A.),
Los Angeles, California

and

The National Council for Research and Development
(N.C.R.D.), Jerusalem, Israel*

Working Paper #123
April 1978

Presented to the
Western Economic Association (W.E.A.) 53rd Annual Conference
Honolulu, Kona, June 20-26, 1978

*The views expressed in the paper are not necessarily representative of the
position of the N.C.R.D.

The Inflationary Effect of the Income
Redistribution Process during Inflation
An Income Redistribution Theory of Inflation
Accompanied by Recession
by Esther Alexander*

"There are of course, in principle, policies other than aggregate demand management to which we might turn and which are enticing in view of the unpleasant alternatives offered by demand management ... The design of better alternatives is probably the greatest challenge presently confronting those interested in stabilization."

F. Modigliani (See F. Modigliani, 1977)

*I express my gratitude to N. Arnon, N.C.R.D., Jerusalem, Israel, A. Babeau, Universite de Paris X and C.R.E.P., Nanterre, France, Y. Barzilay, General Federation of Workers of Israel, Tel-Aviv, Israel, R. Boyer, C.E.P.R.E.M.A.P., Paris, France, E. Kleiman, Hebrew University, Jerusalem, Israel, the members of the Workshop in Monetary Economics, University of California, Los Angeles, for their valuable comments to the previous version of the paper; to E. Lisle, C.N.R.S., Paris, France for the financial support during my work on the paper in Paris; to J. C. La Force, U.C.L.A., Los Angeles, California, for his support in U.C.L.A., and to my husband, S. Alexander, Hebrew University, Jerusalem, Israel for his clarifying discussions and encouragement to me.

INTRODUCTION

The inflation of recent years raises the questions what are the dynamics which enable inflation and unemployment to develop and exist together, and if there is any way to reduce inflation and unemployment at the same time by the same means. As far as is known to us, there are no satisfactory answers on these questions and current theories run into inconsistencies while confronted with actual data. They run into difficulties in analysing and in forecasting actual facts and developments as well as in designing effective policy measures.

We suggest it happens because accepted theories overlook a powerful economic factor which effects strongly economic developments but does not, or very little, effects economic theory. We suggest furthermore that that factor is the income redistribution process happening during inflation.¹ Current theories consider the aggregates -- thus the aggregate income -- as the decisive factors of the economy and for that reason income --

¹The feeling, that some factor has been overlooked, exists for some time in economics. The outcome is the recent emphasis put on "Expectation as a major decisive economic factor. Expectation in its different forms is designed to solve the inconsistencies of the different theories with the actual facts. The Expectation theory of inflation in its different forms regards inflation as a given process and examines its dynamics after it has already been started no matter for what reason. In that respect beside the attempt to solve inconsistencies our Income Redistribution Theory of inflation is similar to the Expectation theory. More, the inflationary expectation is regarded by the Expectation theory as a phenomenon borne in inflation and which at the same time serves as the main cause for its acceleration. The income redistribution process in our theory plays a similar role but in a less direct way. Our model also implies specific policy consequences. They are also different in many other aspects.

The concept of Expectation is regarded here as it is used in "Economic Outlook," O.E.C.D., Paris, July 1977.

redistribution is not incorporated into them as a major economic variable. It is considered more a moral issue, subjected to value judgement than an economically meaningful process and effected very little pure economic thoughts. We intend to show in the coming chapters that income redistribution plays a major role in unemployment and price level determination.

While no apparent aggregate excess demand exists in the economy, many economists see recent inflation as caused and perpetuated by a frequency of supply shocks (See Modigliani, 1977), which are accomodated by respective monetary growth. As Federal Reserve Chairman A. Burnes points out, "Theoretically the Federal Reserve could thwart the non-monetary pressures that are tending to drive costs and prices higher by providing substantially less monetary growth than would be needed to accomodate these pressures fully." (M. Friedman, "Why Inflation Persists," Newsweek, October 8, 1977). Recent inflation looks as if it had no real demand side at all.

The present paper intends to show, that there is an excess demand side of recent inflation which sustains and accelerates it, and which is not the aggregate demand. An attempt is made in the following chapters to analyze inflation not by the aggregate but by differentiated demand, income and consumption. The disaggregation of the aggregate variables is done according to the income redistribution during inflation. As a result a possible dynamics of inflation accompanied necessarily by recession is obtained. The paper analyses inflation's own dynamics, once it has started.

Income redistribution is presented as a very possible consequence of inflation -- the conditions will be clarified -- which has its own consequences in the change of the price level and unemployment once inflation has brought it about.

In chapter I the way of income redistribution by inflation in the market place is described.

The model is presented in chapter II. In chapter III policy consequences are discussed and policy measures are suggested to stop inflation and recession by the same means at the same time. It is shown too why the current policy measures necessarily enhance inflation as well as recession and bring about the need of additional measures instead of stopping them.

In the appendix actual data is computed to show the income redistribution in Israel and in France during inflationary periods.

I. The Process of Income Redistribution -- A Characteristic of Inflation

1. Single Factor Cost Decreases and Income Redistribution

From the income redistribution point of view, in many theories, inflation is regarded -- beside the redistribution consequences of loss of efficiency -- merely as a levy on money balance holders, which is more a wealth than income redistribution. Very little attention has been paid to income redistribution occurring through the income producing production process. It is even denied. But inflation does redistribute income in the market places through non proportionate distribution of the price increment to the product between the different production factors. Inflation means the rise of prices of the products and there is no law -- economic or otherwise -- which provides the proportionate distribution of that price addition between the cost factors. A priori it can happen accidentally but certainly not necessarily.

Now we can conclude that any time a certain production factor does not get its proportional share of the price increment -- after the higher prices

have been paid for the product and have appeared as additional money income on the receiving side -- its share goes to another factor -- or factors -- in addition to that factor's -- or factors' -- own share. Factors which do not get their proportional share in the price rise are the losers in inflation and factors which get more than their proportional share at the expense of another -- factor -- or factors -- are the gainers in inflation. If the additional money income due to inflationary price rise is not distributed proportionally between the cost factors, according to their existing share in the income, then real income redistribution occurs due to inflation.

For example: If a loan finance is made at a rate of interest less than inflation rate then the financing factor does not get its share in the price rise, it loses, while the borrower who gets that share, too, gains in inflation. The same is true for money wages which go up less than the inflation rate, in which case real wages lose and real profit gains. If raw material prices fall or stay constant, their sellers lose and the final products seller gains in inflation. All the losses and gains are in real terms.

Many times income redistribution is confused with production cost decrease. It is claimed, if only money wages would stop rising with inflation -- or any other factor's cost, (we deal here with the money wages because its rise is the most popular argument for the persistence of inflation) -- inflation would come to a halt. It is not realized that what this claim really implies is, that income redistribution is the factor which stops inflation despite the fact that income redistribution is not a variable in the models on which the argument is based. The relative decrease of money wages in inflation won't change the position of the supply function of their product, just the composition of it. It won't decrease the total cost

because inflation instantly transforms relative decrease in money wages into relative increase of other factors income, like income to the capital or fees of different sellers, which are not less incorporated into the supply function than the wages. There is no reason to assume a priori that one kind of factor's income rise pushes up prices more than other kinds of factor's income rise. A priori the supply curve will rise just as fast in inflation if most of the price addition goes as income to non labor factors as when it goes to labor factors.

What is true for wages is true for other kinds of costs. The only way to lower the supply function -- and the price level through it -- by relative or absolute single cost decrease is to eliminate the gains attributed to the cost decrease. There is no built-in dynamics in inflation itself which can bring this about. On the contrary the dynamics of inflation transform instantly, automatically and necessarily the inflationary losses into inflationary gains and for that reason it prevents by nature the automatic transformation of the losses into price decrease.

It is frequently argued that a certain factor's cost decrease is an incentive for the employer to adjust by increasing production at lower prices. But that incentive works only if the gain expected by that process is larger than the gain attributed to a cost-lag. Such a situation might arise in certain market conditions depending on the shape of the demand function or on new technology, etc., factors which are exogenous to inflation. Inflation does not imply it, mainly because the inflationary consequences of the income redistribution originated in the same inflationary gains. (We will prove that statement in our model.) Only gains attributed to price decrease, and not wage or any other cost-lag as such, can serve

as incentive for price decrease. Gains attributed to wage-lag serves only as incentives for more wage-lags.

Does a single factor cost -- primary products and raw material prices, wages, etc. -- reduction, in real or in money terms, reduce inflation in the real world? There is much evidence to show that this is not the case, and it only results in income redistribution.

Examples: The American farm product's prices did not rise at the farm level during the last years. The money income of the farmers stayed constant during annual inflation of about 7%. But this did not prevent food prices from being the leader in the price rises in the markets. The world market prices of coffee have fallen to a half but in the consumer markets its price still goes up. In many countries, where wages are generally low and wage increases are slow or non-existent, like in some of the Middle Eastern or South American countries, inflations run at the highest rate in the world.

2. The Gainers and the Losers in Inflation

In the previous section we have pointed out inflation's ability to redistribute income. The incomes for the various factors have been treated so far equally. The question is if certain incomes are favored while others are depressed by inflation? In other words: Does inflation by nature redistribute income systematically? Of course the ultimate answer to that question is the data observed in different places and times in that matter. It is still legitimate to ask which are the incomes that are most likely to gain and to lose in inflation, due to inflation's own nature.

The question we ask here is not what factor's income causes prices to rise but what is the effect of continuously rising prices on the different factors' income. The expression frequently used by economists too: "price and wage -- inflation" is not accurate. The counterpart of wage-inflation is "profit inflation" because both are factor remunerations while prices are not. J. M. Keynes uses the expression in that way. (See Keynes 1930). Both can be examined by the effect of the price inflation upon them -- which we intend to do here. We do not intend to inquire here into their effect upon the price level.

Inflation by definition is a process of continuing price rise. It means the continuous appreciation of real goods and services against the depreciation of the money. There is a concensus between the economists that concerning wealth the money holders lose while the owners of real goods and services gain in inflation, and concerning income net debtors gain while net creditors lose. All these because of the above described nature of inflation. (This is the definition of inflation used by A. Alchian in his paper "Inflation and Distribution of Income and Wealth" 1965, and it is the conclusion considering wealth and income redistribution attributed to the nature of an unanticipated inflation.)

Inflation on one hand by nature reduces the real value of the debts together with the depreciation of the money thus creditors lose because there is nothing in inflation itself which on the other hand would raise the interest rate to a level necessary to abolish that loss. Creditors do not lose in inflation despite the decline of the value of the money they lended if the interest rate increases with the rate of the inflation.

But there is no dynamics in inflation which can take care of it this while there is a built-in dynamics to decrease creditor income. Creditors by themselves must find a way to increase the interest rate, inflation by itself won't do it for them. They might or might not be able to do that. It depends on the strength of their socio-economic position, which is totally exogenous to inflation. If they are not strong enough, which is the situation in many cases of government's constant interest rate security holders, they lose, and that loss is attributed to the money nature of the credit and of the interest rate, to the exogenous nature of the interest rate rise to the inflation and to the nature of inflation itself.

What is true for the interest rate is also true for money wages. At the end of the production process factors which get the real goods gain and factors which get money wages lose in inflation, unless they raise the money wages at the rate of the inflation.

The real goods and services receivers or sellers income and/or wealth rises automatically with every price rise. R. J. Gordon points out (see R. J. Gordon, 1977) how instantly the final good's prices rose following the information on the energy cost rise, even before it could effect the actual cost of these goods. All this is different with money wages. There is nothing in the dynamics of inflation which makes the money wages rise instantly and automatically with the price rise -- like it happens in the case of the real goods' and services' owners and/or sellers income. If wage-earners are able or not able to raise wages according to the inflation rate depends on their socio-economic position, the strength of the unions, the actual policy of the unions, which all are totally exogenous to inflation. "The increase in wages that an individual could hope to gain

in any given year through bonuses or upgrading of his job classification, etc., are of little consequences in a double-digit inflation ... He will have to put increasing reliance on his union." (See A. Leijonhufvud, 1975).

Beside the exogenous nature of the money wage rise to inflation, it also takes time. It takes time to negotiate or strike or otherwise achieve wage rise. The time element is crucial in inflation, and the lengthy response of wages creates time lag between wage rise and price rise, while there is no such time lag between the price rise and income rise originated in the ownership of real goods and services. At the very moment of the price rise real wages decrease instantly in any case in respect to their value before the price rise, while real and money income originated in real goods and services rise instantly. It takes a lot of effort on the part of the money wages to overcome that disadvantage originating in inflation's nature.

Only inflation accompanied by growing G.N.P. raises the money wages as part of its process by increased demand for labor,-- it goes together with time lag and downward pressure on the real wages even in this case. In other cases there is nothing in the process of inflation which works for wage-rise except making wage earners want to raise it because of its real value decrease.

Even if we consider the labor force as part of all the real goods and services offered in the market, it has its disadvantages in inflation even in this respect comparatively to many other goods and services. Labor force's supply is inelastic, and it is a non-storable good. Its owners, the workers, can not wait and store it even if they expect higher prices for it in the future. In many cases it is also sold in an auction

market. In these respects labor force resembles agriculture products at the production level which are also for the same reasons very vulnerable to inflation.

Inflation's preferences by nature for evaluation of real goods and services against the devaluation of money, the importance of the time-element in it versus the money nature of the wages, the time-consuming process of the wage rise and also the exogenous nature of the wage rise to inflation makes wage earners -- beside the net creditors -- very likely candidates to lose in inflation.

On the other hand the same nature of the inflation, versus incomes which originate in the ownership of real goods and services, the absence of time-lag between income and price rise, the endogenous nature of that income rise to the price rise makes the owners and/or sellers of real goods and services -- besides the net debtors -- very likely candidates to gain in inflation.

K. Lancaster (see K. Lancaster, 1973) relating to inflation accompanied by increasing demand for labor acknowledges the wage-lag phenomenon: "In the first instance, goods prices will rise with wages in particular not yet effected. Profits will increase. Wages will also rise, but with some time lag."

J. M. Keynes wrote in "A Treatise on Money" (see J. M. Keynes, 1930): "A relatively low level of real wages is necessarily a characteristic of a period of Profit Inflation." He believed that inflation redistributes income systematically and mostly at the expense of the wage earners... "Thus a Profit Inflation is almost certain to bring about more unequal distribution of wealth -- unless its effects are balanced by the direct taxation of the rich."

The expectation theory of inflation denies income redistribution in case of an anticipated inflation on the grounds that in that case factors will incorporate the expected rate of inflation into their future earnings. For that purpose all the factors are considered equal by the expectation theory. They are considered equal in their ability to incorporate the expected rate of inflation into their income regardless of the nature of that income, its relation to inflation's nature and regardless also of the socio-economic strength of the different factors. While that theory allows for the effect of the expectation on income redistribution, it does not allow for the inequality of the different factors in respect to their ability to act according to their expectations.

If the factors were equal in that respect the income redistribution effect of inflation might be offset. But in the real world they are very much unequal. Some of the factors are able to incorporate inflation rate into their income, while others are not, even though they expect inflation to continue just the same. If a factor cannot do anything about it just its expectation won't effect inflation. Large parts of the wage-earners belong to this category; some creditors and also the farmers in the United States beside the fixed income pensioners. Certain corporations might as well belong to it. Certainly there is nothing necessary about being able to act successfully to cancel inflation's adverse effect on any factor's income.

In the Appendix data are provided which show the redistribution of income in favor of non-wage earners in Israel during the inflation of 1968-1974, and in France during the period 1965-1970.

3. The Price and Income Effect on the Demand in Inflation --

We analyze here an ongoing inflation, which along its progress redistributes real income through the differences in the rise of the money income of the different factors. We try to demonstrate the appearance of the real gains and losses and to develop two demand functions, one for the gainers and one for the losers in inflation separately.

Figure A. The Development of the Real Demand Functions of the Gainers (D_e) and of the Losers (D_w) in Inflation

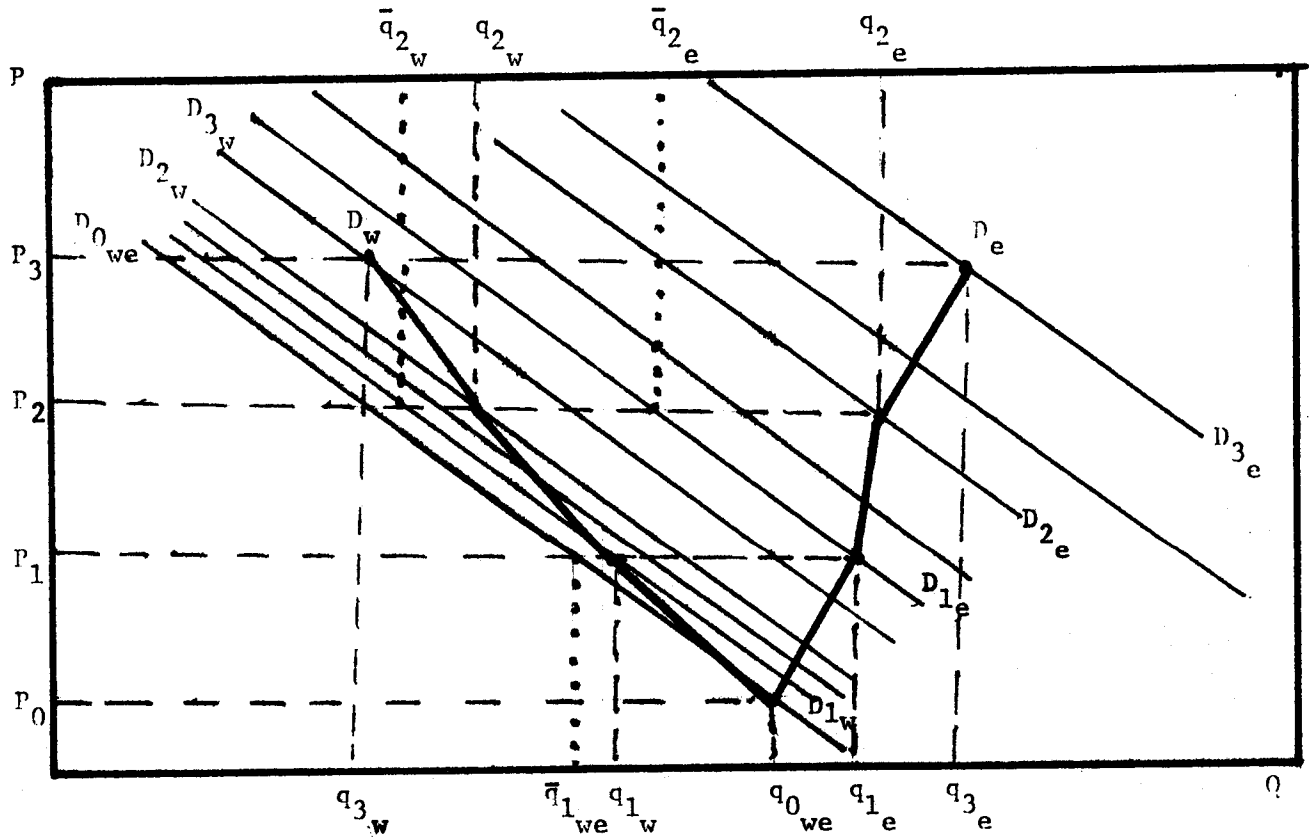


Figure A presents a family of demand curves different from each other by the money income they assume. We project on it an inflation with rising

price level and rising money income. Further we assume two factors, w and e, which at the beginning earn the same money income. At the time 0 the price level is p_0 , w and e are represented by the same demand curve $D_{0_{we}}$, and both are in equilibrium at the demand of $q_{0_{we}}$.

With the progress of the inflation the price level is rising, and also are the money incomes. e's money income is rising faster with the price level than w's. At the time 1 at the price level of p_1 , w moved to the demand curve of D_{1_w} and his demand now is q_{1_w} , while e moved to the demand curve of D_{1_e} and his demand now is q_{1_e} .

With the move of p_0 to p_1 :

Price Effect for w:	$q_{0_{we}} - \bar{q}_{1_{we}}$
Price Effect for e:	$q_{0_{we}} - \bar{q}_{1_{we}}$
Income Effect for w:	$q_{1_w} - \bar{q}_{1_{we}}$
Income Effect for e:	$q_{1_e} - \bar{q}_{1_{we}}$

Real Income Change for w:

$$\begin{aligned}
 & (\text{Income Effect} - \text{Price Effect}) \quad (q_{1_w} - \bar{q}_{1_{we}}) - (q_{0_{we}} - \bar{q}_{1_{we}}) \\
 & = q_{1_w} - q_{0_{we}} \\
 & \quad q_{1_w} < q_{0_{we}}
 \end{aligned}$$

Because the income effect is smaller than the price effect the change in real income is negative: Real loss of w: $-(q_{1_w} - q_{0_{we}}) = q_{0_{we}} - q_{1_w}$

Real Income Change for e:

$$\begin{aligned} & (\text{Income Effect} - \text{Price Effect}) \quad (q_{1_e} - \bar{q}_{1_{we}}) - (q_{0_{we}} - \bar{q}_{1_{we}}) \\ & = q_{1_e} - q_{0_{we}} \\ & \quad q_{1_e} > q_{0_{we}} \end{aligned}$$

Because the income effect is larger than the price effect the change of the real income is positive. Real gain of e: $q_{1_e} - q_{0_{we}}$.

The move of p_1 to the level of p_2 and the move of w to the demand curve D_{2w} and of e to D_{2e} result:

$$\text{Price Effect for } w: \quad (q_{1_w} - \bar{q}_{2_w})$$

$$\text{Price Effect for } e: \quad (q_{1_e} - \bar{q}_{2_e})$$

$$\text{Income Effect for } w: \quad (q_{2_w} - \bar{q}_{2_w})$$

$$\text{Income Effect for } e: \quad (q_{2_e} - \bar{q}_{2_e})$$

$$\text{Real income change for } w: \quad (q_{2_w} - \bar{q}_{2_w}) - (q_{1_w} - \bar{q}_{2_w})$$

$$= q_{2_w} - q_{1_w}$$

$$q_{2_w} < q_{1_w}$$

$$\text{Real loss of } w: \quad q_{1_w} - q_{2_w}$$

$$\text{Real Income Change for } e: \quad (q_{2_e} - \bar{q}_{2_e}) - (q_{1_e} - \bar{q}_{2_e})$$

$$= q_{2_e} - q_{1_e}$$

$$q_{2_e} > q_{1_e}$$

Real Income Gains of e : $q_{2e} - q_{1e}$

Figure A demonstrates that any time the income effect is higher than the price effects real gain occurs. If we connect the points corresponding to that definition we get the demand function for the gainers in inflation (D_e). The characteristic of this demand function is that it rises with the size of the price level.

Similarly, any time the income effect is smaller than the price effect, real loss occurs. If we connect the points corresponding to that definition we get the demand function of the losers in inflation (D_w). The characteristic of that demand function is that it declines with the size of the price level.

The underlying necessary assumptions of this analysis are that inflation is a process of continuous rise in the price level of goods and services and the increments to the products prices are not distributed proportionally -- according to their former share -- between the different factors money income. The real income is redistributed. It happens in a systematic way, which means that gains and losses always happen to the same factors and they do not cancel each other in a certain factor's income.

Figure A assumes growth in the money supply with the rise in the price level but it is not a necessary assumption for the model to get the results. The initial demand function D_0 is not necessarily the last one on the left side. It could be one in the middle. In that case the demand curves to the left of it would assume decreasing money income. Then the redistribution occurs between the group with decreasing money income and the group with sufficiently increasing money income. (For our results D_0 cannot be on the extreme right.)

Because of the real income redistribution process we are justified to disaggregate the aggregate demand function into an upward sloping demand function of the gainers and a downward sloping demand function for the losers in inflation.

The aggregate demand function is not necessarily effected. It might stay constant, rise or decrease according to the relationship between D_w and D_e . The above described process is independent of the final behavior of the aggregate demand.

We have demonstrated that in case our assumptions are proved valid in an economy, there can be substantial demand which increases with the rise of the price level even if the aggregate demand stays constant or declines.

II. A Model of Interaction between Inflation and Income Redistribution

1. Assumptions

The model shows the dynamics of inflation turning into stagflation, how it is sustained and accelerates together with recession through the income redistribution process accompanied to it. It shows the feedback of the income redistribution to the price level, while its increase brought it about in the first place.

The model assumes that income is redistributed during inflation between two groups in the economy. The model does not specify the group of losers and gainers but assumes that the two groups are substantial in the economy, and the national income is distributed between them. Further, it assumes that the redistribution between them is systematic and not accidental.

Marginal propensity to save is assumed to be independent from the change in income.

G.N.P. is constant. The world of the model is a closed economy where the production of final goods is considered as the aim of the activities of all the production factors.² Investment is not introduced explicitly into the model at this stage, and implicitly it is assumed to be a function of the demand for the final products.

Inflation is defined as a process of continuously rising price levels. In the first state it is exogenous to the system.

2. The Income Redistribution Effect (IRE): A Characteristic of Inflation.

One of the main characteristics of inflation is the process of income redistribution during its course. (See Chapter I). It is a widely observed and well documented phenomenon. (See A. Babeau, A. Massou, D. Stroun-Kahn, 1975; M. Allais, 1976). It necessarily means, that some kind of incomes gain real gains and some kind of incomes lose real losses while inflation lasts. According to this notion, it will be true that certain kind of real incomes rise with the rise of the price level and as a result of the rise of the price level, and it will not be true, that the rise of the price level causes a general decrease in real income as is frequently stated. Therefore, it can be said that a continuing rise of the price level is resulting in accumulating growth of certain real incomes on one hand and in accumulating decrease of certain other incomes on the other hand. This double effect of the rise of the price level on real incomes we call the

²In this aspect we accept the Keynesian concept, the inflation is a consumption goods market phenomena.

Income Redistribution Effect of Inflation (IRE). In respect of IRE it makes no difference if aggregate income rises, stays constant or declines - absolutely or relatively - during inflation, it also makes no difference considering IRE what actually started inflation, excess demand, supply shock or the expansion of the money supply.

According to IRE, we divide aggregate income (Y) into two parts:

$$Y = Y_e + Y_w \quad (1)$$

Y_e is defined as the sum of all the real incomes which gain in inflation. Y_w is defined as the sum of all the real incomes which lose in inflation.

$$Y_e = Y_e(P) \quad (2)$$

and by definition of Y_e :

$$\frac{dY_e}{dP} > 0 \quad (3)$$

Since Y_e is an increasing function of the price level (P)

$$Y_w = Y_w(P) \quad (4)$$

and

$$\frac{dY_w}{dP} < 0 \quad (5)$$

Since Y_w is a decreasing function of the price level (P).

The Partial Demand Functions

Demand is considered to be mainly a function of real income. If IRE is big enough and Y behaves in the way described above, there is no justification for use aggregate demand in analyzing inflation. For this

reason we divide aggregate demand (D) according to the redistribution of income during inflation into two partial demands:

$$D = D_e + D_w \quad (6)$$

Partial demand D_e is defined as the sum of the demands of all the people whose real income gains in inflation for all the goods and services in the market (Q). Partial demand D_w is defined as the sum of the demands of all the people whose real income loses in inflation for all the goods and services in the market (Q).

$$D_e = D_e(Y_e(P)) \quad (7)$$

Now, for a price change δP

$$\delta D_e = \frac{dD_e}{dY_e} \delta Y_e = \frac{\partial D_e}{\partial Y_e} \frac{dY_e}{dP} \cdot \delta P \quad (8)$$

and one can assume, as usual that D_e is an increasing function of Y_e , i.e.:

$$\frac{\partial D_e}{\partial Y_e} > 0 \quad (9)$$

Combining the inequalities 3 and 9 and substituting in equation 8 one obtains:

$$\frac{dD_e}{dP} = \frac{\partial D_e}{\partial Y_e} \cdot \frac{dY_e}{dP} > 0 \quad (10)$$

Thus the real demand D_e increases when prices rise. This is demonstrated in Figure 1.

Similarly,

$$D_w = D_w(Y_w(P)) \quad (11)$$

$$\delta D_w = \frac{\partial D_w}{\partial Y_w} \frac{dY_w}{dP} \delta P \quad (12)$$

Also naturally:

$$\frac{\partial D_w}{\partial Y_w} > 0 \quad (13)$$

but, combining 5 and 13 and substituting in equation (12):

$$\frac{dD_w}{dP} = \frac{\partial D_w}{\partial Y_w} \frac{dY_w}{dP} < 0 \quad (14)$$

The real demand D_w decreases with inflation. This is demonstrated in Figure 2.

Graphical Presentation³

Figure 1: Effect of inflation on real demand (D_e) of the group which gains in inflation.

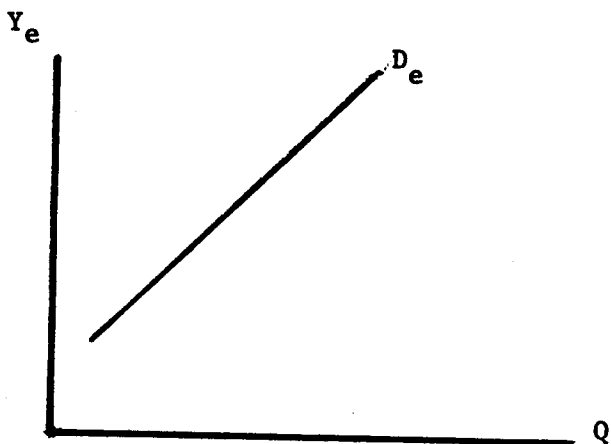


Figure 1a: Dependence of demand (D_e) on real income (Y_e), (equation (9))

Figure 2: Effect of inflation on real demand (D_w) of the group which loses in inflation

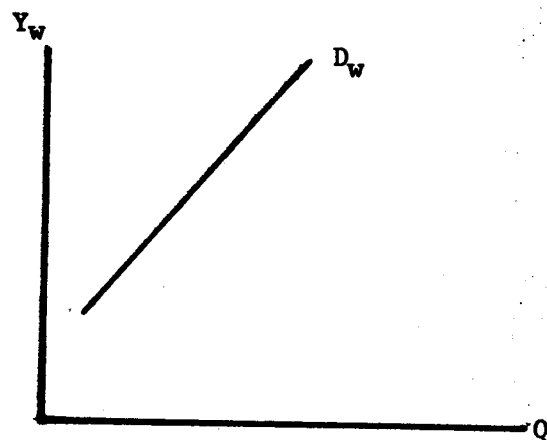


Figure 2a: Dependence of demand (D_w) on real income (Y_w), (equ. (13))

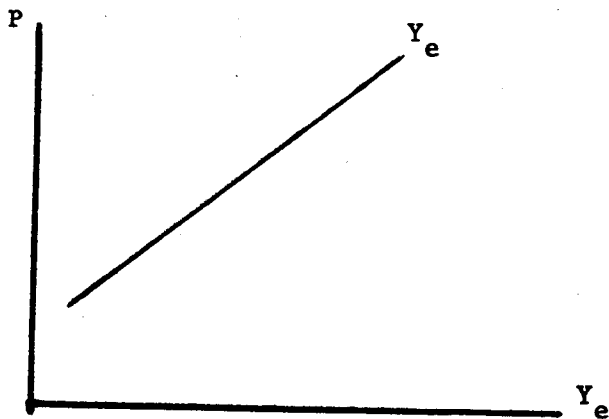


Figure 1b: Dependence of real income (Y_e) on the price level (P), (equ. (3))

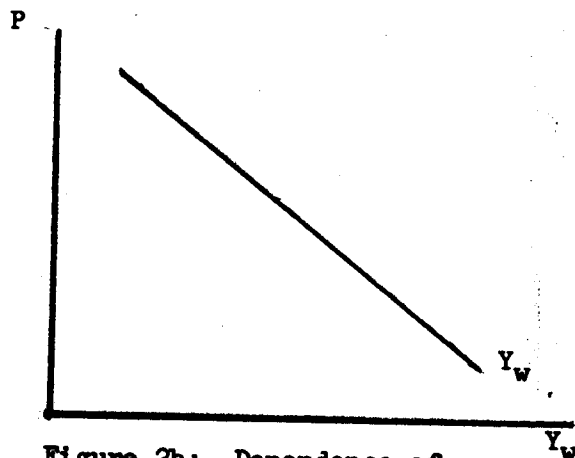


Figure 2b: Dependence of real income (Y_w) on the price level (P) (equ. (5))

³The demand curves here and further in the model do not assume ceteris paribus but changes in real income, as functions of the price level, are incorporated into them -- as described above. (See Figure A).

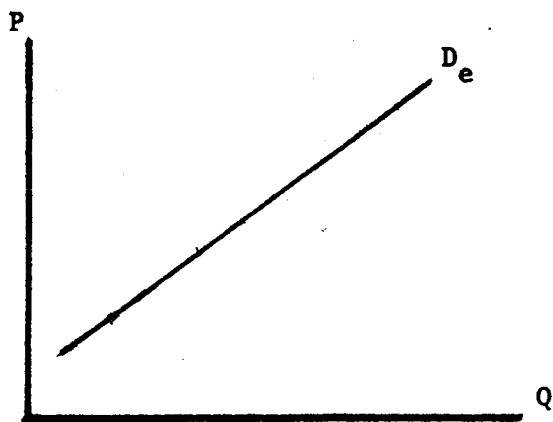


Figure 1c: Effect of the price level (P) on the demand (D_e) (Equ. (10))

Combination of figures 1a and 1b.

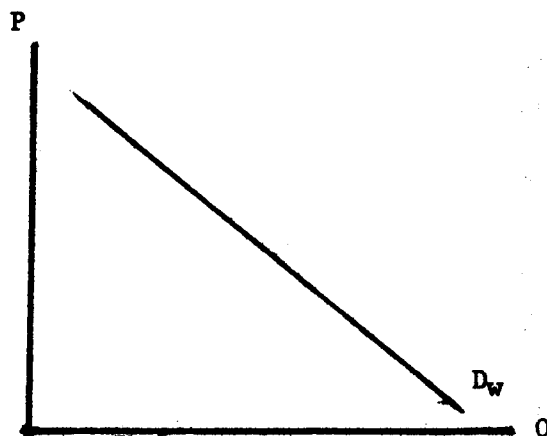


Figure 2c: Effect of the price level (P) on the demand (D_w) (equ. (14))

Combination of figures 2a and 2b.

Obviously, the two inflationary effects on demand tend to cancel in the aggregate demand:

$$\frac{dD}{dP} = \frac{dD_e}{dP} + \frac{dD_w}{dP} \quad (15)$$

and the trend of aggregate demand will depend on the relative magnitude of the two terms (equ. 10 and 14). We shall see however that there are very important systematic effects if the structure of the demand of the two groups is different. We shall discuss this in the next section.

The Differentiated Demand Functions and Appearance of Inflation Accompanied by Recession.

Now we assume that inflation does not redistribute income in a random way. Incomes represented by Y_e are always the same kind of

incomes and incomes represented by Y_w are also the same kind (other) incomes. We also assume that Y_e and Y_w both represent a substantial part of the national income, actually the national income is divided between them. Thus, the earners of Y_e always gain and the earners of Y_w always lose in inflation and both groups control a substantial part of the consumption market. Actually the aggregate consumption is divided between them.

According to these assumptions we divide the market into two parts:

Q_L is defined as the market where most of the consumers are the gainers of the inflation or in other words where most of the spending comes from the kind of incomes which gain real gain in inflation (Y_e). We call it the luxury market.

Q_B is defined as the market where most of the consumers lose in inflation, or in other words where most of the spending comes from the kind of incomes which lose real losses in inflation (Y_w). We call it the basic or wage goods market.

We differentiate the aggregate demand in the economy (D) into its two components according to the distinction between Q_L and Q_B .

Thus:

$$D = D_L + D_B \quad (16)$$

where D_L is the differentiated (total) demand in the luxury market (Q_L) and D_B is the differentiated (total) demand in the basic goods market (Q_B). Similarly, we divide the partial demands of the two income groups:

$$D_w = D_{wL} + D_{wB} \quad (17)$$

$$D_e = D_{eL} + D_{eB} \quad (18)$$

Where the partial demands D_w and D_e are defined as in equations 6, 7 and 11.

The structure of the two demands is illustrated graphically in figures 3 and 4.

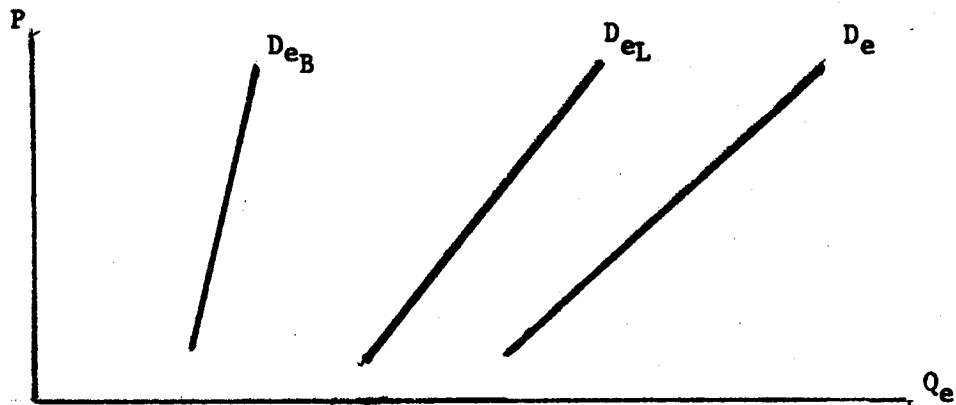


Figure 3

Decomposition of the demand D_e of the group gaining in inflation into its components in the luxury market (D_{eL}) and in the basic goods market (D_{eB}) (equation 18). Q_e represents the total goods and services for which the demand D_e exists. It is composed by the larger part of the luxury market (Q_L) and by the smaller part of the basic goods market (Q_B).

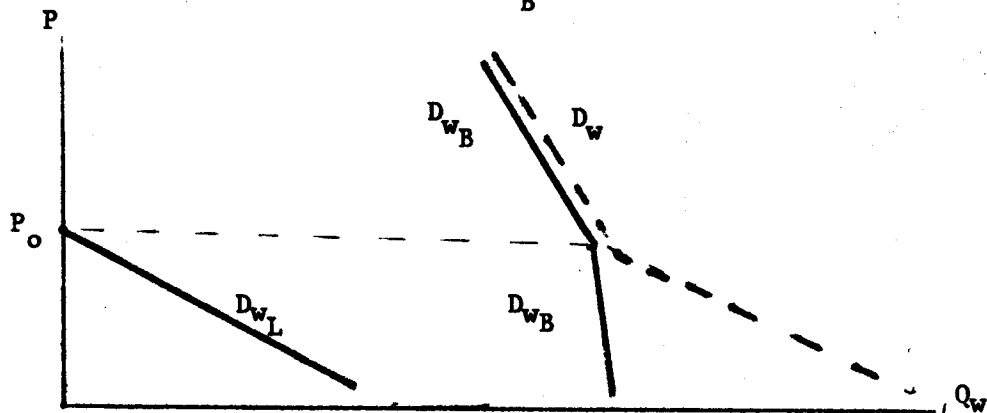


Figure 4

Decomposition of the demand D_w of the group losing in inflation into its components in the luxury market (D_{wL}) and in the basic goods market (D_{wB}) (equation 17). Q_w represents the total goods and services for which D_w exists. It is composed by the larger part of Q_B and the smaller part of Q_L .

We emphasize the asymmetry between the two cases. Since the real income Y_e is rising with prices both D_{eB} and D_{eL} should rise. Since the demand of this group for basic goods (Q_B) is essentially satisfied one expects D_{eB} to rise only slowly. Most of the increase in Y_e is therefore reflected in the increase of the demand for luxury goods D_{eL} . This is shown in Figure 3.

The situation for the group losing in inflation is quite different. Real income (Y_w) is declining. Thus both D_{wL} and D_{wB} should decrease as prices rise. Since the consumption of basic goods is more important, there is, however, a transfer effect in the demand - transferring demand from Q_L to Q_B . This will partially compensate for the effect of the decline in real income (Y_w) on D_{wB} . This compensation is possible until at some price (P_0) D_{wL} vanishes. At this price the group is eliminated from the market for luxury goods. The result is a kink in the demand for basic goods (D_{wB}) at price level P_0 . This is shown in Figure 4.

Finally we can combine these results to obtain the differentiated demand in the two markets.

For the luxury market

$$D_L = D_{wL} + D_{eL} \quad (19)$$

The result, obtained by combining the relevant curves in Figures 3 and 4 is illustrated in Figure 5.

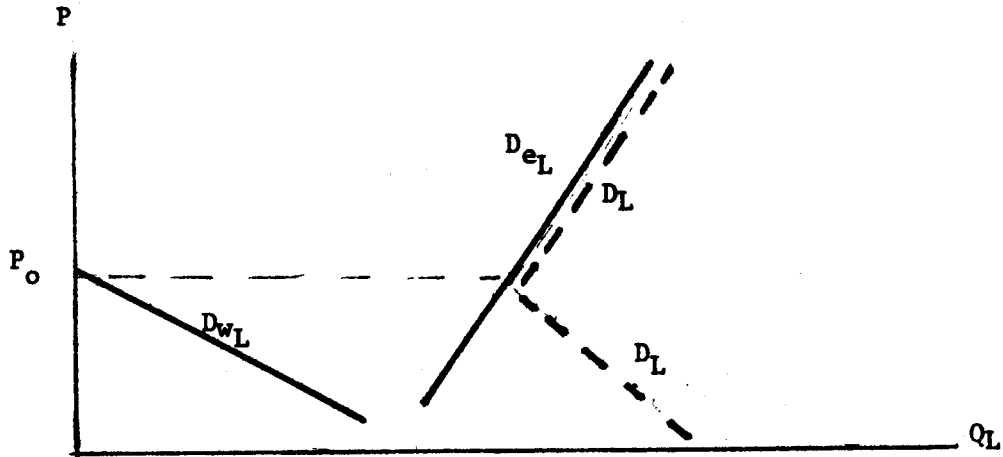


Figure 5

The demand for luxury goods (D_L) resulting from the combination of the demands of the two income groups (D_{wL}, D_{eL}) in this market (equation 19). One notes the kink in D_L at the price level P_0 where D_{wL} vanishes.

Similarly we have for the differentiated demand for basic goods (D_B):

$$D_B = D_{wB} + D_{eB} \quad (20)$$

Again combining the curves in figures 3 and 4 we obtain the result illustrated in figure 6.

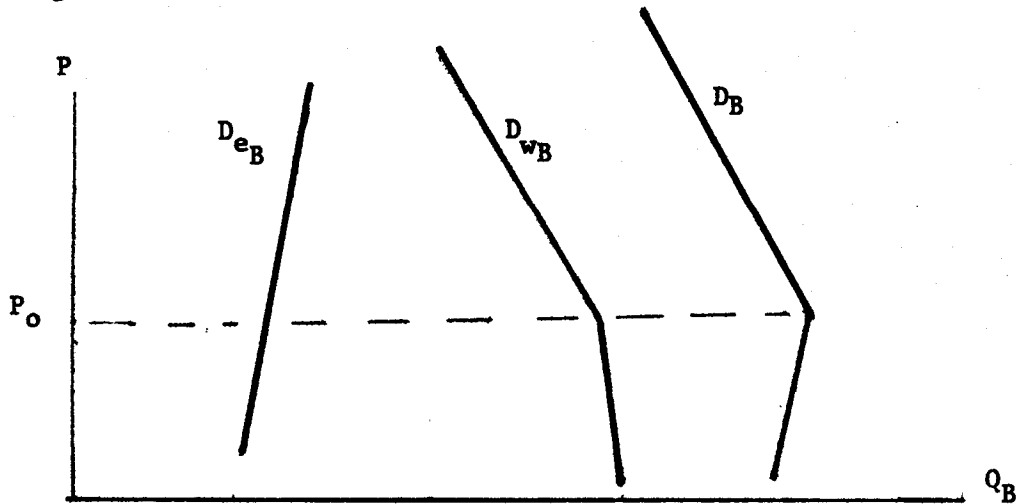
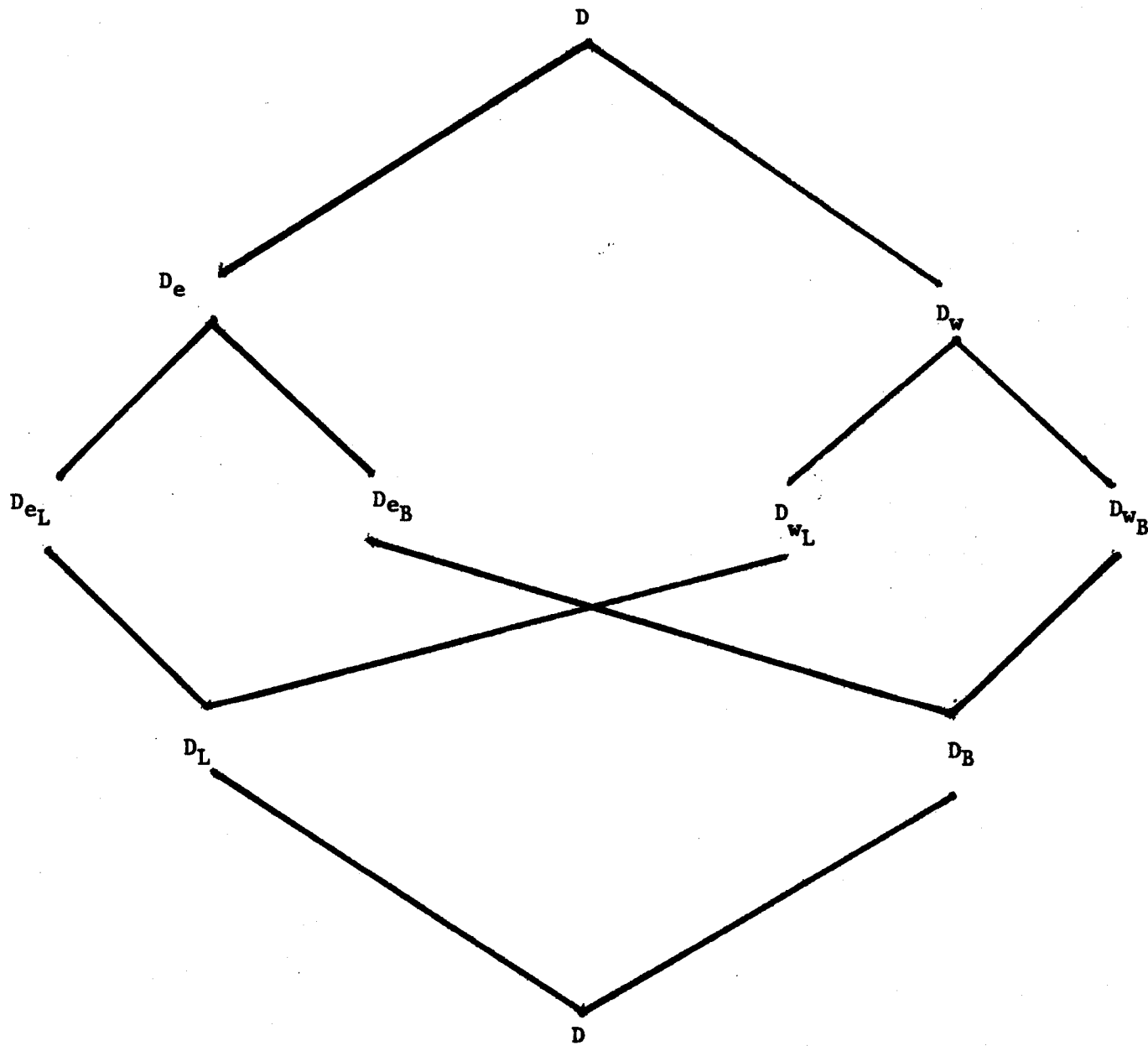


Figure 6

The demand for basic goods (D_B) resulting from the combination of the demands of the two income groups (D_{wB}, D_{eB}) in this market (equation 20). Again there is a kink in D_B reflecting the kink in D_{wB} at price level p_0 . Above this price level the real demand for basic goods falls rapidly as prices rise.

Figure 7: The diaggregation of the aggregate demand to two partial (D_e , D_w) and to two differentiated (D_L , D_B) demands.



Now we assume initial equilibrium in both of the markets followed by an initial rise in the price level. According to the model rising price level -- in the short run while resources remain sticky -- create Differentiated Excess Demand in the luxury market (Q_L), because D_L is an increasing function of the price level, which results in rising prices in that market. The same original rise of the price level also creates demand decline in the basic goods market (Q_B) because D_B is a decreasing function of the price level.

We assume further one general price level in the economy (P) which measures the overall inflation. We consider it as a function of the price developments in Q_L as well as in Q_B .

If the price rise in Q_L is transferred to Q_B causing there stable, non-falling or actually rising (downwardly rigid) prices despite the decreasing demand, then we can conclude that the Differentiated Excess Demand -- and not the aggregate excess demand -- which exists as a result of the income redistribution during inflation in one part of the market will bring about a general rise of the price level.

That new rise of the general price level starts the whole process of income redistribution once again with all its consequences regarding repeated rise of the price level again.

But if it is true that the prices do not fall in Q_B despite the decline of demand because of the dynamics in Q_L and of the possibility of transferring the rising prices to Q_B , then unemployment will be generated in Q_B . Thus as a result of the Income Redistribution Effect of inflation (IRE) we get an inflation which not only logically exists together with recession but necessarily generates and sustains itself as well as recession.

The effect is not quite clear in the first stage of the inflation before prices reach the level of P_0 . Up to that level the losers move out of Q_L , D_{w_L} diminishing effecting D_L downward, in a certain way offsetting the upward effect of D_{e_L} on D_L . They move over to the basic goods market offsetting in a certain way the downward pressure of the price level on D_B up to P_0 . There is a kink in the D_L and D_B curves at P_0 . (See Figures 5, 6) where the effect of D_{w_L} on D_L and D_B stops.

Beyond the point P_0 IRE exercises its full upward effects on prices in the Q_L and downward effects on employment in Q_B and then stagflationary spiral gains momentum.

The double effect of the Differentiated Excess Demand, pulling up prices in Q_L while at least preventing them from falling in Q_B , is the main factor in activating the stagflationary spiral.

J. G. Williamson (See Williamson, 1977) finds positive correlation between inflation, unequal size distribution of income and relatively fast rising wage goods prices. He finds that relationships in every inflationary period of the 20th Century American history: during the period before World War I, between 1914-1920, 1920-1929, 1947-1967, and finally in the recent time between 1965-1972, in these periods he observes rising inflation, deterioration of the size distribution of income and dramatically rising prices in the wage goods market.

He emphasizes that during inflation wage earners are hit twice. First by the income redistribution against them; second by the relatively high wage goods price rise. He concludes that for some reason there is a downward insensitivity of the wage goods prices to the wage-earners demand. Inflation itself is not just insensitive to that demand but seems

to exist only in condition of relatively or absolutely declining wage earners demands while wage goods price rise accelerates it. It seems as if relatively declining wage earnings are resulting in rising relative wage goods prices and thus in acceleration of inflation.

According to J. G. Williamson the opposite is also true. In periods free of inflation of any significance, we find a process of equal size distribution of income and relatively low wage-goods prices which shows as if relatively increasing wage earnings decrease the relative prices of wage goods thus decelerating inflation.

He reportedly does not have an explanation to that phenomenon. We believe our Differentiated Excess Demand Hypothesis explains it, and his findings support this theory.

G. S. Field's (see Fields, 1977) data on income distribution in Brazil and in the United States during periods of economic growth and inflation support Williamson's findings.

Examples for Differentiated Demands: In Israel in the last years of high inflation an ever rising demand for luxury homes and higher price apartments has been observed while there was an excess of supply in development housing. Factories of household appliances like refrigerators and stoves shut down their production lines of the products for the low price mass market and became importers of the same product for the high price luxury market. There were also large surpluses in the textile and agricultural product market while the demand for the services of the expensive travel agencies hit an all-time record. In the United States in 1975 during the crisis in the car industry, luxury cars were sold in unprecedented quantities. (Time, September 12, 1975). The same was

true in Germany in the same year. When Volkswagen suffered from the recession, Mercedes enjoyed a large boom. Nevertheless the prices of the Volkswagen went up. Today in the United States one of the industries which suffers most from lack of demand is the textile industry. (Time, Oct. 3, 1977), which is one of the basic goods in the economy. The prosperity of high price services like expensive dentistry and generally the fast price rise of of services where the cost factor, especially the wage cost factor is small points to the direction of an existing excess demand which pushes up the prices. The fast rise of housing and real estate prices belong in the same category.

3. The Demand-Shift Inflation Feature of the Model with an Income Redistribution Feedback

The accelerating process of stagflation in our model is brought about by a demand shift inflation between two well defined markets linked to a systematic income redistribution process of the inflation. It is a model of demand-shift inflation sustained and accelerated through the feedback of the income redistribution on the price level. This kind of inflation not only can, but necessarily does co-exist with unemployment.

In the literature demand shift inflation is known (see T. F. Dernburs, D. M. McDougall, 1976), as well as the income redistribution process during inflation (see A. Babeau, A. Masson, D. Straussskahn, 1975). But in the literature the demand shift is random between any two products markets and for that reason the process leads nowhere. The income redistribution process, as far as it is systematic, is tied in the literature to insignificant groups in the economic sense like pensioners and mostly social and

not economic effects were attributed to it. The phenomena of demand shift and income redistribution were not linked together before.

Here the result was achieved by linking the income redistribution with demand shift inflation together in a systematic way in a model through disaggregating the aggregate demand. This way the so far overlooked income redistribution and components of the aggregate demand appear as decisive economic factors in the determination of the price level and the level of employment.

Also disaggregation of the aggregate demand is not new in the literature. It has been done by B. Hansen (see B. Hansen, 1951) who disaggregated the aggregate demand by the final goods and production services market. It has been done also by T. F. Dernburg and D. M. McDougall (see T. F. Dernburg and D. M. McDougall, 1976), who disaggregate demand by the goods and labor market. The disaggregation of the aggregate demand by income redistribution during inflation, as far as known by us, was done here first.

4. The Downward Rigidity of Prices Assumption

The downward rigidity of prices in the declining demand-necessities or wage goods-market is important to get the general rise in the price level following the shift in demand. We want to examine its plausibility in the condition of an excess demand-luxury-market existing parallel to the declining demand market.

A. The Common Resources Argument

The production process for both of the markets use the same resources. For that reason the derived demand and prices of the production factors won't be effected by the full impact of the declining demand in the necessities final goods market. The factor prices might or might not rise, they might even fall but not as low as would be implicated by the conditions in the declining demand market only. Thus the necessities market faces a relative or absolute cost rise which makes the prices there unresponsive to the declining demand and downwardly rigid.

It is especially true in the case when a certain resource which serves as production factor in both markets is also a part of the parallel increasing demand consumption market and its price is effected also directly by excess demand. The best example of such a resource is the land and other real estate goods which market prices and rents are increasing faster in most inflation than other items. The fast increase of real estate prices cannot be attributed to wage or any other cost rise, and it must come from rising direct demand (mainly for different kinds of private housing). For that reason real estate prices as production costs are very little influenced by the declining demand in the necessities market but they influence very much the prices there. The same is true for certain service prices, like insurance premiums.

That phenomenon -- rising prices without apparent cost factor -- demonstrates by itself the existence of a demand inflation market and also implies the way of its transfer to the declining demand market in cost inflation form.

We conclude that the unresponsiveness of prices to declining demand is brought about by cost inflation in that market which is originated in the parallel demand inflation market. Without the existence of a parallel prosperity market, with all the markets in the economy depressed, very probable that prices would fall in the face of declining demand.

B. The Rate of Return and the Inelasticity of Wage-Goods Demand Argument

The price rise in the depressed market can be originated -- besides the rising cost -- also in the wish of the producers and other sellers to equalize the rate of return in their market to the higher rate of return in the prosperity market. They want to compensate -- in the short run -- the fall in sales by asking for higher prices. Because of the demand inelasticity of many wage goods that practice might be used in many cases resulting again in downward rigidity of the prices, making them unresponsive to the shift in the demand. (The means to purchase the goods of inelastic demand in the declining demand market when prices rise come from purchasing less luxury goods, as it appears in our model and from dissolving of savings which can be demonstrated in many countries.)

There are today many studies (see Nordhause, 1977) which find that prices are unresponsive to the changes in the demand while they respond fast to the changes in the cost. We attempted to give an explanation to that phenomenon for the case of decreasing demand.

It is understandable why producers who want to keep a constant profit rate respond quickly to the rise of the cost. Which is less understandable why that cost rises in face of declining demand for the final goods. We think institutional and raw-material price explanations are not enough.

We are sure that further inquiry in that field, with our hypothesis of existing parallel prosperity market in mind, will find the market where the prices respond to the increase in the demand and rise regardless of the cost. The explanation of the empirical findings of Nordhouse will be the nature of connection between the two markets.

5. The Stickiness of the Resources in the Short-Run Assumption.

We have used that assumption too to justify the appearance of the demand shift inflation. If the resources would move from one market to another as fast as the prices and/or the rates of return are changing then the supply always would match the demand in every market and the demand shift had no effect on them at all. For small shifts in the demand it would be true also in the short run.

It is an accepted notion in economics today that large shifts in the demand cannot be matched by the same shift of the supply immediately, only in the long run, because the moving of the resources takes time. During that time -- and only during that time -- the increased demand in one market and the decreased demand in the parallel market have their influence on the prices.

According to that notion one can argue -- and it is justified -- that our model of stagflation based on demand shift from the necessities market to the luxury market as a result of income redistribution during inflation is only valid in the short run, and only we wait for longer time then stagflation will disappear by itself, without any action from outside, because the movement of these resources will restore the equilibrium in both markets.

That argument is not true because stagflation is a short-run phenomenon. In the long run the movement of the resources -- and we emphasize that it

does exist in our case -- will be always behind the shift in the demand and its consequences. The income redistribution brought about by the inflation is resulting in the demand shift from the necessities to the luxury goods in the short run. That demand shift rises the price level in the short run and the renewed inflation effects income distribution with its consequences also in the short run. Our model is a continuous interaction between inflation and income redistribution resulting in a stagflationary spiral through shift in the demand. Because the interaction is continuous with all its stages working in the short run, the long run has no place in it.

The question arises, if it is so, what will happen then in the long run? If the system finally will arrive to an equilibrium or it explodes as it is indicated in Figure 5, p. 27. Of course the stagflationary spiral as it is described in our model cannot go on indefinitely. It tells us in the descriptive way, that while the prices are rising, more and more people are priced out from more and more markets and unemployment is growing and total income declines. That development finally must effect the gainers of the inflation turning more and more of them into losers and pushing the whole system into deep depression.

But there is another possibility. As mentioned above resources are moving constantly -- if not fast enough -- from the depressed market to the luxury market reducing in that way the unemployment and also the price rise. The process slow down bringing the economy into an underdeveloped equilibrium with most the consumption and also the production concentrated in the luxury market.

Theoretically it is perfectly possible that a whole economy is working in full employment for only a few percentage of its population. It is the case today in many underdeveloped countries, and it was the case in the 19th century's industrial societies. We have to remember that the affluent society is a fairly new phenomenon after all and its continuous existence is by no means necessary.

The chances to arrive to this situation are of course small. Social forces would prevent it and apparently also the technological state of the developed countries which is more delicate and would break down much before arriving to that state.

But many economists today do think that the stagflation might run out of control and the world economy might suffer another deep depression as a consequence of it.

In any case the staglatory process looks as the adverse process to the creation of the affluent society in all the aspects of the changes in the total production and its distribution.

III. Government and the Income Redistribution Effect of Inflation -- The Policy Consequences of the Model

The policy conclusion implied by our model is that anti-inflationary policy measures should be based on the principle of eliminating the effect of the income redistribution process during inflation. Policy should be designed to prevent inflation from redistributing real income. It could be done only by using Differentiated Demand concepts instead of the aggregates. Economic policy measures designed in that way will fight recession as well.

Government's intervention is necessary, because there is no endogenous factor in inflation which could offset the redistribution of income and bring it back to its original state.

1. The Failure of the Aggregate Demand Management

According to the model the aggregate demand management fails -- as it is observed in many countries -- because the policy measures it implies and exercises like wage restraint, indirect taxes, abolishing subsidies on necessity goods and the likes depress mainly the demands and markets which are anyway depressed by the IRE. They do not -- or very little -- effect downwardly the increasing demand with inflation and its markets, thus leaving the dynamics of accelerating prices intact. The case of wage-restraint policy alone, beside its depression effect it even accelerates inflation by supporting the increasing demand markets with the enlarged gains.

Aggregate demand management policy, based on aggregate concepts, do not discriminate between demands declining and demands growing in inflation. According to these concepts aggregate demand can be reduced no matter what component of it is reduced without altering the consequences. For these reasons the "burdens" implied by fighting inflation is designed regardless if the groups which are affected gain or lose in inflation, and also regardless their share in the national income and consumption.

Thus, frequently happens that the tax required to restrain inflation is paid by groups who anyway pay the "inflation tax" levied by inflation itself. In that way these taxes do not attack the demand which increases with inflation, they mainly exaggregate inflation's own depressive effects without effecting inflation itself. Government facing strong recession pressures reacts in accommodating the tax rises

by increasing the money supply despite the inflation. Thus accelerating inflation and transforming the taxes from being anti-inflationary devices into a cause to the price rise.⁴

If the policy measures of fighting inflation increases instead to decrease the IRE during inflation they strengthen the dynamics of accelerating inflation and recession instead to stop it and they only create needs for new anti-inflationary -- and recessionary -- measures.

2. The Failure of Inflation in Its Role as a Tax

It is observed in many countries that despite government's intention to fight inflation the deficit finance of its budget is continuing from year to year. He can not stop it without decreasing real expenses. On the contrary, we witness cuts in real expenses along the deficit finance of the budget.

It is a strange phenomenon if inflation is considered as a tax which is payed by the whole "public" to the government in order to finance certain real expenses. According to that notion inflation supposed to work as a tax by suppressing the "public's" real income and providing the government with additional real means made free by the public's reduced consumption. That effect supposed to bring about the sequence: deficit finance, inflation, increase in real government expenses, stopping inflation. It is logical but somehow never happens because apparently something goes wrong.

⁴Many times the "mistake" putting the tax burden on the losers is intentional. J. M. Keynes (See J. M. Keynes, 1930) supports this policy in A Treatise on Money. It is done on the ground that they are the majority of the consumers, and on the assumption that their marginal propensity to consume is higher, but their share in the aggregate consumption is not regarded.

But in countries where the majority of the consumers are majority only in a very few markets and they are priced out from most of the markets like in South American or in the Middle East -- these taxes would effect inflation very little.

Logically economists who deny the income redistribution process of inflation cannot regard inflation as a tax because that notion is based on real income redistribution between the public and the government. If it is accepted that inflation does redistribute income in that way there is no reason to assume it does not redistribute it between the different part of the public. But that means that only a certain part of the public pays the "inflation"tax" and not the whole of it. If it is true, then government has to compete with the gainers part of the public for the resources made free by only one -- and another -- part of the public, the losers. There is no certainty that government wins in that competition. If it does not, it cannot increase real expenses despite the deficit, on the contrary it will repeat the budget deficit in an other attempt to achieve its goal. If the consequent inflation does redistribute again real income between the different part of the public that goal won't be achieved but inflation would accelerate.

The Income Redistribution Effect of inflation accelerates inflation besides by its own dynamics as it is shown in our model also by government's reactions to it.

J. M. Keynes was well aware of the role of the income redistribution during inflation in government finance. (See J. M. Keynes, 1930). In A Treatise on Money he suggests the finance of World War I by the English government by taxing away the gains made by businessmen on the wage lag. In his scheme the businessmen play the role of the "inflation's tax," "collectors" for the government. According to Keynes if these gains made on the government induced inflation are not taxed away, government cannot gain anything but renewed inflation in vain.

3. Differentiated Policy Measures -- Fighting Inflation and Recession by the Same Means.

There are many ways through fiscal and monetary policy to activate the principle of offsetting income redistribution's inflationary effects during inflation.

We mention here a few for examples. Money wages should be frequently and fully indexed to the price index of their productions. That kind of indexation is better than the connection to the general cost of living price index because it effects directly the gains made on the wage lags and also helps industries which prices lag after the general price index. We call it industry indexation. The income redistribution effects of the different taxes -- direct and indirect -- should be examined carefully and they should be levied on incomes which gain in inflation and on the markets where these incomes are spent. They should avoid to effect downwardly the depressed market. The income redistribution effect of the government budget should also be examined carefully. It is very easy -- and widely practiced -- to redistribute income through the government budget. During inflation government budget could be used to offset in a large extent the income redistribution effect.

The last tax rebate in the U.S. proved, that if government finance -- even the deficit -- is used in a way of contra -acting the unequal redistribution process of the inflation it is proved to trigger the recovery process without increasing inflation.

In Belgium where wages were indexed fully to the cost of living index enjoyed one of the lowest rates of inflation (11%) in the Western world in 1974 and 1975.

Summary

If the notion that inflation redistributes real income is accepted then it is justified to divide aggregate real income to income which rises and other income which declines in real terms with the rise of the price level. Accordingly we divide aggregate demand to two partial demands originated in incomes which gain inflation and in incomes which lose in inflation, respectively. The first partial demand is an increasing function of the price level while the second partial demand is a decreasing function of it. If we impose these concepts on the consumption market we get two different markets. A market where most of the consumers are the gainers in inflation (luxury market) and another market where most of the consumers are the losers of inflation (basic goods market). The Differentiated Demand of the first market rises with the price level creating excess demand at the present structure of production. The Differentiated Demand of the second market declines with the rise of the price level creating excess supply in this market.

In the first order the price rise in the luxury market and the price decline in the necessity market would cancel each other and the general price level would remain unaffected. But because the stickiness of resources in the short run, and the downward rigidity of prices in Q_B brought about by the double effect of the Differentiated Excess Demand, a second order effect appears and price rise in the luxury market will be transferred to the basic goods market where in the presence of declining demand it causes production curbs and unemployment. The general price level will be effected upward resulting in a renewed round of income redistribution with all its renewed effect on demand and consumption and consequently on the price level and employment.

This way we get inflation and recession at the same time,
accelerating each other necessarily through the process of income
redistribution.

Appendix I

Table 1

National Income, Private Consumption,
Disposable Wages and Saving in the Israeli Economy
1968, 1974

Million IL	1968	1974
<u>A) Wages and National Income</u>		
1. National Income*	11.192	42.184
2. Ammortization*	1.350	6.069
3. Income of Public Sector from Property*	236	1.167
4. Gross private income from economic activity (1+2-3)	12.306	47.086
5. Imputed income from self owned housing*	872	4.315
6. Gross private income from economic activity without imputation of income from self owned housing (4-5)	11.434	42.771
7. Total wages - including a supplementary payments by employer*	6.703	24.325
8. Wages as percentage of gross private income from economic activity, 7 as p.c. of 4	54.5%	51.7%
8a. Wages as percentage of gross private income from economic activity without imputed income from self owned housing. 7 as p.c. of 6.	58.6%	56.9%
9. Total wages	5.130	17.400
10. Supplementary payments by employer 7-9	1.573	6.925
<u>B) Disposable Wages and Private Consumption</u>		
11. Income tax and obligatory loans from wages*, (adjusted to calendar year)	704	3.837
12. Social Security payments from wages*	77	563
13. Disposable wages 9-11-12	4.349	13.000
14. Private consumption*	9.078	32.429
15. Investment in housing*	667	6.365
16. Adjusted private consumption-excluding imputed expenses for self owned housing, including real investment in housing 14-5-+15	8.873	34.479
17. Disposable wages as percentage of adjusted private consumption 13 as p.c. of 16 = the purchasing power ratio of wages	49%	37.7%

	<u>1968</u>	<u>1974</u>
C) Gross Private Profits and Private Consumption		
18. Gross private profits without imputed income from self owned housing 6-7	4.731	18.446
19. Income tax and obligatory loans from profits* (adjusted to calendar year)	714	5.781
20. Social Insurance payments for independent earners*	49	201
21. Gross disposable private profits 18-19-20	3.968	12.464
22. Gross disposable private profits as percentage of adjusted private consumption 21 as p.c. of 16 = the purchasing power ratio of profits	44.7%	36.1%
D) Purchasing Power of Wage Earner and Non-wage Earner		
23. Total disposable private income from economic activity 13+21	8.317	25.464
24. Wages as percent of total private income from economic activity 21 as p.c. of 23	52.3%	51.1%
25. Profits as percent of total disposable private income from economic activity 21 as p.c. of 25	47.7%	48.9%
26. Disposable income of wage earners from other sources*	70	117
27. Total disposable income of wage earners from economic activity 13+26	4.419	13.177
28. Total disposable income of non-wage earners from economic activity 21-26	3.898	12.287
29. Total disposable income of wage earners as percentage of adjusted private consumption. 27 as p.c. of 16	49.8%	38.2%
30. Total disposable income of non-wage earners from economic activity, as percentage of adjusted private consumption. 28 as p.c. of 16	43.9%	35.6%
31. Wage earners as percentage of earners in labour force*	71.3%	75.9%
32. Non-wage earners as percentage of total earners in labour force*	28.7%	24.1%
33a. The coefficient of distribution for wages (29/31), (CDW)	$\frac{49.8}{71.3} = 0.7$	$\frac{38.2}{75.9} = 0.5$
33b. The coefficient of inequality for non-wages (30/32) (CDE)	$\frac{43.9}{28.7} = 1.53$	$\frac{35.6}{24.1} = 1.47$
33c. The coefficient of distribution (33b/33a) (CIN)	$\frac{1.53}{0.7} = 2.19$	$\frac{1.47}{0.5} = 2.94$
33d. The coefficient of redistribution through time (CR)	2.94:2.19 = 1.34	

	<u>1968</u>	<u>1974</u>
E) <u>Private Saving</u>		
34. Disposable income of wage earners from economic activity (27)	4.419	13.177
35. Disposable income of non-wage earners from economic activity (28)	3.898	12.287
36. Internal transfers (interest on government bonds, welfare payments, etc.)*	1.089	7.200
37. Private transfers from abroad*	1.157	3.467
38. Total disposable gross private income from all sources 34+35+36+37	10.563	36.131
39. Private savings from total disposable income 38-16	1.690	1.652
40. Institutionalized savings from wages (10)	1.573	6.925
41. Payments to National Insurance included in institutionalized savings*	292	2.363
42. Institutionalized savings from wages without payment to national insurance 40-41	1.281	4.562
43. Total gross private savings 39+42 (excluding investment in housing which appears as a component of private consumption)	2.971	6.214

ANALYSIS OF TABLE 1

In 1968 wages were 58.6% of the total income from economic activity in the economy -- without the imputed income from self owned housing. In 1974 this percentage was reduced to 56.9%. Accordingly, the share of profits rose from 41.4% to 43.1%.

In 1968 total disposable wages were able to buy 49% of the private consumption for that year (private consumption as computed here does not include the consumption of self owned housing, it does however include the real expenses of households for housing). In 1974 the total free wages -- computed in the same way were only sufficient to buy 37.7% of the private consumption in that year (again computed in the same way). This in spite of the fact that the percentage of wage earners among earners increased from 71.3% in 1968 to 75.9% in 1974.

It is true that, because of the high taxation of profits -- especially those of companies -- the gross disposable private profit which was sufficient to buy 44.7% of private consumption in 1968 could only buy 36.1% of the private consumption in 1974.

In spite of this, and after correcting incomes by adding the income of wage earners from self employed work, and subtracting it from that of non-wage earners, we still find the following result: in 1968 the 71.3% of the labor force wage earners, could buy 49.8% of private consumption while the 28.7% of the labor force, non-wage earners, (NWE) could buy 43.9% of private consumption (PC). In 1974 the 75.9% of the labor force, wage earners (WE) could, on the other hand, buy only 38.2% of P.C. in spite of the fact that their number increased and the 24.1% of the labor force NWE, were able to buy 35.6% of PC.

A simple computation shows that while in 1968 the purchasing power (PP) of a NWE was, on the average 2.19 times that of a WE, in 1974 the PP of the average NWE was 2.94 times that of the average WE, this in spite of the relatively high taxation of reported profits and the increase in the number of WE. This is an increase by 30% in favour of the NWE, as compared to the earlier period.

This demonstrates a process of concentration of PP in the hands of a few. It also shows that taxation is not capable of reversing this trend.

It is important to remember that those relatively few earners each of whom controls a large PP, constitutes about 50% of the total disposable income DI. This percentage increases with time from 46.8% in 1968 to 48.3% in 1974.

From the computation of savings it seems plausible that all WE and also all NWE spend all their DI on consumption (including housing). In 1974 total private savings, excluding institutionalized obligatory saving from wages, were only about one third of the private transfers from abroad, obviously the most plausible sector for saving. If only a third of this was saved, and these are the total savings of the economy from DI, it is highly plausible that this sum was saved from the transfers and not from any other source. Most of the private saving in the economy came from the obligatory saving by direct transfer from wages to social security funds. From the figures it follows that in 1968, when the income distribution was more favourable to WE a larger fraction of incomes from economic activity in the economy was saved since, in that year, saving were larger than private transfers from abroad. Private savings from total DI from all sources did not change in absolute figures from 1968 to 1974 (the figure remains near 1,650 million IL) in spite of the fact that total DI in the economy increased by a factor of 3.4 in the same period.

SOURCES

1. Statistical Yearbook of Israel - p. 167 (Hebrew)
2. Statistical Yearbook of Israel - p. 167 (Hebrew)
3. Bank of Israel Report 1974 - p. 34
and Bank of Israel Report 1972 - p. 33 (English)
5. Report of the Ben Shahar Committee
Appendixed table 1 p. 12-c (Hebrew)
7. Statistical Yearbook of Israel, 1975 - p. 168
9. Statistical Yearbook of Israel, 1975 - p. 335
11. Statistical Yearbook of Israel, 1975 - p. 567
12. Statistical Yearbook 1973/74
National Insurance Agency - p. 1170
14. Statistical Yearbook of Israel, 1975 - p. 156
15. Statistical Yearbook of Israel, 1975 - p. 162
19. Statistical Yearbook of Israel, 1975 - p. 567
20. Statistical Yearbook 1973/74
National Insurance Agency - p. 1
Statistical Quarterly No. 1, 1975
National Insurance Agency - p. 48
26. Statistical Yearbook of Israel, 1975 - p. 263
31. Statistical Yearbook of Israel, 1975 - p. 304
36. Bank of Israel Report, 1974 - p. 34
Bank of Israel Report, 1972 (English) - p. 33
37. Bank of Israel Report, 1974 - p. 34
Bank of Israel Report, 1972 (English) p. 33
41. Statistical Quarterly No. 1, 1975
National Insurance Agency - p. 48
Statistical Yearbook, 1973/74
National Insurance Agency - p. 170

Table 2

Estimate of Constituents of National Income: 1968-1974 (In million IL, current prices)¹

	1968	GR ²	1969	GR	1970	GR	1971	GR	1972	GR	1973	GR	1974	Av. An GR
1. National Income (product side)	11.221	15	12.911	17	15.192	25	18.945	26	23.813	30	30.976	40	43.255	25
2. Minus: National Wages (including associated pay- ments)	-6.669	12	-7.480	20	-9.005	21	-10.952	20	-13.206	30	-17.234	35	-23.283	23
3. Minus: Income of public sector from property	-236		-286		-346		-430		-509		-630		-790	
4. Minus: Attribution for housing and other products	-872	13	-985	31	-1.291	29	-1.661	43	-2.376	35	-3.195	35	-4.315	31
5. Equal: Income from capital and business (product side)	3.444	21	4.160	9	4.550	30	5.902	31	7.722	34	10.307	44	14.867	28
6. Income from capital and business - adjusted estimate for budgeting year	3.625	17	4.260	15	4.890	30	6.355	32	8.370	37	11.445	43	16.380	29
7. Minus: Corporate profits (tax evalua- tion adjusted to national income)	-865	28	-1.110	32	-1.470	22	-1.800	35	-2.426	51	-3.675	82	-6.715	42
8. Minus: Interest payments	-300	18	-355	12	-415	14	-475	21	-600	15	-690	16	-800	
9. Equal: income (6)-(7)-(8)	2.460	13	2.795	8	3.005	36	4.080	31	5.345	32	7.080	25	8.865	24

continue ...

Table 2 (continued)

	1968	1969	1970	1971	1972	1973	1974	Av. An. GR
10. <u>Minus</u> : Profits from self employed occupation (tax evaluation)	-1.930	-2170	-2.335	-2.730	-3.340			
11. <u>Equal</u> : Unexplained gap (9)-(10)	530	624	670	1.350	2.005			
12. National Income adjusted to budget year	11.643	13.481	16.130	20.162	25.605	35.046	46.935	
13. Remainder (includes profits from self-employed occupation) as p.c. of national income (9)/(12)	21.1	20.7	18.6	20.2	20.9	20.2	18.9	
14. Unaccounted gap as p.c. of national income (11)/(12)	4.6	4.6	4.2	6.7	7.8			

¹ Sources: Report of Ben Shazar Commission
Consumer Price Index
Statistical Abstracts of Israel, 1976

² GR - Growth Rate

Analysis of Table 2

Table 2 is based on attached table n^o 1 of the report of the Ben-Shahar Commission for national income (NI) and for each of its constituents we have computed annual growth rates and also the average annual growth rate (AAGR) for the period 1968-1974.

While the AAGR of NI was 25% that of wages was only 23%. On the other hand profits on capital and business activity increased by 28% on the average. In this constituent the fastest growth is that of corporate profits which show an AAGR of 42% over the period.

It follows that the growth of wages was the slowest. Wages lagged behind the NI itself. This demonstrates a redistribution of income against WE during a period when the cost of living index grew from a 100 in 1968 to 281.96 in 1974 (1).

Appendix II

Changes in the Average Purchasing Power of Wage
and Non-Wage Earners in France
1965-1970*

	1965	1970
A. Purchasing Power:		
Total disposable income as percentage of total private consumption		
1. Employers	20.10	21.13
2. Workers	29.98	28.10
3. Wage and Salary Earners (total)	51.24	53.16
B. Percentage in the Labor Force:		
1. Employers	8.49	8.26
2. Workers	28.33	26.83
3. Wage and Salary Earners (total)	45.10	46.96
C. The Coefficient of Inequality $\frac{A}{B}$		
1. Employers	2.37	2.56
2. Workers	1.06	1.04
3. Wage and Salary Earners (total)	1.14	1.13
D. The Coefficient of Distribution		
1. Employers to Workers $\frac{C_1}{C_2}$	2.24	2.44
2. Employer to Wage and Salary Earners (total) $\frac{C_1}{C_2}$	2.08	2.26
E. Inflation Measured by the Cost of Living Index (100 = 1962)	111.1	137.2

*Sources: Publications of INSEE

Comments to Appendix II

The Coefficient of Inequality shows that one percent of the labor force which is composed by employers could buy potentially 2.37% of the aggregate private consumption in 1965 when inflation run about an annual average of 3%. During the same period one percentage of the labor force composed by workers could buy potentially 1.06% of the aggregate private consumption and one percent of the labor force composed by the different kind of wage and salary earners could buy potentially 1.14% of the same total consumption.

In 1970 when inflation ran about an annual average of 5%, the corresponding purchasing power for the employers increased to 2.56%, for the workers it decreased to 1.04% and for all the wage and salary earners it also decreased to 1.13%.

That development altered the Coefficient of Distribution of employers to wage earners from 2.24 in 1965 to 2.44 in 1970. It means that the average employer's purchasing power in 1965 was 2.24 times higher than the average worker's purchasing power, while in 1970 it was 2.44 times higher. The corresponding Coefficient of Distribution of employers to all wage and salary earners increases from 2.08 to 2.26 during the same period.

REFERENCES

- E. Alexander, "National Income, Private Consumption, Disposable Wages and Inflation in the Israeli Economy, 1968, 1974," Reflections on the inflationary effects of the redistribution of income during inflation. (Original Hebrew version), November 1975.
- E. Alexander, "How Inflation Accelerates itself and the Case of the Stugflation," (Hebrew) Emda, November 1975.
- E. Alexander, "Inflation and the Cost of Living Compensation for Wages," (Hebrew) Haakademai, September and October 1976.
- E. Alexander, "Prices-Profits, The Magic Circle," A case for a new anti-inflationary policy," (Hebrew), Al-Hamishmar, March 3 and March 8, 1977.
- E. Alexander, "Wage-earners in the Recent Years Inflation," (Hebrew), Publication of the Union of Religions Academicans, April 1976.

Reviews of the Hebrew version of the paper in the Israeli press

- Cwi Timor, "The Non-Wage Earners Cause Inflation," (Hebrew), Al-Hamishmar November 13, 1975.
- Cwi Timor, "Renewed Battle for the Distribution of Income," (Hebrew) Al-Hamishmar December 11, 1975.
- Y. Tomar, "A Quarter of the Population Might Bring About Inflation," (Hebrew) Yedioth Aharonot, November 14, 1975.
- B. Barak, "Wage-Freezing Accelerates Inflation," (Hebrew) Yedioth Aharonot, January 1, 1976.
- S. ben-Yaeh, "The Economic Policy Widens the Gaps in Society," (Hebrew) Shaar, February 2, 1976.
- Y. Dish, "Wage-Increase does not Cause Inflation," (Hebrew) Yom-Yom, April 2, 1976.
- Y. Dish, "Wage-Increase and Cost of Living Compensation Work Against Inflation," (Hebrew) Maariv, April 1, 1976.
- Reporter of Economic Affairs, "Real Cost of Living Compensation Payment-an Anti-Inflamatory Instrument" (Hebrew) Hat ofe April 1, 1976.
- Reporter of Economic Affairs, "Increasing Purchasing Power is Accumulated in the Hands of the Smaller Non-Wage Earners-Part of the Population," (Hebrew) Haarez, May 2, 1976.
- Economic Editorial, "Relative Justice and Absolute Needs," (Hebrew) Haarez. May 3, 1976.

- D. Krivine, "Wages, Not Profits, are Key to Inflation," (English) The Jerusalem Post, May 7, 1976.
- Y. Laviv, "The Making of the Inflation," (Hebrew) Haolam Haze, April 20, 1976.
- Economic Editorial, "Professor Bruno and the Facts," Haolam Haze, May 26, 1976.

* * * * *

- M. Allais and J. Allais, "Inflation, Income Distribution and Indexation with Reference for the French Economy, 1947-1975," Centre D'Analyse Economique C.N.R.S., March 1976.
- R.G.D. Allen, "The Immediate Contributors to Inflation," The Economic Journal, September 1975. 85, 607-611.
- A. Babeau, "L'influence de L'inflation sur la Situation des Menage 1965-1974," Revue D'economique Politique, September-October, 1976. pp 5.
- A. Babeau, A. Masson and D. Strauss-Kahn, "Inflation et Partage des Surplus: le Case des Menages," Editior Cujas, Paris 1975.
- R. J. Ball and T. Burus, "The Inflationary Mechanism in the U.K. Economy" The American Economic Review, September 1976, pp 66, 467-483.
- R. Boyer, J. Mazier and G. Olive, "Un Nouveau Modele de Prevision Macro Economique Star," Economie et Statistique, Revue Mensuelle d'Insee, November 1974, 61.
- Cambridge Economic Policy Group, "General Review and Policy Analysis," Economic Policy Review, University of Cambridge, Department of Applied Economics, March 1977, 3, 1.
- T. F. Dernburg, D. M. McDougall, "Macroeconomics" McGraw-Hill 1976, 321-343.
- G. S. Fields, "Who Benefits from Economic Development. A Reexamination of Brazilian Growth in the 1960's," American Economic Review, September 1977, pp 570-581.
- M. Friedman, "L'Indexation un Moyen de Degonfler les Gouvernements," Fortune and La Figero, Oct. 5-6, 1974.
- R. J. Gordon, "The Theory of Domestic Inflation" The American Economic Review February 1977, 67, 128-134.
- B. Hansen, "A Study in the Theory of Inflation," Allen and Anwin, 1951, Chapter 7.
- J. V. Howard, "A Method of Controlling Inflation," The Economic Journal, December 1976, 86, 832-844.

- J. M. Keynes, "A Treatise on Money" II. Macmillan, London, 1930, 198-181.
- N. Kaldor, "Inflation and Recession in the World Economy," The Economic Journal, December 1976, 86, 703-714.
- K. Lancaster, "Modern Economics, Principles and Policy," Rand McNally and Company, 1973, 500.
- A. Leijonhufvud, "Cost and Consequences of Inflation," U.C.L.A. Discussion Paper No. 58, 1975. Written for the International Economic Association Conference on the Microfoundation of macroeconomics, S'Agaro, Spain, April 21-25, 1975.
- F. Modigliani, "The Monetarist Controversy or, Should We Foresake Stabilization Policies," The American Economic Review, March 1977, 67, 1-19.
- W. D. Nordhouse, "Inflation Theory and Policy," The American Economic Review, Papers and Proceedings of the 88th Annual Meeting of the American Economic Association, Dallas, Texas, December 28-30, 1975, May 1976, C6, 59-64.
- _____, "Inflation Theory and Policy," Cowles Foundation Paper, No. 436, 1976.
- _____, "The Effect of Inflation on the Distribution of Economic Welfare," Journal of Money, Credit and Banking, February 1973, 465-504.
- O.E.C.D., Economic Outlook," Paris, July, 1977.
- J. Robinson, "The Second Crisis of Economic Theory," American Economic Association Meeting, December 27-29, 1971," ed. Rendings Fels, General Learning Press, Morristown, New Jersey.
- R. Tremblau, "La Transflation ou L'Inflation par les Transferts de Pouvoir d'Achat, L'Actualit Economicque, Avril-Juin, 1975.
- J. G. Williamson, "Strategic Wage Goods, Prices and Inequality," The American Economic Review, March 1977, 67, 29-41.