INFLATION, REDISTRIBUTION OF FACTORS AND UNEMPLOYMENT: ILLUSTRATED BY THE CASE OF FRANCE

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This paper examines the causes and consequences of the inflationary process in terms of its impact upon the national accounting flows, illustrated by the case of France during the period 1966–76. The first section of the paper discusses the apparent causes of inflation, and lays out the circuits through which inflation is propagated. The second section looks behind the apparent causes to examine more closely the reasons for the observed behavior. The final section considers the consequences of inflation in terms of factor allocation, and in turn its impact upon unemployment, the balance of payments, and the rate of growth.

The redistribution of factors which may be caused by a specific type of inflation depends to a large extent on the particular characteristics of the inflationary movement in question. A modern economy can be defined as a set of agents who trade goods and services among themselves for money. When considered over a period of time, for example a year, these exchanges form flows: "real" flows composed of goods and services, and "monetary" flows composed of money in the largest sense of the word. These flows follow the same circuit in opposite directions. The rates of the two types of flows are not constant, however, and they vary differently over time. There is inflation when the rate of increase of monetary flows is greater than that of real flows.

The ratio of the rates of these two types of flows can change in three ways:

1. A change in the intensity of real flows compared to the intensity of monetary flows and vice-versa (changes in productivity, autonomous variations in inventories, autonomous variations in prices, wages, profits or interest rates);

2. A change in the total volume of monetary flows as compared to real flows, and vice-versa (variations in the quantity of money in circulation, variations in the volume of goods available);

3. A change in the respective direction of monetary and real flows. Some of the real or monetary flows are diverted from the market, thus creating a local disequilibrium which may spread out to the entire economy. This occurs notably when the structure of national product is modified in favor of what we shall call "expenditures with a delayed productive effect" (hereafter abbreviated EDPE), such as public expenditures, investments that are not immediately productive and net exports.

In this last case, the global equilibrium in the largest sense of the word is not immediately disturbed. However, some real flows have been taken off the market of consumer goods, creating a gap with the monetary flows which are still oriented towards this market through the incomes of workers directly or indirectly employed in public services, investment goods industries or export industries. The equilibrium cannot be maintained unless one of the following

occurs: any increase in public services is counterbalanced by an equivalent reduction in incomes *generated in the same circuuit*; any increase in investment is financed by savings *accumulated in the same circuit*; an equivalent and simultaneous rise in imports compensates for any increase in exports.

We can conclude that inflation may be due to a large number of different causes which give rise to multiple types of inflationary movements. We shall limit ourselves to the concrete example of inflation in France during the last eleven years (1966–76) which represents a type of inflation that is quite common in most industrialized countries.

Our first step will consist in determining the major causes of inflation in France. We shall try to express quantitatively the difference between the size of corresponding monetary and real flows, and shall attempt to identify the transactions that gave rise to the inflationary gaps thus created. These transactions can be considered the *apparent* causes of inflation. From there we shall work back to the *effective* causes,[1] by systematically asking what is the intentional action that caused the transaction which generated an inflationary gap. Is it an action that tends to conserve the former position of the agent faced with a rise in the cost of his own inputs, or is it a deliberate attempt to increase the ratio between the nominal value of his outputs and of his inputs?

To the extent that movements in the ratios between the outputs and inputs of various agents tend to last, they are expressed through changes in the structure of prices of goods and factors, which in turn modify the structure of economic exchanges and the relative position of participating agents. One of the most serious consequences of these modifications is, in the case of France and also in most of the other industrialized countries, the growth of unemployment.

1. Apparent Causes of Inflation in France

A. *The definition of the Inflationary Gap*

Given X, the nominal value in year $n-1$ of a factor used in the production of a particular sector, and ΔX the total increase in the nominal value of the factor in the year n; furthermore, given c the growth rate in the cost per unit produced of the factor, and r the rate of increase in the volume of production of the sector during year n, the nominal value of the factor in year n can then be written as equal to the nominal value of the factor in year $(n-1)$, multiplied by the coefficient of increase in the volume of production $(1+r)$ and by the cost of the factor per unit produced $(1+c)$:

$$X+\Delta X = X(1+r)(1+c)$$

$$= X + Xr + Xc + Xcr$$

$$\Delta X = Xr + Xc + Xcr$$

(1) $$\Delta X - Xr = Xc(1+r)$$

[1]There is an infinite series of causes explaining any phenomenon. We shall call "the effective cause" the first one coming before the phenomenon to be explained that cannot be considered as endogenous to what is usually called the "economic system".

In the last equation, the term $\Delta X - Xr$ represents the difference between the nominal growth of factor X, and its real growth expressed in prices of the preceding year. This difference constitutes the inflationary gap of factor X in the year n. The inflationary gap of a factor of production is equal to the nominal value of this factor in the preceding year, multiplied by the growth rate of its cost per unit produced and by the coefficient of growth in volume of production utilizing this factor.

B. *The Total Inflationary Gap*

Thus defined, the inflationary gap can be calculated for any aggregate or operation in the national accounts. The most general expression of the inflationary pressure acting on a given country is the inflationary gap of total resources. We shall hereafter call this the total inflationary gap. Total resources are equal to the sum of the Gross Domestic Product (Y) and Imports (M). The total inflationary gap is therefore equal to:

$$(\Delta Y - Y \cdot r_y) + (\Delta M - M \cdot r_m) = c_y Y(1 + r_y) + c_m M(1 + r_m)$$

where r_y, r_m, c_y, c_m represent respectively the growth rates and the costs per unit produced of GDP and Imports.

Calculated in this manner for France, Table 1 shows the total inflationary gap. The coefficient of correlation between lines 2 and 3 is 0.984.

TABLE 1

TOTAL INFLATIONARY GAP IN BILLIONS OF FRANCS AND AS A PERCENTAGE OF TOTAL RESOURCES, FRANCE 1966–75

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
1. Total inflationary gap in billions of francs:	16.3	15.8	27.7	51.4	52.9	51.6	54.8	87.1	219.1	179.0
2. As a percentage of total resources:	2.7	2.4	3.9	6.1	5.6	4.9	4.7	6.4	13.2	10.4
3. Consumer price index (INSEE):	2.7	2.6	4.5	6.4	5.3	5.5	5.9	7.3	13.7	11.7

Source: J. Marczewski, *Inflation et chômage eu France, explication quantitative*, Editions Economica, 49, rue Héricart, 75015 Paris, 1977,† p. 187.

†A translation: *Inflation and Unemployment in France, A Quantitative Analysis*, will be published in 1978 by Praeger Publishers, New York–London.

C. *The Breakdown of the Total Inflational Gap*

The purpose of this breakdown is to seek the causal relationship between the behavior of various economic agents and the creation of the total inflationary gap. The total inflationary gap must therefore be broken down so that the partial inflationary gaps generated by the main categories of economic agents can be distinguished.

In the case of producers, an inflationary gap appears when there is a rise in the nominal value of the gross income they receive per unit produced. For the society these incomes are costs of production, and therefore this represents a gap

in costs. Moreover, the aggregate "Total Resources" is made up of the Gross Domestic Product, which is equal to the sum of the gross factor incomes and indirect taxes less subsidies, and of imports, which are also costs of production on a national scale. We can therefore say that the total inflationary gap is equal to the sum of the inflationary gaps of costs.

In the case of users, the inflationary gap is equal to the difference between the increase in expenditures and the growth in volume of available goods. Total resources are also equal to the sum of final expenditures: Consumption + Gross Capital Formation + Exports. We can therefore say that the total inflationary gap is equal to the sum of the inflationary gaps of expenditures.

D. *The Inflationary Gap of Costs*

Table 2 shows the structure and the evolution of the inflationary gap of costs in France from 1966 to 1976. Wages and social insurance bear the main responsibility for inflating nominal costs (48.3 percent of the total gap on the average), and particularly the wage costs of nonagricultural enterprises (34 percent) and public services (11 percent). Among non-labor incomes, undistributed profits (12 percent), interest (11 percent) and gross incomes of unincorporated enterprises (8.5 percent) play an important role. The contribution of dividends and shares is negative, and of other incomes negligible. Interest is the cost which rose the most per unit produced on the average (20 percent versus 7 percent for wages and social insurance costs). But it has little weight compared to the cost of total production (1.5 percent), which explains its relatively small contribution to the inflationary gap. The role of taxes less subsidies varies a great deal from year to year and from branch to branch. On the average, net taxation contributed 6.8 percent of the inflationary gap, but this contribution varied from −7.1 percent in 1968 to +12.6 percent in 1975.

The prices of imported products by and large had a moderating effect, because they generally rise more slowly than domestic prices. There are two important exceptions to this rule, however:

—The years 1969, 1970 and 1971. Following the devaluation of the franc in 1969 the contribution of imports to the total inflationary gap was respectively 7.5, 18.9 and 8.1 percent;

—The years 1973 and 1974. The surge in the international price of oil and other raw materials and the depreciation of the franc caused 10.0 and 37.3 percent of the total inflationary gap. Thus in 1974, the rise in the price of imports was the main cause of inflation, above wage costs (35 percent) and incomes from property and entrepreneurship (25.9 percent).

E. *The Inflationary Gap of Expenditures*

The inflationary gap of total resources can also be measured when incomes are spent. It appears as soon as a nominal increase in any type of expenditure exceeds the increase in volume of the corresponding resources in goods and services. Since the value of production is necessarily equal to the expenditure of those who buy it, the total inflationary gap of expenditures is necessarily equal to the total inflationary gap of costs.

TABLE 2

THE STRUCTURE AND EVOLUTION OF THE INFLATIONARY GAP OF COSTS IN FRANCE FROM 1966 TO 1976
as a percentage of the total inflationary gap)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	Mean 1966–74	1975	1976	Mean 1966–76
I Total wages and social insurance costs:	*34.3*	*51.4*	*67.9*	*36.6*	*45.7*	*51.4*	*51.5*	*47.7*	*35.0*	*46.8*	*64.9*	*45.5*	*48.3*
Non agricultural enterprises	21.2	38.2	46.1	24.3	33.8	34.3	37.5	38.7	28.8	33.3			
Agricultural enterprises	1.8	−0.9	0.4	0.8	−0.1	0.6	0.9	0.5	0.5	0.5			
Households	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0			
Public services	9.2	10.2	18.9	10.2	9.9	13.5	11.7	7.5	5.2	10.5			
Financial institutions	2.1	3.9	2.5	1.3	2.1	2.8	1.4	1.2	0.5	2.0			
II Total incomes from property and entrepreneurship (including appreciation on inventories)	*58.4*	*44.8*	*40.8*	*42.9*	*28.2*	*24.7*	*41.5*	*29.3*	*25.9*	*37.4*	*0.7*	*10.0*	*31.6*
Interest	26.1	10.1	13.5	10.8	12.4	6.8	7.2	7.9	6.5	11.3			
Dividends and shares	−23.5	−2.3	−1.0	0.6	−0.7	1.8	0.7	1.0	0.6	−2.5			
Gross incomes of unincorporated non-agricultural enterprises	10.0	19.6	7.9	1.3	5.8	7.6	8.3	7.9	7.2	8.4			
Gross incomes of unincorporated agricultural enterprises	8.1	1.3	2.9	6.3	6.5	3.2	12.6	6.4	−0.8	4.4			
Undistributed profits	29.2	4.3	20.0	22.5	2.1	3.1	10.6	6.0	11.0	12.1			
Gross operating results of households	8.5	11.8	3.3	1.4	3.1	1.2	0.9	0.1	1.5	3.6			
III Taxes less subsidies	*1.6*	*2.2*	*−7.1*	*12.3*	*4.5*	*11.9*	*11.3*	*11.6*	*4.6*	*5.9*	*12.6*	*9.0*	*6.8*
IV Imports	*6.1*	*−2.7*	*−3.9*	*7.5*	*18.9*	*8.1*	*−4.5*	*10.0*	*37.3*	*8.5*	*1.3*	*16.8*	*8.6*
V Others	*−0.4*	*4.3*	*2.3*	*0.7*	*2.7*	*3.9*	*0.2*	*1.4*	*2.8*	*1.4*	*20.5*	*18.7*	*4.7*
Inflationary gap of costs	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Sources: *op. cit.*, p. 66.

From the point of view of their role in the inflationary process, it is convenient to regroup expenditures into two categories: on one hand, household consumption; and on the other, expenditures with a delayed productive effect. In the latter category, we have classified all expenditures which result in the diversion of productive factors from the production of consumer goods which might be supplied on the domestic market without delay. These expenditures create consumable incomes without increasing the quantity of consumer goods immediately available. This category includes public expenditures, gross fixed capital formation, variations in inventories and exports.

The distinction between household consumption and EDPE is extremely important. Consumption varies essentially as a function of the disposable income of households, which is predominantly composed of wages. Its fluctuations obey laws that operate in a relatively stable fashion. EDPE are financed basically by taxes, credit and savings derived for the most part from incomes from property and entrepreneurship. They vary considerably with the international business cycle and determine by their fluctuations the divergence of the GDP from the long-term trend traced by movements of consumption.

Table 3 shows the evolution and structure of the inflationary gap of expenditures in France from 1966 to 1976.

Throughout the period and on the average, household consumption was responsible for the largest part of the inflationary gap (54.6 percent). After came private EDPE (22.4 percent), public expenditures (15.3 percent) and foreign trade (7.7 percent).

The years when the inflationary gap of wages was particularly high (1967, 1968, 1971, 1972, and 1975) are precisely those affected by the highest inflationary gaps of household consumption. A detailed study of the transformation process of incomes into expenditures[2] confirms that on the average 84 percent of the consumption inflationary gap is due to the inflationary rise in net wages and social benefit payments.[3] The other 16 percent comes from inflationary increases in other incomes and transfers.

EDPE played a particularly important role in inflation in 1966, 1969 and 1972. These are specifically the years characterized by an unusually rapid rise in incomes from property and entrepreneurship.

Public expenditures underwent particularly strong inflationary increases in 1967, 1968 and 1975. Here the correspondence with inflationary rises in net taxes paid by businesses is rather exceptional. This is because public authorities have access to sources of financing other than taxes paid by businesses, notably personal income taxes, and credit from the Central Bank. Nonetheless, taxes paid by businesses are certainly one of the sources of financing of public expenditures and therefore we can legitimately consider them as a part of the inflationary circuit of public expenditures.

Thus it appears that the process of inflation is based on 6 main circuits (see Table 4 and Figure 1).

[2]J. Marczewski, *op. cit.*, p. 99.

[3]The sum of net wages plus social benefits is approximately equal to the sum of gross wages plus social insurance payments, with the possible addition of the social security deficit.

TABLE 3

THE STRUCTURE AND EVOLUTION OF THE INFLATIONARY GAP OF EXPENDITURES IN FRANCE FROM 1966 TO 1975
(as a percentage of the total inflationary gap)

		1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Mean 1966–75	1976	Mean 1966–76
I	Private consumption	*43.3*	*70.4*	*61.9*	*48.6*	*34.0*	*60.7*	*61.6*	*51.6*	*45.5*	*70.5*	*54.8*	*53.0*	*54.6*
II	Private EDPE	*64.4*	*7.6*	*26.5*	*41.7*	*19.1*	*7.8*	*31.8*	*29.6*	*17.3*	*−14.7*	*23.1*	*14.8*	*22.4*
	Gross fixed capital formation of businesses	30.7	24.1	12.4	23.2	17.0	16.1	19.7	12.8	12.6	3.7	17.2	7.3	16.3
	Gross fixed capital formation of financial institutions	0	0	0.6	0	0.4	0.6	0.4	0.3	0.1	0	0.3	0.8	0.4
	Changes in inventories	27.0	−19.0	2.3	16.6	−1.1	−16.5	5.8	10.0	−0.5	−21.4	0.3	−0.1	0.3
	Gross fixed capital formation of households	6.7	2.5	11.2	1.9	2.8	7.6	5.9	6.5	5.1	3.0	5.3	6.8	5.4
III	Public EDPE	*8.1*	*21.5*	*22.5*	*11.3*	*11.9*	*14.1*	*11.5*	*11.0*	*11.7*	*26.7*	*15.0*	*17.7*	*15.3*
	Wage payments	4.3	7.1	18.5	6.0	8.8	9.6	8.4	6.0	4.3	15.0	8.8	15.5	9.4
	Expenditures on material	−0.6	3.4	1.4	1.3	0.5	3.2	1.2	2.3	1.5	5.7	2.0	−1.2	1.7
	Gross fixed capital formation	4.4	11.0	2.6	4.0	2.6	1.3	1.9	2.7	5.9	6.0	4.2	3.4	4.2
IV	Exports	*−15.8*	*0.5*	*−10.9*	*−1.6*	*35.0*	*17.4*	*−4.9*	*7.8*	*25.5*	*17.5*	*7.1*	*14.5*	*7.7*
	Required to finance the rise in import prices	6.1	−2.7	−3.9	7.5	18.9	8.1		−4.5	10.0	37.3	1.3	7.8	16.8
	Surplus over imports	−21.9	3.2	−7.0	−9.1	6.1	9.3	−0.4	−2.2	−11.8	16.2	−0.7	−2.3	−0.9
	Inflationary gap of expenditures	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Sources: J. Marczewski, *op. cit.*, p. 196.

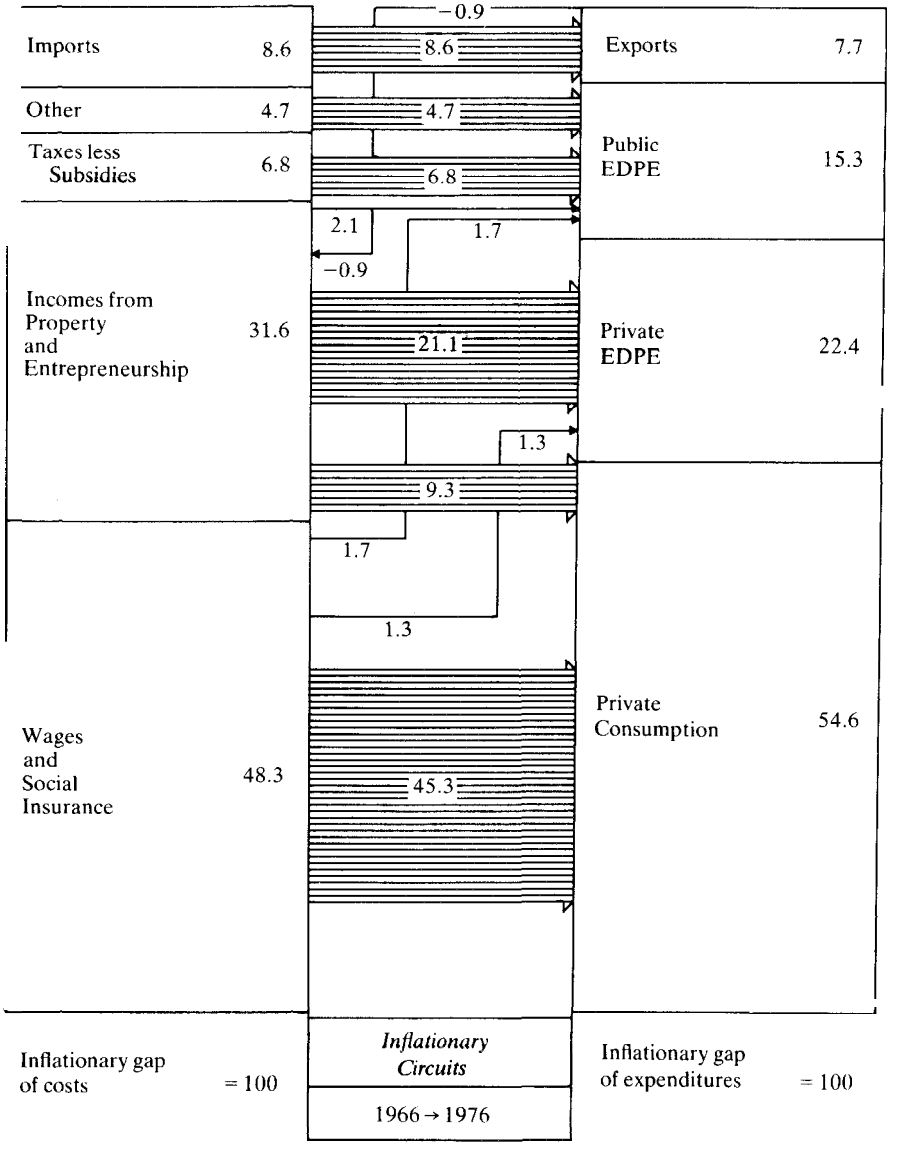
TABLE 4

THE MAIN INFLATIONARY CIRCUITS IN FRANCE FROM 1966 TO 1976

(as a percentage of the total inflationary gap)

Inflationary Circuits	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	Mean 1966–76
1. Wages—consumption	41.0	*39.3*	*59.9*	50.4	28.7	*48.0*	*51.0*	*46.4*	*36.0*	*52.0*	*45.5*	*45.3*
2. Income from property and entrepreneurship—consumption	2.3	31.1	2.0	−1.8	5.3	12.7	10.6	5.2	9.5	18.5	7.5	9.3
3. Income from property and entrepreneurship—private EDPE	*71.1*	7.6	26.5	*53.8*	6.8	2.7	31.3	26.3	18.3	−27.6	14.8	21.1
4. Net taxes—public EDPE	8.1	21.5	22.5	11.3	11.9	14.1	11.5	11.0	11.7	26.7	17.7	15.3
5. Import prices—exports	−15.8	0.5	−10.9	−1.6	*35.0*	17.4	−4.9	7.8	25.5	17.5	14.5	7.7
6. Wages—private EDPE	−6.7	0.0	0.0	−12.1	12.3	5.1	0.5	3.3	−1.0	12.9	0.0	1.3
Total inflationary gap	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: J. Marczewski, *op. cit.*, tables XX bis, XXI bis, XXVI and XXVII.



Source: J. Marczewski, *op. cit.*, p. 92.

Figure 1. Main inflationary circuits 1966–76

F. *The main Inflationary Circuits*

An inflationary circuit exists whenever a gap generated by the rise in a cost or an expenditure is passed on to other costs or expenditures, forming an inflationary flow. After having contributed to a certain number of transactions it returns to the starting point and the process begins all over.

1. *The "wages—consumption" circuit.*

In France, the most important inflationary circuit is the "wages—consumption" circuit. It drains slightly less than half of the total inflationary gap. Rises in wages that exceed growth in production supplement the disposable income of households, who spend most of the increment on purchases of consumer goods. They thus enable businesses to raise their prices and to recover at least part of the increase in labor costs. At the same time, the rise in the price of consumer goods justifies new labor demands for higher wages. The circuit starts another round....

2. *The "incomes from property and entrepreneurship—private EDPE" circuit.*

This circuit accounts for a fifth of the total inflationary gap on the average.

It is closely tied to the international business cycle. An acceleration in international growth (1964, 1968, 1972, 1973) or a devaluation of the national currency (1969) stimulates French exports (1966, 1968, 1969, 1972, 1973) which implies an additional distribution of income that does not have an immediate counterpart on the domestic market. Therefore employment, consumption, investments and public expenditures rise, but at the start these are only partially counterbalanced by an increase in imports, taxes and savings. Interest rates shift upwards, the rise in prices accelerates. The latter is stimulated by demands for an increase in wages and agricultural prices which systematically follow each boost in prices (link with the "wages—consumption" circuit).

At first, prices rise more rapidly than wages (1966, early 1968, 1972). Funds that have been invested tend to generate increased profits for investors enabling them to make still more new investments. The circuit is complete. Its flow increases as compared to the flow of the "wages—consumption" circuit.

But at the same time, two factors temper this process. On one hand imports increase, labor demands become more pressing, wage increases overtake the rise in prices, profit margins diminish. On the other hand, foreign economic growth decelerates (1967, 1970–71, 1974–75), exports expand more slowly. The expected return to investments drops. All these elements eventually cause a relative regression of the circuit "incomes from property and entrepreneurship—private EDPE" to the benefit of the "wages—consumption" circuit.

Thus, two inflationary movements seem to be superposed. A permanent inflationary circuit maintained by the regular increase in wages and consumption, accounting for at least 40 percent of the total inflationary gap, is aggravated by a cyclical inflationary movement, alternatively due to accelerations in the "incomes from property and entrepreneurship—private EDPE" and in the "wage—consumption" circuits. At its highest point (1968), the "wages—consumption" circuit explains 60 percent of the total inflationary gap. The maximum reached by the "incomes from property and entrepreneurship—private EDPE" circuit, in 1966, is 71 percent. Since that time, however, its importance has tended to drop. At the beginning of the period under consideration its average flows over three years made up roughly 35 percent of the total inflationary gap. At the end of the period, it represents only 2 percent. This observation expresses a fundamental change in economic structures.

3. *The circuit "net taxes—public expenditures".*

This circuit carries 15 percent of the total inflationary gap on the average. An increase in net taxes paid by the business sector as a whole[4] leads to either a drop in profit margins after taxes or to an increase in prices. In the first case, there is an immediate inflationary effect, but the profitability of businesses falls, which may have a negative influence on investments and employment. In the second case an inflationary circuit is created. The rise in prices is passed on to wages and agricultural prices. The increase in nominal incomes stimulates consumption expenditures which are added to the growth in public expenditures financed by the rise in tax receipts. The resulting increase in prices eventually compels public authorities to raise tax rates once again. If they do not, the deficit in the budget will soon force them to reduce public expenditures, and therefore to put a negative pressure on employment, or to find other means of financing. Of all possible sources, personal income taxes and taxes on personal wealth are the only ones that are not inflationary, under three conditions: they must not be passed on to nominal payments, they must not result from an inflationary increase in taxable income, and they must not cause a drop in productivity. If the taxation is too progressive, it will discourage initiative and reduce productivity. If it is not very progressive, in order to be efficient it must affect a large number of tax-payers including low-income households, and therefore it will probably lead to a rise in the nominal incomes of those on whom the tax is levied.

There is one more case to be considered: taxes paid by businesses and differentiated according to the branches. This is very common in France where the fraction of value added devoted to net taxes varies from −5 percent for transportation and telecommunications to +38 percent for energy.[5] In this case the effect of taxation will depend on the price elasticity of the products sold by the firm. If the elasticity is less than one, it is in the firm's interest to pass on the tax in the form of higher prices. The inflationary circuit has begun. If elasticity is greater than one, the firm must choose between restricting its market and lowering its profit margins. In both cases, its expansion will be curtailed in the long run, and employment will suffer from it.

But raising taxes paid by businesses is not always enough to ensure the financing of increased public expenditures. As Table 3 shows, the average inflationary rise in taxes paid by the business sector is equal to 6.8 percent of the total inflationary gap, whereas the growth in public expenditures reaches 15 percent of this gap. The difference has been financed by increases in personal income tax and credit from the Bank of France. These two means of financing do not affect the costs of production directly, which is why they do not appear explicitly in the inflationary gap of costs. They have an inflationary effect through public expenditures insofar as they are financed by increasing the money supply or by an inflationary rise in the nominal incomes of tax-payers. This is the explanation of the flows 1.7 and 2.1, linking public expenditures to wages and to incomes from property and entrepreneurship (see Figure 1).

[4]Without distinguishing between branches.

[5]In 1969, see INSEE, *Fresque Historique du Système Productif*; INSEE Collection, Series E 27, Oct. 1974, p. 9 III.

The flow of the "net taxes—public expenditures" circuit is highly variable from year to year. It was considerable in 1967, 1968 and 1975 when it represented more than 20 percent of the total inflationary gap. These were years of slowing economic growth and falling private investment (see Tables 3 and 4).

4. *The circuit "incomes from property and entrepreneurship—consumption".*

The inflationary surplus of incomes from property and entrepreneurship is not wholly invested in EDPE. A part of this surplus finances the consumption of recipients of these incomes. This portion on the average amounts to about 9 percent of the total inflationary gap (see Figure 1), but it varies a great deal from year to year. It is particularly high during years of sluggish economic activity (1967, 1971, 1975) which are characterized by a reduction in productive investments. This explains why the inflationary rise in consumption is always greater than that of wages during these years, although the latter is then also unusually high.

5. *The circuit "import prices—exports".*

Fifth in size on the average, this circuit has a highly variable flow. Inflated by the rise in the price of imports and by the surplus of exports over imports, it expands dangerously just after devaluations in the franc (1970) or after the rise in the price of oil and other imported raw materials (1974), and then falls, due to the decrease in the export surplus, to a very small or even a negative percentage of the total inflationary gap (1966, 1968, 1969, 1972). The rise in the price of imported products which triggers off this circuit leads to an increase in domestic prices, stimulates demands from wage-earners and farmers (link with the wages—consumption circuit) and adds to the growth in prices of exportable products. But, at the same time, higher import prices procure foreign exchange for countries exporting raw materials who then increase their purchases from industrialized countries. The latter therefore have the possibility, despite the fierce competition for markets in these 'nouveau riche' countries, to gradually pass the rise in the price of imports on to prices of exports intended for their suppliers. After a while, the increase in the price of industrial products triggers off a new shift in the price of raw materials and the circuit starts back at the beginning.

However, the various industrialized countries are not all in the same position, as far as trade is concerned with raw material producing countries, and notably oil producing countries. Some industrialized countries, and first of all West Germany, are able to keep the rate of domestic inflation lower than others. Rises in their export prices can therefore be restricted to much lower rates than those of most of their competitors, including France, who must simultaneously contend with increased import costs and rapidly growing labor costs. Countries that are unable to control their domestic inflation are faced with the following choices:

—devaluing the currency, which would contribute to a new increase in the price of imports, a new extension of exports and increased inflationary pressure that would be likely to counteract the advantages of the devaluation;

—granting special advantages to the export sector, which implies a rise in public expenditures and its consequent inflationary effects;

—accepting a decreasing share of foreign markets, which leads to a deficit in the balance of trade and to a devaluation of the national currency, or to a reduction in imports accompanied by a drop in economic activity and employment.

The fact that the inflationary effect of the "import prices—exports" circuit is often negative (1966, 1968, 1969, 1972) means that any inflationary pressure due to the rise in the price of imports has been more than counterbalanced by the deflationary impact of a deficit in the balance of trade (1966, 1969), or that this impact reinforced the deflationary effect of a relative drop in import prices (1968, 1972).

A decrease in French investments abroad or an increase in foreign capital—entering the country as loans, purchases of securities and direct investments—has made up for a lack of domestic savings. Insofar as this foreign capital is composed of short-term investments, which may be taken out of the country at any sign of a deterioration of the exchange rate, this situation is extremely dangerous for the country's economic stability. The danger is all the greater to the extent that this influx of foreign capital may hide the real magnitude of domestic inflation for a while, and encourage national authorities to give up unpopular measures against inflation. A sudden reversal of capital movements is then likely to make a devaluation necessary (1969, 1979).

6. *The circuit "wages—private EDPE".*

Very small on the average, this circuit sometimes attains relatively high, positive (1970 and 1975) or negative (1966 and 1969), values, which are determined by the fluctuations of the propensity to consume of wage-earners. This propensity increases when economic conditions are unfavorable and unemployment is rising. On the contrary an increase in production and employment determines a drop in propensity to save.

Increases in costs and expenditures, however, are only the apparent causes of inflation. We still need to know why costs and expenditures increase. The study of the effective causes of inflation, therefore, is equivalent to determining for what reasons progress in productivity is no longer reflected by a decrease in cost-prices, but, on the contrary, is accompanied by a continuous rise in costs which then turns into a continuous rise in nominal incomes, in expenditures and in prices.

II. The Effective Causes of Inflation in France

A. *The Causes of the Acceleration in Labor Costs*

The increase in labor costs is due to two series of causes:

—the rise in prices of consumer goods to the extent that this rise is not the result of increased labor costs;

—the strategy of labor unions that demand and obtain nominal wages increasing faster than prices and the apparent productivity of labor.

Only the strategy of labor unions can be considered as the expression of a conscious effort by economic agents to improve their terms of exchange with the society. It is therefore one of the effective causes of inflation in France.

The rise in prices that is independent from the increase in labor costs is an intermediary step in the chain of causal relationships and, as such, it has its own effective cause to be determined separately.

1. *The strategy of trade unions*

The rise in the price of consumer goods is noticeably less sharp than the increase in wages and social insurance costs.

TABLE 5

THE COMPARATIVE RISE IN CONSUMER PRICES AND IN AVERAGE WAGE COST PER EMPLOYEE

(as a percentage of their value in the preceding year)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Mean 1966–75
Growth in average wage cost per worker (s)	7.4	6.2	10.6	11.7	10.0	10.4	11.0	12.7	17.9	17.3	11.5
Consumer price index (INSEE) (p)	2.7	2.6	4.5	6.4	5.2	5.5	6.1	7.5	13.7	11.7	6.5
Ratio $\frac{1+s}{1+p}-1$	4.9	3.5	5.8	5.0	4.6	4.6	4.6	5.0	3.7	5.0	4.7

Source: J. Marczewski, *op. cit.*, pp. 4 and 21.

The rise in the price of consumer goods cannot therefore be considered as the unique cause of increases in wages. All the more so, since the growth in labor costs *per unit produced* is enough to explain the larger part, if not all, of price increases.

TABLE 6

COMPARATIVE RISE OF UNIT LABOR COSTS AND PRODUCERS PRICES

(in percentage per year)

	1959–69	1969–73	1974	1955
Growth rate of producers prices	3.4	6.2	14.9	10.2
Growth rate of labor costs per unit produced	4.8	6.4	15.9	16.2

Source: Jean Marczewski, *op. cit.*, p. 105.

This constant gain of labor costs on prices continues despite very considerable substitution investments undertaken by firms before 1974, and despite the very rapid headway of the apparent productivity of labor which resulted from them. Since firms have no interest in raising the share of labor costs in value

added—they are already burdened down by the financial costs incurred for these investments—we must conclude that this movement of labor costs is due above all to pressure from trade unions. Moreover, this interpretation is totally confirmed by an observation of the past.

The strategy used by trade unions in this matter consists in demanding in advance an increase in nominal wages that guarantees a growth in purchasing power equal to, or even greater than, the possible improvement in productivity. This is equivalent to demanding a rise in nominal wages at least equal to the expected increase in prices plus any possible improvement in productivity. The latter is estimated with reference to past performances of the most progressive firms, regardless of the situation of the firm in question, and of the country. This strategy is inflationary for two reasons:

—an improvement in productivity that has not yet been achieved and will not be achieved by most firms and in most branches is incorporated in the calculation of wages;

—by anticipating the rise in prices, this rise is made unavoidable because the purchasing power required to finance it is created in advance.

The strategy of trade unions is therefore the main, if not the only source, of the "wages—consumption" inflationary circuit.

Partisans of monetary theory will no doubt object that a restrictive credit policy could make excessive increases in wages impossible, and consequently, that the cause of inflation lies with the monetary policy and not with the behavior of trade unions. We agree entirely that it is theoretically possible to stop inflation by stopping credit. We also recognize that a rational policy of credit regulation is one of the indispensable weapons in the fight against inflation. But for obvious social and political reasons no country in Western Europe, including France, is able to carry out such a policy to a point that it might become truly efficient by itself. This is even more inconceivable because, although the excessive rise in wages is the main cause of inflation, it is not the only one. Any measure attempting to curtail the increase in wages must therefore be accompanied by others destined to stop or moderate price rises which are incurred independently of increases in wages. As we will see further on, these rises cannot be controlled simply by monetary policy either.

2. *Rises in prices independent of increases in wage costs.*

Among the branches in which the price of production has grown more than labor costs (but less than wage payments) appear:

—between 1969 and 1974, consumer goods industries;

—between 1969 and 1973, agriculture and investment goods industries;

—between 1969 and 1974, housing, construction, and intermediate industries.

On the other hand, in 1975, the rise in labor costs was considerably higher than the rise in the price of production in all branches.

For most branches a rise in prices exceeding the rise in labor costs may be explained by the particular market conditions. This explanation however does not apply to agricultural prices. They have increased faster than labor costs, in

spite of a demand which, for many important foodstuffs, was considerably lower than the supply.

3. *Government control of agricultural prices*

On the average, labor costs represent only 10 percent of value added per unit produced in agriculture. Their part in the price of production is even smaller. One cannot therefore say that rises in wages are a direct cause of increases in agricultural prices.

However, the principal agricultural prices are set by the government and the European Commission at constantly higher levels, regardless of the conditions of supply and demand. This policy not only creates enormous waste,[6] but what is more is the starting point for rises in the price of foodstuffs on which wages are practically indexed. The consequent increase in wages in industry leads to a rise in the price of industrial products consumed in agriculture. The effect of this rise is amplified by the constant growth in volume of intermediate consumption per unit of agricultural production. Indeed, since prices are set by the government, and therefore guaranteed without regard to the quantities produced and the level of demand, farmers are encouraged to increase their production constantly. Under present conditions in France, where no land lies fallow with no manpower available to work it, the only way to augment production is to intensify the industrialization of agriculture, i.e., to employ more equipment and intermediate consumption from the industrial sector. But returns to this intermediate consumption are necessarily decreasing. Its volume therefore increases faster than production. With the rise of industrial prices, its growth in value is even more rapid. Thus, whatever the level of agricultural prices set by the government, intermediate consumption per unit produced always overtakes the rise in prices. In conjunction with the rise in financial costs due to increasing indebtedness and interest rates, it hinders the growth of value added in agriculture. Finally, the latter grows much more slowly than the price of production and this justifies new demands from farmers. A true "agricultural prices—intermediate consumption" inflationary circuit is added to and accelerates the movement of the "wages—consumption" circuit.

This does not mean that nothing should be done to aid certain categories of farmers. But this aid ought and could be granted in a more efficient, less expensive and less absurd fashion.

B. *The causes for the acceleration in private EDPE.*

EDPE contribute to inflation independently of the rise in labor costs to the extent that their share in national expenditures increases. Fluctuations in these expenditures, which are closely tied to international economic developments, give the national economy a cyclical pattern that cannot be eliminated entirely. Combined with interventionist policies of a Keynesian type, the cycle reinforces the inflationary role of EDPE still further.

[6]Products exported at half of their cost-price. Factors of production retained in less profitable activities, etc.

To the inflationary pressure characteristic of periods of sustained growth is added the inflationary effect of measures taken during slump periods to counteract their deflationary influence. But productive capital formation and the development of exports are essential to economic growth and to the maintenance of a satisfactory level of employment. There can be no question therefore of limiting them. What we should seek, however, is a greater stability in the share of GNP that they represent. An efficient policy in this field would necessitate international cooperation on a much larger scale than now exists.

The productive effect of some EDPE is not simply delayed, but non-existent or nearly so. These are 'safe' investments sought by private persons in order to avoid the depreciation of their savings. They have developed to an excessive extent because of the government policy of intervening in the field of financial transactions. Since prices and wages are continuously increasing, the borrower is in a particularly favorable position, and the demand for long-term credit rises. The result is an upward pressure on interest rates and a continuous growth in indebtedness of producers. But interest rates are limited by the government, indexation of loans is prohibited, and dividends are subject to discriminatory taxes. Consequently, an individual who is not involved directly in business is in fact unable to make a non-negative return on an investment in the productive sector. Primary savings diverted from productive investments are used for investments in goods that are likely to maintain their capital value: land, buildings, works of art, precious metal and stones, etc. This contributes directly to the rise in prices, and increases expenditures whose productive effect, if any is delayed.

The resulting shortage of a primary supply of long-term capital leads to the near disappearance of the financial market. A number of preferential circuits organized by public authorities divert the rest of long-term savings towards the investments with the smallest return. Most productive investments must have recourse to self-financing or to credit originating in the "transformation" of short-term deposits into medium and long-term loans. For lack of any other source, both of these types of financing are over-employed which contributes to inflation. Thus, the depreciation of primary savings, along with labor union strategy and a policy of agricultural price supports, constitutes the third effective cause of inflation in France.

C. *The Causes of the Acceleration in Public EDPE*

The extension of public services is rational insofar as it gives rise to positive external effects, or as it eliminates negative external effects. In all other cases, an expansion of public services that exceeds the growth in total resources swells the "net taxes—public expenditures" inflationary circuit. A balanced budget policy is not enough to neutralize its inflationary effect. To be efficient, an increase in public expenditures must not be financed by higher taxation on business, nor lead to a rise in incomes equal to or greater than any increase in personal income tax.

In fact, all of these conditions are rarely met. The extension of public services is considered as a means both of increasing employment and of

furthering social justice. This belief, combined with the political options of some parties, constitutes the effective cause of an inflationary increase in public expenditures. It can be expressed by the rise in the proportion of non-marketable services in GNP.

D. *The Causes of the Rise in Import Prices*

An increase in the price of imports may originate in a depreciation in the national currency (see Table 3: 1969, 1970 and 1971), or an exogenous rise in foreign prices (see Table 3: 1973 and 1974). The former is simply the consequence of domestic inflation due to one or several of the causes mentioned above. The latter, conversely, is an effective and independent cause of imported inflation. To compensate for this type of inflation, nominal incomes of all domestic economic agents would have to be reduced. This is socially and politically impossible.

Inflation in France from 1966 to 1976 is therefore due to five effective causes:

1. The strategy of labor unions who try to anticipate any future increase in prices and productivity.

2. Government policy of agricultural price supports.

These first two causes are the main sources of the "wages—consumption" inflationary circuit.

3. The policy which leads to the depreciation of primary savings.

This cause is at the root of the misallocation of savings and the consequent fall in productivity.

4. The over-extension of public services. This cause increases national expenditures and reduces national productivity.

5. The exogenous rise in the price of oil and other raw materials. This cause also reduces the productivity of national factors through its negative influence on the terms of trade.

Furthermore, all of these causes result in a redistribution of factors, the most serious consequence of which is unemployment.

III. The Effects of Inflation on Factor Allocation

A. *The Effect on Factor Allocation of a Rise in Wages which Exceeds the Increase in Productivity*

1. *The acceleration of the substitution of capital for labor.*

Because nominal wages increase faster than prices, firms are compelled to accelerate their substitution investments, which leads to a rapid growth in the apparent productivity of labor. Insofar as nominal wages rise faster than productivity, however, these investments are insufficient to counteract the increase in labor costs (Table 7).

When we consider price elasticity and competition there is no reason to expect that domestic and foreign outlets will expand faster than productivity improves. On the contrary, insofar as labor costs progress more rapidly in France

TABLE 7

THE RELATIONSHIP BETWEEN THE GROWTH IN THE WAGE RATE AND THE APPARENT PRODUCTIVITY OF LABOR

(in percent per year)

	1959–69			1969–73			1974		
			Wages			Wages			Wages
	Wages	Productivity	Productivity	Wages	Productivity	Productivity	Wages	Productivity	Productivity
Branches producing directly for consumption									
1. Housing	n.a.	n.a.	n.a.	10.0	7.9	1.9	15.9	9.9	5.5
2. Services	8.4	2.9	5.3	10.9	1.5	9.3	19.4	1.6	17.5
3. Commerce	8.5	4.0	4.3	10.4	2.7	7.5	18.8	1.9	16.6
4. Consumer Goods Industries	8.8	5.9	2.7	11.2	6.5	4.4	19.8	6.4	12.6
5. Food Transformation Industries	9.5	5.3	4.0	11.8	4.5	7.0	20.8	4.4	15.7
6. Agriculture	10.3	6.5	3.6	14.5	8.6	5.4	20.2	4.1	15.5
Other Branches									
7. Construction	9.5	4.4	4.9	10.9	5.5	5.1	18.6	6.0	11.9
8. Transportation and Telecommunications	7.9	3.8	3.9	10.7	6.5	4.0	18.2	5.4	12.1
9. Intermediate Industries	8.3	6.6	1.6	12.4	6.3	5.7	19.4	5.2	13.5
10. Investment Goods	8.3	6.7	1.5	11.6	6.0	5.3	18.4	1.5	16.6
11. Energy	8.4	8.9	0.5	n.a.	11.3	n.a.	n.a.	2.0	n.a.
Total (Housing excluded)	8.8	5.9	2.7	11.6	4.9	6.4	19.1	2.8	15.9
							Total branches 1975:		
							17.3	0.9	16.2

Source: J. Marczewski, *op. cit.*, p. 103.

TABLE 8

THE RELATIONSHIP BETWEEN THE APPARENT PRODUCTIVITY OF LABOUR AND JOB OPENINGS BY BRANCH

	Annual Growth Rate of the Productivity of Labor 1952–72 (in %)	Total Number of Persons Employed (in thousands)		Structure in % of the Total		Average Annual Growth Rate 1965–76	Growth Rate of Production in Volume 1966–74
		1965	1976	1965	1976		
Branches in which the productivity of labor grows quickly							
Energy	8.8	381	265	1.9	1.1	−3.3	5.8
Intermediate industries	6.7	1521	1722	7.7	8.2	+1.1	6.1
Agriculture	6.3	3315	2039	16.8	9.7	−4.5	2.1
Consumer goods industries	6.2	1798	1528	9.1	7.2	−1.5	5.4
Investment goods industries	5.7	1565	1954	7.9	9.4	+2.1	7.4
Total		8582	7528	43.4	35.8	−1.2	5.5
Branches in which the productivity of labor grows slowly							
Food transformation industries	4.4	660	605	3.3	2.9	−0.8	4.4
Transport–Telecommunications	4.3	1017	1238	5.1	5.9	+0.8	6.7
Construction	3.8	1964	1821	9.9	8.7	−0.7	4.9
Commerce	3.3	2145	2520	10.8	12.0	+1.5	5.0
Services	2.7	2249	3296	11.4	15.7	+3.3	5.3
Housing		62	62	0.3	0.3	0.0	6.0
Total		8097	9542	40.9	45.5	1.5	5.3
Unproductive Activities							
Public Services, Financial institutions, Servants		3093	3921	15.6	18.7	2.2	
Total Active Population		19772	20991	100.0	100.0	0.54	

Source: J. Marczewski, *op. cit.*, p. 171.

than those incurred by its main foreign competitors, its share of domestic and foreign markets is more likely to decrease. In any case, as Table 8 shows, in branches where productivity rises rapidly, employment decreases (−1.2 percent per year). Employment increases, conversely, in branches where productivity makes little headway (1.5 percent per year) or none at all (2.2 percent per year).

In 1965, 43.4 percent of the active population was employed in branches in which productivity was growing rapidly. In 1976, this percentage had dropped to 35.8 percent. Conversely, branches in which productivity is improving slowly now employ 45.5 percent of the active population as compared to 40.9 percent in 1965. Finally, activities in which productivity is not growing at all employed 15.6 percent of the active population in 1965, and 18.7 percent in 1976. The increase in these activities as a proportion of total employment leads to a drop in the growth rate of marketable production *per capita*, both of the total population and of the actively employed population.

TABLE 9

ANNUAL GROWTH RATE OF MARKETABLE PRODUCTION PER PERSON ACTIVELY EMPLOYED AND *PER CAPITA*

	Geometric Average			
	1960–64	1965–69	1970–74	1975
1. Growth rate of gross domestic production at prices of the preceding year (*P*)	6.6	5.6	5.3	−1.5
2. Growth rate of the actively employed population (AEP)	0.9	0.7	0.9	−1.5
3. [(1+P)/(1+AEP)]−1	5.6	4.9	4.4	0
4. Growth rate of the total population (TP)	1.4	0.8	0.8	0.1
5. [(1+P)/(1+TP)]−1	5.1	4.8	4.5	−1.6

Sources:

1. French National Accounts (INSEE, *Rapports sur les comptes de la nation*), vol. 3, 1975 p. 14; 1974, pp. 22–21; 1972; pp. 24–25; 1970 pp. 14–15; 1959–66, pp. 66–69.
2. *Ibid.* 1975, p. 164; 1974, p. 164; 1972, p. 156; 1950, p. 164; 1959–46 pp. 238–239.
3. *Ibid.* 1975, vol. 2 p. 42; 1974, vol., 3 p. 159; 1972 p. 161; 1970, p. 167; 1959–66, p. 240.

We can sketch the mechanism that operates under these circumstances as follows:

1. When wages rise more quickly than productivity, firms subject to foreign competition must accelerate the pace of their substitution investments;

2. If wages continue to rise, substitution investments become ineffective and the competitive position of firms is no longer improved sufficiently to broaden domestic and foreign outlets. An increase in the number of persons employed is no longer possible, and often personnel must be reduced;

3. The number of persons engaged in activities competing for international markets consequently drops (Table 8);

4. The manpower laid off by these branches and workers arriving on the market for the first time try to find employment in activities that are protected from international competition;

5. Generally, the growth in productivity in these branches is much smaller than the growth in productivity in competitive branches. This is partly due to their nature (public and private services, commerce) and partly to the lack of competitive incentives;

6. The growth in average productivity on a national scale falls gradually. This is detrimental to the competitive position of branches vying for international markets. Indeed, the expansion of public services and financial institutions causes a direct increase in taxes and financial costs. Moreover, an excessive rise in the share of protected activities puts additional pressure from home demand on products of competitive sectors and on imports. Exports become more and more difficult and an increasing proportion of final domestic demand is satisfied by imports.

The resulting pressure on the balance of trade compels government authorities to choose between two policies:

—they may depreciate the national currency continuously, which decreases the domestic productivity of labor in terms of foreign products;

—they may put quotas on imports, which hinders the development of national industry and consequently also acts negatively on the evolution of the domestic productivity of labor.

In other words, if wages rise considerably faster in France than in countries with which we trade regularly, French businesses in competitive sectors are forced to maintain a proportionally higher pace of substitution of capital for labor than their foreign counterparts. They manage to safeguard their share of the domestic and international market as long as they can keep up the pace, but their demand for French labor decreases. If for technical or financial reasons they are unable to maintain the rhythm, their share of the market decreases, and they must reduce their personnel. In both cases an excessive rise in wages leads to a decrease in employment.

Compensating by an increase in employment in protected sectors or in "unproductive" activities is no solution. This augments the need for imports and diminishes export possibilities. The proportion of activities that take part in the consumption of foreign products cannot indefinitely exceed the proportion of activities that contribute to exports of national products. The entire country consumes imported products whereas only competitive sectors take part in exports. France cannot become a nation of government employees, shopkeepers and suppliers of services because Frenchmen need foreign products that can only be obtained in exchange for exported French products. And these must be produced and sold at reasonable prices.

2. *The fall in the growth rate of productive investments.*

Since 1972, the growth in productive investments has been dropping continuously.

This trend is not in contradiction with the acceleration in the substitution of capital for labor that we have already observed. Indeed, these represent distinct

TABLE 10

THE RATE OF GROWTH OF PRODUCTIVE INVESTMENTS IN PRICES OF THE PRECEDING YEAR
(in percentage)

Geometric mean		
1960–64	1965–69	1970–74
9.6	8.0	6.3

Source: FNA, vol. 3, 1974 pp. 22–23; 1972 pp. 24–25; 1970 pp. 14–15; 1959–66 pp. 66–69.

and successive phases of wage-induced inflation affecting a firm or a branch. On the macroeconomic level, however, both may occur at the same time.

The accelerated substitution of capital for labor is the first reaction of business to a rise in wages that they cannot pass on to sales prices. It implies that the economic life of invested capital is shortened, contributes to a rise in interest rates and consequently increases the cost of investments required to obtain a given improvement in the apparent productivity of labor. Over a longer period of time, it creates heavy liabilities on firms that reduce their capacity for self-financing and for increasing their indebtedness.

When, despite accelerated investments, firms are no longer able to keep the rise in their wage costs under or equal to that of prices, profit margins per unit produced begin to drop in real value.[7] In this case, an investment can be profitable only if the market will allow the firm to expand its production considerably. Even so, the firm must have access to adequate financing, which, for reasons mentioned above, is not always the case.

Firms therefore hesitate to invest. They are even more wary of expenditures on new investments if, like in France after the 1974–75 recession, they possess a large unused productive capacity. This capacity is basically composed of equipment slightly less modern than that in use. It is no longer profitable to employ this older equipment in view of the price of the manpower required to operate it.

Thus, the rise in wages contributes to the acceleration of substitution investments at times, and in branches, in which it is still possible given the general economic situation to expect a growth in sales and prices that in conjunction with the savings in labor resulting from the investment will enable firms to counterbalance the increase in wages during a period sufficiently long to write off this investment. Conversely, when expectations concerning sales and prices are such that firms cannot hope to compensate for an inevitable rise in wages, this rise will act unfavorably on the level of investments.

An inflationary rise in wages has therefore a double negative impact on employment: first, it reduces employment per unit of invested capital, and second, it diminishes the volume of productive investment. But this is not all.

An increase in prices stimulates investment to the extent that it generates a nominal return to an investment which is constantly rising in comparison to the

[7]For the demonstration see J. Marczewski, *op. cit.*, p. 127.

nominal value of the repayment plus interest on the loan that financed it. However, we must keep in mind the fact that the net income of an investor is the result of two elements which bear opposite signs: receipts and operating costs.

Inflation may act on these two elements in different ways depending on the type of investment. When an investment is made in an "unproductive" asset (like a painting) operating costs include only such incidental expenses as storing, insurance and interest and are affected little or not at all by inflation. The investment will benefit from a considerable appreciation at the time of resale. In consequence, the owner takes advantage of both the increase in nominal value due to the general rise in prices and the increase in real value caused by a growing demand for objects which possess such agreeable qualities.

An investment in a block of flats is somewhat less profitable from this point of view. Operating costs include several elements that undergo the influence of inflation: taxes, maintenance costs, etc. Hypothetically receipts benefit from the same advantages as in the preceding case, but they are often subjected to a strict control, which in some cases, in the past, entirely cancelled any advantages.

Finally, in the case of a so-called productive investment, receipts do benefit from the rise in prices. But expenses other than depreciation on loans and interest are affected by both the rise in prices and the rise in wages which is generally faster. So long as the increase in wages is counterbalanced by an improvement in productivity, the operation is by and large worthwhile. But as the effect of the improvement in productivity wears off, and wages continue to rise, the nominal value of receipts begins to decline and with it the nominal value, and therefore the real value, of net profits. If wages represent an important part of value added, and if lenders of funds have taken care to require an interest rate that anticipates rising prices and wages correctly, the real net profit may well become negative.

In conclusion, lasting inflation that is characterized by wages that rise considerably faster than prices encourages barely productive or unproductive investments that create few job openings, and discourages investments that really favor employment.

3. *Widening of the gap between the growth rate necessary to ensure maximum employment and the growth rate compatible with a balance in foreign trade.*

In a country with a given economic, social and political structure, a given set of resources and scale of preferences, and in a specific international context there is one well-determined growth rate which ensures that available manpower will be employed to a maximum. We will call this rate r_e. Under the same conditions there is one well-determined growth rate compatible with a balance in international trade. We will call this rate r_s.

Under normal conditions, and more specifically under the conditions of the French economy, which is characterized by a very high import elasticity due to the scarcity of natural resources, balance of trade is a decreasing function and employment is an increasing function of the rate of growth. With a certain number of adjustments or substitutions within the structure of final demand, or

the technological matrix of the national economy, it is possible to lower r_e or to raise r_s to a certain extent. But these adjustments are hard to make in a market economy and need considerable time. Furthermore, they imply changes in relative returns to productive factors, which requires the consent of the public.

Until the beginning of 1974, the reciprocal adjustment of r_s and r_e had the benefit of a particularly favorable international economic situation. International trade grew rapidly and almost continually. The active French population had remained essentially constant for a century, and France had no fundamental difficulty in achieving an average growth rate of around 5.6 percent per year which was compatible both with maximum employment and a reasonably satisfactory balance of trade. For that matter, there was a shortage of unskilled labor filled by a significant immigration of foreign workers. However, at the same time the French economy was under nearly constant inflationary pressure which generally was greater than that incurred by its more important foreign partners and competitors.

The result was a relatively frequent need to devalue the franc to re-equilibrate a heavy deficit in balance of trade. With an r_e which was potentially less than or equal to r_s over a long period, France in fact went through the following cycle:

$$r_e \leq r_s \rightarrow \text{Inflation} \rightarrow r_e > r_s \rightarrow \text{Trade deficit} \rightarrow \text{Devaluation} \rightarrow r_e \leq r_s$$

The fourfold increase in the price of oil in 1973, the widespread rise in the price of raw materials that followed, and that has remained significant despite subsequent decreases, and the 1974–75 recession have entirely upset the conditions needed for an equilibrated balance in international trade.

At the same time the large post-war cohorts have reached working age, the female population has tremendously increased their activity ratio, and this, combined with consequences of inflation on the national economic structure, has totally changed the employment situation.

The hesitant recovery of the world wide economy hinders a sufficiently rapid growth in exports. The increase in the price of oil and raw materials has brought about a deterioration in French terms of trade on the international market. For a given volume of imports, more exports are therefore required. But imports generally increase more than proportionally to a rise in the national growth rate. If r_e is to equal r_s, the export effort must be much greater than before 1974. To counteract the effect of the relative stagnation of foreign markets, France would need to be able to raise the share of its exports in foreign imports. This can only be achieved by lowering Fgench prices as compared to foreign prices, which requires that the rate of inflation in France be noticeably less than that of its main commercial partners. If this condition is not satisfied, either we must accept another drop in the international value of the franc, or resign ourselves to a growth rate, r_s, which is well below the rate r_e needed to restore and maintain maximum employment.

A depreciation in the value of the franc is in no way a permanent solution to the problem. The improvement in the trade balance thus obtained is only temporary unless the equilibrium achieved satisfies the conditions of the optimal rate of exchange, corresponding to the relationship between the real returns to,

and productivity of, domestic and foreign factors. Once again we will be confronted with the preceding cycle, but r_s will be lower and r_e higher. Situations in which $r_e \leq r_s$ will give way to those where $r_e = r_s$ in the best of cases, and these will be much shorter than periods when $r_e > r_s$, periods characterized by semi-permanent structural unemployment.

B. *The Consequences of the Depreciation of Primary Savings*

The first consequence is the near disappearance of the financial market. In 1976 investments on the financial market represented only 5.9 percent of new funds available to the economy, vs. 23.2 percent in 1966.[8]

At the same time the proportion of liquid or short-term investments rose from 32 percent to 54.9 percent. Non-financial enterprises are responsible for less than half of the net issue of shares. Subscribers prefer government guaranteed loans, despite their relatively low return (10.95 percent in December 1976) to private bonds (return 11.39 percent) and even more so to shares, which do not benefit from the same fiscal advantages.

Firms are compelled to increase the self-financing of their investments. To do so, they must include in their sales prices an allowance both for the depreciation of former investments and for the cost of new investments to be undertaken. National companies that have a legal monopoly, like "Electricité de France", and firms in sectors protected from foreign competition are particularly able to use this process.

Businesses that compete for international markets can use self-financing only to the extent that their costs of production are lower than the prices set by their competitors. If this is not the case, they must restrict their investments or have recourse to bank credit derived from "transformation".

Thus, the role of transformation in financing the gross formation of fixed capital rose from 17.9 percent in 1950 to 36.2 percent in 1975 and 34.2 percent in 1972.[9] Over the same period, the rate of self-financing fell to 57 percent in 1975 and rose again to 64 percent in 1976. The rate of self-financing considered as normal in France is roughly 75 percent.

The fact that almost no new shares are issued and the drop in the rate of self-financing explain the second effect of the depreciation of primary savings on economic structures: the considerable rise in business indebtedness. The ratio of the increase in net liabilities to investments in fixed capital and inventories has risen from 0.39 in 1961 to 0.51 in 1973 in non-financial enterprises. It was as much as 0.71 for corporations in 1975. Combined with the rise in interest rates, this indebtedness is at the root of a very rapid growth in financial costs incurred by businesses. One of the factors responsible for curtailing new investments is the weight of these liabilities in the balance sheets of enterprises.

Finally, the third structural effect of the depreciation of primary savings is the growing portion of unproductive investments in the total allocation of

[8] *Rapports du Conseil National du Crédit*, 1969, p. 41, and 1976 (provisional edition), p. 84, New resources available to the economy do not include self-financing nor funds loaned by one economic agent to another without going through any financial intermediaries, nor transactions with other countries.

[9] Conseil National du Crédit, *Trente et unième rapport*, année 1976, Edition prov., p. 95.

savings. The result is an enormous waste of capital, diverted from more productive uses, and an extension of unemployment, since most of these investments do not create job openings.

C. *The Effect on Factor Allocation of an Excessive Expansion of Public Services*

The main consequences of an over-extension of public services are:

1. A rise in the average cost of national production and therefore a depreciation in the competititve position of national businesses. This rise in costs exists regardless of the means used to finance the growth in public services. This is true for indirect taxation, even if exports are exempt from it, because this is equivalent to exporting products for less than the national cost-price and using the costly foreign exchange thus obtained to import products that could have been manufactured more cheaply at home. But this is also true for direct taxes. If they are too high, either nominal incomes rise in response, or productivity decreases, or eventually productive factors that are too heavily taxed leave the country;
2. The misuse of services supplied free of charge to the population that is not aware of their real cost to the nation.
3. A distribution of free services that does not necessarily benefit those who need them the most;
4. A general decline in initiative and enterprising spirit;
5. A rise in the number of persons employed by the government, which increases the demand for goods and services without increasing their production.

The over-extension of public services widens the gap between the minimum growth rate needed to ensure a satisfactory level of employment and the maximum growth rate compatible with an equilibrated balance in foreign trade. Given the foreign trade constraint, unemployment rises. These facts are by no means specific of an open market economy. In a centrally planned and protected economy, the expansion of public service implies a transfer of a fraction of the real income of workers in 'productive' branches to workers in the "non-productive sphere".[10] Apparently foreign trade is not affected, but the difference between the domestic and the foreign standard of living widens.

D. *The Effects on Factor Allocation of an Exogenous Rise in the Price of Imports*

A durable rise in the import price of energy and raw materials is equivalent to a decline in national productivity. It means that more national factors must be given in exchange for a unit of imported factors. Normally this should lead to a fall in payments accruing to national factors.

In fact, given the current social and political context, there can be no question of explicitly decreasing the nominal income of domestic factors because of the increase in the price of imported inputs. The rise in the price of imported raw materials is included in the price of finished products and therefore causes a reallocation of nominal incomes. If the resulting increase in export prices is not

[10]See J. Marczewski: *Crise de la Planification Socialiste?*, P. U. F. Paris 1973, p. 246, or *Crisis in Socialist Planning*, Praeger Publishers, New York, Washington, London, Second Printing 1976.

greater than that incurred by our foreign competitors, the negative repercussions on the balance of trade can be avoided by increasing exports to the countries supplying the raw materials that are undergoing a rise in price.

In this case, the main lasting consequence of imported inflation is a change in the structure of exports and production. Exports increase towards countries supplying raw materials that are undergoing regular rises in prices. Exports towards industrialized countries stay roughly the same. To those underdeveloped countries that do not supply increasingly expensive raw materials, exports diminish, at least in relative value. There should be a parallel evolution in the structure of production, with a particularly strong development in products destined for newly wealthy countries.

If, on the contrary our export prices rise more than those of our main competitors, the growth in exports towards countries supplying increasingly expensive raw materials is small or nil. Exports towards other regions tend to fall. There is no structural adaptation. The country cannot avoid continuous problems with the balance of trade (such as we have described them above). Therefore the gap widens between the minimum growth rate necessary to ensure a satisfactory level of employment, and the maximum growth rate compatible with a balance in foreign trade.

As far as we can judge from available statistics, since 1974 the French economy has evolved to about half-way between these two theoretical extremes, perfect adaptation and non-adaptation.

In Table 11, we can observe that the oil crisis has brought about a change in the structure of French exports by zone.

The share of exports destined for Common Market countries grew regularly until 1972, but, beginning in 1973, it has declined steadily.

Conversely, the share of exports destined towards oil-producing countries, and to a lesser extent towards Eastern Europe and the U.S.S.R., has risen spectacularly since 1973.

TABLE 11

GEOGRAPHICAL DISTRIBUTION OF FRENCH EXPORTS
(in percentage)

	1970	1971	1972	1973	1974	1975
Oil Producing Countries	5.3	5.0	4.4	4.7	5.0	8.6
EEC	53.6	54.8	56.0	55.7	53.2	49.2
Eastern Europe and the U.S.S.R.	3.6	3.6	3.6	3.6	3.5	5.0
Other countries	37.5	36.6	37.0	36.0	38.3	37.2
Total	100	100	100	100	100	100

Source: FNA, 1975, vol. 2. p. 149.

This modification in the structure of exports by zone has had a noticeable impact on the structure of exports in terms of products (Table 12). In 1974, the exports of intermediate products, and, to a lesser extent, investment goods, were

considerably greater than in 1973. In 1975, the exports of investment goods are the only ones that increased. This is due to the fact that intermediate goods are exported to industrialized countries which were affected by the recession, whereas investment goods have a growing market, since they are in demand by oil-producing countries. The same is true for land transport material.

TABLE 12

STRUCTURE OF FRENCH EXPORTS

(as a percentage of total exports)

					Jan.–March	
	1973	1974	1975	1976	1976	1977
Food, drinks, tobacco	18.20	16.31	14.81	14.64	15.31	13.07
Energy, lubricants	2.11	2.64	2.70	2.89	2.92	2.74
Unfinished products	5.62	5.97	4.46	4.75	4.91	5.09
Manufactured products:	71.02	73.53	76.89	77.09	76.30	78.59
Semi-finished products	23.53	27.41	23.74	23.58	22.39	24.79
Investment goods	21.07	20.87	26.15	26.59	27.09	24.69
Agricultural equipment	0.75	0.75	0.89	0.80	0.78	0.91
Current consumer goods	27.67	24.50	26.10	26.13	26.04	28.20
Industrial gold	1.05	1.55	1.14	0.63	0.57	0.50

Sources: *Commerce Extérieur de la France.* Résultats de 1973, 1974, 1975, 1976 et Comparaison 1974–77 période de janvier–mars. Centre Français du Commerce Exterieur.

It is easy to see however that the economy has not adapted perfectly. One must simply observe the evolution of the rate of coverage[11] of imports by exports (Table 13).

TABLE 13

THE EVOLUTION OF THE RATE OF COVERAGE OF TOTAL IMPORTS (F.O.B. CORRECTED FOR SEASONAL FLUCTUATIONS) BY TOTAL EXPORTS (F.O.B., CORRECTED FOR SEASONAL FLUCTUATIONS)

(in percentage)

	1973	1974	1975	1976	1977
Quarters					
I	106	95	103	97	94
II	107	92	109	96	96
III	104	92	104	91	97
IV	101	96	96	90	

Sources: INSEE, *Tendances de la conjoncture*, No. 11, 15 novembre 1977 and preceding issues 1974, 1975, 1956 and 1977.

The surplus in the trade balance during the first three quarters of 1975 can be explained essentially by the drop in imports due to the recession. Exports, encouraged by purchases of oil-producing countries, maintain the preceding level roughly. However, during the first semester of 1977 there has been a noticeable improvement in the balance. This is no doubt one of the first results of

[11]Value of exports/value of imports expressed as a percentage.

the policy restricting nominal incomes enacted by the government in September 1976.

Conclusion

In France, from 1966 to 1974, the main effects of inflation on the redistribution of factors were:

1. An accelerated substitution of capital for labor;
2. A drop in productive investments;
3. A fall in the growth rate compatible with an equilibrated balance in foreign trade;
4. A decline in the capacity to adapt to changes in the international market;
5. A fall in employment in activities in which productivity grows rapidly;
6. A rise in employment in activities in which productivity grows slowly or not at all;
7. A general spread of unemployment.