NATIONAL ACCOUNTS AS AN INSTRUMENT FOR THE ANALYSIS OF THE SOURCES OF STAGFLATION AN EXAMPLE: FRANCE AND GERMANY, 1971–79

BY JEAN MARCZEWSKI

University of Paris I

Stagflation is a combination of an increasing rate of inflation with a decreasing rate of real growth. It appears when the inflationary gap of production costs raises faster than the inflationary gap of expenditures on Gross Domestic Marketable Product. The decomposition of these two gaps into their main elements gives then the possibility of determining the sources of the inflationary increase in costs and the causes of the relative retardation of the inflationary increase in expenditures. The main cause of stagflation in 1974 for France and Germany was the huge rise in oil prices which had not been immediately followed by an equal rise in prices of their exports. The inflationary rise in wages is an almost permanent factor of stagflation in France; in Germany its responsibility is involved only before 1975. In France the insufficient increase in the inflationary gap of expenditures was mainly due to the restrictive monetary policy and to the official price regulation. In Germany the restrictive monetary policy also contributed to the slowdown in demand in 1974 and 1975. In 1977, on the contrary, the main cause of stagflation was the slackening of export demands due to the world recession and the revaluation of the DM.

In a paper presented at the Fifteenth General Conference of IARIW at Aulanko in 1977, I showed how national accounts could be used for the quantitative assessment of the sources of inflation [3].[1] Since that time I have been trying to extend the method elaborated for that paper to the study of stagflation, a phenomenon which has not been clearly explained until now. The present paper contains some tentative results of this research applied to France and Western Germany against the background of the world economic development for the years 1971–79.

1. STAGFLATION AS AN INFLATIONARY SLOWDOWN IN PRODUCTION

Let $\Delta M - \Delta R$ be the difference between the "nominal" and the "real" growth of output and let Δr be the increase in the rate of real growth of R during a given period (usually a year).

Recent economic events demonstrate that the increase in monetary flows can be accompanied by a slowdown or even a decrease in real flows. Accordingly there are four possible types of economic development:

	$\Delta M - \Delta R > 0$ *Inflation*	$\Delta M - \Delta R < 0$ *Deflation*
$\Delta r > 0$	Inflationary growth (IG)	Deflationary growth (DG)
$\Delta r < 0$	Stagflation (S)	Recession (R)

[1]See bibliography at the end of paper.

The difference $\Delta M - \Delta R$ constitutes what is generally known as inflationary (or deflationary) gap. This gap can be calculated for any item of the national accounts. For studying inflation on the national level the most appropriate concept available is the Inflationary Gap of Total Resources, or Total Inflationary Gap (TIG). Total Resources (TR) represent the sum of GDP and Imports and therefore include all the transactions carried out within the national economy [3, p. 285]. The inflationary gap can then be expressed either in absolute terms at current prices or as a percentage of total resources.

The respective formulas are as follows:

(i) For TIG in the year t at current prices:

$$\begin{aligned} (1) \qquad \mathrm{TIG}_t &= \mathrm{TR}_t - \overline{\mathrm{TR}}_t \\ &= (\mathrm{GDP}_t - \overline{\mathrm{GDP}}_t) + (M_t - \bar{M}_t) \\ &= \mathrm{GDP}_t - \mathrm{GDP}_{t-1}(1 + r_t^{\mathrm{GDP}}) + M_t - M_{t-1}(1 + r_t^{M}) \end{aligned}$$

where: $\overline{\mathrm{TR}}_t$, $\overline{\mathrm{GDP}}_t$ and $\bar{M}_t$ designate respectively Total Resources, Gross Domestic Product and Imports in the year t, at prices of the year $t-1$; r_t^{GDP} and r_t^{M} the rates of growth in the year t of, respectively, GDP and M at prices of the year $t-1$.

(ii) For TIG in the year t as a percentage of TR in the same year:

$$(2) \qquad \mathrm{TIG}_t^{\%} = \frac{\mathrm{TIG}_t}{\mathrm{TR}_t} \times 100.$$

(iii) For TIG in the year t as a percentage of TR in the preceding year:

$$(3) \qquad \mathrm{TIG}_{t-1}^{\%} = \frac{\mathrm{TIG}_t}{\mathrm{TR}_{t-1}} \times 100.$$

Expression (2) means that, in the year t, the $\mathrm{TIG}_t^{\%}$ percent of the nominal value of Total Resources did not correspond to any real production of goods or services. Expression (3) represents the rate of growth of the implicit price of Total Resources during the year $t-1$. Expression (2) is the most comprehensive measure of an inflationary gap. Expression (3) is the most general measure of the price increase, including prices of imported final goods. Inflationary gaps for other aggregates such as GNP, GDP, Consumption, Capital Formation and so on, and for their components, will be calculated in the same way.

Table 1 shows the result of such a calculation for the years 1971 to 1979 in France and Germany as compared to the evolution of World economy; the latter being represented by the rates of growth of the combined GDP (or GNP) of the industrialized nations and of their implicit prices.

The most striking fact emerging from Table 1 is an almost complete identity of economic development in all the industrialized countries. Except for France in 1973 and for Germany in 1979, the types of economic development in both countries are the same as in the average of the industrialized countries.

In the two exceptional years 1973 and 1979, stagflation in France coincides with inflationary growth in Germany. But in 1973, inflationary growth is common to all industrialized countries, with a single exceptiom of stagflation in France.

TABLE 1

GROWTH RATES OF OUTPUT AND PRICES AND TYPES OF ECONOMIC DEVELOPMENT, FRANCE, GERMANY AND ALL INDUSTRIALIZED COUNTRIES, 1971–79

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Geom. Mean 1971–79
1. *Industrialized countries* (total)[a]										
1.1. GNP (or GDP) at prices of the preceding year	3.7	5.7	6.2	0.3	−0.6	5.3	3.8	4.0	3.4	2.7
1.2. GNP (or GDP) implicit price	5.4	4.8	7.4	12.1	11.3	7.6	7.6	7.4	7.7	8.9
1.3. Types of economic development[b]	S	DG	IG	S	R	DG	R	DG	S	
2. *France*										
2.1. GDP at prices of the preceding year	5.3	5.8	5.4	2.8	0.3	4.9	2.9	3.3	3.2	3.0
2.2. $TIG_t^{\%}$	5.3	4.9	7.1	14.0	10.0	9.2	8.6	7.8	9.4	8.1
2.3. Types of economic development	S	DG	S	S	R	DG	R	DG	S	
3. *Germany*										
3.1. GDP at prices of the preceding year	3.2	3.7	4.9	0.5	−1.8	5.2	3.0	3.3	4.6	2.9
3.2. $TIG_t^{\%}$	6.2	4.5	6.2	8.5	5.2	3.3	3.2	2.7	4.2	4.6
3.3. Types of economic development	S	DG	IG	S	R	DG	R	DG	IG	

[a]Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany (F.R.), Ireland, Iceland, Italy, Japan, the Netherlands, Norway, New Zealand, Spain, Sweden, Switzerland, the United Kingdom, the United States.

[b]S = Stagflation, DG = Deflationary growth, IG = Inflationary growth, R = Recession.

Sources: 1. [2], 1980, Table 1; 2. [1], 1977 and 1979, Vol. 3, p. 6; 3. [6], Reihe 1, 1977, p. 240 and 1979, pp. 176, 180, 276.

In 1979, on the contrary, stagflation is a common rule except for an inflationary growth in Germany. It means that domestic conditions overcame the influence of world trends in 1973 in France (restrictive monetary policy) and in 1979 in Germany (expansionist monetary and budgetary policy). For all the other years, the economic evolution in both countries had been mainly determined by external factors.

The similarity of the general evolution in all industrialized countries does not exclude the existence of important differences between the nations. Till 1976, the rate of real economic growth was notably higher in France (3.9 percent) than in Germany (2.1 percent) and most industrialized countries (3.0 percent) (Table 1, lines 1.1, 2.1 and 3.1). But this advantage for France disappeared during the years 1974–79 (France: 3.6 per cent; Germany: 4.0 percent; industrialized countries: 4.1 percent). On the other hand, the rate of inflation which was, till 1976, only by 26 percent lower in Germany than in France and in the average of industrialized countries, has become, since 1976, 2.6 times lower than in France and 2.3 times lower than in the average of industrialized countries (Table 1, lines 1.2, 2.2, and 3.2).

The fact that stagflation is a combination of an increasing rate of inflation with a decreasing rate of real growth suggests that it must be somehow related to the sources of the slowdown in production as well as to those of inflation. The following analysis of economic development in France and Germany during the years 1971–79 will show how these two sets of sources combine in a process of stagflation.

II. The Sources of Inflation

The aggregate TR may be considered either as the sum of production costs (gross factor incomes, indirect taxes less subsidies, imports) or as the total value of the goods and services sold for a final use (private and public consumption, capital formation and exports). Each of these subaggregates can in turn be divided according to the nature, origin or destination of the flows it is composed of. A partial inflationary gap can then be calculated for each of these subdivisions in order to determine the operations which have contributed significantly to the creation of the gap and the agents that may be considered as directly responsible for them. It would of course be desirable to pursue the analysis further by examining the causal relationship and actual motivations of the agents concerned but that goes beyond the scope of the present paper.

A. *The Inflationary Gap of Costs*

Table 2 shows the structure and the evolution of the inflationary gap of costs in France and Germany. The structure of the gap is very similar in both countries.

1. Labour Costs

The increase in labour costs per unit produced represents in both countries about half of TIG (Table 2, lines, 1.1 and 1.2). It is however slightly higher in

TABLE 2

STRUCTURE AND EVOLUTION OF THE TOTAL INFLATIONARY GAP OF COSTS, FRANCE AND GERMANY, 1971–79

(As a percentage of Total Inflationary Gap)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Average
1. *Wages and social insurance costs*										
1.1. France	56.4	47.2	52.9	42.2	67.0	46.8	49.5	49.4	42.0	50.4
1.2. Germany	63	57.4	57.6	48	50.5	25.1	55	49.2	28.2	48.2
2. *Household net income from property and entrepreneurship*										
2.1. France	18.8	23.1	10.3	8.0	18.0	10.2	15.2	19.0	16.1	15.4
2.2. Germany	15.0	0.8	3.8	6.4	27.4	19.0	35.3	13.6	n.d.	15.1 (1971–78)
3. *Enterprise net undistributed income*										
3.1. France	−3.0	6.4	4.6	−5.0	−7.9	−2.7	8.3	3.7	6.7	1.2
3.2. Germany	−4.8	19.4	3.3	−4.9	0.6	21.1	−12.3	25.9	n.d.	6.0 (1971–78)
4. *Government net income from property and entrepreneurship*										
4.1. France	1.9	1.1	1.2	0.3	−3.0	−0.1	−1.3	−1.5	−2.3	−0.4
4.2. Germany	−0.7	−3.8	0.5	−2	−4.7	−5.2	−5.6	1.9	−0.7	−2.2
5. *Taxes on production less subsidies*										
5.1. France	13.4	15.0	9.0	4.6	7.9	12.7	3.1	14.9	13.2	10.4
5.2. Germany	16.2	18.5	6.8	7.7	18.3	5.1	10.7	12.7	11.4	11.9
6. *Capital consumption*										
6.1. France	8.9	9.5	8.8	10.4	14.5	17.4	4.7	10.2	8.0	10.3
6.2. Germany	9.3	5.7	5.9	6.5	8.9	8.7	8.8	12.0	10.1	8.4
7. *Imports*										
7.1. France	8.9	−4.2	13.5	39.0	1.7	17.3	20.7	3.8	17.5	13.1
7.2. Germany	2.2	2.2	22.3	37.8	1.4	25.6	8.1	−14.3	31.8	13.0
8. *Net factor income paid to the rest of the world*										
8.1. France	−5.3	1.9	−0.0	0.5	1.8	−1.6	−0.2	0.5	−1.2	−0.4
8.2. Germany	−0.2	−0.2	−0.2	0.5	−2.4	+0.6	−0.0	−1.0	−0.3	−0.4

Sources: [6], 1978, Reihe 1, pp. 122–145; 1979, pp. 174, 197, 198 and [1], 1977 and 1979, Vol. 3, pp. 6, 8, 10, 12.

France (50.4 percent) than in Germany (48.2 percent). Its contribution to TIG varies in both countries in the same direction without any exception. However the coefficient of correlation between these two series is weak (0.41), as is the correlation between the French and the German TIGs. The reason why is that the French series is increasing while the German one decreases. Expressed as a percentage of the French TIG, the German inflationary gap of wages and social security costs for the years 1971–75 was equal, on the average, to 89 percent of the corresponding French figure. For the years 1976–79, it dropped 31 percent (Table 3, lines 2.1 and 2.2). At the same time, the real growth of the German GDP overtook the economic growth of France, while the German rate of inflation fell to a level almost three times lower than the French. We must admit therefore that, in both countries, there is a close relationship between the rate of increase in nominal wages per unit produced and the rate of inflation. In fact, the coefficient of correlation between TIGs, expressed as a percentage of total resources (Table 1, lines 2.2 and 3.2), and the rate of growth in nominal wages per unit produced (Table 4, lines 2.1 and 2.2) is significant for France (0.85) as well as for Germany (0.89).

There is also a correlation, this time a negative one, between the rate of growth in labour costs and the rate of real growth of GDP (France: −0.84; Germany: −0.37). This last relation would certainly be much closer if the massive oil prices rises did not constitute in 1973, 1974 and 1979 the second major cause of stagflation.

A further proof of the relation between inflationary wage increase and stagflation is the fact that all the years of deflationary growth in both France and Germany (1972, 1976 and 1978) are characterized by a decreasing contribution of labour costs to TIG (Table 2, lines 1.1 and 1.2). The only two other years when this contribution is decreasing are the years 1974 and 1979, which are marked by an extremely strong increase in the inflationary gap of imports (Table 2, lines 7.1 and 7.2). The rising price of oil then reduces the relative contribution of wages to TIG.

The periods when the labour contribution to TIG is increasing are in both countries the years of recession (1975 and 1977) and a year of strong inflationary pressure (1973) determined by a simultaneous increase in wages and in oil prices.

The statement that deflationary growth is always accompanied by a reduction of the contribution of labour costs to TIG, while the opposite is not always true, indicates that a moderate wage increase is a necessary but not sufficient condition of deflationary growth, which certainly is the most favorable type of economic development. The second necessary condition of deflationary growth is the absence of any other major increase in costs, except for undistributed income of enterprises (Table 2, lines 3.1 and 3.2) which, from the producers' point of view, is not a real cost.

On the other hand, a strong increase in the labour cost contribution to TIG leads necessarily either to inflationary growth, if production is elastic and the competitiveness of enterprises satisfactory (Germany, 1973), or to stagflation, if production is constrained by a lack of disposable capacities, price regulation, or credit restrictions (France, 1973), or to recession, if the increase in wages coincides with a slowdown in exports (France and Germany, 1975 and 1977).

TABLE 3

INFLATIONARY GAPS OF COSTS IN FRANCE AND GERMANY, 1971–79, AS A PERCENTAGE OF THE FRENCH TOTAL INFLATIONARY GAP

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Average	
1. *Total inflationary gap*											
1.1. France	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1.2. Germany	117.4	91.5	87.0	60.9	51.3	36.8	37.5	34.4	45.4	62.5	
2. *Wages and social insurance costs*											
2.1. France	56.4	47.2	52.9	42.2	67.0	46.8	49.5	49.4	42.0	50.4	
2.2. Germany	73.7	52.7	50.3	29.1	26.3	9.0	20.5	17.0	12.6	32.4	
3. *Household net income from property and entrepreneurship*											
3.1. France	18.8	23.1	10.3	8.0	18.0	10.2	15.2	19.0	16.1	15.4	
3.2. Germany	17.5	0.7	3.3	3.9	14.2	6.8	13.1	4.7	n.d.	8.0	(1971–78)
4. *Enterprise net undistributed income*											
4.1. France	−3.0	6.4	4.6	−5.0	−7.9	−2.7	8.3	3.7	6.7	1.2	
4.2. Germany	−5.6	17.8	2.9	−3.0	0.3	7.6	−4.6	9.0	n.d.	3.1	(1971–78)
5. *Government net income from property and entrepreneurship*											
5.1. France	1.9	1.1	1.2	0.3	−3.0	−0.1	−1.3	−1.5	−2.3	−0.4	
5.2. Germany	−0.8	−3.5	0.4	−1.2	−2.4	−1.9	−2.1	0.7	−0.3	−1.2	
6. *Taxes on production less subsidies*											
6.1. France	13.4	15.0	9.0	4.6	7.9	12.7	3.1	14.9	13.2	10.4	
6.2. Germany	19.0	17.0	5.9	4.7	9.5	1.8	4.0	4.4	5.1	7.9	
7. *Capital consumption*											
7.1. France	8.9	9.5	8.8	10.4	14.5	17.4	4.7	10.2	8.0	10.3	
7.2. Germany	10.9	5.2	5.2	3.9	4.6	3.1	3.3	4.2	4.5	5.0	
8. *Imports*											
8.1. France	8.9	−4.2	13.5	39.0	1.7	17.3	20.7	3.8	17.5	13.1	
8.2. Germany	2.6	2.0	19.5	23.0	0.7	9.2	1.2	−5.0	14.2	7.5	
9. *Net factor income paid to the rest of the world*											
9.1. France	−5.3	1.9	−0.0	0.5	1.8	−1.6	−0.2	0.5	−1.2	−0.4	
9.2. Germany	−0.2	−0.2	−0.2	0.3	−1.2	0.2	0.0	−0.3	−0.1	−0.2	

Source: Table 2.

TABLE 4

GROWTH RATE OF NOMINAL LABOUR COSTS PER UNIT PRODUCED IN FRANCE AND GERMANY, 1971–79

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Geom. Mean
1. *Growth rate of total labour costs at current prices* (%)										
1.1. France	13.1	11.9	15.5	19.2	17.7	16.0	13.5	12.8	13.2	14.7
1.2. Germany	13.0	9.9	13.5	10.0	4.1	7.4	6.9	6.7	7.3	8.7
2. *Growth rate of labour costs per unit of GDP at prices of the preceding year* (%)										
2.1. France	7.4	5.7	9.6	16.0	17.3	10.6	10.3	9.2	9.6	10.6
2.2. Germany	9.5	6.0	8.2	9.5	6.0	2.0	3.8	3.3	2.6	5.6
3. *Ratio* 2.1/2.2	0.8	1.0	1.2	1.7	2.9	5.2	2.7	2.8	3.7	2.4[a]

[a]Arithmetic average.

Sources: [1], 1977 and 1979, Vol. 3, pp. 6, 11 and [6], Reihe 1, 1978, p. 128; 1979, pp. 180–203.

It might be objected however that the relative moderation of nominal wage growth in Germany is not a cause but a consequence of the slower price rise in that country. It is quite true that wages at time interval t_1 result from a collective bargaining performed at t_0 when trade unions and employers have been considering expected prices and wages for future time intervals $t_2, t_3, \ldots, t_n$, derived from the past evolution of prices and wages at $t_{-1}, t_{-2}, \ldots, t_{-n}$.

But, once the wage rate is fixed by a common agreement, it remains unchanged for some time[2] and determines, in conjunction with other independent variables, the conditions of demand and supply and therefore of prices, at least in so far as the latter are not fixed exogenously. A more or less moderate attitude of trade unions in wage bargaining is therefore a decisive factor in the determination of TIG.

Moreover, a relative moderation of German trade unions in nominal bargaining did not deprive their members of a substantial improvement in their standard of living (Table 5, line 4.2). Even if the real wage growth appears to be slightly slower than in France (Table 5, line 4.3), it has been achieved, contrary to the French case, without any deterioration in other fundamental aspects of the country's economic growth, such as the balance of trade, the financial capacity of enterprises to invest and consequently the employment and the future well-being of workers.

The French balance of trade (Table 6) represents on the average 0.14 percent of GDP. It was negative in 1974, 1976, 1977 and 1979. The German balance equals 2.46 percent of GDP and remains positive during the whole period. So far as exports and imports have been submitted in both countries to the same external shocks (massive oil price rises in 1974 and 1979) and constraints (slowdown of world trade after 1973), the explanation of such a large difference must be looked for in the internal evolution of these countries. The steady increase in the labour cost ratio between France and Germany (Table 7, line 2) explains the parallel appreciation of the DM against the Franc (Table 7, line 3). The fact that the DM is also appreciating against all other main currencies in terms of its December 1969 parity (Table 7, line 4) suggests that this appreciation is also due to the relative moderation of German labour costs. Thus Germany managed to reduce considerably the pressure of world inflation on its domestic market (Table 3, line 8.2) and in particular to lighten the impact of massive rises in prices of oil and other raw materials in 1974 and 1979.

2. Income from Property and Entrepreneurship

In both countries, the growth of real wages during the first years of the period studied was noticeably higher than the growth of real GDP *per capita* (Table 5, lines 4 and 5). However, this situation reversed in Germany after 1975, whereas in France the change occurred only after 1977. In both countries the improvement of the relative position of wage earners has been paid for by a deterioration in the share of income from property and entrepreneurship and especially of enterprise undistributed profits. This evolution has been particularly

[2]For instance, in Germany, collective agreements on wages are concluded for a rather long period and exclude explicitly the possibility of any wage adjustment before an appointed date, even if there is a change in economic conditions.

TABLE 5

REAL WAGE GROWTH IN FRANCE AND GERMANY, 1971–79

(annual percent rates)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Geom. Mean[a]
1. *Total nominal income of wage earners*										
1.1. France	13.1	11.9	15.5	19.2	17.7	16.0	13.5	12.8	13.2	14.7
1.2. Germany	13.0	9.9	13.5	10.0	4.1	7.4	6.9	6.7	7.3	8.7
2. *Employment*										
2.1. France	1.5	1.6	2.2	1.5	−0.8	1.2	1.2	0.6	0.1	1.2
2.2. Germany	0.8	0.1	0.6	−1.8	−3.5	0.5	0.3	1.2	1.7	−0.1
3. *Nominal income of wage earners per capita*										
3.1. France	11.5	10.1	12.9	17.5	18.6	14.7	12.2	12.1	13.1	13.6
3.2. Germany	12.2	9.8	12.9	12.1	7.8	7.9	6.6	5.4	5.5	8.9
4. *Income of wage earners per capita at prices of the preceding year*										
4.1. France	5.7	4.0	5.3	3.4	6.1	4.6	2.5	2.8	2.0	4.0
4.2. Germany	6.4	4.0	5.4	4.8	1.5	3.2	2.7	2.8	1.3	3.6
4.3. *Ratio* 4.1/4.2	0.9	1.0	1.0	0.7	4.1	1.4	0.9	1.0	1.5	1.1
5. *Growth of GDP per capita at prices of the preceding year*										
5.1. France	−0.4	4.9	4.6	2.1	−0.2	4.5	2.5	2.9	2.8	2.6
5.2. Germany	2.2	3.1	4.4	0.4	−1.4	5.7	3.2	3.4	4.5	2.8

[a]Calculated from the formula: $\sqrt[n]{(1+r)^n}$. The ratio is that of the means.

Sources: [1], Vol. 3, 1977, pp. 6, 11, 62, 63; 1979, pp. 201, 202 and [6], Reihe 1, 1977, p. 276; 1979, pp. 180, 314.

TABLE 6

BALANCE OF TRADE, FRANCE AND GERMANY, 1971–79

(as a percentage of GDP at current prices)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Average
France	0.90	0.83	0.57	−1.48	0.69	−1.14	−0.28	0.68	−0.12	0.14
Germany	1.91	2.09	3.01	4.42	2.72	2.36	2.45	2.55	0.59	2.46

Sources: [1], 1977 and 1979, Vol. 3, pp. 164 and 167 and [6], Reihe 1, 1977, p. 240; 1979, pp. 176–276.

TABLE 7

LABOUR COST AND EXCHANGE RATE INDICES, FRANCE AND GERMANY, 1971–79

	1971	1972	1973	1974	1975	1976	1977	1978	1979
1. Total inflationary gap index France/Germany (1970 = 100)	99	100	101	106	111	117	124	128	134
2. Labour cost per unit produced index France/Germany (1970 = 100)	98	98	99	105	116	126	134	141	152
3. Exchange rate index DM/FF (31.XII. 1969 = 100)	105	105	116	121	112	138	147	151	154
4. Exchange rate index DM/SI (31.XII.1969 = 100)	104	105	116	123	119	134	140	146	154
5. Exchange rate index FF/SI (31.XII.1969 = 100)	98	99	100	101	107	97	95	97	100
6. Exchange rate index $/SI (31.XII.1969 = 100)	93	92	85	81	86	87	81	73	73

SI: Synthetic index of 11 most important currencies weighed by the contribution of their respective countries to the world trade of manufactured goods.
Sources: Line 2: Table 4; Lines 3–6: [1], Vol. 2, 1973, p. 17; 1976 and 1979, p. 23.

TABLE 8

INCOME OF NON-FINANCIAL CORPORATIONS, FRANCE AND GERMANY, 1971–79

(in millions of FF or DM at current prices)

	1971	1972	1973	1974	1975	1976	1977	1978	1979
1. *Distributed Income*									
1.1. France	19,229	21,512	25,745	31,495	34,598	38,177	47,827	53,563	60,908
1.2. Germany	13,420	11,820	12,340	15,300	13,010	13,130	19,450	15,630	20,250
2. *Net undistributed income*									
2.1. France	15,819	19,999	16,063	−4,934	−12,033	−23,776	−16,486	−7,470	−1,313
2.2. Germany	5,060	13,450	14,410	5,540	4,010	14,650	7,690	17,710	n.d.

Sources: [1], Vol. 3, 1979, pp. 21–33, 13, 14; 1977, pp. 20, 14 and [6], Reihe 1, 1977, p. 244; 1979, pp. 280–231.

marked in France where a tremendous rise in labour and import costs coincided with the impossibility of a proportional rise in prices, constrained as they were by foreign competition or government regulation. The inflationary gap of net undistributed income became negative in 1971, 1974, 1975 and 1976 (Table 2, line 31). In other words, undistributed profits grew slower than prices, i.e. declined in real value. The decline has been especially deep and durable in French non-financial corporations (Table 8, line 2.1). In Germany, the inflationary gap of net undistributed profits was also negative during the years 1971, 1974 and 1977, but in the other years the positive results were well above the corresponding French figures (Table 2, line 3.2) and non-financial corporations did not suffer any loss, at least at current prices (Table 8, line 2.2). In consequence, the inflationary gap of undistributed income has been on average two and a half times larger in Germany than in France (Table 3, lines 4.1 and 4.2). This evolution had an important bearing on the propensity to invest in the two countries.

The negative influence of labour cost increase on income from property and entrepreneurship of households (Table 2, lines 2.1 and 2.2) has been much weaker than on undistributed profits. In particular, the income of individual enterprise and liberal professions has risen approximately at the same rate as wages on the average. It means that their nominal rise in France has been almost two times faster than in Germany.

3. Taxes on Production Less Subsidies

The contribution of this cost to TIG is higher in Germany (Table 2, lines 5.1 and 5.2). But as the French TIG is larger, its absolute burden on production is lower in Germany than in France (Table 3, lines 6.1 and 6.2).

4. Import Prices

In both countries, import prices (Table 2, lines 7.1 and 7.2) became an important factor of inflation only in the years of a massive rise in prices of imported oil and other raw materials (1973, 1974 and 1979). Their relatively high contributions in 1976 and 1977 are due to the decline of TIG during those years rather than to the strength of the inflationary gap of imports. While the growth rate of imports in real terms is on the average faster in France (8 percent) than in Germany (6.5 percent), their relative inflationary impact on production costs is almost identical in both countries (Table 2, lines 7.1 and 7.2). This is simply due to the fact that domestic costs rise faster in France. In absolute terms, the inflationary pressure of imports is more than twice as weak in Germany (Table 3, line 8.2). The continuous appreciation of the DM (Table 7, lines 3 and 4), which reduces import costs for German enterprises, plays a major part in this evolution. On the other hand, a moderate living cost rise enables German workers to accept moderate nominal wage increases, which explains the continuous appreciation of the DM. It is what is commonly called the "virtuous circle" of the German economy.

B. *The Inflationary Gap of Expenditures*

Considered as the total value of final goods, TR can be defined as the sum of expenditures by the final users of these goods (households, enterprises,

government and the rest of world). TIG can then be decomposed into partial inflationary gaps of Household consumption and capital formation, Enterprise fixed capital formation and the change in inventories, Government consumption and capital formation, and Exports.

Table 9 shows the structures and the evolution of the inflationary gap of expenditures in France and Germany 1971–79. The general structure of this gap is similar in the two countries but in Germany the contributions of government spending and exports are relatively larger, while in the case of France, the share of household consumption is predominant.

1. Household Consumption and Capital Formation

Except for two years (1976 and 1978) the household consumption contribution to TIG varies in both countries in the same direction. The coefficient of correlation between the two series is positive and significant (0.5), as it is for wages (Table 2, lines 1.1 and 1.2), although consumer price movements are not correlated at all ($r = 0.08$). In both countries, the inflationary gap of consumption is on the average approximately equal to the inflationary gap of wages. But in France the gap of consumption is slightly larger than the gap of wages, while in Germany this relationship is exactly the inverse. This is probably due to the fact that the proportion of wage earners in the total population is in France slightly lower (34 percent) than in Germany (36 percent) and perhaps also because German workers have a higher propensity to save.

There is no significant correlation between the inflationary gaps of consumption and wages either in France (0.25) or in Germany (0.14). As the most important factor of inflation, the inflationary gap of wages varies in the same direction as TIG, except for the years of a very strong rise of import prices (1974 and 1979). On the other hand, consumption depends mainly on the household disposable income, which contains, besides wages, several elements (such as income of individual entrepreneurs, social transfers, direct taxes) which do not necessarily vary in the same direction as wages.

The German inflationary gap of household consumption expressed as a percentage of the French TIG amounts on the average to a little more than half of its French counterpart (Table 10, lines 2.1 and 2.2). As in the case of wages, this relationship has decreased strongly since 1976.

The inflationary gaps of household capital formation in France and Germany are not exactly comparable (Table 9, lines 2.1 and 2.2). In France, this item only includes the construction of dwellings belonging directly to households. Given the absence of the corresponding flow in the German national accounts, I have been obliged to use the item "Wohnungsbau," which is of course much larger. In spite of this, the two series vary generally in the same direction, depending heavily on the economic cycle inside and outside of the country.

2. Enterprise Fixed Capital Formation

The relative magnitude of this item for Germany in Tables 9 and 10 is partly due to the inclusion of the whole of dwelling construction in household capital formation. Subject to this difference, the real growth rate of fixed capital formation by enterprises is on the average almost equal in both countries: France

TABLE 9

STRUCTURE AND EVOLUTION OF THE TOTAL INFLATIONARY GAP OF EXPENDITURES, FRANCE AND GERMANY, 1971–79

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Aver. 1971–1979
1. *Household consumption*										
1.1. France	53.5	60.6	46.6	42.7	54.3	50.5	50.5	54.5	52.5	51.5
1.2. Germany[a]	38.1	53.6	48.1	33.4	51.7	58.5	50.5	46.0	37.8	46.4
2. *Household fixed capital formation*										
2.1. France	4.1	6.1	6.9	5.6	5.1	6.3	4.9	5.3	5.5	5.6
2.2. Germany[b]	12.1	21.2	8.1	3.7	2.0	4.5	6.6	10.5	9.8	8.7
3. *Enterprise fixed capital formation*										
3.1. France	10.8	11.5	10.6	11.5	9.5	12.4	11.0	9.5	9.2	10.6
3.2. Germany	9.6	−5.8	5.4	6.5	8.1	9.2	7.4	11.4	9.3	6.8
4. *Change in inventories*										
4.1. France	−0.2	1.6	2.4	2.5	3.8	0.8	0.4	0.6	1.4	1.5
4.2. Germany	−0.2	0.6	0.9	0.3	−0.7	−4.7	0.9	0.5	1.3	−0.1
5. *Government consumption*										
5.1. France[a]	16.0	16.0	14.6	11.7	15.4	12.9	14.7	15.2	12.4	14.5
5.2. Germany	25.7	20.1	21.5	19.5	19.1	16.7	23.1	18.3	17.3	20.2
6. *Government fixed capital formation*										
6.1. France	3.8	2.9	4.0	2.9	3.2	3.3	2.3	2.5	2.6	3.0
6.2. Germany	4.8	2.2	2.2	2.7	1.1	2.3	2.7	5.7	5.7	3.3
7. *Exports*										
7.1. France	12.0	1.3	14.9	23.1	8.7	13.8	16.2	12.4	16.4	13.3
7.2. Germany	9.9	8.1	13.8	33.9	18.4	13.5	8.8	7.4	18.8	14.7
Total Inflationary Gap	100	100	100	100	100	100	100	100	100	100

[a]Including non profit associations.
[b]Total residential construction (Wohnungsbau).
Sources: [1], Vol. 3, 1977, p. 6; 1979, p. 6 and [6], Reihe 1, 1977, p. 240; 1979, pp. 186–188; 267, 276.

TABLE 10

INFLATIONARY GAPS OF EXPENDITURES IN FRANCE AND GERMANY, AS A PERCENTAGE OF THE FRENCH TIG, 1971–79

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Aver. 1971–1979
1. *Total inflationary gap*										
1.1. France	100	100	100	100	100	100	100	100	100	100
1.2. Germany	117.4	91.5	87.0	60.9	51.3	36.8	37.5	34.4	45.4	62.5
2. *Household consumption*										
2.1. France	53.5	60.6	46.6	42.7	54.3	50.5	50.5	54.5	52.5	51.5
2.2. Germany	44.5	49.0	41.8	20.3	26.5	21.5	18.9	15.8	17.2	28.4
3. *Household fixed capital formation*										
3.1. France	4.1	6.1	6.9	5.6	5.1	6.3	4.9	5.3	5.5	5.6
3.2. Germany	14.2	19.4	7.0	2.3	1.0	1.7	2.5	3.6	4.4	6.9
4. *Enterprise fixed capital formation*										
4.1. France	10.8	11.5	10.6	11.5	9.5	12.4	11.0	9.5	9.2	10.6
4.2. Germany	11.3	−5.3	4.7	4.0	4.2	3.4	2.8	3.9	4.2	3.7
5. *Change in inventories*										
5.1. France	−0.2	1.6	2.4	2.5	3.8	0.8	0.4	0.6	1.4	1.5
5.2. Germany	−0.2	0.5	0.8	0.2	−0.4	−1.7	0.3	0.2	0.6	0.3
6. *Government consumption*										
6.1. France	16.0	16.0	14.6	11.7	15.4	12.9	14.7	15.2	12.4	14.5
6.2. Germany	30.2	18.4	18.7	11.9	9.8	6.1	8.9	6.3	7.9	13.1
7. *Government fixed capital formation*										
7.1. France	3.8	2.9	4.0	2.9	3.2	3.3	2.3	2.5	2.6	3.0
7.2. Germany	5.6	2.0	1.9	1.6	0.6	0.8	1.0	2.0	2.6	2.0
8. *Exports*										
8.1. France	12.0	1.3	14.9	23.1	8.7	13.8	16.2	12.4	16.4	13.3
8.2. Germany	11.6	7.4	12.0	20.6	9.4	5.0	3.3	2.5	8.5	8.9

Sources: Table 9, Table 3.

2.4 percent, Germany 2.7 percent. But in France, a remarkably rapid growth in the years 1971–73 (6.2 percent) was followed by an almost complete stagnation in the years 1974–79 (0.3 percent), as a consequence of the very unfavourable evolution of nonfinancial enterprise income (Table 8, line 2.1). On the contrary, in Germany, the deep slowdown in the years 1974 and 1975 was immediately followed by an extremely rapid growth (6.8 percent on the average) corresponding to the rapid revival of profits (Table 8, line 2.2). As to the inflationary gap of enterprise fixed capital formation, it is smaller in Germany (Table 9, lines 3.1 and 3.2), because, in France, a slower real growth of investment combined with a faster rise in prices. Nevertheless, the two series are correlated (0.61), which is certainly due to the general influence of the world economic development on the entrepreneurs' expectations in both countries.

3. Public Expenditures

Surprisingly enough there is a correlation (0.59) between the inflationary gaps of public consumption in France and Germany (Table 9, lines 5.1 and 5.2). This correlation is even higher than that between the two TIGs or labour cost inflationary gaps. Public consumption contributes relatively more to inflation in Germany than in France, but as a percentage of the French TIG, its contribution is still slightly weaker than the French one (Table 10, lines 6.1 and 6.2). Its real growth is faster in Germany (3.9 vs. 3.3 percent) but the nominal rise in salaries and in prices of purchased goods is much faster in France.

Conversely, while the relative shares of public capital formation in TIG are almost identical in both countries (Table 9, lines 6.1 and 6.2), there is no significant correlation between them. This is quite understandable given the exogenous character of this variable in relation to most of the other economic magnitudes considered here. The real growth of public capital formation is faster in Germany than in France (0.7 vs. 0.5 percent), but its inflationary impact is much weaker in Germany (Table 10, lines 7.1 and 7.2).

4. Exports

The inflationary gaps of exports in the two countries are correlated (0.66). This seems to be due entirely to a very strong correlation between world trade and the real exports of France and Germany. Like imports, French exports rise faster in real terms (8.3 percent) than the German ones (6.1 percent), but their relative contribution to TIG is lower than in Germany (Table 9, lines 7.1 and 7.2). This is understandable since domestic factors of inflation are much stronger in France. However, in absolute terms, given the relationship existing between the respective TIGs, the inflationary impact of exports on the domestic economy is weaker in Germany than in France (Table 10, lines 8.1 and 8.2).

C. *The Inflationary and Deflationary Circuits*

As I showed previously [3, p. 291 and 5, p. 18], the transmission of inflationary pressures is accomplished through a variety of circuits. An inflation-

ary circuit is created 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, the gap returns to the starting point and the process begins all over.

The most important inflationary circuits are as follows (Table 11):

(i) Household disposable income → Household market consumption. This circuit, the main source of which is wages, represents, as a percentage of the respective TIGs, about 48 percent in France, and about 45 percent in Germany;
(ii) Household savings → Household capital formation;
(iii) Government disposable income (after wage payments) → Government market consumption;
(iv) Government saving → Government capital formation;
(v) Enterprise disposable income → Enterprise capital formation;
(vi) Rest of the World disposable income (imports plus net factor income payable to the Rest of the World) → Exports.

In so far as the inflationary gap of the disposable income of an agent is larger than the inflationary gap of the corresponding expenditure, the positive balance (Table 11, line 1.3) forms a deflationary gap for some agents among those who financed the nominal increase of the disposable income. Their purchasing power has been diminished and consequently they may be forced to reduce their own expenditure, creating in this way a deflationary flow or even a deflationary circuit.

On the contrary, when the difference between the disposable income and the corresponding expenditure is negative, it means that the agent concerned financed his deficit with a credit (Table 11, line 3.3) which normally must have been extended by a surplus agent.

There is however no reason for the positive differences to be exactly equal to the negative ones. All deflationary gaps created by the increase in nominal incomes are not necessarily compensated by credits. In an inflationary economy there are always some deflationary flows which have not been compensated by new credits and which remain, in spite of the simultaneous existence of inflationary circuits. The amount of these flows represents respectively 12 and 14 percent of TIG in France and Germany (Table 12, lines 7.1 and 7.2).

These last figures must however be corrected by the amount of credits extended to Government by the Central Bank and by the Rest of the World. In contrast to the credits financed out of disposable income, these credits create a new inflationary purchasing power which should be subtracted from the deflationary flows. This correction is provided for in Table 13. The resulting figures expressed as a percentage of the respective TR (Table 13, lines 4.1 and 4.2) are generally higher in the years of stagflation and recession (1971, 1974, 1975, 1977) than in the years of inflationary or deflationary growth. The only exception is Germany 1975.

This fact confirms my earlier hypothesis that an increase in costs which is not followed by a rise in effective demand large enough to absorb the cost-induced inflationary gap leads to a decrease in sales and in economic activity [4, p. 69].

TABLE 11

MAIN INFLATIONARY CIRCUITS AT CURRENT PRICES, FRANCE AND GERMANY, 1971–79

A. France (millions of FF)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Average
1. *Households*										
11 Disposable income → market consumption	27,607	33,237	42,237	90,457	92,037	91,988	95,903	105,837	141,990	80,144
12 Disposable income → fixed capital formation	2,157	3,328	6,397	12,143	8,810	11,728	9,584	10,505	15,093	8,861
13 Deflationary(+) or inflationary(−) balance	10,969	4,725	10,051	11,760	54,153	−14,877	17,724	38,736	−6,513	14,081
2. *Government*										
11 Disposable income or credit → market consumption	2,190	2,136	2,646	7,143	6,161	6,513	5,384	7,165	10,466	5,534
12 Disposable income or credit → Fixed capital formation	2,037	1,634	3,165	6,354	5,546	6,171	4,547	5,046	7,191	4,632
13 Deflationary(+) or inflationary(−) balance	1,355	4,807	6,495	13,338	−4,298	45,593	−197	−322	41,802	12,064
3. *Enterprises*										
31 Disposable income or credit → Fixed capital formation	5,744	6,445	9,810	25,847	21,178	23,086	21,357	20,499	26,324	17,810
32 Disposable income or credit → change in inventories	−117	962	2,179	5,400	1,599	1,552	882	1,152	3,917	1,947
33 Deflationary(+) or inflationary(−) balance	−3,613	−297	−6,115	−41,459	−15,076	−11,847	−3,119	2,242	−6,494	−9,531
4. *Rest of the World*										
41 Imports and factor income paid to the Rest of the World—Exports	6,348	751	13,754	50,188	15,027	25,812	31,502	23,234	45,155	38,552
42 Deflationary(+) or inflationary(−) balance	−1,582	−2,016	1,898	36,865	−11,867	1,068	10,674	−15,851	−1,518	1,963
5. *Inflationary ciruit (total) = Inflationary gap of market resources*	45,966	48,493	80,188	197,532	150,358	166,850	169,159	173,438	250,136	142,458
6. *Non compensated deflationary flows (total)*	7,129	7,219	12,329	20,504	22,912	19,937	25,082	24,805	27,277	18,577
7. *Non compensated deflationary flows as % of TR*	0.69	0.64	0.95	1.32	1.34	0.99	1.11	0.97	0.93	0.99

Sources: [1], Vol. 3, 1977, pp. 6–9, 1979, pp. 6–9.

B. Germany (millions of DM)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Average
1. *Households*										
11 Disposable income → market consumption	20,049	22,873	31,322	32,826	32,445	25,765	23,155	18,693	27,704	22,870
12 Disposable income → fixed capital formation	6,761	9,291	5,463	3,660	1,031	2,122	3,108	4,379	7,440	4,806
13 Deflationary(+) or inflationary(−) balance	5,110	3,281	−14,939	8,994	39,149	−23,906	−3,007	2,229	−7,858	1,006
2. *Government*										
21 Disposable income or credit → market consumption	4,809	3,136	5,056	8,875	6,125	2,296	3,603	2,890	6,702	4,832
22 Disposable income or credit → fixed capital formation	2,660	1,017	1,519	2,788	865	1,020	1,316	2,448	4,430	3,118
23 Deflationary(+) or inflationary(−) balance	10,995	2,358	24,564	−1,657	−27,722	20,442	13,798	1,704	630	5,012
3. *Enterprises*										
31 Disposable income or credit → fixed capital formation	5,373	−2,554	3,689	6,820	5,342	4,124	3,602	4,913	7,113	4,269
32 Disposable income or credit → change in inventories	203	1,567	−794	−1,542	1,821	3,890	1,708	1,951	1,320	1,125
33 Deflationary(+) or inflationary(−) balance	−2,516	343	−3,117	1,040	4,694	5,238	11	15,272	2,730	2,633
4. *Rest of the World*										
41 Imports and factor income paid to the Rest of the World—Exports	5,481	3,575	9,389	34,922	11,881	6,128	4,215	3,229	14,354	10,030
42 Deflationary(+) or inflationary(−) balance	−3,276	−1,077	6,788	5,563	−10,074	2,431	963	−15,214	11,377	−280
5. *Inflationary circuit (total) = Inflationary gap of market resources*	45,336	38,905	55,644	88,349	59,510	45,345	40,707	38,503	69,063	53,485
6. *Non-compensated deflationary flows (total)*	10,313	4,905	13,296	13,940	6,047	4,205	11,765	3,991	6,879	8,371
7. *Non-compensated deflationary flows as % of TR*	1.15	0.5	1.22	1.16	0.48	0.3	0.79	0.25	0.39	0.69

Sources: [6], Reihe 1, 1976, p. 240; 1979, pp. 176, 177, 180, 186, 188, 207, 276.

TABLE 12

MAIN INFLATIONARY CIRCUITS AS A PERCENTAGE OF THE RESPECTIVE TIGS, FRANCE AND GERMANY, 1971–79

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Arithm. Average
1. *Household disposable income → Household market consumption*										
1.1. France	49.3	47.8	39.5	40.6	62.3	41.3	50.8	51.4	45.9	47.7
1.2. Germany	36.0	51.7	46.6	32.1	49.5	54.5	48.6	44.0	37.1	44.5
2. *Household disposable income → Household fixed capital formation*										
2.1. France	4.1	6.1	6.9	5.6	5.1	6.3	4.9	5.3	5.5	5.6
2.2. Germany	12.1	21.2	8.1	3.7	2.0	4.5	6.6	10.5	9.8	8.7
3. *Government disposable income → Government market consumption*										
3.1. France	3.9	3.1	2.5	3.2	4.2	2.9	2.9	3.5	3.4	3.3
3.2. Germany	8.6	7.1	7.5	8.7	9.4	4.9	7.6	6.8	9.0	7.7
4. *Government disposable income → Government fixed capital formation*										
4.1. France	3.8	2.9	4.0	2.9	3.2	3.3	2.3	2.5	2.6	3.0
4.2. Germany	4.8	2.2	2.2	2.7	1.1	2.3	2.7	5.7	5.7	3.3
5. *Enterprise disposable income → Enterprise fixed capital formation*										
5.1. France	10.8	11.5	10.6	11.5	9.5	12.4	11.0	9.5	9.2	10.6
5.2. Germany	9.6	−5.8	5.4	6.5	8.1	9.2	7.4	11.4	9.3	6.8
6. *Imports and factor income paid to the Rest of the World → Exports*										
6.1. France	12.0	1.3	14.9	23.1	8.7	13.8	16.2	12.4	16.4	13.3
6.2. Germany	9.9	8.1	13.8	33.9	18.4	13.5	8.8	7.4	18.8	14.7
7. *Non-compensated deflationary flows*										
7.1. France	13.5	12.9	13.4	9.4	13.2	10.7	12.9	12.5	9.9	12.0
7.2. Germany	18.5	11.1	19.8	13.6	9.2	8.9	24.7	9.4	9.2	13.8

Note: The circuit "Enterprise disposable income → change in inventories" has been omitted because of its uncertain determination. Thus totals to not necessarily equal 100.

Sources: Table 11.

TABLE 13

DEFLATIONARY FLOWS AND CREDITS OF THE CENTRAL BANK AND OF THE REST OF THE WORLD TO GOVERNMENT, FRANCE AND GERMANY

(millions of FF or DM)

	1971	1972	1973	1974	1975	1976	1977	1978	1979
1. *Non-compensated deflationary flows*									
1.1. France	7,129	7,219	12,329	20,504	22,912	19,937	25,082	24,805	27,277
1.2. Germany	10,313	4,905	13,296	13,940	6,047	4,205	11,765	3,991	6,879
2. *Credits of the CB and of the Rest of the World to Government*									
2.1. France	−402	306	454	−273	3,348	3,664	298	2,243	n.d.
2.2. Germany	360	−750	3,410	−1,920	−720	1,600	−180	−380	n.d.
3. *Difference (1–2)*									
3.1. France	7,531	6,913	11,875	20,777	19,564	16,273	24,784	22,562	n.d.
3.2. Germany	9,953	5,655	12,842	15,860	6,767	2,605	11,945	4,371	n.d.
4. *Line 3 as a percentage of TR*									
4.1. France	0.73	0.61	0.91	1.33	1.14	0.81	1.09	0.89	n.d.
4.2. Germany	1.11	0.59	1.18	1.32	0.54	0.19	0.81	0.28	n.d.
5. *Types of economic development*[a]									
5.1. France	S	IG	S	S	S	DG	R	IG	IG
5.2. Germany	S	DG	DG	S	S	DG	S	IG	DG

Sources: [1], Vol. 3, 1976, p. 134; 1979, pp. 132–144 and [6], Reihe 1, p. 271; 1979, p. 309, Tables 11 and 12.

[a]S = Stagflation, IG = Inflationary growth, DG = Deflationary growth, R = Recession.

III. The Sources of the Inflationary Slowdown in Production

A. *A General Theory of Stagflation*

An exogenous rise in the price of a factor or a good will produce a double effect:

(i) the creation of additional purchasing power at the disposal of the seller of the factor or of the good whose price has risen. This purchasing power does not correspond to any increase in real flows. It constitutes an inflationary gap;

(ii) an equivalent diminution of the purchasing power of the buyers of the factor and of the good concerned. It is a deflationary gap.

The transmission of the inflationary gap to the suppliers of the seller whose purchasing power has increased generates an inflationary flow which may or not be transformed into an inflationary circuit. This transformation is realized if and when the inflationary gap created by the initial increase in price comes back to the agents who had been obliged to finance it, compensating in this way their deflationary gap. That is the classical case of a pure inflation which will be accompanied by a more or less important increase in output depending on the elasticity of production. The spreading of inflation will be the fullest and the most rapid with a zero elasticity of production. On the other hand an infinite elasticity of production would mean a complete absorption of inflation.

However, it may happen that the inflationary flow does not come back to its starting point. For instance, an increase in wages, instead of being spent on consumption of goods produced by the firms which bear the burden of rising labour costs, is hoarded or diverted towards other home produced or imported goods. Or an increase in import costs is not followed by an equal rise in exports. Or an expenditure on investment does not bring to the investors concerned any rise in profits. In all these cases, the inflationary flow continues to develop, but the inflationary circuit is not closed. The deflationary flow is not compensated and exerts a depressive influence on the economy. The firms or the nations which have financed the initial inflationary gap are compelled, after some time, either to reduce their activity or to replace the factors which have become too expensive by other means of production. This is the most common source of what is now called "stagflation," that is inflation combined with a slowdown of production and unemployment.

B. *The Domestic Sources of Stagflation*

In order to apply the preceding theory to the example of France and Germany, it is necessary to compare the inflationary gaps of costs to the inflationary gaps of expenditures on final goods and services produced in each country. The total expenditure on the domestic production of a country is represented by Gross Domestic Market Product (GDMP) which may be conveniently decomposed into Household and Government market consumption, Capital Formation and Exports minus Imports. The choice of costs which have to be compared to GDMP is more difficult. Some of the elements accounted for until now as costs (Table 9), such as undistributed income of enterprises (corporate and

uncorporated) are not really costs for the producers. For them, their increase is a stimulating factor rather than a burden. If we consider, as a first approximation, the production system of a nation as a single unit comprising enterprises and government, then its costs are reduced to payments of all kinds (factor incomes, transfers and payments for imports) to households and to the rest of the world. The payments between government and enterprises do not have to be taken into account. But imports are already accounted for, as a negative item, in GDMP. The magnitudes to be compared are therefore the inflationary gap of GDMP on the one hand, and the inflationary gap of all payments by government and enterprises to households and to the rest of the world (except payments for imports) on the other.

Since stagflation, like all other types of development, is a dynamic process, the inflationary gaps to be compared have to be expressed in terms of rates of increase, i.e. as a percentage of the given aggregate in the preceding year (formula (3)). Table 14 gives the results of such a comparison for France and Germany in 1971–79. As one may see, out of 17 country-years taken into consideration 16 confirm the hypothesis that the inflationary slowdown in production is due to an excessive increase in costs which is not compensated by an equal increase in prices. The only exception is the year 1978 in France, for which the Table shows an increase in costs higher than the increase in the rate of inflation, while in fact the growth rate of GDMP increased from 3.1 to 3.4 percent. This exception may be due to the fact that in 1978 wages paid by enterprises increased less than prices (Table 15A, lines 2.1 and I), which is rather exceptional in France. The excess of cost increases over price increases was mainly concentrated on items such as income of individual entrepreneurs (Table 15A, line 2.3), which is not considered by enterprises as a cost, and social transfers (Table 15A, line 2.4) the greatest part of which is supported by Government.

In all other cases, an increase in the inflationary gap of costs higher than the increase in the inflationary gap of sales corresponds to a slowdown in production (stagflation or recession).

It is to be noticed that the types of economic development indicated in Tables 14 and 15 issue from the comparison of GDMP real growth rates with the inflationary gap of GDMP. That is why they are not exactly identical to the types of economic development shown in Table 1, which result from the comparison of GDP real growth rates with the inflationary gap of TR. Tables 14 and 15 represent the types of development at the domestic production stage. Table 1 gives a final picture of economic development after having taken into account the influence of non-market services and of final goods imports on the rates of real growth and prices.

Table 15 represents the main components of the inflationary gaps of GDMP and of its costs. The first column for each year indicates the share of the given item in each inflationary gap; the second shows the growth rate of prices or unit costs. This table makes it possible to ascertain the costs and the demands, the growth or the fall of which has mainly contributed to the slowdown in production.

On the side of costs, the main cause of stagflation in 1974 for both countries was the rise in import prices (Table 15, line 1.5). The inflationary rise in wages (Table 15, lines 2.1 and 2.2) is responsible for stagflation in France in all years,

TABLE 14

INFLATIONARY GAPS OF GROSS DOMESTIC MARKETABLE PRODUCT AND OF ITS COSTS, FRANCE AND GERMANY, 1971–79

(millions of FF or DM)

A. France

	1971	1972	1973	1974	1975	1976	1977	1978	1979
I GDMP									
1.1. GDMP at current prices	777,266	875,159	993,794	1,134,390	1,278,499	1,473,466	1,645,327	1,864,752	2,127,914
1.2. Rate of growth of GDMP at prices of the preceding year (%)	5.5	6.1	5.8	3.0	0.0	4.9	3.1	3.4	3.4
1.3. Inflationary gap of GDMP as a percentage of GDMP of the preceding year	5.9	6.5	7.7	11.2	12.7	10.4	8.6	10.0	10.7
II Costs									
2.1. Costs at current prices	451,834	507,126	586,401	715,400	840,148	955,261	1,084,863	1,242,826	1,404,476
2.2. Inflationary gap as a percentage of costs of the preceding year	8.2	6.1	9.8	19.0	17.5	8.8	9.2	11.2	9.6
III Types of Economic Development	S	IG	S	S	S	DG	R	IG	IG

Sources: [[1], 1976, Vol. 3, pp. 28, 56, 62, 74, 90; 1979, Vol. 3, pp. 6, 36, 42, 48, 54, 56, 70.

B. Germany

	1971	1972	1973	1974	1975	1976	1977	1978	1979
I GDMP									
1.1 GDMP at current prices	668,490	729,140	806,260	857,450	892,910	973,390	1,040,470	1,118,510	1,216,530
1.2. Rate of growth of GDMP at prices of the preceding year (%)	3.0	3.4	5.0	0.2	−2.7	5.3	3.1	3.2	4.7
1.3. Inflationary gap of GDMP as a percentage of GDMP of the preceding year	7.3	5.7	5.6	6.2	6.8	3.7	3.8	4.3	4.1
II Costs									
2.1. Costs at current prices	504,450	542,680	588,320	639,760	697,690	736,270	790,160	842,350	n.d.
2.2. Inflationary gap as a percentage of costs of the preceding year	9.2	4.2	3.4	8.5	11.8	0.2	4.2	3.3	n.d.
III Types of Economic Development	S	DG	DG	S	S	DG	S	IG	DG

Sources: [6], 1977, Reihe 1, pp. 80–88, 231, 240; 1979, pp. 138–146, 176, 180, 246, 276.

TABLE 15

MAIN COMPONENTS OF INFLATIONARY GAPS OF GROSS DOMESTIC MARKET PRODUCT AND OF ITS COSTS AS A PERCENTAGE OF RESPECTIVE INFLATIONARY GAPS, FRANCE AND GERMANY, 1971–79

In italics, rates of increase in prices or in costs per unit produced

A. France

	1971		1972		1973		1974		1975		1976		1977		1978		1979	
I GDMP	5.9	*5.5*	6.5	*6.1*	7.7	*7.3*	11.2	*10.8*	12.7	*12.7*	10.4	*9.9*	8.6	*8.4*	10.0	*9.7*	10.7	*10.3*
1.1. Household consumption	67.6	*5.6*	66.1	*6.0*	62.6	*6.8*	81.7	*13.3*	63.7	*11.6*	69.4	*9.9*	75.5	*9.1*	64.4	*8.8*	71.3	*10.5*
1.2. Government consumption	5.4	*5.9*	4.3	*5.2*	3.9	*5.7*	6.4	*14.4*	4.3	*10.2*	4.9	*9.7*	4.2	*7.3*	4.4	*8.5*	5.3	*10.9*
1.3. Fixed capital formation	24.3	*5.1*	22.7	*5.2*	28.7	*7.9*	39.9	*13.3*	24.6	*11.6*	30.8	*9.9*	28.0	*9.1*	22.0	*8.8*	24.4	*10.5*
1.4. Exports	15.5	*4.8*	1.5	*0.5*	20.4	*7.7*	45.3	*23.7*	10.4	*5.9*	19.6	*8.8*	24.8	*9.1*	14.1	*5.8*	22.7	*9.9*
minus:																		
1.5. Imports	−11.5	*3.7*	4.7	*−1.5*	−18.3	*7.2*	−76.8	*43.5*	−2.1	*1.2*	−24.4	*10.5*	−31.7	*11.7*	−4.5	*1.8*	−24.5	10.6
II Costs	8.2	*7.8*	6.1	*5.8*	9.8	*9.3*	19.0	*18.5*	17.5	*17.4*	8.8	*8.4*	9.2	*10.2*	11.2	*10.8*	9.6	*9.3*
2.1. Wages and social security costs paid by enterprises	71.5	*7.4*	73.2	*5.6*	76.2	*9.4*	64.7	*15.9*	71.9	*17.1*	90.2	*10.3*	71.2	*9.7*	61.2	*8.9*	76.2	*9.7*
2.2. Wages and social security costs paid by Government	17.1	*6.8*	16.6	*5.0*	15.9	*7.7*	15.9	*15.5*	21.5	*20.4*	27.2	*12.1*	21.8	*11.3*	19.4	*10.6*	18.3	*8.6*
2.3. Income from property and entrepreneurship paid to households and to the Rest of the World	11.4	*8.7*	14.1	*7.9*	11.9	*10.5*	21.0	*36.4*	7.3	*10.4*	11.9	*8.6*	14.4	*12.7*	11.8	*10.8*	19.9	*15.6*
2.4. Social benefits paid by Enterprises and Government	28.3	*6.3*	42.3	*7.1*	33.9	*9.1*	28.7	*15.2*	52.4	*27.1*	48.2	*11.1*	46.7	*12.7*	49.4	*13.9*	49.1	*11.6*
minus:																		
2.5. Social contributions paid by households	−29.2	*7.4*	−34.0	*6.4*	−29.2	*8.8*	−27.2	*16.4*	−39.7	*23.0*	−51.9	*13.8*	−43.1	*13.2*	−33.3	*10.6*	−54.1	*14.8*
minus:																		
2.6. Direct taxes paid by households to Government	0.9	*−0.7*	−12.2	*8.1*	−8.7	*9.2*	−3.1	*6.3*	−13.5	*29.7*	−25.5	*24.3*	−11.0	*11.1*	−8.5	*9.0*	−9.3	*8.7*
III Types of Economic Development	S		IG		S		S		S		DG		R		IG		IG	

Sources: [I], 1976, Vol. 3, pp. 28, 56, 62, 74, 90; 1979, Vol. 3, pp. 6, 36, 42, 48, 54, 56, 70.

B. Germany

	1971		1972		1973		1974		1975		1976		1977		1978		1979	
I GDMP	7.3	*7.2*	5.7	*5.5*	5.6	*5.3*	6.2	*5.9*	6.8	*7.0*	3.7	*3.3*	3.8	*3.7*	4.3	*4.1*	4.0	*3.6*
1.1. Household consumption	45.5	*5.3*	60.3	*5.6*	77.0	*7.0*	66.2	*6.9*	55.4	*6.1*	77.7	*4.5*	62.7	*3.7*	41.8	*2.8*	61.0	*3.9*
1.2. Government consumption	10.9	*9.9*	8.3	*5.7*	12.4	*8.1*	17.9	*12.6*	10.5	*7.2*	6.9	*2.4*	9.8	*3.8*	6.5	*2.7*	14.8	*6.0*
1.3. Fixed capital formation	33.6	*8.0*	20.4	*3.8*	26.2	*5.0*	26.8	*−0.1*	12.4	*3.4*	21.9	*3.3*	21.8	*3.4*	26.2	*4.4*	41.8	*6.4*
1.4. Exports	12.4	*3.6*	9.4	*2.2*	23.1	*4.9*	70.4	*15.5*	20.3	*4.9*	18.5	*2.6*	11.4	*1.3*	7.2	*1.1*	31.6	*4.2*
minus:																		
1.5. Imports	−2.8	*0.9*	−2.6	*0.7*	−36.8	*9.4*	−78.2	*21.9*	−1.5	*0.4*	−36.8	*4.7*	−10.3	*1.4*	13.9	*−2.1*	−51.9	*7.1*
II Costs	9.2	*9.0*	4.2	*4.0*	3.4	*3.3*	8.5	*8.5*	11.8	*12.1*	0.2	*0.2*	4.2	*4.1*	3.3	*3.3*	n.d.	
2.1. Wages and social security costs paid by enterprises	59.6	*8.3*	92.4	*5.8*	150.8	*7.5*	66.8	*8.4*	31.2	*5.5*	709.0	*2.4*	59.9	*3.7*	84.7	*3.5*	n.d.	
2.2. Wages and social security costs paid by Government	24.0	*16.1*	30.5	*8.7*	50.0	*10.9*	29.7	*15.9*	16.4	*11.6*	10.6	*0.1*	14.7	*3.5*	19.3	*3.1*	n.d.	
2.3. Income from property and entrepreneurship paid to households and the Rest of the World	48.0	*12.3*	−3.7	*−0.1*	32.4	*3.1*	23.1	*5.7*	23.7	*8.5*	503	*3.4*	59.0	*7.1*	20.8	*1.6*	n.d.	
2.4. Social benefits paid by enterprises and Government	19.0	*8.4*	48.0	*9.6*	42.1	*6.4*	38.0	*14.8*	50.1	*26.1*	190.6	*1.6*	26.7	*4.1*	25.5	*2.6*	n.d.	
minus:																		
2.5. Social contributions paid by households	−23.5	*11.8*	−52.1	*10.4*	−83.4	*12.6*	−32.1	*11.7*	−22.3	*11.2*	−689.0	*6.3*	−23.1	*3.7*	−38.5	*4.1*	n.d.	
minus:																		
2.6. Direct taxes paid by households to Government	−27.2	*18.1*	−15.1	*4.2*	−91.9	*20.4*	−25.5	*12.8*	0.9	*−0.7*	−624	*8.7*	−37.1	*8.6*	−11.9	*−1.8*	n.d.	
III Types of Economic Development	S		DG		DG		S		S		DG		S		IG		DG	

Sources: [6], Reihe 1, 1977, pp. 80–88, 231, 240, 266; 1979, pp. 138–146, 176, 180, 198, 240, 276, 304, 311.

TABLE 16

MONEY SUPPLY (M_2) AND TOTAL RESOURCES AT CURRENT PRICES, FRANCE AND GERMANY, 1971–79

(annual rates of growth, percent)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	Geom. Mean
1. *France*										
1.1. Money supply (M_2)	17.9	18.5	14.5	16.0	16.5	17.3	12.3	13.2	13.4	14.0
1.2. Total Resources (TR)	11.5	12.7	14.9	20.0	9.8	17.9	12.3	12.4	15.4	13.8
1.3. Ratio 1.1/1.2	5.7	5.1	−0.3	−3.3	6.1	−0.5	0.0	0.7	−1.7	1.3
2. *Germany*										
2.1. Money supply (M_2)	12.3	14.4	17.9	7.9	−0.6	5.5	8.4	11.8	10.7	9.8
2.2 Total Resources (TR)	11.1	9.2	11.5	10.2	4.9	10.1	6.6	6.8	10.5	8.7
2.3. Ratio 2.1/2.2	1.1	4.8	5.7	−2.1	−5.2	−4.2	1.7	4.7	0.2	1.0

Sources: France: [7], 1979, p. 138 and [1], 1977 and 1979, p. 6. Germany: [8], 1980, p. 41 and [6], p. 240 and 1979, pp. 186–276.

except for 1972, 1976 and 1978; in Germany its responsibility is involved only during the years 1971–75. The contribution of the income from property and entrepreneurship to stagflation (Table 15, line 2.3) was important in France during the whole period except for the year 1975. In Germany it had played a noticeable role in 1971, 1975 and 1977. The stagflationary impact of social benefits (Table 15, line 2.4) has been generally compensated by the contrary influence of social contributions (Table 15, line 2.5), but this compensation has been generally more efficient in Germany than in France. The same may be said about direct taxes (Table 15, line 2.6): their deflationary impact on costs is much stronger in Germany than in France.

The responsibility of demand in the slowdown in production is clear only when a rise in the inflationary gap of costs is not followed by an equal or a higher rise in the inflationary gap of expenditures or when a fall in the inflationary gap of costs is accompanied by a still deeper fall in the inflationary gap of expenditures. This kind of situation can be observed in France in 1973, 1974 and 1977 and in Germany in 1974, 1975 and 1977 (Table 15, lines I and II). In France the insufficient rise in the inflationary gap of expenditures is mainly due to restrictive monetary policy (Table 16, line 1.3) and to official price regulation which was not abolished until 1979. In Germany, the restrictive monetary policy contributed probably also to the slowdown in demand (Table 16, line 2.3) in 1974 and 1975. In 1977, on the contrary, the main contribution to the slowdown of production was the slackening of export demand (Table 15B, line 1.4) due to the world recession (Table 1, line 1.1) and to the revaluation of the DM (Table 7, lines 3 and 4).

C. *The International Sources of Stagflation*

My theory of stagflation is fully applicable to the explanation of world stagflation. Massive oil price increases contribute to a rise of costs in all oil importing countries. To the extent that many of the latter (and first of all the LDCs, the East European countries and the countries which do not master their domestic inflation) are unable to increase their exports in the same proportion, this increase in costs produces a stagflationary effect on their economies. Moreover, some oil exporting countries are not able to increase their imports proportionally to their exports. The world demand for imports consequently slows down while production costs continue to rise. Only countries which master their domestic costs will be able to expand their relative shares in the stagnant world trade.

The method above, when applied to national accounts of particular countries and to an international matrix of trade and capital movements, gives us the possibility of finding out the most efficient solution to this crucial issue on the national and world level.

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