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To: Members of the Executive Board
From: The Secretary
Subject: France - Selected Background Issues

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Mr. Moghadam (ext. 35333) or Mr. O'Callaghan (ext. 38219) is available to answer technical or factual questions relating to this paper prior to the Board discussion.

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INTERNATIONAL MONETARY FUND

FRANCE

Selected Background Issues

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Approved by the European I Department

August 25, 1993

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I. The Causes of Unemployment in France 1/

1. Overview

Arguably, the most urgent problem facing the French economy is high unemployment. The unemployment rate stood at 11.6 percent in June 1993 having risen by about 3 percentage points between 1990 and 1993. The new government has declared employment growth as one of its key objectives and has already announced a number of measures aimed at stemming the rise in unemployment. Given the recent sharp slowdown in the economy, and despite the government's new measures, the unemployment rate is unlikely to peak before 1994.

Although the slowdown in activity has undoubtedly contributed to a worsening of labor market conditions in France, the high rate of unemployment cannot simply be attributed to a deceleration in economic activity. The unemployment rate was last below 8 percent in 1981. High and persistent unemployment as well as its composition, e.g., high youth unemployment, suggest underlying structural problems. Because of labor market rigidities, demand and supply shocks, such as the twin oil shocks and high interest rates associated with German reunification, have led to persistence in unemployment.

Unemployment has persisted despite the fact that in recent years France's macroeconomic performance in other respects has compared favorably with the other G7 or EC countries. Over the last five years growth has been in line with the European average and above that of the G7, while inflation has been below both the EC and the G7 averages. The new government has reiterated the previous government's commitment to a monetary policy aimed at maintaining France's low inflation, anchored by the current parity of the franc against the deutsche mark. The government has also enhanced the credibility of the low inflation policy by granting independence to the Bank of France. Low inflation has contributed to improved competitiveness and, recently, to trade surpluses. However, employment creation has been disappointing and the recent recession has further exacerbated the situation.

To combat unemployment, the authorities have put in place a number of labor market programs aimed at increasing labor demand through payroll tax exemptions and enhancing the supply of labor through training schemes. The new government has announced a number of further measures, including subsidizing employers' family allowance contributions for those being paid up to 20 percent above the minimum wage, reducing the cost of employing young workers and increasing the funds allocated to government-subsidized employment and training programs. The budgetary cost of these programs and the growing deficit in the unemployment insurance system, in the context of a large general government deficit, give added urgency to understanding the causes of unemployment and to adopting policies aimed at reducing it.

1/ Prepared by Reza Moghadam.

This paper investigates the causes of unemployment in France, with the aim of assessing the effectiveness of potential policy responses. The paper is organized as follows: section 2 examines the nature of unemployment in France; section 3 identifies some of the potential factors contributing to unemployment by comparing France to other industrial nations and by using cross-section regressions; section 4 provides some time series evidence on the long-run and short-run causes of unemployment in France; section 5 examines recent labor market measures; and section 6 assesses these measures and considers other potential policy responses to structural unemployment.

2. The history and composition of French unemployment

a. The rise and rise of unemployment

Following the first oil shock and the onset of recession in 1974-75, unemployment in France rose continuously from just under 3 percent in 1973 to a peak of 10.7 percent in 1987. It then declined gradually to 8.8 percent in 1990 before resuming its ascent (Chart 1). In June 1993 unemployment stood at 11.6 percent. Given the severity of the recession in 1992-93 and the expected weakness of activity through 1994, it is likely that the unemployment rate will rise above 12 percent by the end of 1993 and that it will only peak during 1994.

Both labor supply and demand factors appear to have contributed to the rise in unemployment. Between 1970 and 1992, the labor force grew by about 16 percent, equivalent to 3.3 million people (Chart 2). This growth came about even in spite of a fall in the aggregate participation rate ^{1/} during the 1980s--the increase in female participation was more than offset by a decline in male participation (Chart 2). ^{2/} The growth in the labor force was thus concurrent with an even larger increase in the population of working age, conventionally defined as those aged between 15 and 64.

During the same period, employment growth has been disappointing: there was no net increase in employment between the mid-1970s and the late 1980s. Male employment dropped almost continuously between 1973 and 1987 as employment in the traditionally male dominated industrial sectors such as mining, chemicals and metals declined. Growth in the service sector and opportunities for part-time work boosted female employment, which has grown continuously since the early 1970s, albeit not as fast as the increase in the female labor force (Chart 3).

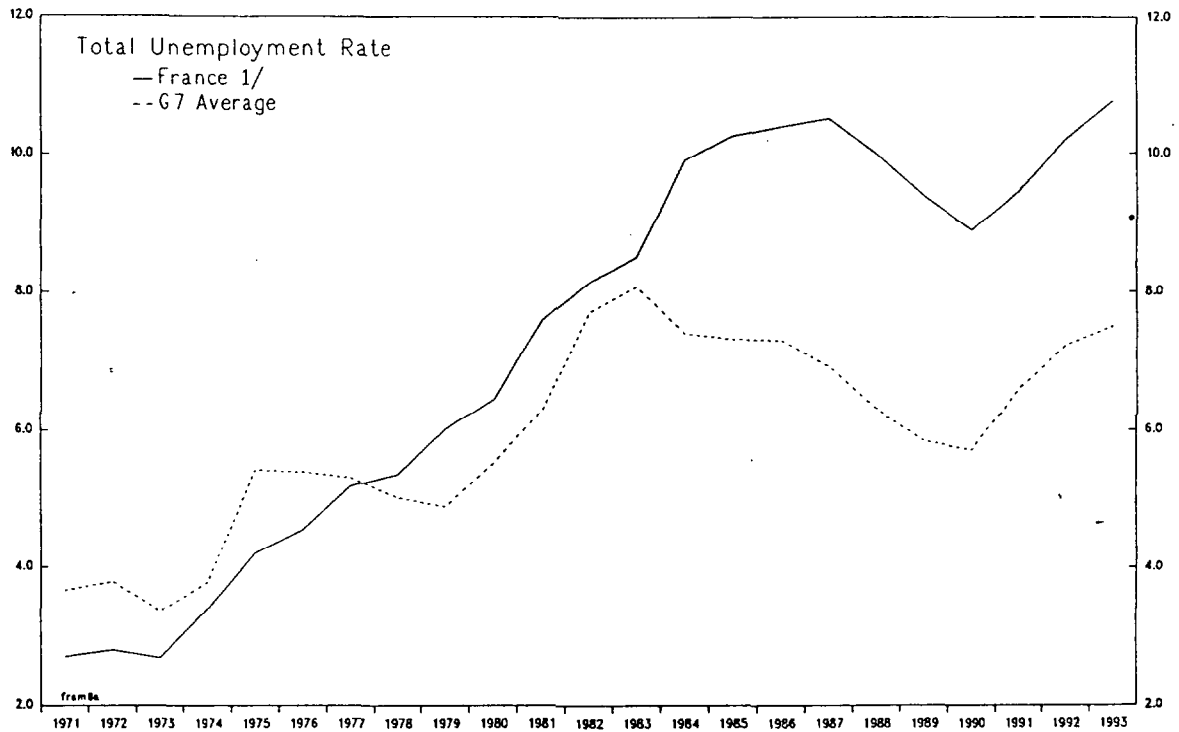
Why has the high growth of the labor force not been accompanied by an equivalent increase in employment? An increase in the labor supply should, in theory, lead to higher output through lower real wages, increased

^{1/} Defined as $LF/PW = (E+U)/PW$, where LF is the labor force, E employment, U unemployment and PW is the population of working age.

^{2/} The fall in the male participation rate is not independent of the rise in unemployment and is partly due to the early retirement of the old unemployed, see discussion of participation rate by age below.

CHART 1
FRANCE

Unemployment Rate, Growth, and Inflation

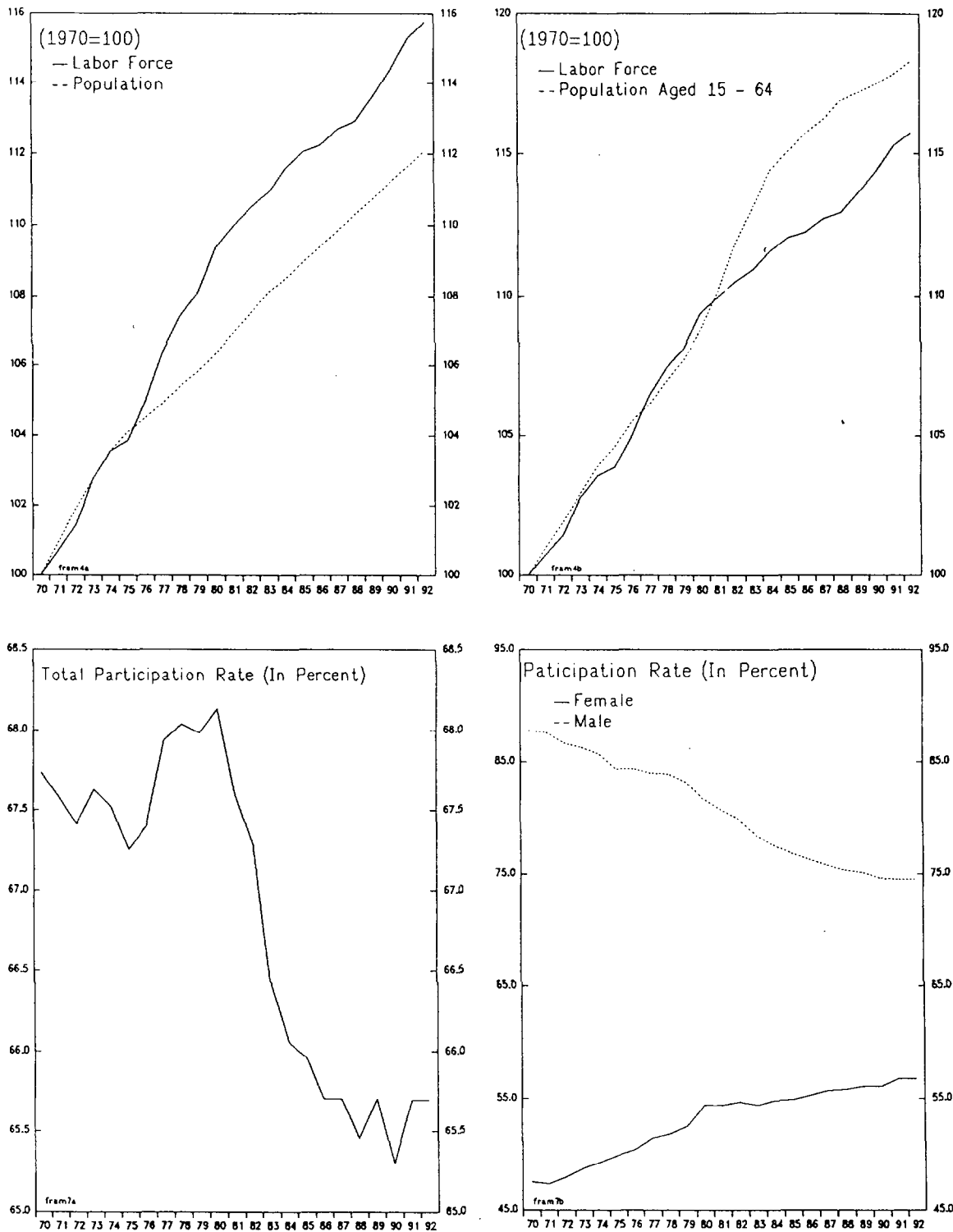


Sources: INSEE, National Accounts; and IMF, World Economic Outlook.
1/ April 1993.

- 2b -

CHART 2
FRANCE

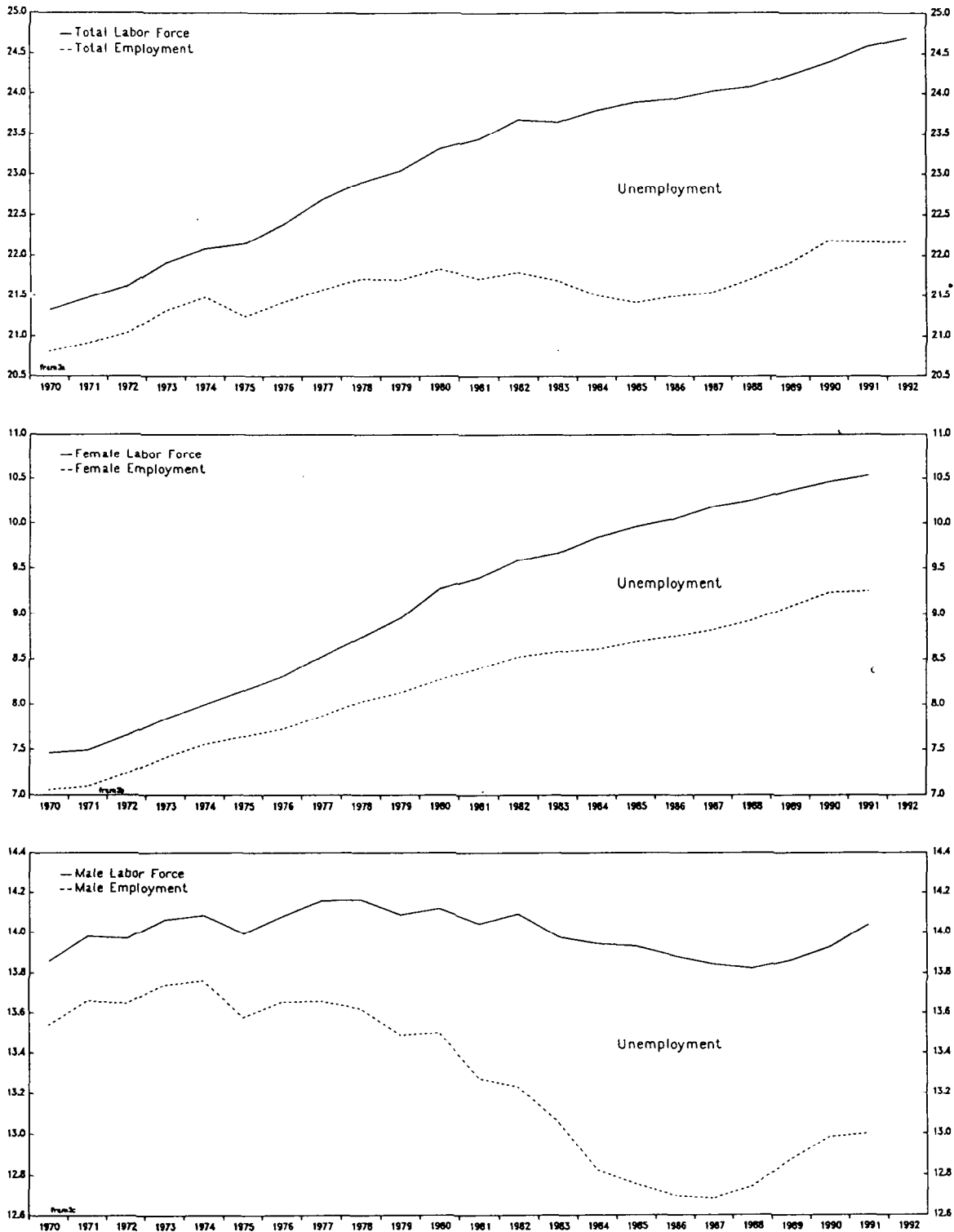
Labor Force, Population and Participation Rate



Source: OECD, Historical Statistics.

CHART 3
FRANCE

Labor Force, Employment and Unemployment
(In Millions)



Source: OECD, Historical Statistics.

competitiveness, and increases in production capacity unless the labor market is inflexible. Besides, there have been similar demographic developments in other industrial countries: in both Canada and the United States the average rate of growth of the labor force since 1970 has been more than twice that in France, yet the average rate of growth of employment in the United States and Canada has been over four times that in France.

Over the last two decades the average rates of growth of the population of working age and the labor force in France have been below the OECD average, though more or less in line with the EC average (Table 1). It is the rate of growth of employment in France that has been disappointing, particularly when compared to the OECD average in the 1980s.

Table 1. Key Labor Market Indicators
(Average annual percentage growth rates)

		1974-79	1980-90	1990	1991	1992
Population of working age	France	0.7	0.8	0.3	0.3	0.3
	EC	0.7	0.7	0.3	0.2	0.2
	OECD	1.2	1.0	0.7	0.6	0.5
Labor force	France	0.9	0.5	0.4	0.7	0.4
	EC	0.7	0.8	0.9	0.7	-0.2
	OECD	1.3	1.3	1.1	0.8	0.7
Employment	France	0.3	0.2	1.0	0.1	-0.5
	EC	0.2	0.6	1.6	0.3	-1.2
	OECD	1.1	1.2	1.3	0.0	-0.1
GDP Growth	France	2.8	2.1	2.2	0.7	1.3
	EC	2.5	2.2	2.9	1.4	1.1
	OECD	2.7	2.7	2.5	0.7	1.5

Source: OECD, Historical Statistics

b. Composition of unemployment

Although the trend rise in unemployment can be observed in many other industrial countries, two factors characterize the French experience: unemployment peaked somewhat later than in the other G7 countries and the subsequent decline was not as sharp (Chart 1). This persistence suggests structural imbalances in the labor market which are also reflected in the composition of unemployment:

(1) Youth unemployment

The youth unemployment rate has been consistently higher than the total unemployment rate and more sensitive to economic downturn (Chart 4). In general, one would expect the youth unemployment rate to be above the

total unemployment rate as the young have lower human capital. Labor market practices such as "last-in, first-out" also reinforce youth unemployment and explain its sensitivity to economic conditions. Furthermore, there is some evidence that wage bargainers are primarily concerned with the interests of those who are employed, i.e., the "insiders," rather than those who seek employment, the "outsiders". For example, the insiders may take advantage of high turnover costs or the uncertainties associated with employing an outsider, to demand higher wages than is justified by productivity or inflation. This theory also helps to elucidate the persistence in youth unemployment. However, labor market features such as "last-in, first-out" or "insider-outsider" are not unique to France, yet youth unemployment in France is high compared to other industrial nations (Chart 5). This suggests that other more specific factors are also at work. The minimum wage and high employer payroll taxes could have a more pronounced impact on the employment of the young (see section 3 below). Furthermore, many young people are poorly qualified or lack the skills sought by employers. In 1991, the rate of unemployment among 15-24 year olds with only certificat d'études primaires (CEP) was twice as high as for those with the baccalauréat level diploma.

(2) Female unemployment

Unemployment among women has been consistently above the average unemployment rate (Chart 4). There are a number of potential causes. Part-time working, especially among women, remains less developed in France than in the other G7 countries (Table 2).

Table 2. Size and Composition of Part-Time Employment, 1973 and 1992

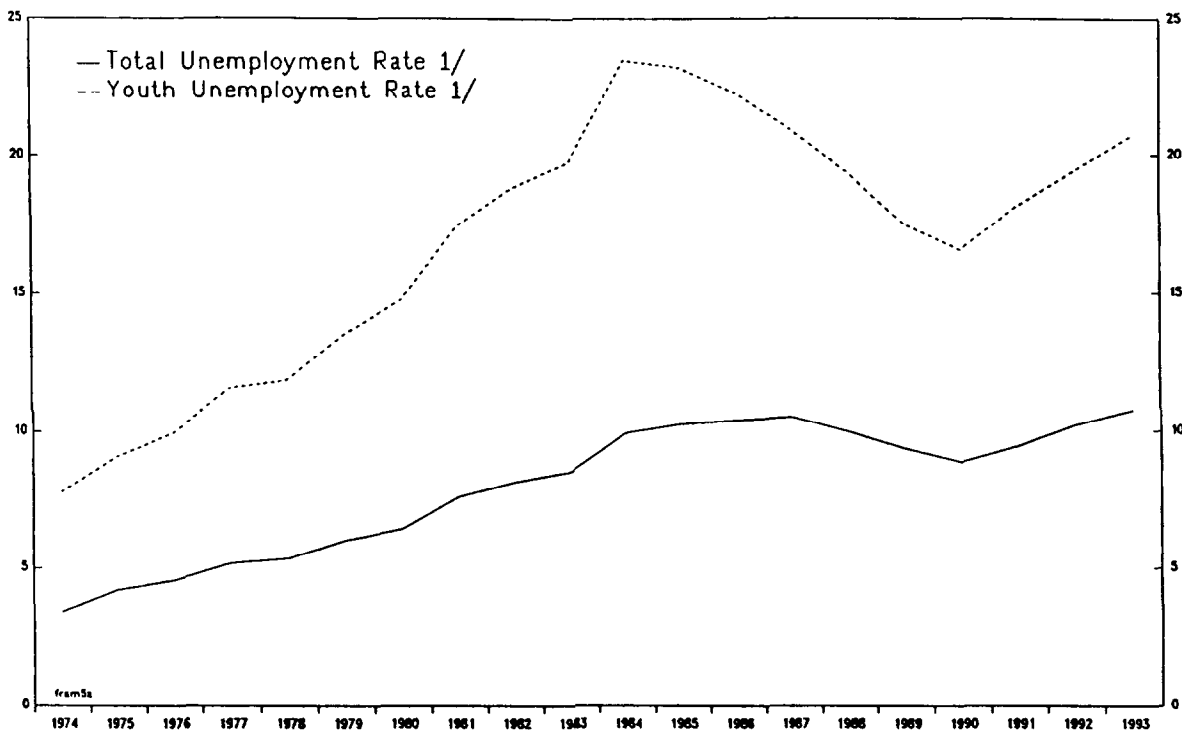
(In percent)

	Canada	France	Germany	Italy	Japan	U.K.	U.S.
<u>(Part-time employment as a proportion of employment)</u>							
1973							
Men	4.7	1.7	1.8	3.7	6.8	2.3	8.6
Women	19.4	12.9	24.4	14.0	25.1	39.1	26.8
1992							
Men	9.3	3.6	2.7	2.7	10.6	6.1	10.8
Women	25.9	24.5	34.3	10.5	34.8	44.6	25.4
<u>(Women's share in part-time employment)</u>							
1973	68.4	82.3	89.0	58.3	70.0	90.9	66.0
1992	70.0	83.7	89.6	67.9	69.3	85.4	66.4

Source: OECD, Employment Outlook, 1993.

CHART 4
FRANCE

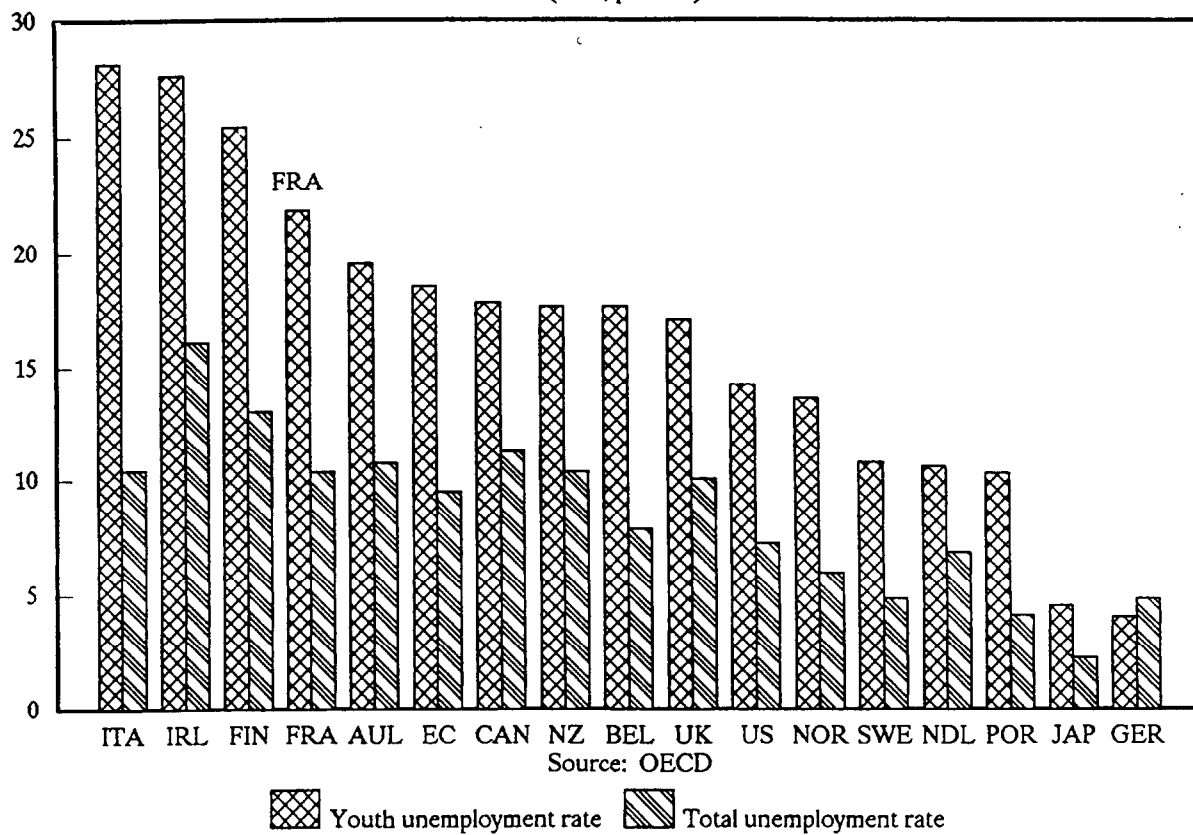
Unemployment Rates - Youth, Female and Male
(In Percent)



Source: INSEE.
1/ April 1993.

CHART 5
FRANCE

Unemployment rate (1992, percent)



Although jobs have grown faster in the service sector--which provides substantial female employment--than the average rate of increase in employment, this rate of growth has been lower than that achieved in the United States, United Kingdom, Italy, and Japan. ^{1/} There is also some evidence that, for women in particular, the probability of finding a job rises as the maximum duration of benefits draws near (see section 2 below). In France, benefits are available for a longer duration than in most other industrial nations and the ratio of long-term to short-term replacement rates for women was high until January 1993, when the government introduced a new system whereby unemployment benefits decrease more rapidly over time (see sections 3 and 5 below).

(3) Long-term unemployment

About 40 percent of those who are unemployed have been out of a job for at least one year. Although this is not exceptionally high when compared to other industrial economies (Chart 6), it is high in absolute terms. There is considerable evidence that the long-term unemployed exert no pressure on wage inflation (Layard and Nickell and Jackman, 1991). Therefore, long-term unemployment could reduce the potential output of the economy through a higher natural rate of unemployment. Pissarides (1992) illustrates that human capital depreciates as the duration of unemployment increases leading to a lower probability of finding a job.

With regard to the demand side causes of long-term unemployment, employers faced with continued uncertainty regarding future orders may refrain from recruitment for long periods of time, causing the persistence of both unemployment and long-term unemployment, particularly if wages are not flexible. Labor market rigidities such as the relative generosity of long-term benefits, employment protection legislation, the minimum wage and high employer costs are other potential contributory factors. These factors are investigated further below. The adoption of a number of job creation and training programs makes the study of long-term unemployment even more complex. Cases and Lollivier (1993) characterize the French labor market as one which is divided into three segments: unemployment, regular employment and marginal employment. Many job schemes fall into the last category and there are flows between all three segments. Transition from long-term unemployment to labor market schemes and vice versa could lead to recurrent spells of unemployment rather than to long-term unemployment.

^{1/} Commissariat Général du Plan (1993), pp 128-130.

(4) Non-employment rate

Another useful concept in comparing the labor market experience of different countries is the "non-employment rate," 1/ which combines the effects of high unemployment and low participation in the labor force. In addition to the high rate of unemployment, France has a low participation rate, particularly among men, (Chart 7). The participation rate in France drops dramatically for those aged 56 and above when compared to the average of EC countries (Table 3) as a consequence of generous early retirement schemes. 2/

Table 3. Participation Rates by Age Group, 1991

(In percentages)

	France			EC Average		
	Males	Females	Total	Males	Females	Total
14-19 years	13.2	10.1	11.7	28.5	24.3	26.4
20-24 years	69.8	62.9	66.2	76.3	66.5	71.4
25-29 years	94.9	78.0	86.3	92.0	70.3	81.2
30-34 years	97.1	75.1	86.0	96.2	66.8	81.5
35-39 years	97.3	74.5	85.9	96.8	66.6	81.6
40-44 years	96.8	76.0	86.4	96.2	65.7	81.0
45-49 years	95.3	70.4	82.9	94.3	59.5	77.0
50-54 years	88.4	62.1	75.2	88.9	50.6	69.6
55-59 years	61.9	42.4	51.8	72.7	35.9	53.8
60-64 years	14.6	12.4	13.4	37.1	14.6	25.3
65-69 years	5.3	2.4	3.7	11.3	4.4	7.5
70 years & over	1.8	0.6	1.0	3.8	1.2	2.2
Total	63.7	46.2	54.5	67.5	42.6	54.6

Source: Eurostat, Labour Force Survey Results 1991.

1/ The non-employment rate is defined as:

$$\frac{U+(PW-U-E)}{PW} = 1 - \frac{E}{PW}$$

where U is unemployment, E is employment and PW is population of working age.

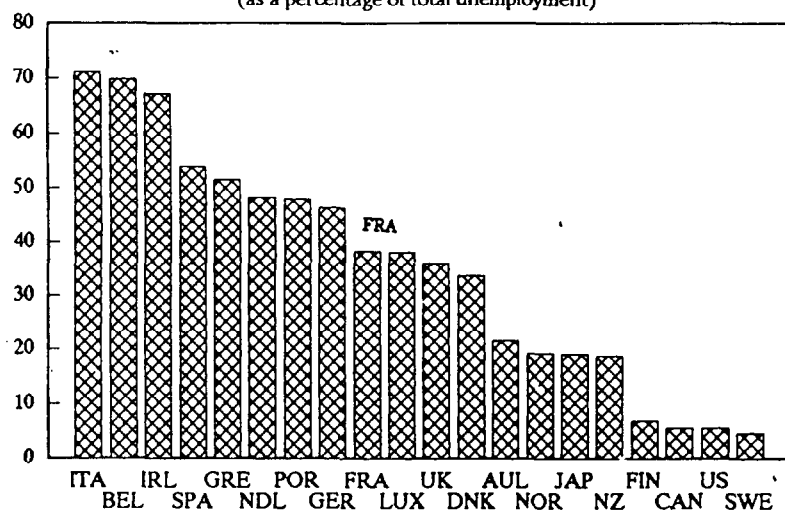
2/ Those aged over 56 can obtain unemployment benefits without looking for work. If someone over 56 becomes unemployed as a result of company restructuring, he will be entitled to 65 percent of previous income or a maximum of F 12,000 per month with the employer paying 10 per cent of the cost.

CHART 6

FRANCE

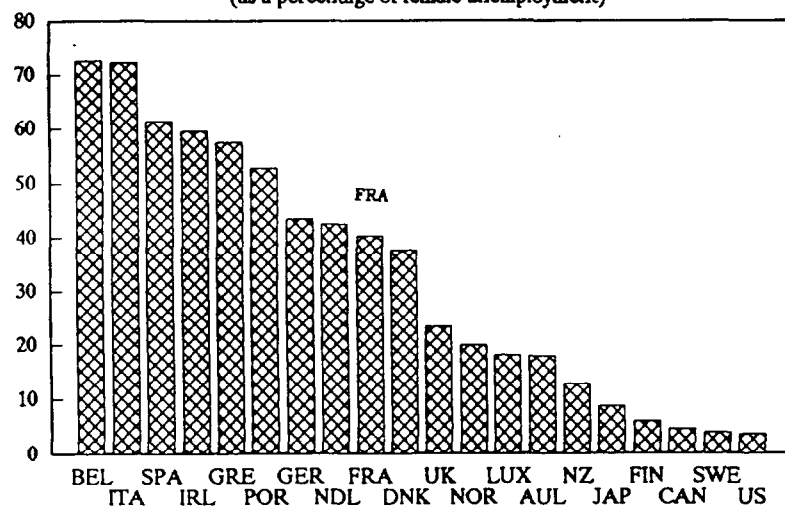
Total long-term unemployment

(as a percentage of total unemployment)



Female long-term unemployment

(as a percentage of female unemployment)



Male long-term unemployment

(as a percentage of male unemployment)

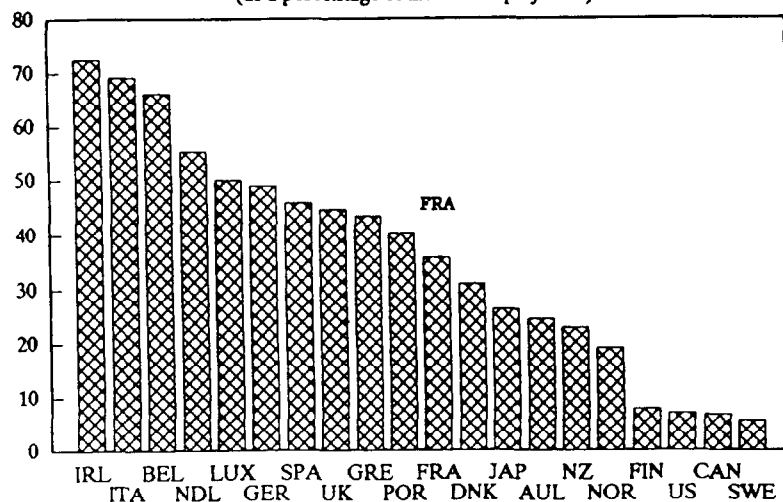
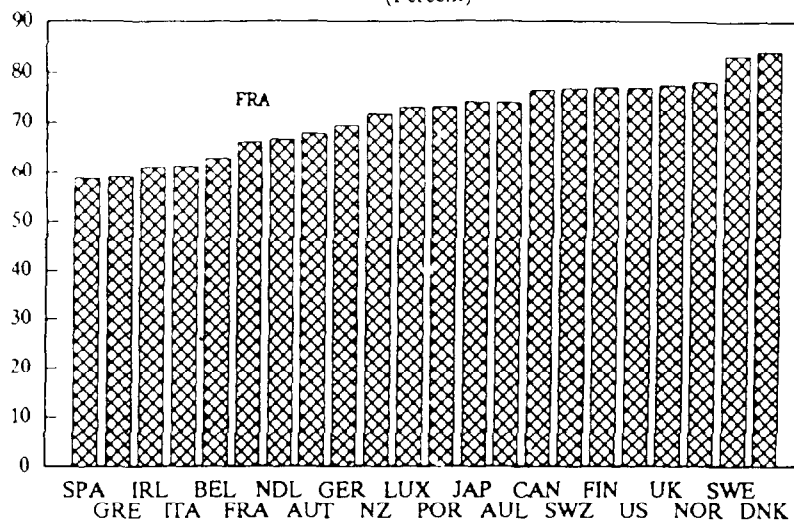
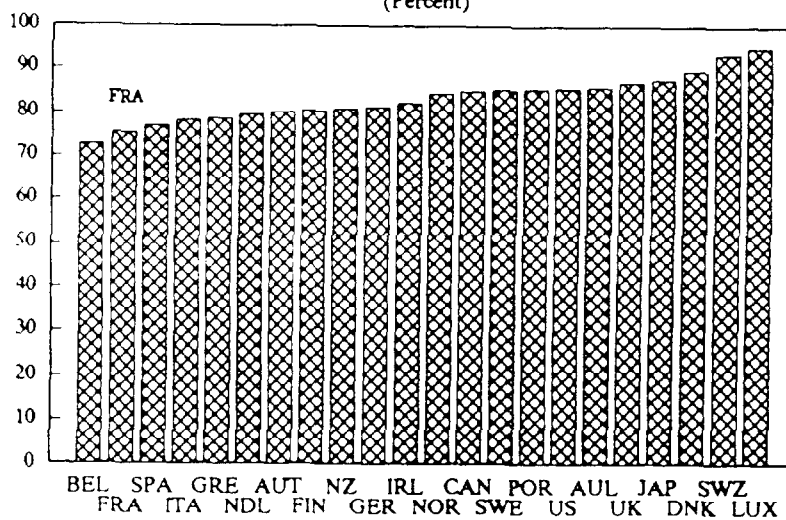


CHART 7
FRANCE

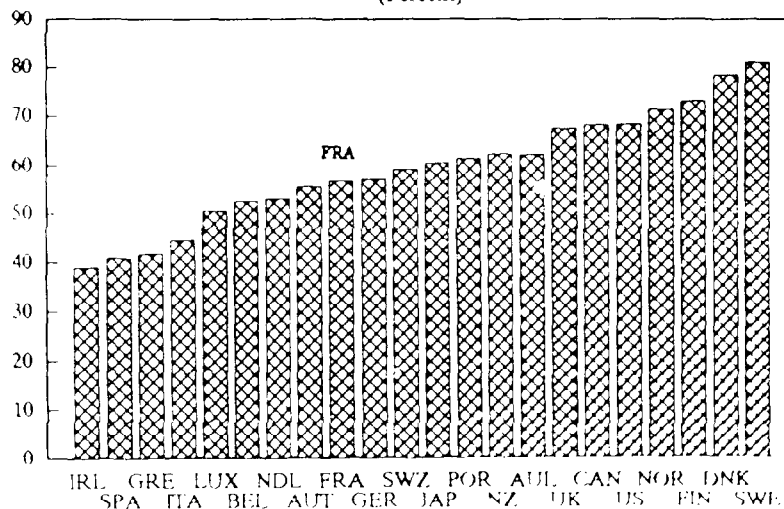
Total participation rate (Percent)



Male participation rate (Percent)



Female participation rate (Percent)



The high non-employment rate in France is more comparable to the southern European and the Benelux countries than to the other industrial countries (Chart 8). This under-utilization of labor imposes a heavy burden on government finances, through both lost tax revenue and increased social security expenditure. This burden will become increasingly serious with the rise in the proportion of the elderly in the population, given the need to finance pension expenditures, which operate on a pay-as-you-go basis in France. Not surprisingly, cross-country evidence suggests that the higher the non-employment rate, the higher the budgetary expenditure on the labor market (Chart 9).

3. Causes of unemployment

a. Employers' taxes

Social security contributions in France, particularly for employers, are very high. Total employee and employer contributions as a ratio to income are higher than in all other industrial countries except Italy (Chart 9, lower panel). Personal income taxes, on the other hand, are lower than in most other countries. Table 4 provides a more detailed comparison of labor costs in France and other major European countries for an unmarried worker. Gross labor costs in France, while below those in Italy, are substantially higher as a proportion of net earnings than in Germany and the United Kingdom. In fact, the gap with the latter two countries widened in the 1980s. The main contributor to this differential is employers' social security contributions which are not only substantially higher than in Germany and the United Kingdom, but also increased significantly during the 1980s.

Table 4. European Comparison of Earnings, Direct Taxes and Social Security Contributions, as a Percentage of Net Earnings (For a Single Worker)

	Year	Italy	France	Germany	U.K.
1. Gross earnings	1979	125	125	146	142
	1989	138	132	155	139
2. Employees' contribution	1979	11	15	23	9
	1989	12	23	27	13
3. Personal income taxes	1979	14	10	23	33
	1989	26	9	28	26
4. Net earnings (1-2-3)	1979	100	100	100	100
	1989	100	100	100	100
5. Employers' contribution	1979	58	47	23	14
	1989	67	59	27	14
6. Total labor cost	1979	183	172	169	156
	1989	205	191	182	153

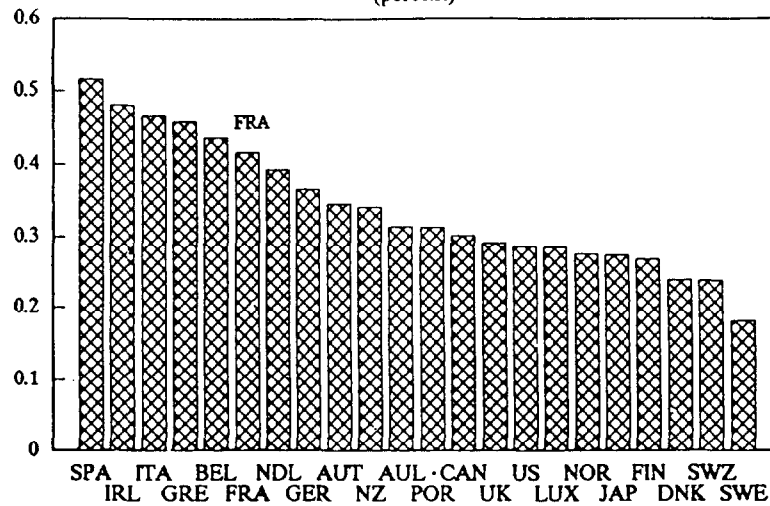
Source: Commissariat Général du Plan (1993)

Table 4 also shows that contribution rates of employees are noticeably higher in France than in Italy and the United Kingdom but marginally below those in Germany. Furthermore, contributions as a ratio to net earnings increased by some fifty percent during the 1980s. Income taxes in France, on the other hand, are about one-third of those in the other three countries as a proportion of net earnings and they declined marginally during the 1980s.

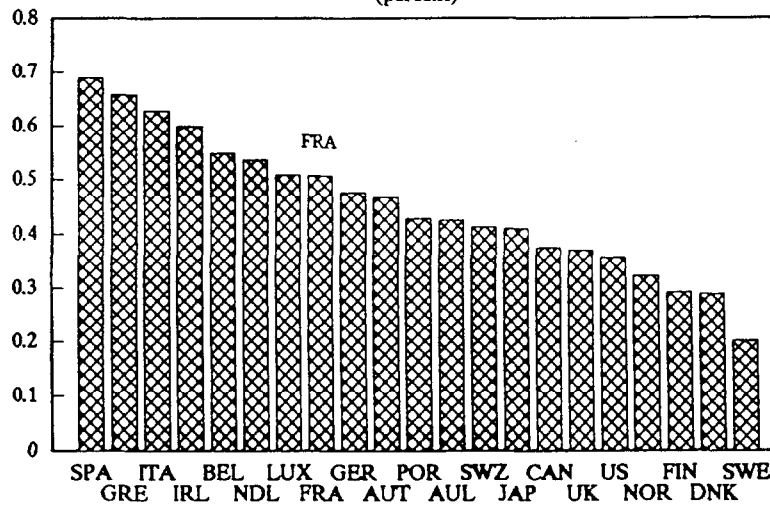
From a theoretical perspective, the invariance of incidence proposition (IIP) implies that the replacement of an employer tax by an equal employee tax has no effect on the real economy, i.e., the product wage, the consumption wage and the level of employment will be unaffected (Layard et al 1991; Newell and Symons, 1987; OECD, 1990). However, this result may not apply--at least in the short-run--if there are market imperfections, for instance, if wages are above market clearing values and adjust slowly, or wage negotiators only care about the "insiders". Even if the IIP holds, differences in tax liability could alter the allocation of resources. For example, employer taxes apply only to the wage whereas personal or corporate income taxes also apply to income from capital. A switch from income taxes to employer taxes implies an increase in the overall rate of taxation on employment and a decrease in capital taxation, which may lead to a substitution of capital for labor. Similarly, personal income taxes are

CHART 8
FRANCE

Total non-employment rate
(percent)



Female non-employment rate
(percent)



Male non-employment rate
(percent)

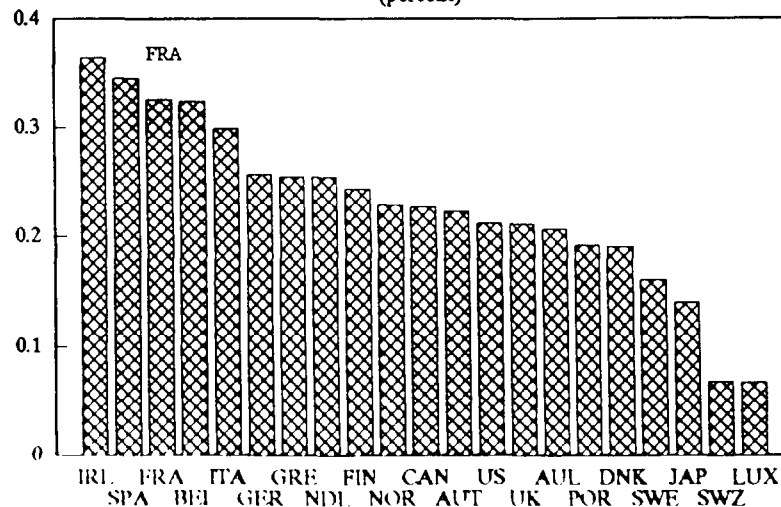
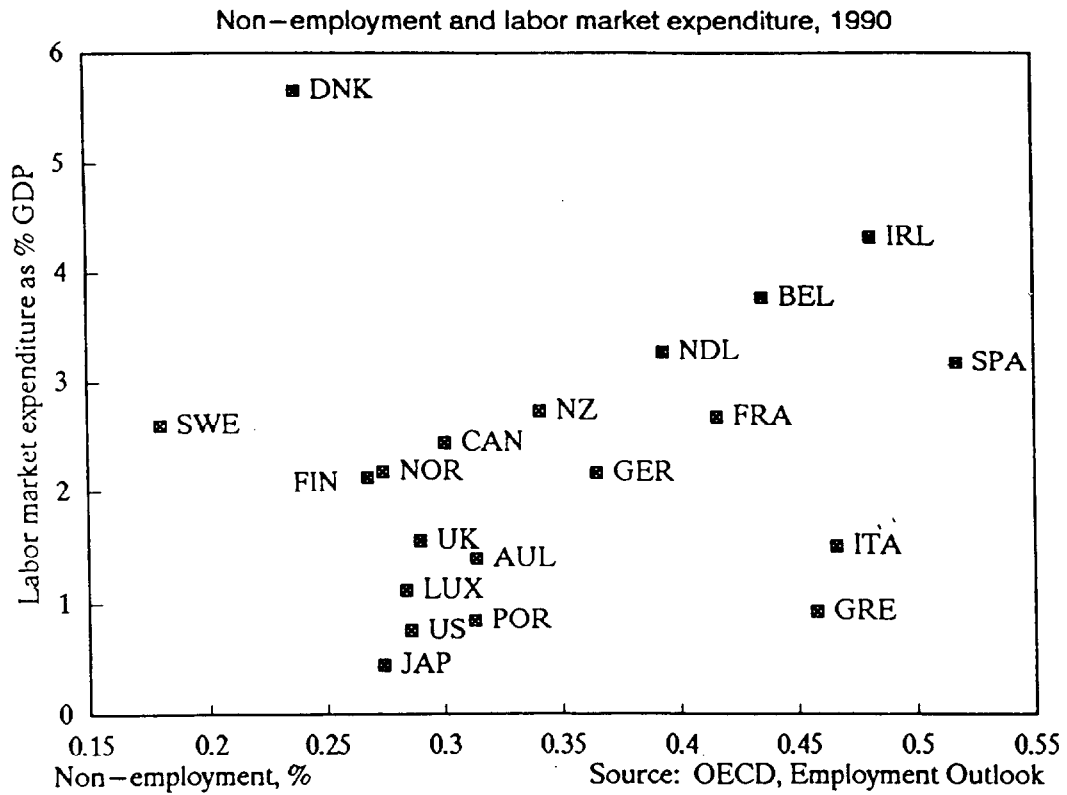
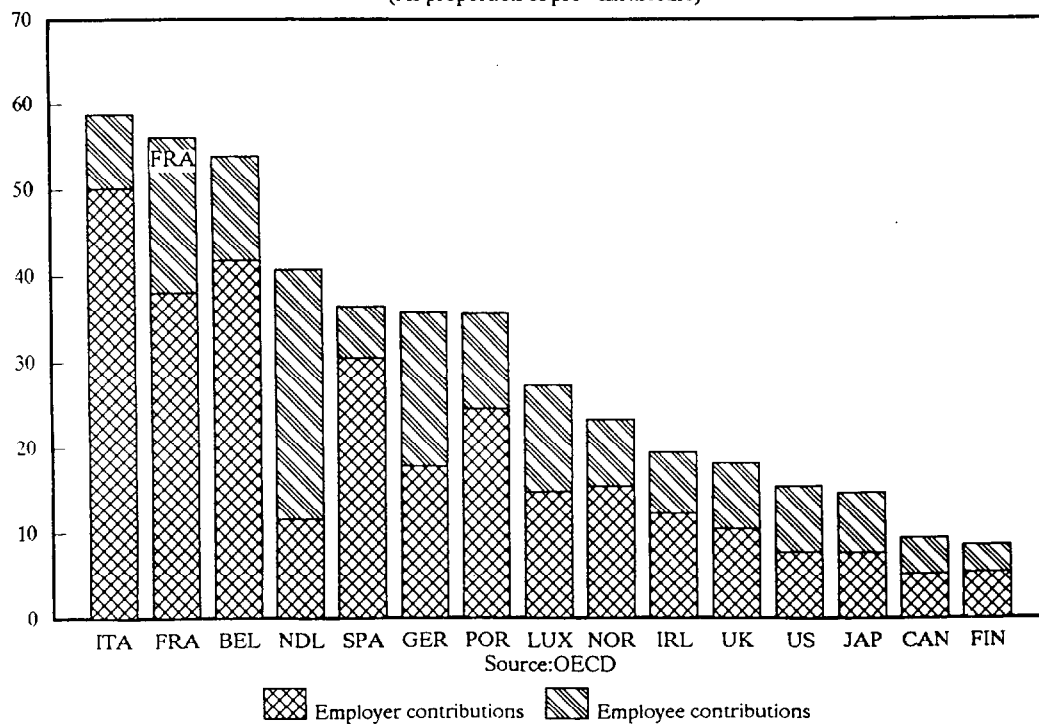


CHART 9
FRANCE



Social security contributions, 1990

(As proportion of pre-tax income)



usually progressive whereas social security taxes are not, a switch from one to another could lead to changes in the total tax bill for many individuals and firms and affect labor supply or demand decisions.

Empirical studies (Newell and Symons, 1987) suggest that even when using a model where the IIP holds in the long-run, a cut in employer taxes and an equivalent rise in employee taxes could reduce unemployment in the short-run. The short-run effects may last for several years because of lags in the adjustment process (OECD, 1986). Cotis and Loufir (1990) find support for IIP in France (see below). Other authors have found that the tax wedge has a long-run effect on unemployment in France (Bean et al, 1986). We investigate this issue further using time series data for France in section 4. Table 5 provides some cross section evidence on the impact of employer taxes on the composition of unemployment in the industrial countries.

Table 5. Employer taxes, youth and long-term unemployment

OLS cross-section regressions for 15 OECD countries 1/
(t-ratios in parentheses)

$$\begin{aligned} (UY/U) &= 1.7 + 0.01 CS_E \\ &\quad (2.03) \\ R^2 &= 0.27 \end{aligned}$$

$$\begin{aligned} LTU &= 17.5 + 0.97 CS_E \\ &\quad (2.14) \\ R^2 &= 0.26 \end{aligned}$$

Where:

UY/U = ratio of youth to total unemployment rate

CS_E = employers' social security contributions

LTU = percentage of unemployed who have been unemployed for more than a year

The first equation gives the result of regressing the ratio of youth to total unemployment on the rate of employers' social security contributions using cross-section data for 15 OECD countries. The results indicate a significant positive correlation between the two variables. The coefficient on employers' contributions indicates that if they are 1 percentage point higher in one country than in another, then the ratio of youth to total unemployment is likely to be 1 percentage point higher. In France, employer contributions are about 20 percentage points higher than the sample average

1/ The 15 countries in the data set are: Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, The Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.

implying a similar gap for the percentage of youth unemployment. The second regression presents results for long-term unemployment which are very similar; they indicate that higher employer contributions are associated with higher long-term unemployment. When the same regressions were performed for men and women separately, the coefficients were higher in the case of women.

Admittedly, these results do not capture any theoretical relationship. However, they do suggest that high employer taxes are associated with a high incidence of youth and long-term unemployment which are symptoms of structural unemployment. The results suggest that increases in employers' contributions have not been passed on to employees through wage reductions.

b. The minimum wage (SMIC)

France has had an institutional minimum wage since 1950, the current SMIC (salaire minimum interprofessionnel de croissance) was introduced in 1970. There are three mechanisms for revising the SMIC: a) a rise of 2 percent or more in the consumer price index automatically triggers an equivalent rise in the SMIC; b) the SMIC is revised on 1 July every year by at least half of the increase in the real hourly wages in industry; and c) the government can raise the SMIC at its discretion. ^{1/} These mechanisms have led to a steady rise in the real value of the SMIC.

The latest report on the SMIC by Ministère du Travail shows that the number of people being paid the SMIC has risen over the last five years. ^{2/} In 1992, 8.6 percent of the workers or just under 2 million people received the minimum wage, with the percentage among women being much higher (Table 6). The proportion of individuals earning the SMIC is particularly high for those who are under 26 years old: 35.5 percent of wage earners under 26 were paid the SMIC in 1992. The fact that a large number of young workers and a growing number of people in general are paid the SMIC suggests that it is a significant labor market factor which may have an impact on employment.

^{1/} Following the election of President Mitterand, the SMIC was raised by 10 percent in May 1981.

^{2/} In fact these numbers are an under-estimate since the survey carried out by the Ministère du Travail does not cover firms with less than 10 employees nor those in agriculture, coal, public transport and utilities.

Table 6. Proportion of Wage and Salary Earners in Establishments Employing More Than Ten Workers in Industry, Commerce and Services, Covered by the SMIC, 1972-92 ^{1/}

	Males	Females	Total
1972	1.8	4.6	2.7
1976	3.6	8.4	5.1
1979	3.0	6.2	4.0
1981	5.1	13.9	8.0
1983 ^{2/}	4.6	10.4	6.6
1985	6.2	16.2	9.7
1987	5.1	12.6	7.8
1989	5.2	13.9	8.2
1992	5.1	14.1	8.6

Source: Bazen and Martin (1991) and Ministère du travail, de l'emploi et de la formation professionnelle.

^{1/} The data refer to July of each year. They cover all workers whose hourly wage is less than the new hourly SMIC rate which applies from 1 July of each year.

^{2/} New series from 1983 on.

Empirical studies on the effect of the SMIC on employment have not been conclusive. Bazen and Martin (1991) find that "increases in the real value of the SMIC have exerted significant upward pressure on real youth earnings". However, they are unable to show conclusively that increases in real labor costs have had a negative impact on youth employment, although they believe this to be the case. Their results do suggest that moderating the relative rate of increase in the SMIC would have a favorable impact on youth employment. Chart 10 also suggests a correlation between the relative minimum wage and youth unemployment. In response to high youth unemployment, the government has introduced a number of labor market measures (Chart 10, lower panel). Many labor market scheme are targeted at the young (see section 5, below). Given the large increase in the number of places on employment programs between 1984 and 1987, it is difficult to assess whether the fall in the youth unemployment after 1984 was due to the fall in the relative value of the SMIC or an increase in labor market programs. It is likely that both played a role.

By adding to wage rigidity--in particular, the rigidity of relative wages by limiting wage differentials--the SMIC has several implications. 1/ To the extent that the productivity of the less skilled and less qualified is below that justified by the SMIC, they are likely to suffer unemployment. This no doubt helps explain France's high rate of youth unemployment, and also the persistence of unemployment. The SMIC may also be an obstacle to regional labor mobility, as it is uniform across the country and thus does not reflect regional differences in the cost of living which imply different real values for the SMIC.

The experience of other industrial countries with a statutory minimum wage is also relevant. Empirical work in United States and Canada has concluded that the minimum wage has had a negative impact on youth employment. 2/ It is therefore instructive to compare the level of the minimum wage in France to that in other industrial countries.

The cost of employing someone at the minimum wage in France is about twice that in the United States. This is due to two factors. Firstly, the minimum wage in France is about 1.5 times that in the United States and, secondly, employers' social security contribution rates are 38 percent in France but only 7.7 percent in the United States 3/ (Table 7).

Table 7. The minimum wage in France and the United States,
July 1992

	Monthly <u>4/</u> minimum wage (F) <u>5/</u>	Cost to the employer (F)
France	5,756	7,943
U.S.	3,950	4,254

Source: Bulletin Mensuel de Statistique and U.S. Employment and Earnings.

A comparison with Belgium and the Netherlands is interesting because unlike France these countries have a lower minimum wage for the young than

1/ In addition to the SMIC, there is evidence of other types of wage rigidity which could also lead to higher unemployment. For example, there is evidence of "insider power" (Cahuc and al, 1990; Plassard and Tahar, 1990).

2/ See Brown (1988) for a survey of the U.S. evidence and Coe (1990) on evidence for Canada.

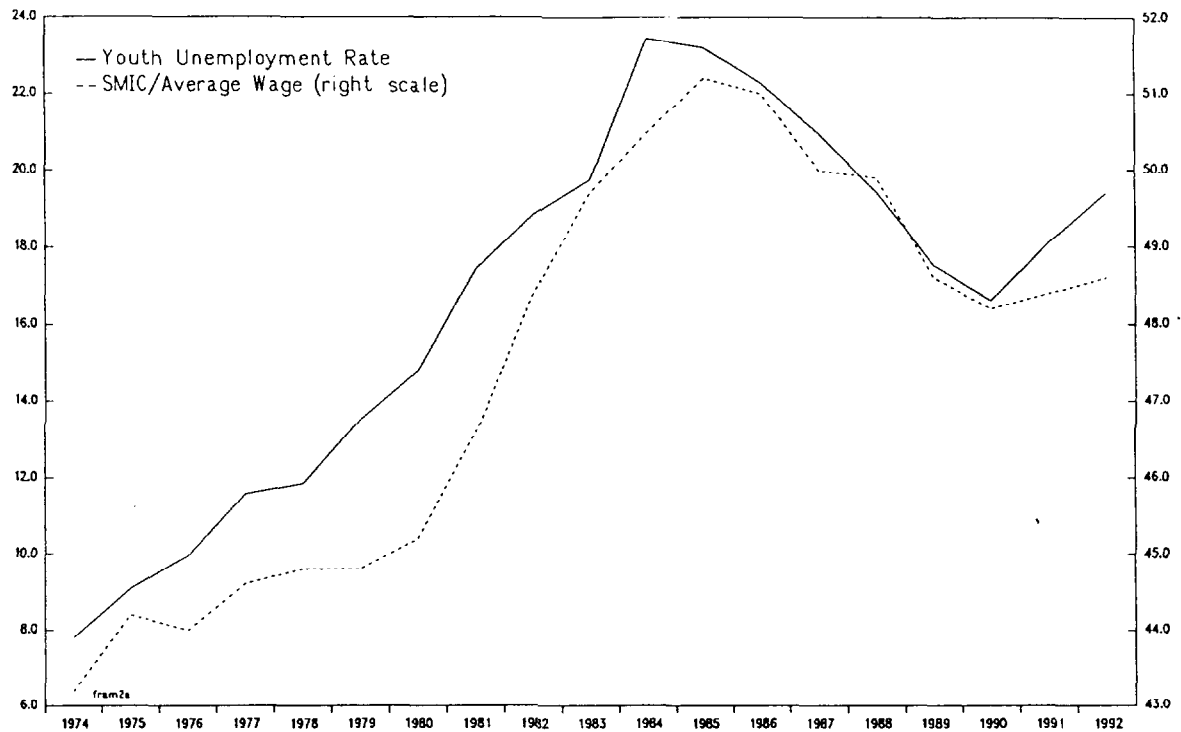
3/ Based on internationally comparable figures compiled by the OECD (1992).

4/ On the basis of working 169 hours a month.

5/ Using an exchange rate of \$1 = F 5.5.

CHART 10
FRANCE

Youth Unemployment, the Relative Minimum Wage
and Labor Market Programs



Sources: INSEE, OECD and staff estimates.

for other workers. In France the minimum wage, at least in theory, applies to anyone aged 18 or above. 1/ In the Netherlands the full minimum wage applies to those aged 23 and above. For those under 23, the minimum wage is reduced sharply. 2/ In Belgium the full minimum wage applies to those aged 21 and above and there are lower rates for those under 21, although the reduction is not as sharp as in the Netherlands. 3/

The existence of the youth minimum wage means that, in absolute terms, it is cheaper for an employer to employ an 18 year old in the Netherlands or Belgium than in France, although the full minimum wage is higher in the former countries (Table 8). Interestingly, the ratio of youth to total unemployment in the Netherlands is among the lowest in the industrial countries (Charts 11 and 5).

1/ In recent years the government has introduced a number of measures which reduced employers' contributions and the minimum wage for young people participating in employment schemes. These measures were re-enforced in June 93 reducing the effective minimum wage substantially when participating in special schemes (see section 5 below).

2/ The minimum wage in the Netherlands is reduced according to the following schedule:

<u>Age</u>	<u>Percent of minimum wage</u>
22	85.0
21	72.6
20	61.5
19	52.5
18	45.5
17	39.5
16	34.5
15	30.0

3/ The minimum wage in Belgium is reduced according to the following schedule:

<u>Age</u>	<u>Percent of minimum wage</u>
20	92.5
19	85.0
18	77.5
17	70.0
16	62.5

Table 8. The minimum wage for an 18 year old
in France, the United States, Belgium and the Netherlands, July 1992

	Monthly full minimum wage (F) <u>1/</u>	Monthly minimum wage for an 18 year old (F)	Cost to employer of 18 year old (F)
France	5,756	5,756	7,943
U.S. <u>2/</u>	3,950	3,365	3,624
Belgium	6,743	5,226	7,405
Netherlands	6,476	2,947	3,286

Source: Bulletin Mensuel de Statistique, U.S. Employment and Earnings,
and K. van den Heuvel (1992).

There is, therefore, considerable evidence that the minimum wage in France is high by international standards, especially for the young. There is also some evidence that the minimum wage affects youth, if not total, unemployment. We will pursue this issue further by doing some time series analysis of data for France in section 4, after we have briefly considered the other potential causes of unemployment.

c. Generosity of benefits

Most models of wage determination imply that benefits have a significant effect on wages (Layard et al, 1991). The impact of the replacement rate (i.e. the ratio of unemployment benefits to wages) on the decision to seek employment very much depends on the individual's circumstances and is difficult to measure at an aggregate level. Besides, some countries with a high replacement rate such as Sweden and Norway have low unemployment and a high participation rate. The important issue is not so much the absolute level of benefits, or even the replacement ratio, but the incentive structure of the benefit system and the characteristics of the individual (see, for example, Schmitt and Wadsworth, 1993).

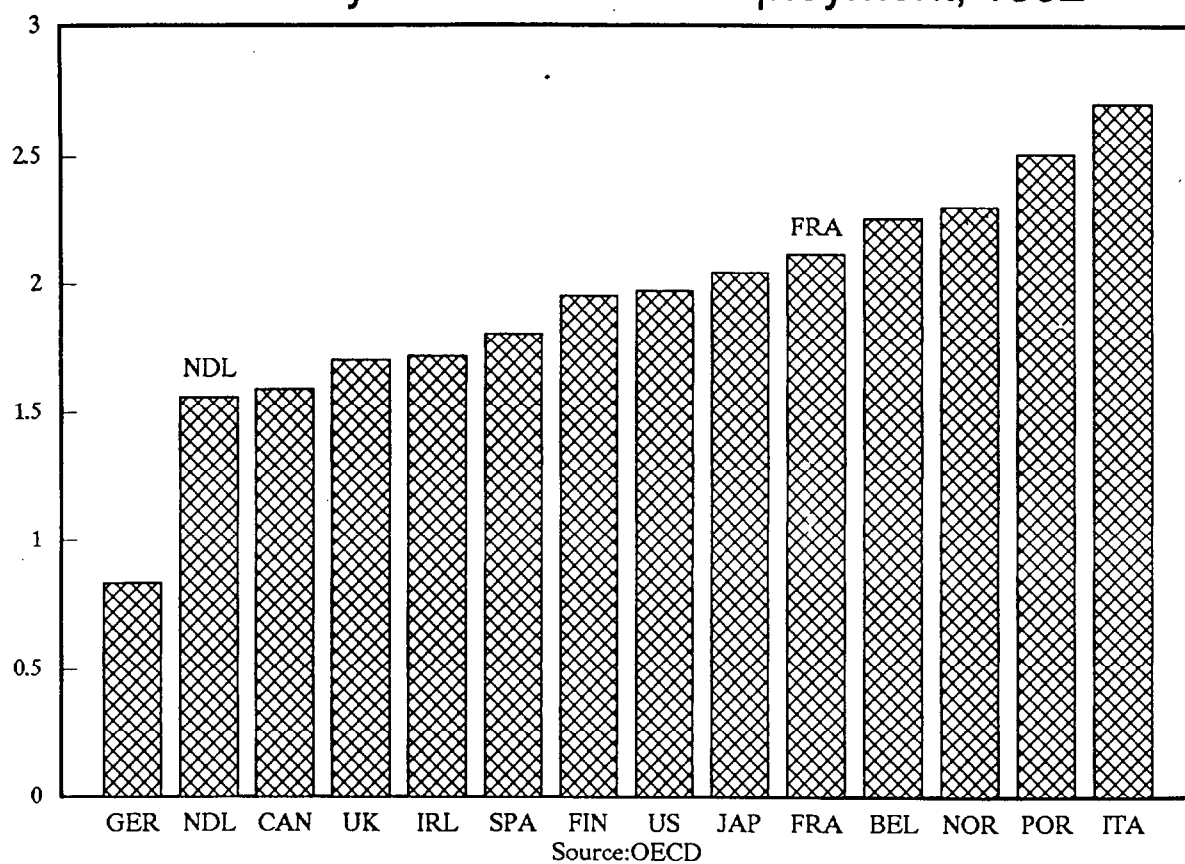
One aspect of this is the duration structure of benefits. Table 9 gives the result of regressing the proportion of long-term unemployed on the ratio

1/ Using \$1 = F 5.5 and July 1992 exchange rates for other currencies.

2/ In the U.S. there is a reduced minimum wage for 16-19 year olds which is 85 percent of the full minimum wage.

CHART 11
FRANCE

Ratio of youth to total unemployment, 1992



of the long-term to short-term replacement rate using cross-section data for 15 OECD countries. Separate regressions were performed for men and women.

Table 9. Long-Term Unemployment and the Relative Generosity of Benefits

OLS cross-section regressions for 15 OECD countries (t-ratios in parentheses)	
<hr/>	
Women	
	LTU = 7.10 + 0.60 RATIO (2.47)
	R ² =0.32
Men	
	LTU = 4.80 + 0.46 RATIO (2.59)
	R ² =0.34

Where:

LTU = percentage of unemployed who have been unemployed for more than a year
RATIO = the ratio of long-term to short-term replacement rates times 100

Table 9 shows that there is a significant positive relationship between long-term unemployment and the generosity of long-term relative to short-term unemployment benefits for both men and women. The equation for men suggests that if the ratio of long-term to short-term unemployment benefits is 1 percentage point higher, then long-term unemployment will be 0.46 percentage points higher. Interestingly, the corresponding figure for women is 0.60 percentage points. In the data-set, which corresponds to 1991, the ratio of short-term to long-term replacement rates for France is 17 percentage points higher than the sample average for men, and 22 percentage points higher for women. The introduction of the new unemployment benefits system will reduce these ratios (see section 5).

There are other features of the benefits system which may also have an impact on unemployment. According to the EC Commission, unemployment benefits were paid to 43 percent of those without work in France in 1989, which is substantially above the EC average of 30 percent. One cause of this phenomenon could be the duration for which unemployment benefits are available in France. Table 10 provides data on the maximum duration of benefits for the OECD countries. Benefit duration in France is among the longest in the OECD countries. Only in Belgium, Denmark and the Netherlands are benefits available for a longer period.

Table 10. Maximum Duration of Unemployment Benefits and Replacement Rates

	1981	1989
EC countries		
Belgium	Indefinite	Indefinite
Denmark	130 weeks	130 weeks
France	156 weeks	130 weeks
Germany	52 weeks	52 weeks
Ireland	65 weeks	65 weeks
Italy	26 weeks	26 weeks
Netherlands	...	156 weeks
Spain	104 weeks	104 weeks
United Kingdom	52 weeks	52 weeks
Non-EC European countries		
Austria	30 weeks	30 weeks
Finland	100 weeks	100 weeks
Norway	40 weeks	80 weeks
Sweden	60 weeks	60 weeks
Switzerland	36 weeks	50 weeks
Non-European OECD countries		
Canada	50 weeks	50 weeks
Japan	26 weeks	30 weeks
United States	39 weeks	26 weeks

Sources: OECD Employment Outlook, 1993

d. Institutional factors

Structural unemployment is also affected by the benefits administration system, hiring and firing regulations and other institutional factors which could discourage employers from taking on new workers or act as a disincentive to job search by the unemployed. A few of these factors are examined in this section.

(1) Unemployment benefit administration

France does not seem out of line with regard to the minimum waiting period before the receipt of benefits; as in many other industrial countries, there is no minimum period. A number of countries have a minimum waiting period of a few days. However, if a person has left his job voluntarily, he would be completely disqualified from receiving benefits in France, whereas in many countries there is a waiting period of several weeks but not a complete disqualification (Table 11).

Regulations concerning signing-on in France are rather liberal: confirmation of unemployment status is done on a monthly basis by post (Table 12). However, France does have a system of intensified interviews by the placement and benefit administration services (Table 13).

(2) Hiring and firing legislation

The 1986 work dismissal legislation in France requires that those being dismissed are given one to two months' written notice of dismissal and informed in writing of the reasons for their dismissal. At the same time this legislation removed the need to seek the permission of the Labor Ministry for collective dismissals. Other legislation in 1989 obliged companies to prove the cause of dismissal. The law in France also requires that workers be paid up to a maximum of one and a half months' salary as severance pay. Though the legal restrictions on dismissal in France are less strict than those in the southern European countries, they are more strict than those outside Europe, particularly in the United States.

Barriers to non-traditional forms of work such as part-time or temporary work are often viewed as a form of rigidity in the labor market. We noted above that part-time working is less developed in France than in many other industrial countries (Table 2). In order to assist part-time working, the government passed legislation in December 1992 exempting employers from 50 percent of social security contributions if they took on part-time workers.

The proportion of people working on temporary contracts in France has risen continuously over the last decade from 3.3 percent of employment in 1983 to 10.2 percent in 1991 (Table 14). However, the regulations governing fixed term contracts remain more strict in France than in most other industrial countries (Table 14). For example, in some circumstances the use of temporary contracts is restricted; there is a legal maximum duration for fixed term contracts; and employees are entitled to termination benefits.

Table 11. Periods for Which No Insurance Benefits Are Paid at the Start of an Unemployment Spell

	Minimum waiting period (for all claims)	Waiting period if the last job was quit voluntarily
Australia	7 days	2-12 weeks
Austria	none	4 weeks
Belgium	none	1-26 weeks
Canada	2 weeks	6 weeks
Denmark	none	5 weeks
Finland	5 days	6 weeks
France	none	complete disqualification
Germany	none	12 weeks
Greece	6 days	complete disqualification
Ireland	3 days	6 weeks
Japan	7 days	1-3 months
Netherlands	none	none
New Zealand	7-14 days	6 weeks
Norway	3 days	4 weeks
Portugal	none	complete disqualification
Spain	none	complete disqualification
Sweden	none	4-10 weeks
Switzerland	5-20 days	...
United Kingdom	3 days	1-26 weeks
United States	1 week	complete disqualification

Source: OECD, Employment Outlook 1991.

Table 12. Signing-On and Other Regular Reporting by Benefit Claimants

Signing-on in Person		Confirmation of unemployed status by postal procedure	
Australia	Every 2 weeks	France	Monthly
Belgium	Every day	Greece	Monthly
Denmark	Every 2-3 months	Netherlands	Maximum 3 months
Japan	Every 4 weeks	United States	Every one or two weeks
Portugal	Monthly		
Spain	Every 3 months	No regular procedure	
Switzerland	3 times a week		
		Finland	
		Germany	
		Sweden	

Source: OECD, Employment Outlook 1991.

Table 13. Scheduling of Intensified Interviews by Unemployment Duration

Scheduling of intensified interviews	
Australia	Duration of more than 2 years
Denmark	Every 3 months
France	4th and 13th month of unemployment (employment placement), 14th month (benefit administration)
Germany	After at least a year
Netherlands	Reorientation interviews after 3 years of unemployment
Sweden	Unemployed over 6 months given priority
United Kingdom	At 6 months and every 6 months thereafter
New Zealand	At 6 months

Source: OECD, Employment Outlook 1991.

Table 14. Temporary Workers as a Percentage of Total
Dependent Employment, 1983-91

	1983	1988	1991
Australia	...	18.7	19.7
Belgium	5.4	5.0	5.1
Denmark	...	11.5	11.9
Finland	11.1	...	13.1
France	3.3	7.8	10.2
Germany	...	11.4	9.5
Greece	16.3	17.6	14.7
Ireland	6.2	9.1	8.3
Italy	6.6	5.8	5.4
Japan	10.3	10.7	10.5
Luxembourg	3.2	3.7	3.3
Netherlands	5.8	8.7	7.7
Portugal	...	18.5	16.5
Spain	...	22.4	32.2
Turkey	...	7.2	6.6
United Kingdom	5.5	6.0	5.3

Source: OECD, Employment Outlook, 1993.

Temporary Work: Fixed-Term Contact Regulations and Requirements, 1990

Degree of government regulations	Contract regulation	Restric- tions	Maximum duration 1/	regulation Renewable 2/	Termination benefits
Minimum					
Austria	Y	N	N	Y	N
Denmark	N	N	N	Y	N
Ireland	N	N	N	Y	N
U.K.	N	N	N	Y	N
Moderate					
Belgium	Y	N	N	N	N
Germany	Y	Y	18	N	N
Greece	Y	Y	N	2	N
Netherlands	Y	N	N	Y	N
Sweden	Y	Y	N	1	N
Severe					
France	Y	Y	24	2	Y
Italy	Y	Y	6	N	Y
Luxembourg	Y	Y	24	2	N
Portugal	Y	Y	36	2	Y
Spain	Y	Y	36	Y	Y

Source: OECD, Employment Outlook, 1993.

Y - Yes; N - No.

1/ Maximum duration in months.

2/ Possibility of renewal and the number of times a contract may be renewed.

The barriers to temporary work have to be considered in conjunction with the constraints on permanent employment such as employer taxes or hiring and firing regulations. If the regulations governing permanent employment were not rigid then employers would make use of temporary contracts only to the extent that they help in adjusting to changes in demand. However, the existence of barriers to permanent employment would encourage greater use of temporary contracts. Therefore, given the existence of barriers to permanent employment in France and the fact that the regulations governing temporary work are more strict than in most other countries, it is difficult to argue that the rise in the proportion of temporary workers in France is a sign of enhanced labor market flexibility.

Another potential constraint on hiring non-temporary staff in France is that the employment agency, ANPE (Agence nationale pour l'emploi), currently has a monopoly in placing non-temporary staff. This was originally done to prevent the exploitation of the unemployed and is no longer enforced. Firms regularly employ outside the ANPE. Such legal restrictions also exist in a number of other European countries (Table 15). Even though this legislation is not currently enforced, it could act as a disincentive to private firms considering entering the placement market if they fear that the legislation may be invoked in the future.

e. Mismatch

Evidence on the mismatch between the skills held by workers and those demanded by employers is rather difficult to assemble. For example, indicators based on unemployment by occupation only consider the supply side of the market, and since skills are defined on the basis of the last job held, they exclude all the unemployed without previous experience.

Data on the characteristics of the unemployed suggest some degree of mismatch. Youth unemployment is highest among those with the least qualifications (OECD, 1992b). The long-term unemployed tend to have lower educational attainment than average (Bonnal and Fougère, 1990) and are concentrated in the least qualified occupations (Caracosta et al, 1991). As for regional mismatch, both the uniformity of the SMIC across the country and the high taxation of property transfers are hindrances to regional mobility.

Using time series measures of mismatch based on the distribution of vacancies and unemployment by industry and occupation, Jackman and Roper (1987) and Jackman, Layard and Savouri (1991) argue that mismatch in France, and indeed in most of Europe, did not increase markedly during the 1980s. However, Entrof (1993) illustrates that time series measures of mismatch may lead to the wrong conclusions since these measures are biased downwards when unemployment is rising. Entrof also presents some micro data which suggest that regional and occupational mobility declined in Europe during 1980s.

Table 15. Legal Constraints on Methods of Filling Vacancies

Requirements for notification of vacancies to the public employment service		Legality of profit-making employment placement agencies
Australia	No requirement	Permitted
Austria	No requirement	Banned
Belgium	All vacancies for external candidates	Temporary work agencies only are permitted
Canada	No requirement	Permitted
Denmark	No requirement	Banned
Finland	All vacancies	Banned
France	All vacancies for external candidates	Temporary work agencies only are permitted
Germany	No requirement	Temporary work agencies only are permitted
Greece	All vacancies	Banned
Ireland	No requirement	Permitted
Italy	...	Banned
Netherlands	No requirement	Permitted
Norway	All vacancies	Temporary work agencies are often permitted
Portugal	No requirement	Permitted
Spain	All vacancies	Banned
Sweden	All vacancies for external candidates	Banned
Switzerland	No requirement	Permitted
United Kingdom	No requirement	Permitted
United States	No requirement	Permitted

Source: OECD, Employment Outlook, 1991.

A simple measure of mismatch based on the variance of unemployment ^{1/} indicates that in France mismatch increased during the 1980s. For example regional mismatch increased from 1.27 percent in 1982 to 1.88 percent in 1990. However, regional mismatch fell to 1.48 percent in 1992 as the rate of increase in unemployment was higher in regions with lower unemployment. ^{2/} The same picture emerges when considering unemployment by professional status; since unemployment has risen sharply among white collar workers (who had a relatively low unemployment rate), mismatch falls from 12.5 percent in 1990 to 11.9 percent in 1992.

Chart 12 depicts a more formal measure of mismatch, the unemployment-vacancy (UV) ratio (or Beveridge curve), for the period 1974-92. An outward shift of the curve seems to have occurred: between 1978 and 1983 the same ratio of vacancies to the labor force was coupled with a higher unemployment rate than before. During the period 1984-87, unemployment rose while vacancies were on the rise, albeit modestly. This behavior is indicative of a small increase in mismatch. ^{3/}

France spends 2.7 percent of its GDP on the labor market: the average for the OECD being 2 percent and for the G7, excluding France, 1.1 percent. However, France spends much less than most other industrial countries on active labor market measures such as training and more on passive measures such as unemployment compensation (Chart 12, lower panel). Only the former are likely to alleviate labor market mismatch.

4. Causes of unemployment - time series evidence

This section presents a time series econometric model of the determinants of the NAIRU (non-accelerating-inflation rate of unemployment) or the natural rate of unemployment. The primary interest here is not to estimate a numerical value for the NAIRU but to identify a set of policy instruments which could be used to reduce it.

a. The model

To understand the causes of unemployment in Britain, in an influential study, Layard and Nickell (1986) construct an empirical model consisting of equations for prices, wages, employment and the trade balance. Here we estimate a simplified version of their model which consists of two

^{1/} This is defined as $1/2 \text{ VAR}(U_i/U)$.

^{2/} For example, unemployment rate in Yvelines (Ile-de France) rose from 4.9 to 6.2 percent, a rise of 27 percent; whereas it rose from 13.5 percent to 15.5 percent in Hérault in Languedoc-Roussillon, a rise of 15 percent.

^{3/} Bismut (1982) illustrates that there was a significant shift of the Beveridge curve after the two oil shocks. There is no evidence of such instability during the 1980s. However, the flatness of the UV curve during 1974-92 period and its upward slope during 1984-87 point to a small increase in mismatch.

equations: a price equation and a wage equation. In this model firms are assumed to operate in an imperfectly competitive environment setting their prices on the basis of costs and demand. A key feature of the model is that wages are influenced by "pressure variables" such as those reviewed in the last section, e.g., mismatch, the minimum wage, generosity of benefits, import prices, etc. If increases in the wage pressure variables lead to higher real wages then unemployment would have to rise for price inflation to be kept in check. More formally, the model assumes that stable inflation requires consistency between two concepts:

(i) the "target" real wage: firms and workers bargain about nominal wages as a mark-up on expected value-added prices;
 $w^* = \text{target}(w-p)$ $\frac{1}{\alpha}$, and;

(ii) the "feasible" real wage: in an imperfectly competitive market the firms are thought of as setting value-added prices as a mark-up on wages; $p^* = \text{feasible}(p-w)$.

The economic variable which brings about this consistency in the long-run is unemployment (Layard et al, 1991).

The model is given below in equations (1)-(4). Since we are interested in the NAIRU, which is the long-run equilibrium concept for the unemployment rate, we have separated the long-run relationships from the dynamic ones. This is also desirable from an estimation point of view (Wren-Lewis, 1990). (1) and (2) give the long-run wage and price equations, (3) and (4) give the dynamic framework for wages and prices.

$$w^* = pr + \alpha_1 U + \alpha_2 Z_w + \alpha_3 (pm - p) \quad (1)$$

$$p^* = \beta_1 (y_d - \bar{y}) + \beta_2 Z_p - pr \quad (2)$$

$$w = w^* + p + \theta_1(L) \Delta w - \theta_2(L) \Delta p + \theta_3(L) D_w \quad (3)$$

$$p = p^* + w + \phi_1(L) \Delta p - \phi_2(L) \Delta w + \phi_3(L) D_p \quad (4)$$

where w^* = target real wage (i.e., target $(w - p)$)

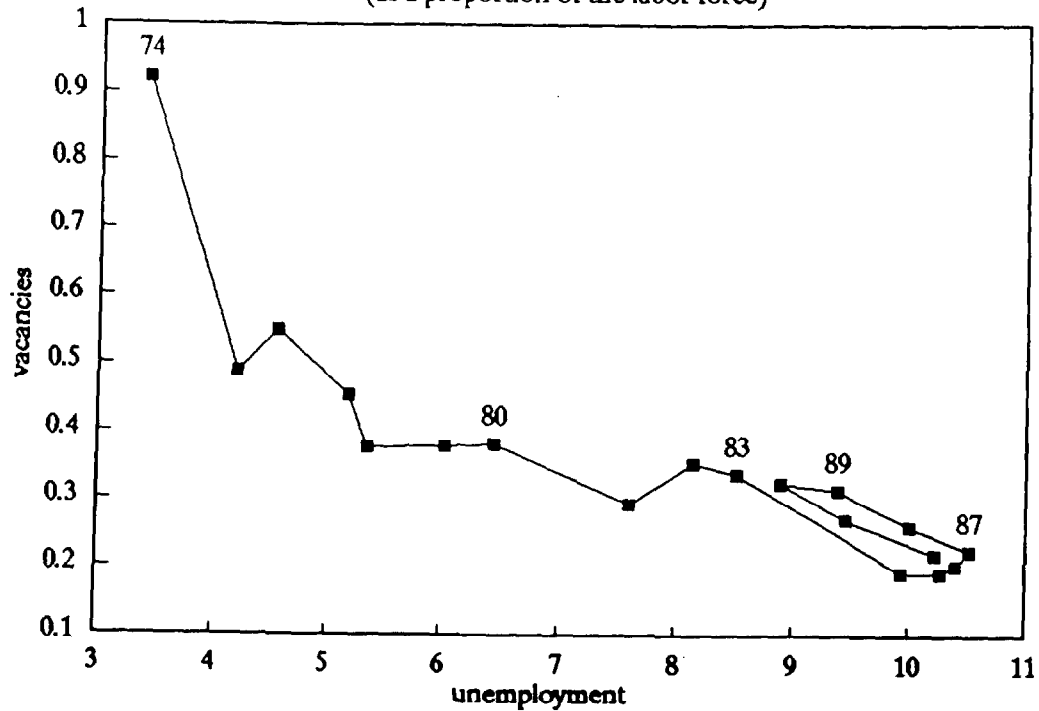
p^* = feasible real wage (i.e., feasible $(p - w)$), w = nominal hourly earnings, pr = productivity or unit labor costs, p = output prices, U = unemployment rate, P_m = import prices, $(y_d - \bar{y})$ = actual demand relative to potential output, Z_w = other wage pressure variables, Z_p = other variables affecting firms' margin, D_w, D_p = other factors affecting the dynamics of wages and prices and Δ is the difference operator. All lower case variables are logged. θ and ϕ are polynomials in the lag operator L and have both positive and negative powers of L , with forward terms appearing as expectations. It is also assumed that polynomials are such that the target real wage is independent of the rate of inflation, i.e., dynamic homogeneity holds.

$\frac{1}{\alpha}$ w and p are in logs.

CHART 12
FRANCE

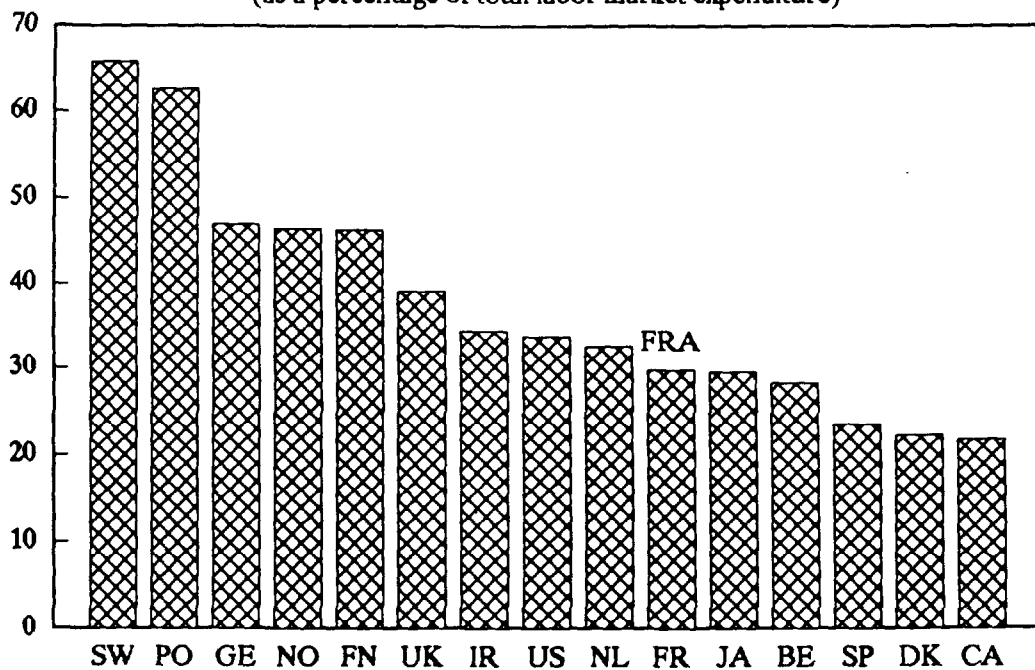
vacancies and unemployment, 1974-92

(as a proportion of the labor force)



Share of active labor market expenditure

(as a percentage of total labor market expenditure)



Source: OECD Employment outlook, 1992

Combining (3) and (4) gives:

$$[\theta_2(L) - \phi_1(L)] \Delta p = w^* + p^* + [\theta_1(L) - \phi_2(L)] \Delta w + [\theta_3(L)Dw + \phi_3(L)Dp] \quad (5)$$

The left hand side of (5) is a polynomial in changes in prices. The right hand side of (5) can be regarded as a measure of inflationary pressure which is made up of three elements: i) $w^* + p^*$, the difference between the target real wage and the feasible real wage; ii) a polynomial in the dynamics of wage contracts; and iii) other short-run influences on wages and prices.

The first element, $w^* + p^*$, can be derived from combining (1) and (2)

$$w^* + p^* = \alpha_1 U + \beta_1 (y_d - \bar{y}) + \alpha_2 Z_w + \beta_2 Z_p + \alpha_3 (pm - p) \quad (6)$$

In a steady state where inflation is constant, (5) implies that $w^* + p^* = 0$. Therefore (6) becomes a long-run relationship between the NAIRU, the level of actual demand relative to potential, $(y_d - \bar{y})$, Z_w , Z_p , and import prices. For a given level of demand, (6) would determine the long-run influences on NAIRU.

b. The results

Since we are interested in estimating long-run relationships, an obvious way forward is to employ cointegration techniques. ^{1/} The basic idea of cointegration is that two or more variables may be regarded as defining a long-run equilibrium relationship if they move closely together in the long run, even though they may drift apart in the short run. This long-run relationship is referred to as a cointegrating vector. Because there is a long-run relationship between the variables, a regression containing all the variables of a cointegrating vector will have a stationary error term, even if none of the variables taken alone is stationary.

We have directly estimated the long-run relationships (1) and (2) above using the Johansen procedure and quarterly data for the period

^{1/} Cuthbertson, Hall, and Taylor (1992) presents a survey of cointegration.

1971:I-1992:IV. 1/ The test statistics and the estimated cointegrating vectors from the Johansen procedure are reported in Appendix I. The cointegration tests reveal the following unique wage and price equations:

$$w-p = pr + 0.59 \text{ smic} - 0.07 U + 0.15 SK + 0.12 (pm-p) \quad (7)$$

$$p-w = -pr + 0.02 CU + 0.26 \rho + 0.43 t_1 \quad (8)$$

The wage equation contains U and $pm-p$ as suggested by (1) as well as the log of the real value of the SMIC (denoted as $smic$) and an index of skill shortages, SK , from the EC Commission's quarterly survey of employers. 2/ The latter two represent wage pressure variables Z_w in (1). The price equation contains capacity utilization, CU , the cost of capital, ρ and the employers' tax wedge, t_1 . The capacity utilization variable is a proxy for demand relative to potential output, $(y_d - y)$. This variable is available from business survey data. The cost of capital, ρ , and the employers' tax wedge, t_1 , represent Z_p in equation (2) and are discussed further below. A unit coefficient on the productivity term, pr , is imposed in both equations as suggested by (1) and (2). A number of other specifications for both the target real wage and the target price markup were also tried (see below).

In the cointegrating vector for the real wage, all of the estimated coefficients have the expected signs and are of plausible magnitudes. Two of the variables, U and SK , enter not as logs but as levels. Unemployment has the expected negative effect on wages. The equation indicates that if the import price wedge rises, wage earners would resist a fall in the real consumption wage (i.e. deflated by consumer prices) by pushing up the real product wage. The other two variables, $smic$ and SK are of policy interest. The minimum wage variable captures the downward rigidity of wages and the index of skill shortages can be viewed as a proxy for mismatch. 3/ The wage equation here is similar to that used in a paper by Blanchard and Muet (1993), however, instead of the SMIC and the SK variables they use a price

1/ Johansen (1988) and Johansen and Juselius (1990) present a cointegration estimation methodology which is based on maximum likelihood estimates of all the cointegrating vectors in a given set of variables, and provide two likelihood ratio tests for the number of cointegrating vectors. Johansen (1988) demonstrates that the likelihood ratio tests have asymptotic distributions that are a function only of the difference between the number of variables and the number of cointegrating vectors. Therefore, in contrast with the DF and ADF tests, the Johansen likelihood ratio tests have well defined limiting distributions. Johansen and Juselius also provide a methodology for testing hypotheses about the estimated coefficients of the cointegrating vectors based on likelihood ratio tests with standard chi-squared distributions.

2/ This is defined as the percentage of firms in the survey whose output is constrained by a lack of labor.

3/ We tried the ratio of minimum wage to average wage instead of the $smic$ variable but we were unable to obtain a cointegrating vector with the variables correctly signed.

inflation variable in the wage equation. We were unable to obtain cointegration using this formulation. The approach here has the advantage of directly identifying wage pressure variables; besides, conceptually it would be unusual to have inflation in a long-run vector.

In the cointegrating vector for prices, the estimated coefficients again have the expected signs and are of reasonable magnitudes. The coefficient of the cost of capital, ρ , and the employers' tax wedge, t_1 , imply that, in the long-run, employers pass on some of the increase in their costs by reducing earnings. Both of these variables are strongly influenced by economic policy choices. We find that tax wedges have no long-run effect in the wage equation, a result similar to that obtained by Cotis and Loufir (1990). However, in our formulation the employers' tax wedge has a long-run effect on unemployment through the price equation.

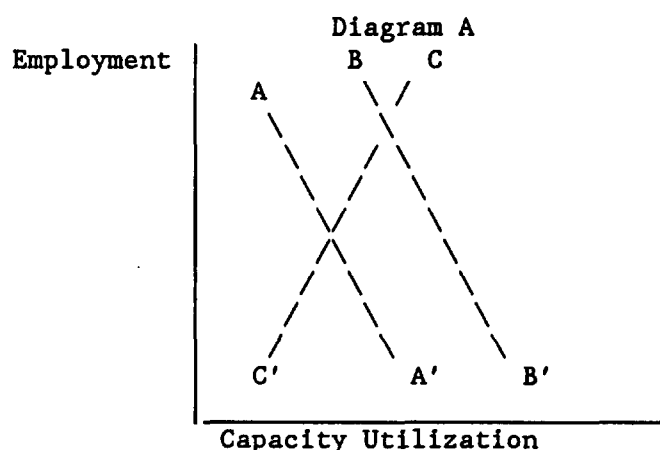
A number of other variables and formulations were also tried but with no success. In the wage equation we tried other forms of mismatch; direct, indirect and the employers' tax wedge; unemployment in logs rather than as a rate and an aggregate measure of benefits. In the price equation we also tried tax wedges and changes in consumer expenditure. However, none produced plausible results.

Since our primary interest is in the long-run determinants of unemployment, we shall not dwell any further on the long-run wage and price equations and proceed to obtain a long-run equation of the form given by (6) above. This can be done in the steady state by simply adding the vectors in (7) and (8) and eliminating wages and prices to obtain:

$$U - 0.3CU = 8.4 \text{ smic} + 3.7 \rho + 6.1 t_1 + 2.1 SK + 1.7 (\text{pm-p}) \quad (9)$$

Equation (9) is not, strictly speaking, a NAIRU equation because it has a term in capacity utilization, CU .^{1/} This can be illustrated using diagram A below. Equation (9) is represented by the lines AA' and BB' . The right hand side variables in (9) will determine a schedule of values for unemployment and capacity utilization. A cut, say, in the real value of the SMIC would shift AA' to, say, BB' so that for a given level of capacity utilization employment would be higher and unemployment lower.

^{1/} See Wren-Lewis (1990) and Joyce and Wren-Lewis (1991) for a fuller discussion in the context of a large macroeconomic model.



To obtain an equation for NAIRU it is necessary to eliminate CU from (9). This can be done by estimating an upward sloping schedule, such as CC', between unemployment and capacity utilization which reflects a linkage through aggregate demand: a rise in capacity utilization would increase the demand for labor and reduce unemployment. Here we have estimated a very simple cointegrating relationship between CU and U using the Johansen procedure:

$$0 = CU + 0.25 U \quad (10)$$

Substituting for CU from (10) into (9) gives:

$$U = 7.8 \text{ smic} + 3.4 \rho + 5.7 t_1 + 2.0 SK + 1.6 (\text{pm-p}) \quad (11)$$

Equation (11) implies that in the long-run unemployment would be lower, the lower are the following variables:

- (i) the real minimum wage;
- (ii) employers' tax wedge;
- (iii) skill shortages;
- (iv) the cost of capital; and
- (v) real import prices.

Using the actual values of the right hand variables in (11) gives a NAIRU of 8.2 percent in 1992.

Appendix II provides estimates of the dynamic equations (3) and (4). The dynamic equations illustrate that reductions in direct and indirect taxes would also have an impact on unemployment through wage and price dynamics, but only in the short-run. However, given the long lags on these variables, the impact could last as long as two years. The fact that reductions in direct and indirect taxes only have a temporary impact, whereas a cut in employers' taxes has a long-run effect, is a violation of the IIP. However, this could be because the cost to the employer of employing someone at a wage of the SMIC plus employers' taxes is well above market clearing rate and therefore IIP does not apply. In these

circumstances, reductions in employer taxes and the real value of the SMIC could help generate new jobs.

5. Recent labor market measures

Sections 3 and 4 identified some of the causes of unemployment in France; in this section we examine some of the recent policy responses. Over the last year three principal measures have been taken: (i) a new unemployment benefit system has been put in place; (ii) a number of labor market programs, particularly those aimed at the young, have been expanded; and (iii) payroll taxes for the low paid have been reduced. These developments and their potential impact are analyzed below.

a. The unemployment benefit system

The new benefit system, l'allocation unique dégressive (AUD), came into effect in January 1993. The benefits are financed by social security contributions, as before. The novel feature of the new system is that, after an initial period, benefits are progressively reduced every four months. The previous salary and the period of contribution to the system determine the initial level of the benefit. For someone who has worked for at least six months earning the SMIC, 1/ the initial replacement rate would be 75 percent gross or 83.8 percent net of contributions in the new system (Table 16); it would then decline over time. The initial replacement rate is equal to 57.4 percent gross or 67 percent net for someone earning F 20,000 per month (Table 16).

Table 16. Replacement Ratio

Monthly salary (F)	Gross replacement ratio	Net replacement ratio
1 times SMIC (5,756)	75.0%	83.8%
1.1 times SMIC (6,332)	66.4%	78.4%
1.2 times SMIC (6,907)	64.2%	75.8%
1.3 times SMIC (7,483)	62.4%	73.6%
9,000	58.7%	69.1%
15,000	57.4%	67.3%
20,000	57.4%	67.0%
49,440	57.4%	66.5%

Source: Data provided by the authorities.

1/ F 5,756 in June 1993.

The initial period for which benefits are paid at the maximum level and the subsequent four monthly reductions in the benefit are determined by the age of the claimant and the period of contribution to the system (Table 17). For example, someone earning F 9,000 per month who is less than 25 years old and has made fourteen months of contributions in the last two years, will receive the maximum level of benefit for nine months. Thereafter, his benefits will be reduced by 17 percent every four months and he would receive benefits for a maximum of 30 months (Table 17).

Table 17. Duration of Benefits

Qualifying period	Benefit duration (months)			% reduction every 4 months
	Period of maximum benefit	Period of reduced benefit	Total	
4 out of last 8 months <u>1/</u>		4	4	-25
6 out of last 12 months	4	3	7	-15
8 out of last 12 months				
less than 50 years old	5	10	15	-17
50 plus	8	13	21	-15
14 out of last 24 months				
less than 25 years old	9	21	30	-17
25-49	12	18	30	-17
50 plus	17	28	45	-15
27 out of last 36 months				
50-54	20	25	45	-15
55 plus	27	33	50	-8

Source: Data provided by the authorities.

1/ For this category, benefits are reduced by 25 percent to start with.

b. Action plan for the long-term unemployed

In February 1992 the government introduced a program of systematically interviewing the long-term unemployed, Action d'insertion et de formation (AIF). The program has aimed to identify the training needs and the job prospects of the long-term unemployed. Between February 1992 and November 1992 about one million long-term unemployed were interviewed. Subsequent to the interviews, the flow out of the long-term unemployed increased appreciably in spite of increasing difficulty in the economic situation. Thirty percent of the interviews led to a job or a training scheme, 25 percent of the interviews led to no action and 16 percent of the interviewees were taken off the unemployment register. The rise in the

placement of the long-term unemployed during the interview period was accompanied by a fall in the placement of short-term unemployed, indicating a substitution effect. However, this was in a period of economic slowdown and the exact magnitude of substitution is difficult to ascertain.

c. Labor market programs

Labor market programs have played an increasing role in the effort to stem the rise of unemployment (Chart 13). Numerous programs have been introduced: in July 1993, approximately 40 labor market programs were in existence providing assistance to some 1.9 million individuals. ^{1/} These programs provide aided employment in the public and private sector as well as early retirement and training provision. Labor market programs have had a significant impact on the labor market (Chart 13). OFCE estimate that during 1985-87 period when the observed employment fell by 60,000 and unemployment rose by 170,000, labor market programs provided 370,000 jobs. Therefore, unemployment would have been higher in the absence of labor market programs.

Many programs are targeted at those facing the greatest difficulty, i.e., the young, the long-term unemployed and those on the minimum social security benefit (RMI). In 1992 about half of the participants on employment and training schemes were under 26 years old. Table 18 provides a brief description of the schemes aimed at the young. Similar programs have been initiated for the long-term unemployed and those on minimum benefits. The most prominent are: contrat emploi-solidarité (CES) which creates jobs deemed to be of public value in the non-commercial sector for the long-term unemployed and those on minimum benefits; contrat de retour à l'emploi (CRE) which subsidizes the hiring of those who have been out of a job for over a year.

In June 1993, the new government announced a number of emergency measures to encourage employment. These measures essentially increased the level of the subsidies and the total funding of a number of existing programs, including:

- increased funding for contrat d'orientation: the state will provide a subsidy of F 2000 for the first three months and F 3000 for the subsequent three months to an employer taking on a poorly qualified under 23 year old for six months. The wage need be no higher than 30-65 percent of the SMIC;
- under contrat de qualification the government will waive all social security contributions and provide up to F 10,000 to enterprises taking on an unqualified young person. The young will be paid 35-75 percent of the SMIC and benefit from a training program which will lead to professional qualifications;

^{1/} This figure includes those on early retirement schemes.

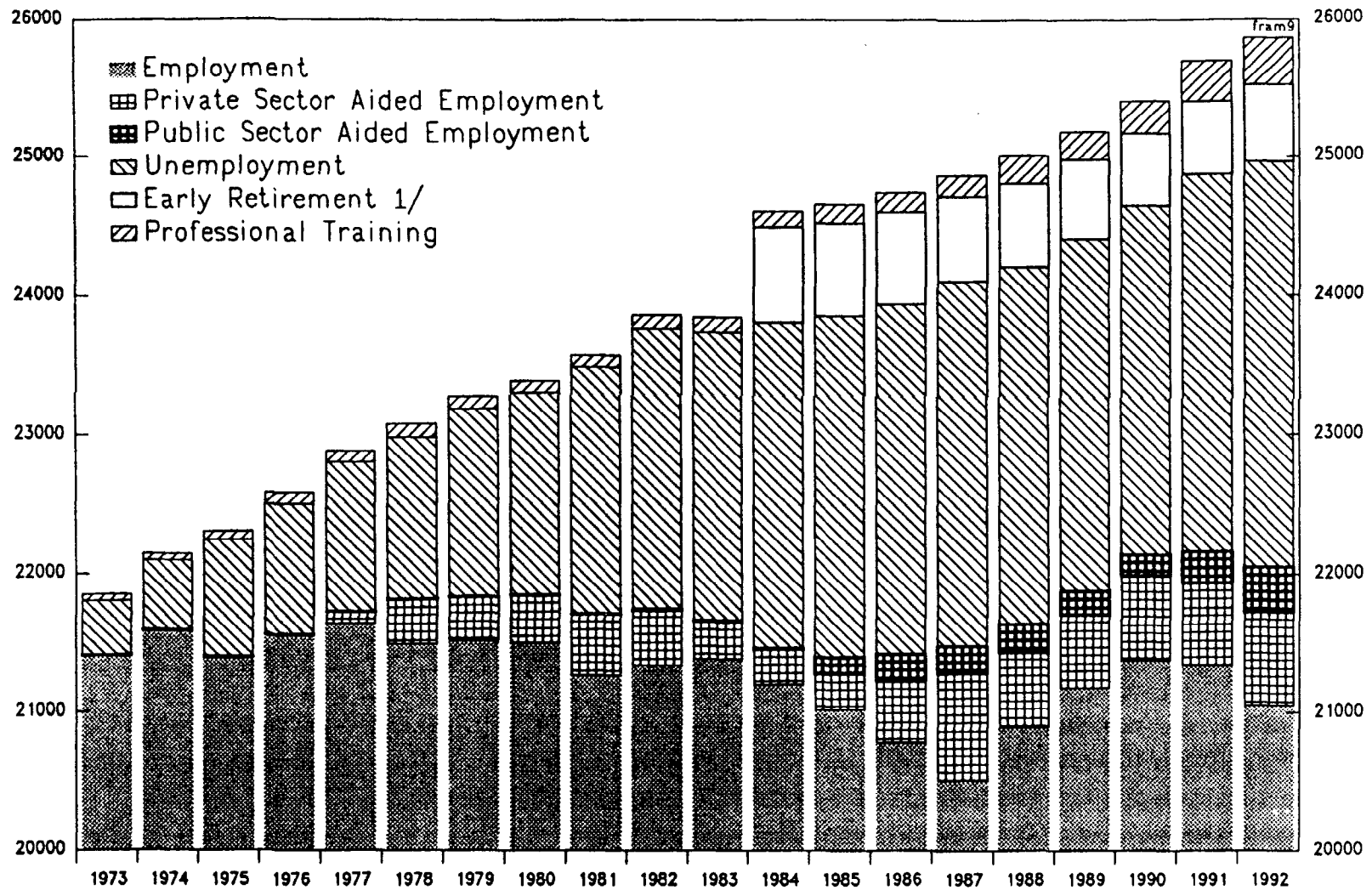
Table 18. Labor Market Programs for the Youth

	Objective	Means
Contrat d'orientation	Aid the poorly qualified under 23 who have encountered difficulty finding a job.	32 hours of training per month in training centers, waive social security contributions, reduced SMIC.
Contrat de qualification	Help to acquire professional qualifications.	1/4 of work time in training, exemption of social security contributions, reduced SMIC.
Contrat d'apprentissage	Assist gaining of experience and qualifications through formal schemes.	Sharply reduced SMIC, waive social security contributions, 400 hours of training in special centers.
Contrat d'adaptation	Encourage the living of qualified young people under 26.	Reduced contributions and reductions in SMIC, 200 hours of on-the-job training.
CES (contrat emploi-solidarité)	Provide experience through socially valuable work.	Salaries paid by the state and contributions are waived.
Exo Jeunes	Help employment of those with no qualifications.	Waive social security contributions.
Credit formation	Encourage acquiring of qualifications.	Through other measures.
PAQUE	Provide access to apprenticeship or qualifications	Through other measures.
Contrat local d'orientation	Short-term work experience for the 16-18 year olds.	Wage subsidies, reduced SMIC and waive contributions.
Actions de formation alternée	Provide individually designed action plans.	Individual training and short work experience.

Source: Information provided by the authorities.

CHART 13
FRANCE

Employment, Unemployment, and Labor Market Programs
(Thousands)



Sources: Data provided by authorities and staff estimates.
1/Including those no longer seeking employment.

- the state will pay F 5000 for taking on apprentices under contrat d'apprentissage and social security contributions will be waived. The apprentices would be entitled to 400 hours of training and paid 25-78 percent of the SMIC;
- increased funding for contrat d'adaptation to enable young people with qualifications to gain experience. Social security contributions are reduced and employers will be paid F 2000 for taking on a qualified under 25 year old who will be paid less than 80 percent of the SMIC;
- finally, the number of places on CES were increased to 650,000 and the state aid to employers for taking on someone on CRE was raised from F 10,000 to F 20,000.

d. Introducing payroll tax exemptions

In order to reduce the cost of hiring people at the bottom end of the pay scale, the government exempted employers from paying family allowance contributions for workers earning up to 10 percent above the minimum wage in July 1993. The contribution for those paid between 10 and 20 percent above the SMIC was cut in half. This was financed by an increase in a more broadly based tax, contribution sociale généralisée (CSG).

6. Assessment of the policy responses to unemployment

The recent slowdown in economic activity in France and in her trading partners, particularly Germany, has no doubt contributed to higher unemployment. However, the persistence and the composition of unemployment suggest that it is necessary to address the structural imbalances in the labor market in order to ensure a substantial decline in unemployment when the recovery is underway. ^{1/}

The government has taken a number of welcome measures in this regard. Table 19 attempts to assess the potential impact of the recent measures. The introduction of progressive reductions of unemployment benefits as the spell of unemployment lengthens (allocation unique dégressive), should, by lowering the ratio of the long-term to short-term replacement rate, reduce long-term unemployment (see section 3 above). Evaluation of job and training prospects by means of individual interviews through action

^{1/} Over the coming years the labor force in France is unlikely to witness an expansion such as that seen in the last twenty years unless the participation rate rises significantly. Demographic projections made by the World Bank (Bos and Bulatao, 1990) imply that the population of working age in France -- for both males and females -- will fall slightly over the next ten years before stabilizing during the following ten years. After the year 2010, when the post war "baby boom" generation starts to retire from the labor market, the population of working age should decline gradually for the following thirty years.

Table 19. Potential Impact of Government Measures on
the Causes of Structural Unemployment

	Causes of structural unemployment			
	Employers' taxes	The minimum wage (SMIC)	Generosity of benefits	Mis-match
Reductions in unemployment benefits through time (AUD)	X	X	✓	X
Action plan for the long-term unemployed	X	X	✓	✓
Labor market programs				
contrat d'orientation	✓	✓	X	✓
contrat de qualification	✓	✓	X	✓
contrat d'apprentissage	✓	✓	X	✓
contrat d'adaptation	✓	✓	X	✓
contrat emploi-solidarité (CES)	✓	X	X	X
contrat de retour à l'emploi (CRE)	✓	X	X	✓
Payroll tax exemptions	✓	X	X	X

Source: Staff assessment.

d'insertion et de formation should assist the long-term unemployed in finding suitable jobs or training, thereby reducing mismatch as well as excessive reliance on unemployment benefits. The array of reinforced labor market measures for the young (contrat d'orientation, contrat de qualification, contrat d'apprentissage, contrat d'adaptation) has the effect of reducing the cost of hiring young people through reductions in employers' taxes and the SMIC. Contrat emploi-solidarité and contrat de retour à l'emploi reduce the cost of employment through wage subsidies and contribution exemptions. The latter, in common with most youth programs, also has an element of training and should help reduce mismatch. Finally, payroll tax exemptions will reduce the cost of employment through reduced employer taxes.

All the above measures are a step in the right direction. However, given the scale of the unemployment in France, more ambitious measures are needed to ensure that unemployment will adjust quickly when the recovery begins. A number of potential measures are given below.

a. Reduce benefits' duration and move from passive to active measures

Further steps in the direction of the recent reform of the benefit system would enhance labor market flexibility. In particular, Table 16 shows that the initial net replacement ratio also remains high. Tables 10 and 17 indicate that unemployment benefits are available for longer in France than in most other industrial countries: benefits are available for up to two and a half years for those under 45 and for just over four years for those over 45. Florens et al (1990) show that there is a significant correlation between the expiry date of benefits and the probability of finding a job. This suggests that reducing the duration of benefits and their initial level could help to reduce unemployment duration, and hence the total number unemployed by providing further incentives for job search. Furthermore, any savings from this and from reductions in other passive measures such as early retirement could be transferred to funding more active measures (e.g., training programs) to enhance the skills of those searching for jobs.

Of course, as explained in section 5, there are a large number of active labor market programs already in existence in France. Many are well targeted and some have been re-invigorated recently. However, if anything, there are too many programs: some 40 in total and about 10 just aimed at the young. Simplifying the multitude of programs, many of which share objectives as well as means, would make them more transparent and more easily understandable by the employers and the unemployed and thereby improve their effectiveness.

Furthermore, experience so far suggests that measures which help create jobs in the private sector are more likely to lead to permanent jobs; a shift of resources to private sector job subsidies is likely to be beneficial. According to a recent survey 58 percent of those participating in CRE and 67 percent of those taking on a contrat de qualification held a

job a few months after the program. 1/ However, only 50 percent of those participating in CES in the non-commercial sector were in employment subsequent to the program and one-fifth of those were on another CES program. The survey also found that in many cases CES did not have a training element. In this regard it is regrettable that CES is expected to expand more than the other labor market programs.

Given that signing-on for benefits in France is done monthly by mail, there is little contact with the unemployed. However, the intensive interviewing program for the long-term unemployed, AIF, has produced some encouraging results and its expansion would be helpful.

Targeted labor market programs such as those aimed at the young or the long-term unemployed will help to create employment in the long-run only if they enhance the skills of the individuals who participate in them. 2/ It is, therefore, necessary to have a well defined, nationally recognized system of qualifications for any such programs and to encourage employers to participate in the training schemes in order to ensure that the skills gained by the participants correspond to those which employers demand.

b. Reduce employers' taxes further

The recent government decision to subsidize employers' family allowance contributions for those being paid up to 20 percent above the minimum wage is likely to help job creation by reducing employers' labor costs. However, more permanent measures are needed to boost employment in the long-run. The exemption of contributions could be extended to salaries above 1.2 times the SMIC. In the long-run, it is desirable to de-link the financing of family allowances from employers' taxes completely; they could be financed through more broadly based income taxes. The econometric results given in section 4 suggest that if the employer's tax wedge is lowered by 1 percentage point and employee taxes raised by 1 percentage point, then for a given level of capacity utilization, the unemployment rate would fall by about 0.1 in the long-run. Given that tax wedges in France are high by international standards, cuts in benefits and budgetary expenditure which would enable a reduction in employers' contributions would also help reduce structural unemployment.

c. Introduce a youth minimum wage

The analysis above suggests that the minimum wage has a significant and positive impact on unemployment in general and youth unemployment in particular. Reducing the real value of the SMIC relative to average earnings should help to lower unemployment. However, the current mechanism

1/ Survey by Centre d'Etudes de l'Emploi.

2/ Layard et al (1991) illustrate that non-targeted public employment would only increase net employment in the long-run under very restrictive conditions. For example, taxes needed to finance public employment would have to be fully absorbed by labor.

for revising the SMIC ensures that it will not fall by more than 2 percent a year as a rise of 2 percent or more in the CPI automatically triggers an equivalent rise in the SMIC. Furthermore, the SMIC is raised by at least half the increase in real hourly wages in industry every year. Therefore, a re-appraisal of the legal framework would be desirable and, at a minimum, the SMIC should not be increased by more than the minimum legal requirement. ^{1/}

Many of the employment schemes in effect amount to a reduction in the SMIC for the young; however, as an indirect mechanism this remains a second best solution. A better option is to introduce a reduced minimum wage for the young as this would be very transparent, permanent and easy to apply. The introduction of a youth minimum wage in the Netherlands has had a positive impact on employment and the analysis in this paper suggests that it could help reduce youth unemployment in France. Failing this, a simplification of the current programs would be helpful.

d. Other structural reforms

Despite restrictive regulations regarding fixed-term temporary work, temporary employment in France is not low. This is probably due to the high fixed costs associated with permanent contracts. Relaxing the regulations on temporary and permanent work may help to generate more employment.

Abolishing the ANPE's redundant legal monopoly on placing non-temporary staff would at worst have no impact and could potentially increase the efficiency of job placement services through the more active participation of private employment agencies.

e. Introduce incentives for profit-sharing

The firms which practice profit sharing in France appear to enjoy higher profitability and productivity as well as higher employment growth compared to those which do not have any method of profit sharing (Commissariat Général du Plan, 1993). Profit sharing may not reduce unemployment if it results in strong productivity gains; however, it would help wage flexibility.

f. Reduce working time?

A recent report by Commissariat Général du Plan has argued that shorter weekly hours could help reduce unemployment. Also, model simulations have shown potentially significant employment gains from work sharing. However, reducing working time would reduce unemployment only if output were unaffected. If output were affected then such a policy would be either inflationary or leave unemployment unchanged. The key is to have an equivalent reduction in earnings, which is difficult to bring about. Not

^{1/} In the long-run de-indexation could also reduce the relative real value of the minimum wage as it did in the United States during the 1980s.

surprisingly, therefore, empirical evidence casts doubt on the effectiveness of this policy in reducing unemployment. ^{1/} Reductions in working time are best left to individual negotiations between employees and employers.

7. Conclusion

This paper has examined the causes of unemployment in France. Unemployment in France is not only high compared to other industrial countries, but it has been persistent with especially high rates of female and youth unemployment. The participation rate, particularly among men, is low, leading to a high rate of non-employment. Although labor supply has been rather high over the last twenty years, high unemployment seems to stem from a lack of job creation.

As described above, the following factors help explain long-run or structural unemployment in France: the employers' tax wedge, the real value of the minimum wage, skill mismatch, the high cost of capital, the generosity of long-term relative to short-term unemployment benefits and high real import prices.

The economic upturn will bring about a fall in unemployment. However, the key question is whether this decline would be faster and more substantial than during the previous upturn. To ensure this, it is necessary to address the key structural labor market problems. The simple model estimated in this paper gives a NAIRU of 8.2 percent in 1992, only 2 percentage points below the actual rate in that year.

Structural policies such as reducing employers' employment costs, introducing a youth minimum wage, shifting expenditure from passive to active labor market measures, targeting active labor market measures and re-directing them from the public sector towards job creation in the private sector, reducing the generosity and duration of unemployment benefits, abolishing the ANPE's placement monopoly and profit sharing could help reduce unemployment in the long-run.

^{1/} See OECD Employment Outlook (1990) and Layard et al (1991)

Data Sources

All the data has been obtained from INSEE Quarterly National Accounts, Informations Rapides and Bulletin Mensuel de Statistique unless indicated otherwise.

- p - market GDP price deflator
- pm - import price deflator
- pr - real GDP per man-hour
- w - average hourly earnings in the market sector
- t1 - employer's tax wedge defined as total contributions by the employers over gross wages
- t2 - employee's tax wedge defined as total contributions paid by employees over income from employment
- t3 - indirect tax wedge defined as indirect taxes over consumer expenditure
- U - unemployment rate
- SK - the percentage of firms reporting general or skilled labor shortage obtained from EC Quarterly Business Survey
- CU - index of capacity utilization
- ρ - cost of capital, taken from Taylor (1993).

Econometric Results

In Table 20, panel A reports the maximal eigenvalue test of the null hypothesis that there are at most r cointegrating vectors against the alternative of $r+1$ cointegrating vectors. ^{1/} Starting with the null hypothesis that there are no cointegrating vectors ($r=0$) against the alternative of one ($r=1$), the test statistic (36.7) is greater than the 95 percent critical value (33.3), rejecting the null hypothesis and indicating that there is at least one cointegrating vector. The null hypothesis of $r \leq 1$ against $r=2$, however, cannot be rejected, suggesting that there is a unique cointegrating vector. Panel B reports the trace test of the null hypothesis that there are at most r cointegrating vectors against the alternative that there are more than r . Again, the null of $r=0$ against $r \geq 1$ is rejected. However, the null of $r \leq 1$ against $r \geq 2$ cannot be rejected indicating that there is at most one cointegrating vectors. The two tests, therefore, indicate the existence of a unique cointegrating vector. Panel C of the table presents the estimated cointegrating vector. The coefficients in parentheses are normalized on $w-p-pr$.

Turning to Table 21, in panel A the maximal eigenvalue test of the null hypothesis that there are no cointegrating vectors ($r=0$) against the alternative of one ($r=1$) is rejected, indicating that there is at least one cointegrating vector. The null hypothesis of $r \leq 1$ against $r=2$, however, cannot be rejected, suggesting that there is a unique cointegrating vector. In panel B, the trace test of the null hypothesis of $r=0$ against $r \geq 1$ is rejected. However, the null of $r \leq 1$ against $r \geq 2$ cannot be rejected indicating that there is at most one cointegrating vectors. The two tests together indicate the existence of a unique cointegrating vector. Panel C of the table presents the estimated cointegrating vectors. The coefficients in parentheses are normalized on $p-w+pr$.

^{1/} The Johansen procedure involves the simultaneous estimation of dynamic vector autoregressive (VAR) equations, for which fourth order lags were included. It is assumed that the variables have linear deterministic trends. Estimation has been done on MICROFIT 3.0, see Pesaran and Pesaran (1991).

Table 20. Johansen Maximum Likelihood Tests and Parameter Estimates

Long-run vector for real wages

1971:I to 1992:IV (84 observations), maximum lag in VAR = 4
Eigenvalues in descending order: 0.33, 0.18, 0.14, 0.12, 0.05

- A. Cointegration likelihood ratio test based on maximal eigenvalue of the stochastic matrix.

<u>Hypothesis 1/</u>		<u>Statistic</u>	<u>95% Critical value</u>	<u>90% Critical value</u>
<u>Null</u>	<u>Alternative</u>			
$r=0$	$r = 1$	36.7	33.3	30.8
$r \leq 1$	$r = 2$	18.6	27.1	24.8
$r \leq 2$	$r = 3$	13.1	21.1	18.9
$r \leq 3$	$r = 4$	11.4	14.9	12.9
$r \leq 4$	$r = 5$	5.0	8.2	6.5

- B. Cointegration likelihood ratio test based on trace of the stochastic matrix.

<u>Hypothesis 1/</u>		<u>Statistic</u>	<u>95% Critical value</u>	<u>90% Critical value</u>
<u>Null</u>	<u>Alternative</u>			
$r=0$	$r \geq 1$	84.8	70.6	86.5
$r \leq 1$	$r \geq 2$	48.1	48.3	45.2
$r \leq 2$	$r \geq 3$	29.5	31.5	28.7
$r \leq 3$	$r \geq 4$	16.4	18.0	15.7
$r \leq 4$	$r = 5$	5.0	8.2	6.5

- C. Estimated cointegrating vectors, coefficients normalized on w-p-pr in parentheses.

<u>Vector</u>	<u>w-p-pr</u>	<u>U</u>	<u>smic</u>	<u>SK</u>	<u>pm-p</u>
1	1.98 (-1.00)	0.13 (-0.07)	-1.17 (0.59)	-0.30 (0.15)	-1.24 (0.12)

1/ r denotes the number of cointegrating vectors.

Table 21. Johansen Maximum Likelihood Tests and Parameter Estimates

Long-run vector for markup of prices over wages

1971:I to 1992:IV (84 observations), maximum lag in VAR = 4
Eigenvalues in descending order: 0.28, 0.12, 0.10, 0.04

- A. Cointegration likelihood ratio test based on maximal eigenvalue of the stochastic matrix.

<u>Hypothesis 1/</u>		<u>Statistic</u>	<u>95% Critical value</u>	<u>90% Critical value</u>
<u>Null</u>	<u>Alternative</u>			
$r=0$	$r = 1$	27.7	27.1	24.7
$r \leq 1$	$r = 2$	11.0	21.0	18.6
$r \leq 2$	$r = 3$	8.5	14.1	12.1
$r \leq 3$	$r = 4$	3.0	3.8	2.7

- B. Cointegration likelihood ratio test based on trace of the stochastic matrix.

<u>Hypothesis 1/</u>		<u>Statistic</u>	<u>95% Critical value</u>	<u>90% Critical value</u>
<u>Null</u>	<u>Alternative</u>			
$r=0$	$r \geq 1$	50.2	47.2	43.9
$r \leq 1$	$r \geq 2$	22.4	29.7	26.8
$r \leq 2$	$r \geq 3$	11.4	15.4	13.3
$r \leq 3$	$r \geq 4$	3.0	3.8	2.7

- C. Estimated cointegrating vectors, coefficients normalized on p-w+pr in parentheses.

<u>Vector</u>	<u>p-w+pr</u>	<u>CU</u>	<u>ρ</u>	<u>t1</u>
1	-2.59 (-1.00)	0.07 (0.02)	0.67 (0.26)	1.13 (0.43)

1/ r denotes the number of cointegrating vectors.

Table 22.3 Dynamic Model for Real Wages

(Sample period 1971:I - 1992:IV)

$$\begin{aligned} \Delta(w-p-pr) = & 0.30 - 0.19 \Delta(w-p-pr)_{-1} - 0.29 \Delta^2 p_{-1} \\ & (6.09) \quad (1.96) \quad (2.28) \\ & + 0.46 \Delta t2_{-3} + 0.05 \Delta t3_{-3} \\ & (2.00) \quad (1.79) \\ & + 0.30 \Delta(pm-p)_{-3} \\ & (2.24) \\ & - 0.08 \quad rw_{-1} \\ & (6.11) \end{aligned}$$

where rw = residuals from the cointegrating vector (7)

$$R^2 = 0.38, \quad SE = 0.007, \quad DW = 1.86$$

$$LM(4) = 2.26, \quad \text{Ramsey's RESET } \chi^2(1) = 2.75$$

$$\text{Normality } \chi^2(2) = 0.57, \quad \text{Heteroscedasticity } \chi^2(1) = 0.23$$

$$\text{Chow test } \chi^2(4) = 3.97$$

Table 23. Dynamic Model for the Markup of Prices Over Wages

(Sample period 1973:I - 1992:IV)

$$\begin{aligned} \Delta(p-w+pr) = & 0.28 - 0.32 \Delta(p-w+pr)_{-1} \\ & (3.71) \quad (2.25) \\ & + 0.002 \Delta CU + 0.32 \Delta t^3_{-3} \\ & (2.81) \quad (2.00) \\ & - 0.52 \Delta(w-p)_{-1} - 0.05 rp_{-1} \\ & (3.12) \quad (3.67) \end{aligned}$$

where rp = residuals from the cointegrating vector (8)

$$R^2 = 0.26, \quad SE = 0.007, \quad DW = 1.84$$

$$LM(4) = 5.50, \quad \text{Ramsey's RESET } \chi^2(1) = 3.80$$

$$\text{Normality } \chi^2(2) = 0.85, \quad \text{Heteroscedasticity } \chi^2(1) = 2.39$$

$$\text{Chow test } \chi^2(4) = 4.18$$

II. The Link Between Real Interest Rates And French Aggregate Private Investment 1/

1. Introduction

The effect of movements in real interest rates on aggregate investment expenditure has traditionally been thought of as an important element of the monetary transmission mechanism (see for instance Miles and Wilcox (1991)). In France, the issue of the existence and strength of the link between real interest rates and real aggregate expenditure forms a crucial element of the current policy debate, given the tensions inherent in pursuing a firm nominal exchange rate policy in the face of high unemployment and weak macroeconomic activity.

This study is concerned with developing and estimating an empirical investment equation for France, using quarterly data for the period 1970-92. In particular, we search for the link between the real interest rate and the level of real aggregate private investment expenditure. We then use our empirical results to examine to what extent high real interest rates were responsible for the stagnation in French investment over the 1990-92 period, and whether reductions in real interest rates will significantly stimulate investment expenditure and so help lead the economy out of recession.

In contrast with much of the empirical evidence available on this issue, the results of our empirical investigation reveal the presence of very small but statistically significant short-run and long-run effects of the real interest rate on French investment demand. The key to unearthing this relationship (and explaining why previous researchers have not detected it) appears to lie in the use of a methodological approach which is novel in empirical investment demand studies. This approach involves deriving an empirical model whose long-run solution is consistent with multi-period optimizing behavior on the part of firms, but for which the short-run dynamics are largely determined by the data. While the resulting short-run investment function can be interpreted as deriving from dynamic optimization of firms in the presence of adjustment costs, it is capable of allowing for very rich short-run dynamics. In particular, there is a distinction made between the short-run and long-run elasticities of substitution between capital and labor. In the short run, we find that this elasticity is extremely low--which explains why simple accelerator models of investment have in the past been successful when estimated on French data--but in the long run the elasticity tends towards unity. 2/ The increased opportunity for substitution between capital and labor in the long run makes the implicit rental cost of capital goods, relative to the wage rate, increasingly important for investment decisions as time passes.

1/ Prepared by Mark Taylor.

2/ Technically, the short-run production technology appears to be closer to the Leontief or fixed factor proportions type, while the long-run production function appears well approximated by a Cobb-Douglas function.

Although the effect of real interest rate movements on investment appears to be statistically significant, it is nevertheless extremely small. Simulations carried out using our estimated equation suggest that high real interest rates were not largely responsible for weak investment over the 1990-92 period, and that the stimulatory effects of real interest rate cuts on investment cannot be relied upon as an engine of recovery from the present recession.

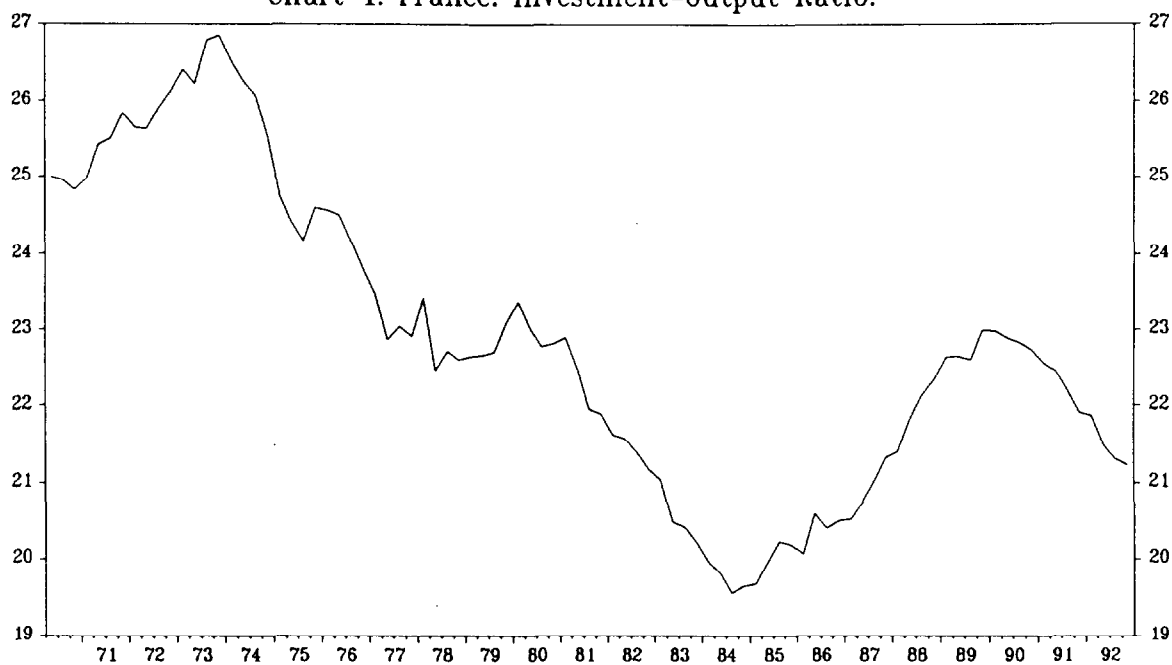
In the next section we motivate the analysis through a discussion of the relevance of the investment-interest rate nexus for the current policy debate. In section 3 we give a very brief survey of previous empirical studies of aggregate investment on French data. In section 4 we summarize our theoretical and empirical framework, the technical details of which are given more fully in Appendix I. The data are described in section 5 and our empirical results are summarized in section 6 (and given in detail in Appendix II). In section 7 we use the estimated equation to carry out some counterfactual simulations assuming a higher growth of aggregate demand or lower real interest rates over the 1990-92 period. In section 8 we carry out some forecast simulation exercises, assuming alternative paths for real interest rates and output over the 1993-94 period. A final section concludes.

2. Investment and interest rates in France

For the ten years following the first OPEC oil price shock of 1974, the French investment-output ratio (gross fixed investment as a proportion of GDP) showed a more or less continuous decline, from close to 27 percent at the end of 1974 to less than 20 percent in 1984 (Chart 1). Although there was some reversal of this trend over the ensuing five years, investment again stagnated during the 1990-92 period. A prime suspect for one of the underlying causes of the recent stagnation in investment expenditure has been the very high level of real short-term interest rates (Chart 2).

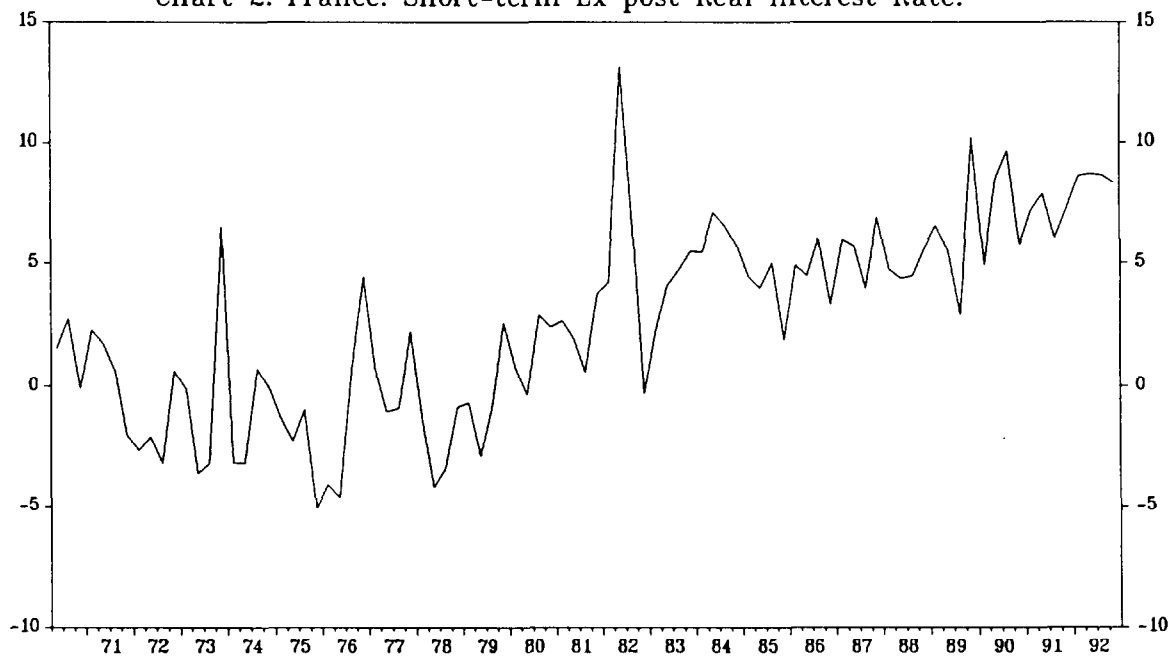
Over the past year, high nominal interest rates have been needed in order to defend the franc's parity against the deutsche mark, in the face of mounting speculative pressures and considerable turbulence within the EMS as well as a tight anti-inflationary stance of monetary policy in Germany. In the absence of strong French inflationary pressures, these high nominal rates translated into high real interest rates, despite the weakness of French economic activity and the clear desirability of easing monetary conditions. An apparent rise in market confidence in the franc, following the formation of the new government in March 1993 and the announcement of new policy measures the following month, eased downward pressure on the franc somewhat, however, and German nominal interest rates have also seen some slight reduction. More recently, the franc has again come under strong speculative attack, exacerbating the policy dilemma over whether the recent interest rate cuts should be reversed in the face of macroeconomic weakness. Even if the latest round of speculative attacks on the franc had not occurred, the link between interest rates and investment would still be an important policy issue for France.

Chart 1. France. Investment-Output Ratio.



Note : Ratio of real investment expenditure of the secteur marchand to real GDP.

Chart 2. France. Short-term Ex post Real Interest Rate.



Note : 3-month money market rate less annualized growth in the GDP deflator in the following quarter.

A traditional view among French economists, presumably derived from the empirical evidence discussed in the next section, is that real interest rates have little or no effect on investment expenditure. Certainly, any link which does exist between real interest rates and investment is likely to be complex, and interest rates clearly cannot explain all of the variation in investment. As Charts 1 and 2 show, for example, the great decline in the aggregate investment-output ratio over the decade following the first OPEC oil price shock coincided with a sustained period of low and often negative ex post short-term real interest rates.

Nevertheless, economic theory does suggest that the real interest rate, operating through the implicit rental price of capital goods and in combination with other variables such as the relative price of labor and aggregate demand, should have some effect on real investment expenditure. In practice, however, empirical work on French aggregate investment has found little evidence of a link with the real interest rate. Rather, applied researchers have tended to favor the use of simple flexible accelerator-type models, where investment is explained solely by movements in aggregate output. Such a model would be implied by a fixed-coefficients production technology under a demand constraint: if a given amount of capital is required for producing a given amount of output, with no possibility of substituting between capital and labor, then the demand for new capital will depend on the expected level of output demand and will be largely insensitive to movements in the rental price of capital goods, and hence real interest rates.

We now turn to a discussion of existing empirical literature on this issue.

3. Empirical investment studies on French data 1/

Empirical investment studies, in France and elsewhere, may be broadly classified into three broad categories: true neoclassical, competitive equilibrium models; quasi-neoclassical models; and accelerator models.

The true neoclassical model assumes perfectly elastic supplies of factors and perfectly elastic demand for output. The result is an investment function which, in the absence of adjustment costs or price uncertainty, is only defined for decreasing returns to scale (Jorgenson (1967), Coen (1969)). This is because with constant returns to scale the desired capital stock of the representative firm is infinitely large, while with increasing returns to scale the revenue function does not have a maximum. These problems illustrate the dangers of applying what is an essentially microeconomic theory of optimal capital accumulation at the aggregate level without allowing for the relevant features of aggregation, such as imperfectly elastic output demand.

1/ This survey is highly selective. A more thorough and comprehensive survey of the theory and evidence relating to the French investment function can be found in Artus and Muet (1990).

Nevertheless, a number of researchers have estimated the true neoclassical model--in which investment is a function of relative factor rentals only--on aggregate French data (Schramm (1972), Muet (1979a, b), Villa, Muet and Boutillier (1980), Artus and Migus (1986)). 1/ Nearly all of these studies have reported disappointing results and have concluded that the true neoclassical model of investment is unrealistic at the aggregate level.

In a number of influential studies published during the 1960s, 2/ Jorgenson developed what became known as the "neoclassical model" of capital accumulation, but which we shall refer to as quasi-neoclassical. Jorgenson derives the desired level of the capital stock by equating the marginal product of capital with the user cost of capital, and then assumes lagged adjustment of the actual capital stock towards this desired level. The net result is an investment equation conditioned on output and the real user cost of capital. The problem with this approach is that only one of the first-order conditions for profit maximization is utilized; setting the marginal product of labor equal to the real wage rate and substituting into the Jorgenson model would yield the true neoclassical model where investment is conditioned only on relative factor rentals. Thus, the Jorgenson model is "quasi-neoclassical". Muet (1979a) has estimated quasi-neoclassical models of investment for France, and reports largely disappointing results.

A close relative of the quasi-neoclassical model, which has a sounder theoretical footing, is the effective-demand investment model. This model explicitly recognizes an aggregate demand constraint, and so aggregate output (equal to demand if demand is less than notional supply) enters the investment function in addition to relative factor rentals. 3/

Output may also enter the investment function even in the absence of demand constraints if the production technology is assumed to be of the fixed factor proportions, or Leontief type. In the absence of a labor constraint, the desired capital stock will be directly proportional to output. Assuming a distributed lag adjustment of actual towards desired capital stock then results in the traditional flexible accelerator investment model, where investment is a function only of the change in output, with no effect of relative factor prices on the investment decision.

Demand-constrained investment models have been estimated for France, with some degree of success, by Artus and Muet (1980, 1981). These authors find, however, that the influence of relative factor rentals on investment "is weak compared to the acceleration effect of demand" (Artus and Muet

1/ See Schramm (1970) and Jorgenson (1967) for applications to U.S. data.

2/ For instance, Jorgenson (1967), Jorgenson and Stephenson (1967, 1967a, 1969, 1969a), Hall and Jorgenson (1971).

3/ In the Jorgenson model, investment is conditioned on output and the real user cost of capital rather than relative factor rentals alone or relative factor rentals and output. It really is, therefore, "neither fish nor fowl".

(1980)). They also find that the elasticity of investment with respect to output demand--in theoretical terms, the inverse of the production function's returns to scale--is insignificantly different from unity.

Simple flexible accelerator models of investment have been estimated for France by a number of researchers (e.g., Oudiz (1978), Muet (1978)--see Artus and Muet (1990) for a survey). These equations perform reasonably well and again provide evidence of constant returns to scale in production.

More recent work on the French aggregate private investment function includes Artus and Sicsic (1990) and Muet and Véganzonès (1992), who fit a range of models to 1980s data. A major finding of these authors is that, while the effect of the real interest rate on investment, operating through the user cost of capital, was significant during the 1960s and 1970s, it becomes insignificant when the sample is extended to include the 1980s.

4. The theoretical and empirical framework

In Appendix I, we consider the investment decision of a representative firm facing a demand constraint on its output and producing according to a production function which is, at least in a long-run sense, of the traditional constant-returns Cobb-Douglas variety. We demonstrate that the solution to the firm's optimization problem is a long-run investment demand function of the form:

$$\log I(t) = \pi - \gamma t + \log Y(t) - \alpha \log [\rho(t)/w(t)] + \nu(t) \quad (1)$$

where $I(t)$ is aggregate investment at time t , $Y(t)$ is aggregate output, $\rho(t)$ is the real user cost of capital, $w(t)$ is the real wage rate, $\nu(t)$ is a stationary disturbance term, π is a constant term, γt is a time trend which captures the effects of technical progress, and α is the share of labor in aggregate output (approximately 0.6 for France). The two noteworthy features of equation (1) are a long-run output elasticity of investment demand of unity and a negative investment demand elasticity with respect to relative factor rentals.

In Appendix I we also show that, given the existence of a long-run investment demand equation of the form (1), both dynamic optimization theory and certain statistical theorems can be employed to derive a short-run investment demand function of the form:

$$\begin{aligned} \Delta \log I(t) = & \gamma_0 + \sum_{i=1}^n \gamma_{1i} \Delta \log I(t-i) \\ & + \sum_{i=0}^n \gamma_{2i} \Delta \log Y(t-i) + \sum_{i=0}^n \gamma_{3i} \Delta \log [p(t-i)/w(t-i)] \\ & + \gamma_4 v(t-1) + \xi(t) \end{aligned} \quad (2)$$

where $v(t)$ is the "error correction" or equilibrium error implicitly defined in (1), $\xi(t)$ is a stochastic disturbance term, and $\gamma_4 < 0$. The main interest of this equation is that it nests a flexible accelerator-type investment function (i.e., where investment is a function of lagged changes in output $1/$), but has a long-run solution which is of the form (1). In the short-run, we expect γ_4 and the γ_{3i} 's to be small, reflecting limited short-run opportunities for capital-labor substitution. We expect γ_4 to be negative and statistically significant, however, reflecting increased capital-labor substitution opportunities as time passes, with eventual steady-state convergence on the long-run investment demand function (1).

Equations (1) and (2) are the two main equations estimated, although in Appendix II we also report estimates of a long-run aggregate production function for France, since the analysis is predicated on the assumption that this is approximately Cobb-Douglas--an assumption we test.

5. Data

Quarterly data for the period 1970Q1-1992Q4 was obtained from the INSEE data base on the following series for the secteur marchand (i.e., for the economy excluding public administration): real output (Y) and the output deflator (p), real gross investment expenditure (I) and the investment deflator (Q), total hours worked (L), the nominal hourly wage rate (W), and the nominal three-month money market interest rate (i). A corresponding real capital stock series was taken from OECD sources. 2/

Real wage (w) and real capital goods price (q) series were computed by deflating by the output deflator (i.e., $w=W/p$ and $q=Q/p$). An ex post measure of the user cost of capital was constructed as:

1/ The usual accelerator model explains investment or the investment-output ratio as a function of changes in output, rather than having changes in investment as the dependent variable. In this paper, however, we shall speak of the whole class of investment functions in which investment is explained solely by a distributed lag of changes in output as flexible accelerator-type models.

2/ Flux et Stocks de Capital Fixe, OECD, Paris.

$$p(t) = q(t)[[(i(t)/400) - \Delta p(t+1)/p(t)] + \delta/400] \quad (3)$$

--i.e. the real price of capital goods multiplied by the opportunity cost of funds (real interest rate) and the quarterly depreciation rate, where the annual depreciation rate, δ was set at 6 percent. ^{1/}

6. A summary of the empirical results

Using very recent applied econometric techniques on the estimation of long-run economic relationships (Engle and Granger (1987), Johansen (1988), Phillips and Loretan (1991)), we obtained the following constrained estimate of equation (1):

$$\log I(t) = \log Y(t) - 0.6 \log [p(t)/w(t)] + v(t) \quad (4)$$

This estimated equation is extremely encouraging in that the long-run coefficient constraints, of a unit output elasticity and of a negative relative factor rental elasticity equal in magnitude to the share of labor in aggregate output, are not rejected by the data (see Technical Appendix II for further details).

The deviations from long-run equilibrium from this equation, i.e., the fitted values of $v(t)$, were then used to estimate a dynamic short-run investment function of the form (2). This resulted in a highly stable estimated equation which fitted the data well, explaining some 55 percent of the quarterly percentage change in aggregate investment, and which passed a whole range of modern regression diagnostic tests. The stability of the estimated coefficients is particularly impressive. The short-run elasticity of investment demand with respect to relative factor rentals was estimated to be about -0.37, or roughly half the long-run elasticity of around -0.6, and to operate with a six-month lag. The estimated value of the adjustment coefficient, γ_4 in (2), was approximately -0.02, implying a very slow adjustment towards the long-run or equilibrium level of investment demand: a ten percent deviation from the long-run equilibrium level of investment generates an adjustment of only 0.2 percent in the current quarter.

Thus, although we have found an effect of real interest rates on investment which is statistically significant and consistent with optimizing economic theory, the small magnitude of the relevant estimated coefficients and the extremely slow implied speed of adjustment towards long-run

^{1/} This value was suggested by economists at the French Direction de la Prévision. Setting δ as low as 2 percent per annum or as high as 15 percent per annum made no qualitative difference--and slight quantitative difference--to the results reported below.

equilibrium (and increased capital-labor substitution possibilities) suggest that this link may not be economically important for practical policy purposes. This issue is explored in the following two sections.

7. What caused the recent decline in investment?

The marked slowdown in French private investment over the 1990-1992 period has been variously explained as due to the effect of high real interest rates operating through the user cost of capital, or the recession itself operating through a decline in output and an accelerator effect on investment. In an attempt to shed some light on this issue, we carried out three counterfactual experiments using our estimated investment equation.

In the first experiment, we held the short-term real interest rate constant, over the period 1990-92, at its 1989 average level of 6.3 percent per annum, as opposed to an actual path of the ex post real interest rate of between 6.7 and 8.2 per cent over this period. Assuming no feedback effect on output, prices and the wage level, we then used the equation to forecast investment dynamically over this three-year period. The percentage deviation of the forecast level of investment from the level predicted by the model with the real interest at its actual historical values was then computed.

In the second counterfactual exercise, the real interest rate was held at 5 percent per annum from 1990Q1, and in the third exercise, real output was assumed to grow at 2.5 percent per annum from 1990Q1 (with the real interest rate at its actual historical values). This growth rate, which corresponds roughly to potential output growth, is considerably higher than was actually experienced on average over 1990-92: though aggregate output growth was 2.5 percent in 1990, it was only 0.7 percent in 1991 and 1.3 percent in 1992.

The results of these exercises are given in Table 1. It appears that the real interest rate had little direct impact on investment over the 1990-92 period, and that a major cause of the reduction in the investment-output ratio was the decline in output growth.

8. Will lower real interest rates stimulate recovery through increased investment?

The final question which we address is whether the prospective decline in real interest rates, as forecast in July 1993 for the World Economic Outlook (WEO), will have a significant impact on investment expenditure. In examining this issue, we used our estimated equation to carry out four forecast simulation exercise.

In the first exercise, we forecast the growth path of real investment over the period 1993QIII through 1994QIV, using values of all of the exogenous variables consistent with the WEO forecast.

Table 1. Simulated Growth Paths for Investment, 1990QI-1992QIV

(Assumptions)				
	All Exogenous Variables at their Historical Values	Real Interest Rate=6.3 Percent p.a. from 1990QI On	Real Interest Rate=5 Percent p.a. from 1990QI On	Annualized Growth Rate of Output=2.5 Percent from 1990QI On
1990QI	1.32	1.33	1.33	0.86
QII	0.57	0.57	0.57	0.82
QIII	0.68	0.69	0.80	0.68
QIV	-1.19	-1.10	-1.09	0.50
1991QI	-0.12	-0.06	-0.05	0.43
QII	0.42	0.41	0.25	0.85
QIII	0.48	0.48	0.50	0.51
QIV	-0.83	-0.75	-0.75	0.30
1992QI	0.72	0.76	0.77	0.43
QII	-0.26	-0.26	-0.28	0.50
QIII	-0.08	0.02	0.02	0.39
QIV	-1.23	<u>-1.22</u>	<u>-1.22</u>	<u>0.50</u>
Cumulative percent increase over base simulation		0.39	0.37	6.50

In the second exercise, we performed the same forecast simulation with the same WEO assumptions except that the real interest rate was held constant at its 1993QII level of 5.9 percent, rather than declining as foreseen in the WEO forecast.

In the third exercise we attempted to get an indication of the scope for using monetary policy independence to stimulate real activity by setting the real interest rate to zero over the forecast period.

In the final forecast simulation, we used the WEO assumptions for real interest rates but assumed a higher growth path of manufacturing output, of 1 percent per quarter.

The results of these exercises, expressed as the cumulative difference in the forecast level of investment at the end of 1994 from the level of investment produced by the using the WEO forecast as assumptions, are given in Table 2. As the Table shows, the cumulative interest rate effects on investment--even when the real interest rate is set to zero--are very small indeed. On the other hand, increasing output growth to some 4 percent per annum (from the WEO forecast of -1 percent for 1993 and +1.3 percent for 1994) would increase real investment by a cumulative 5 percent over the WEO base forecast by the end of 1994.

The results of this section suggest very clearly that declines in real interest rates cannot be relied upon to provide a large stimulatory impulse to French real aggregate investment.

9. Conclusion

In this study, we have combined recent econometric techniques on the long-run properties of economic time series and economic theory to derive and estimate an empirical investment equation for France which is both consistent with economic theory and empirically tractable and successful. The resulting equation, estimated on French quarterly data for the period 1970-1992, performed well empirically, and suggested a statistically significant but very small effect of real interest rates on aggregate investment demand, operating through the user cost of capital.

Simulations using the estimated equation suggested that the high level of real interest rates over the 1990-92 period were not directly responsible to any significant degree for the decline in the investment-output ratio over the same period. Similarly, further forecast simulations suggested that real interest rate declines could not be relied upon to provide a strong stimulus to aggregate real investment. Overall, while the transmission mechanism of monetary policy through the interest rate-investment link does appear to be statistically significant, it does not appear to be very important for policy purposes.

Table 2. Simulated Effects on Investment Forecasts of Alternative Assumptions, 1993QIII-1994QIV

(Assumptions)

	Real Interest Rate Unchanged From 1993 QII Level, (-5.9 Percent p.a.)	Real Interest Rate set to Zero	Quarterly Growth Rate of Manufacturing Output=1 Percent from 1993QIII on
Cumulative percent increase over WEO base simulation	-0.02	0.05	4.99

Notes: Simulations assume paths for the exogenous variables that are consistent with the July WEO forecast, except those indicated. The forecast real interest rate is 4.1 percent for 1993QIII and 3.6 percent thereafter. The forecast quarterly real growth of output is 0.0 percent for 1993QIII, 0.4 percent for 1993QIV, 0.5 percent for 1994QI and 1994QII, and 0.6 percent for 1994QIII and 1994QIV.

The Theoretical and Empirical Framework

Consider a representative firm producing according to a constant-returns Cobb-Douglas technology and facing a demand constraint. Its optimization problem is therefore one of cost minimization subject to a given level of output. Consider first the one-period static optimization problem:

$$\text{Minimize } [w(t) L(t) + \rho(t) K(t)] \quad (A1)$$

Subject to:

$$A(t) L(t)^\alpha K^{1-\alpha} = Y(t) \quad (A2)$$

where $w(t)$ and $\rho(t)$ denote the real wage and real user cost of capital at time t , respectively, $L(t)$ and $K(t)$ measure inputs of labor and capital at time t , and $A(t)$ denotes total factor productivity at time t .

The solution to this problem can be expressed as a cost function of the form:

$$c(w(t), \rho(t), Y(t)) = \mu A(t)^{-1} w(t)^\alpha \rho(t)^{1-\alpha} Y(t) \quad (A3)$$

where

$$\mu = \alpha^{-\alpha} (1 - \alpha)^{\alpha-1}$$

By Shephard's lemma, the factor demand schedules are given by the derivatives of the cost function with respect to the relevant factor price. ^{1/} Thus, we have the demand for the capital stock at time t given by:

$$K(t) = \frac{\partial c}{\partial \rho} = \mu^* A(t)^{-1} [\rho(t)/w(t)]^{-\alpha} Y(t) \quad (A4)$$

where

$$\mu^* = \alpha^{-\alpha} (1-\alpha)^\alpha \quad (A5)$$

Taking logarithms of (A4)

^{1/} A proof of Shephard's lemma can be found in Varian (1978), Chapter 1.

$$\log K(t) = \log \mu^* - \log A(t) + \log Y(t) - \alpha \log [\rho(t)/w(t)] \quad (A6)$$

In order to derive a relationship involving investment rather than the capital stock, we can employ the following identity:

$$I(t) = \delta K(t-1) + K(t) - K(t-1) \quad (A7)$$

where δ is the depreciation rate. In logarithms this expression becomes:

$$\log I(t) = \log K(t) + \log [\delta + \Delta \log K(t)] - \Delta \log K(t). \quad (A8)$$

Equation (A8) is identically equivalent to (A7), except for the approximation of the percentage change in the capital stock to $\Delta \log K(t)$, which is in any case not essential. Note that, since $K(t) > 0$ for all t , equation (A7) implies that the term $\delta + \Delta \log K(t)$ must be positive so long as gross investment, $I(t)$, is positive. Thus, (A8) is a valid transformation of (A7).

We also assume that total factor productivity evolves according to:

$$A(t) = \exp [\gamma t + \epsilon(t)] \quad (A9)$$

where $\epsilon(t)$ is a stationary (but possibly serially correlated) stochastic disturbance.

Substituting from (A8) and (A9) into (A5):

$$\log I(t) = \log \mu^* - \gamma t + \log Y(t) - \alpha \log [\rho(t)/w(t)] + \nu(t) \quad (A10)$$

where

$$\nu(t) = \log [\delta + \Delta \log K(t)] - \Delta \log K(t) - \epsilon(t) \quad (A11)$$

Now, if the time series investment, output, level of the capital stock, and factor prices are integrated of order one (as most macroeconomic time series are), then from the definition of $\nu(t)$ given in (A11), we see that (A10) must be a cointegrating relationship (Engle and Granger (1987)).

The analysis can be generalized to a multi-period optimization problem as follows. Note that unless there are costs of adjustment in the capital

stock, the multi-period optimization solution is equivalent to the static one-period solution just outlined. Thus, introducing costs of adjustment of the capital stock, the representative firm's optimization problem can be represented as 1/:

$$\text{Minimize } V(t) = \sum_{j=0}^{\infty} \beta^j [c(w(t+j), p(t+j), 1) Y(t+j) + p(t+j) (\Delta \log K(t+j))^2] \quad (A12)$$

Subject to (A2), where β is a discount factor. From the Hamiltonian conditions for the solution of this problem, an expression can be derived which is identical to (A10) except for additional $I(0)$ terms in the composite error term $\nu(t)$, which nevertheless remains $I(0)$. Thus, equation (A10) again emerges as a cointegrating relationship. This is the justification for equation (1), the long-run investment demand function used in the text.

An interesting implication of cointegration is that, by the Granger Representation Theorem (Engle and Granger (1987)), if investment is cointegrated with the right-hand-side variables in (A10), there must exist a dynamic error correction representation of the form

$$\begin{aligned} \Delta \log I(t) = & \gamma_0 + \sum_{i=1}^n \gamma_{1i} \Delta \log I(t-i) \\ & + \sum_{i=0}^n \gamma_{2i} \Delta \log Y(t-i) + \sum_{i=0}^n \gamma_{3i} \Delta \log [p(t-i)/w(t-i)] \\ & + \gamma_4 \nu(t-1) + \xi(t) \end{aligned} \quad (A13)$$

where $\nu(t)$ is the "error correction" or equilibrium error implicitly defined in (A10), $\xi(t)$ is a disturbance term, and $\gamma_4 < 0$.

In the static, one-period case, the error correction form is hard to interpret. In the case of dynamic, multi-period optimization, however, (A13) can be interpreted as the solution to the optimization problem (A12), since it is well-known that solutions to multi-period quadratic costs of adjustment problems can be expressed as error correction equations (Nickell (1985), Taylor (1987)). This is the justification for equation (2), the short-run investment demand function used in the text.

Note that we could equally well have used (A6) as our cointegrating relationship, and derived an error correction equation analogous to (A13)

1/ Note that, for simplicity, we assume certainty equivalence.

but in terms of $\Delta \log K$ rather than $\Delta \log I$. The advantage of working with the latter is that this is the series in which we are primarily interested. Although, asymptotically, it should make no difference whatsoever in which of these two forms the estimated error correction equation takes, the actual short run dynamics may differ slightly between the two equations in small samples.

Detailed Empirical Results

1. Unit root tests

Table 3 lists the results of unit root tests applied to the logarithmic transformations of investment, output, hours worked, the capital stock, real wages, and the real user cost of capital. In every case, we cannot reject the hypothesis that the series are stationary in first differences, or integrated of order one (Engle and Granger (1987)).

2. The long-run production function

The theoretical and empirical framework outlined in Appendix I is predicated on the assumption that output, at least in the long run, is governed by a Cobb-Douglas technology in labor and capital. Thus, our first task was to investigate whether or not a cointegrating relationship exists which approximates a Cobb-Douglas production function.

Table 4 reports results of estimating the long-run relationship between $\log Y(t)$, $\log K(t)$, and $\log L(t)$ by ordinary least squares, Johansen (1988) maximum likelihood estimation, and Phillips-Loretan (1991) estimation. In each estimation method, allowance was made for a linear trend to enter the long-run relationship, capturing the assumption of an exponential trend in total factor productivity (equation (A9)).

The results reported in Table 4 are reassuring in the sense that the three methods produce quite similar results. We are unable to reject the null hypothesis of non-cointegration using an augmented Dickey-Fuller test applied to the cointegrating regression residuals. However, the poor power characteristics of the ADF test are well-known and, using the Johansen techniques we find strong evidence of a unique cointegrating vector.

The least squares results are also noteworthy in that the estimated coefficients are close to the values suggested by economic theory--i.e., the sample factor shares in output of 0.6 and 0.4 for labor and capital, respectively. The Phillips-Loretan method, which has been shown to have superior small-sample performance (Phillips and Loretan (1991)) also produces coefficient estimates which are insignificantly different from their theoretical values.

Although we would not wish to claim that French manufacturing and business output can be completely explained by a simple Cobb-Douglas production function (see e.g., Coe and Moghadam (1993)), these results nevertheless imply that the salient long-run characteristics can be captured by such a model. This at least allows us to investigate the existence of the implied long-run investment function.

3. The long-run investment function

The results of applying the various cointegration estimation methods to investment, output, the user cost of capital, and the wage rate, are given

Table 3. Unit Root Tests

Series	Augmented Dickey-Fuller Test	
	Level	First Difference
logI	-1.675	-3.649
logY	-1.881	-3.819
logL	-1.923	-3.259
logK	-2.451	-2.961
logw	-2.552	-3.966
logp	-1.823	-5.480

Notes: The null hypothesis is that the series in question is I(1). The null hypothesis is rejected for values of the augmented Dickey-Fuller statistic less than c, where c = -3.51, -2.89 or -2.58 for significance levels of 1 percent, 5 percent, and 10 percent respectively (MacKinnon (1991)).

Table 4. Cointegration Estimates of the Long-Run Production Function

a) Ordinary Least Squares

$$\log Y(t) = 0.637 \log L(t) + 0.447 \log K(t)$$

$$R^2 = 0.99, \quad ADF = -2.816$$

b) Johansen Maximum Likelihood

i) Cointegration Tests (r = number of cointegrating vectors)

Null Hypothesis	TRACE Statistic	5% Critical Value	Null Hypothesis	λ -max statistic	5% Critical Value
$r \leq 2$	1.462	3.762	$r=2$ vs. $r=3$	1.462	3.762
$r \leq 1$	9.211	15.410	$r=1$ vs. $r=2$	7.750	14.069
$r = 0$	35.413	29.680	$r=0$ vs. $r=1$	26.202	20.967

ii) Estimated Cointegrating Vector

$$\log Y(t) = 0.291 \log L(t) + 0.886 \log K(t)$$

c. Phillips-Loretan

i) Estimated cointegrating vector

$$\log Y(t) = 0.579 \log L(t) + 0.523 \log K(t)$$

ii) Restricted cointegrating vector

$$\log Y(t) = 0.6 \log L(t) + 0.4 \log K(t)$$

$$\text{Wald}(2) = 0.983 \\ (0.61)$$

Notes: Allowance was made for a trend in the cointegrating equation in each case. Four lags were used in the VAR estimation for the Johansen method. For the Phillips-Loretan method, two lags of the cointegrating vector were used, and for leads and lags of changes in investment and man-hours. In panel c), Wald denotes a Wald test statistic for the restrictions, with marginal significance level in parentheses. The critical values for the ADF test in panel a) are from MacKinnon (1992). The critical values in panel b) are from Osterwald-Lenum (1990).

in Table 5. Note that, because of the difficulties in estimating non-linear models with a very large number of parameters, we constrained factor rentals to enter in relative terms in the Phillips-Loretan estimation, thereby substantially reducing the dimensions of the parameter space.

Again, the results are encouraging in that broadly similar results are obtained using any of the three methods. We are again unable to reject, at the 5 percent level, non-cointegration on the basis of a cointegrating regression ADF test, but find evidence of up to three cointegrating vectors using the Johansen method.

For all three methods, the estimated coefficients are correctly signed and, for the Johansen and Phillips-Loretan results, the output coefficients are close to unity. A Wald test of the restrictions that the output coefficient is unity and the coefficient on relative factor rentals is -0.6 is not rejected (panel (c)).

Overall, therefore, these results were very encouraging indeed, and strongly implied that a search for a stable, dynamic short-run investment function incorporating these long-run results would be fruitful.

4. The short-run investment function

The next step was to estimate a short-run, dynamic error-correction equation which could be interpreted as a short-run investment function. Since, in the previous section, we could not reject the theoretical restrictions on the long-run investment function, our error correction or "equilibrium error" term was defined as follows:

$$v(t) = \log I(t) - \log Y(t) + 0.6 \log [p(t)/w(t)] \quad (A15)$$

Starting with a general dynamic form corresponding to (A13) with $n=4$ lags, we sequentially imposed statistically insignificant zero restrictions until a final parsimonious specification remained upon which no further statistically insignificant restrictions could be placed.

Table 5. Cointegration Estimates of the Long-Run Investment Function

a) Ordinary Least Squares

$$\log I(t) = 2.138 \log Y(t) - 0.293 \log \rho(t) + 0.417 \log w(t)$$

$$R^2 = 0.96 \quad ADF = -3.165$$

b) Johansen Maximum Likelihood

i) Cointegration Tests (r = number of cointegrating vectors)

Null Hypothesis	TRACE Statistic	5% Critical Value	Null Hypothesis	λ -max statistic	5% Critical Value
$r \leq 3$	2.636	3.762	$r=3$ vs. $r=4$	2.636	3.762
$r \leq 2$	22.536	15.410	$r=2$ vs. $r=3$	19.900	14.069
$r \leq 1$	45.224	29.680	$r=1$ vs. $r=2$	22.688	20.967
$r = 0$	81.017	47.210	$r=0$ vs. $r=1$	35.793	27.067

ii) Estimated Cointegrating Vector (corresponding to largest eigenvalue)

$$\log I(t) = 0.960 \log Y(t) - 0.719 \log \rho(t) + 0.124 \log w(t)$$

c. Phillips-Loretan

i) Estimated cointegrating vector

$$\log I(t) = 1.196 \log Y(t) - 0.199 \log[\rho(t)/w(t)]$$

ii) Restricted cointegrating vector

$$\log I(t) = 1.0 \log Y(t) - 0.6 \log[\rho(t)/w(t)]$$

$$\text{Wald}(2) = 0.074$$

(0.96)

Notes: Allowance was made for a trend in the cointegrating equation in each case. Four lags were used in the VAR estimation for the Johansen method. For the Phillips-Loretan method, two lags of the cointegrating vector were used, and for leads and lags of changes in investment and man-hours. In panel c), Wald denotes a Wald test statistic for the restrictions, with marginal significance level in parentheses. The critical values for the ADF test in panel a) are from MacKinnon (1992). The critical values in panel b) are from Osterwald-Lenum (1990).

The resulting parsimonious specification was as follows:

$$\begin{aligned} \Delta \log I(t) = & -0.018 \nu(t-1) + 0.161 [\Delta \log I(t-2) + \Delta \log I(t-4)] + 1.203 \Delta \log Y(t) \\ & (0.008) \quad (0.047) \quad (0.194) \\ & - 0.372 \Delta \log [\rho(t-2)/w(t-2)] \\ & (0.135) \end{aligned} \quad (A16)$$

$$T = 1971:2-1992:3, R^2 = 0.55, \hat{\sigma} = 1.12\%, AR(4, 75) = 0.16, \\ (0.96)$$

$$ARCH(1, 77) = 0.45, \quad ARCH(4, 71) = 0.26, \quad WHITE(18, 60) = 1.25, \\ (0.50) \quad (0.90) \quad (0.25)$$

$$HETX^2(10, 68) = 1.27, \quad RESET(3, 76) = 1.43 \\ (0.26) \quad (0.24)$$

The estimated short-run equation is quite encouraging in that a reasonable fit is obtained with well-determined coefficients which are intuitively of the correct sign, and the equation also passes a battery of regression diagnostics. ^{1/}

When the model is estimated retaining the last five years of data for post-sample forecasting tests, we obtain:

$$\begin{aligned} \Delta \log I(t) = & -0.016 \nu(t-1) + 0.138 [\Delta \log I(t-2) + \Delta \log I(t-4)] + \\ & (0.009) \quad (0.060) \\ & + 1.098 \Delta \log Y(t) - 0.371 \Delta \log [\rho(t-2)/w(t-2)] \\ & (0.242) \quad (0.152) \end{aligned} \quad (A17)$$

$$T = 1971:2 - 1987:3, R^2 = 0.51, \hat{\sigma} = 1.23\%, AR(4, 55) = 0.18 \\ (0.95)$$

^{1/} AR(4, 75) is a test for up to fourth-order residual serial correlation; ARCH(1, 77) and ARCH(4, 71) are tests for first-order and up to fourth-order autoregressive conditional heteroskedasticity in the residuals; WHITE(18, 60) is White's (1980) test for general heteroskedasticity or functional misspecification; HETX²(10, 68) is a test for heteroskedasticity based on the squares of the regressors; RESET(3, 76) is a test for non-linear specification, based upon adding powers of the fitted values to the regression. All test statistics are distributed as F under the null hypothesis with the indicated degrees of freedom. A discussion of the diagnostic tests can be found in Cuthbertson, Hall, and Taylor (1991).

$$\text{ARCH (1, 57)} = 0.18, \quad \text{ARCH (4, 51)} = 0.32, \quad \text{HETX}^2 (10, 48) = 1.13, \\ (0.67) \quad (0.86) \quad (0.36)$$

$$\text{RESET (3, 56)} = 0.46, \quad \text{CHOW (20, 59)} = 0.31, \quad \text{HF(20)} = 6.8. \\ (0.71) \quad (0.99) \quad (0.99)$$

Clearly, the equation parameters appear to be stable and the fit and regression diagnostics are again satisfactory. Particularly impressive are the results of the Chow (1960) and the Hendry (1980) tests for predictive failure over the last five years of the sample (CHOW and HF respectively): they are both highly insignificant.

As a comparison, we also estimated an accelerator model of investment of the kind estimated by Muet and Véganzonès (1992):

$$[I(t)/Y(t)] = a_0 + \sum_{i=1}^{10} a_i \Delta \log Y(t) + \xi(t) \quad (\text{A18})$$

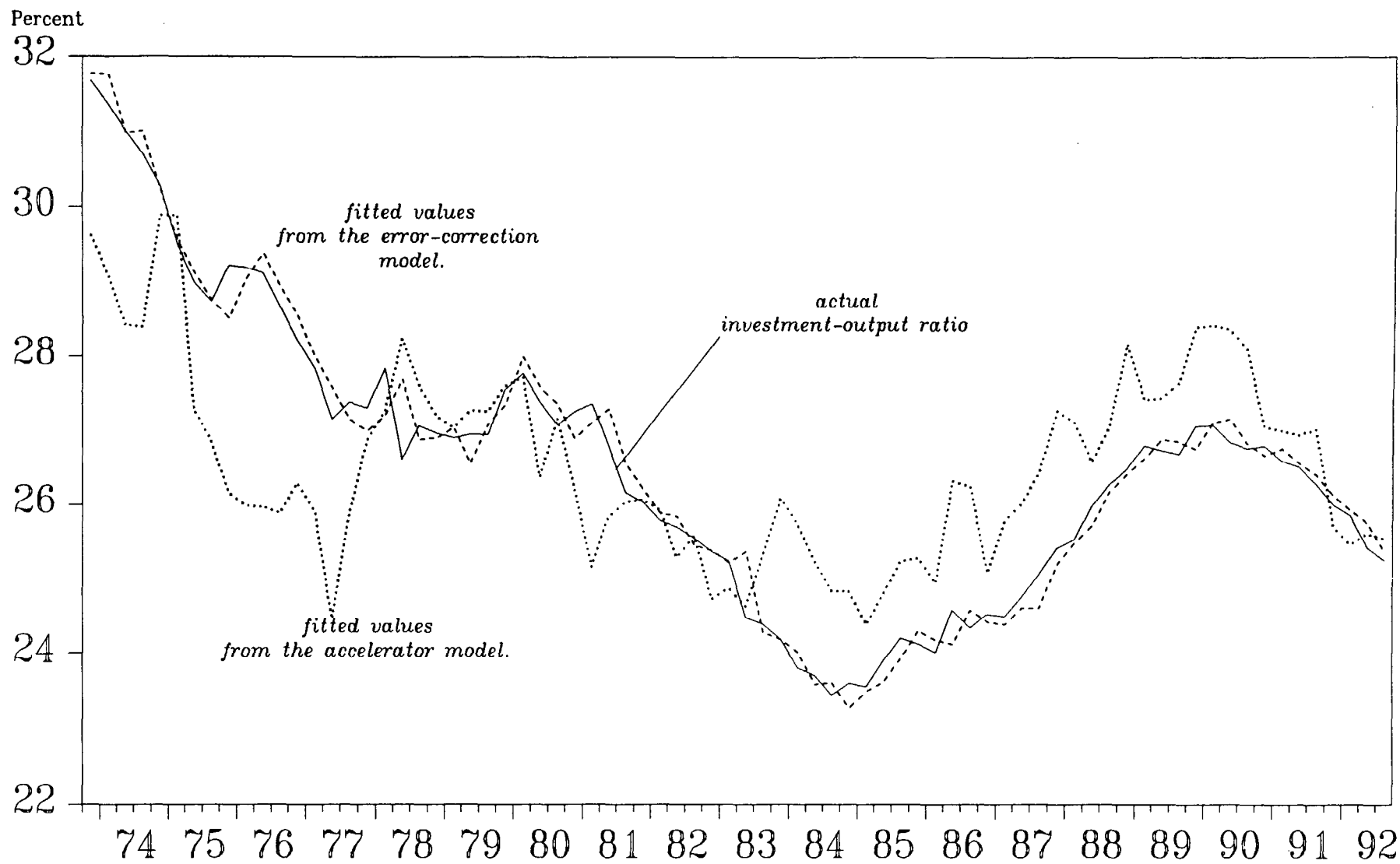
This resulted in an estimated equation with an R^2 of 0.47 and a Durbin-Watson statistic of 0.28 (suggesting dynamic misspecification). In Chart 3 we have graphed the actual values of the investment-output ratio over the estimation period, the fitted values from the accelerator model, and the implied fitted values of the investment-output ratio from the estimated error correction model. This reveals that the error correction model tracks the data quite well, and is clearly superior to the accelerator model, which heavily over-predicts the investment output ratio in the 1983-91 period, and heavily under-predicts it during the 1975-78 period.

We also carried out more formal tests of the two estimated equations as alternative models of investment, as follows. First, we multiplied the fitted values from (A18) by $Y(t)$ and took logarithms and then first differences of the resulting series, to obtain implied fitted values of $\Delta \log I(t)$. Regressing the actual values of $\Delta \log I(t)$ onto the fitted values of $\Delta \log I(t)$ from the estimated error correction model and the implied fitted values from the accelerator model (using superscripts ecm and acc to denote fitted values from the error-correction and accelerator models respectively), we obtained:

$$\Delta \log I(t) = \frac{0.895}{(0.117)} \Delta \log I(t)^{\text{ecm}} + \frac{0.048}{(0.049)} \Delta \log I(t)^{\text{acc}} \quad (\text{A19})$$

where standard errors are given in parentheses. Clearly, the implied fitted values of the accelerator model contain no extra information with respect to the growth of investment over the information supplied by the error correction model. In that sense, the error correction model encompasses the accelerator model (Mizon (1984)).

Chart 3.
Actual and Fitted Values of the Investment-Output Ratio for the
Secteur Marchand.



In order to avoid the charge of unduly biasing the test against the pure accelerator model, we also carried out the converse exercise of calculating the implied fitted values of $(I(t)/Y(t))$ from the estimated error correction model, $(I(t)/Y(t))^{ecm}$, and regressed the actual values of $(I(t)/Y(t))$ onto these and the fitted values from the accelerator model, $(I(t)/Y(t))^{acc}$, obtaining:

$$\begin{aligned} [I(t)/Y(t)] = & \frac{0.945}{(0.023)} [I(t)/Y(t)]^{ecm} \\ & + \frac{0.049}{(0.034)} [I(t)/Y(t)]^{acc} \end{aligned} \quad (A20)$$

Again, the pure accelerator model provides no additional information and is encompassed by the error correction equation.

III. ERM Money Supplies and the Transition to EMU 1/

Interest in monetary aggregates extending beyond national borders has been stimulated by the agreement reached by EC countries at Maastricht in December 1991 to proceed to monetary union, and by recent tensions within the EMS, caused in part by the fact that short-term interest rates have remained high in Germany in order to curb excessive German money growth and combat German inflation, while inflation has been more moderate in neighboring countries such as France, Belgium, and the Netherlands. The eventual achievement of EMU would naturally lead to the use of monetary indicators for the monetary union as a whole; the properties of EC money demand are therefore of interest. A European central bank (ECB) would need credible targets, and it is possible that cross-country monetary aggregates could provide the basis for monetary targeting. Moreover, even at the present time, the presumption that money demand in EC countries may be affected by currency substitution as financial integration with other EC countries proceeds, and the likelihood that economic activity and inflation are affected by monetary conditions in other countries, also make it natural to consider cross-country monetary aggregates.

Cross-country monetary aggregates may receive increasing attention in stage 2 of the transition to EMU--which is to begin on January 1, 1994 and to end with the beginning of stage 3 in 1997 or 1999. For instance, the transition could be smoothed by devoting increasing attention to foreign monetary indicators. At one end of the spectrum is an asymmetric system in which developments in the anchor country--Germany--largely determine monetary policy for the ERM based on domestic economic conditions; at the other end is the symmetric system that is planned for EMU, in which the policy of the ECB will be guided by Europe-wide monetary developments. Giving gradually increasing importance to other ERM countries' monetary variables in the formulation of monetary policy might permit a smoother transition to an eventual target for the joint money supply of all participating EMU countries.

It is of course an empirical question whether ERM monetary variables are more stable and predictable than national ones, and whether monetary aggregates in other countries are useful indicators of future trends in inflation. With increasing integration in goods markets and possibly heightened currency substitution--both furthered by the creation of the "single market" as of January 1, 1993--and in the absence of currency realignments, developments that affect aggregate demand in one country will increasingly spill over onto other countries. For instance, to the extent that French M3 is an indicator of French aggregate demand conditions, it may also be a useful indicator for Germany. If so, it might be appropriate to give some importance to French M3 as an indicator in formulating German monetary policy. There is also the possibility that, during the transition to EMU, cross-country monetary aggregates could provide a focal point for monetary cooperation among national central banks.

1/ Prepared by Paul Masson, Tim Lane, and Marcel Cassard.

In assessing monetary indicators, it is important to consider the role of the exchange rate. For countries whose exchange rates are free to fluctuate substantially against the deutsche mark--either within wide bands, as a result of realignments, or because they have freely floating exchange rates--there is much less of a presumption that their money supplies should be relevant for Germany. If such countries run divergent monetary policies relative to the anchor country's, the inflationary effects on Germany will be at least partly neutralized by exchange rate movements. 1/

In this study we therefore focus on a core group of countries which have maintained their parities against the deutsche mark in the recent period of turbulence--in particular France, Belgium, Luxembourg, the Netherlands, and Denmark. These countries have not realigned relative to the deutsche mark since at least January 1987; in the case of the Netherlands, since March 1983. The Belgium-Luxembourg monetary union and the Netherlands have also limited fluctuations of their currencies relative to the deutsche mark to a greater extent than required by the narrow ERM band, hence until the suspension of the narrow band on August 2, 1993, and its replacement by intervention thresholds of plus or minus 15 percent of central parities, they approximated a situation of fixed exchange rates relative to Germany. 2/

Even for an ERM core group, exchange rate parities are not necessarily fixed irrevocably, and imperfect credibility affects the interpretation of monetary indicators such as interest rates, and, to a lesser extent, cross-border aggregate money supplies. Indeed, the major difficulty in assuring a smooth transition to EMU is that stage 2 has elements both of an adjustable peg system and a monetary union. However, until stage 3 of EMU is attained, it is premature to imagine that monetary developments in other core-ERM countries would be given commensurate weight with those in Germany. Hence the exploration of intermediate arrangements in this study.

The plan of the study is as follows. First, an analytical section discusses the relevant issues and surveys the existing literature. A second section presents empirical results concerning the long-run properties and stability of French and German broad money demands (demands for M3) and compares them to the properties of an M3 variable for a core group of ERM members. A third section examines evidence of the predictive ability of other countries' aggregates in explaining output and inflation (in particular, of French M3 for German inflation, and vice-versa). A fourth section considers how a core-ERM M3 aggregate could be used in stage 2. A final section attempts to draw tentative conclusions.

1/ Indeed, if there is overshooting of the exchange rate--as implied by the model of Dornbusch (1976)--Germany would initially not import inflation but rather deflation, as the deutsche mark would appreciate in real terms vis-à-vis the country undertaking monetary expansion.

2/ The Netherlands and Germany continue to respect the ± 2.25 percent bands for the guilder/deutsche mark rate, on the basis of a bilateral agreement.

1. An analytical framework

There are three issues concerning monetary policy within the EMS that deserve attention. First, the value of an intermediate indicator like the money supply rests on the stability and predictability of the relationship linking it to economic activity and the price level. Therefore, it is important to examine the relative stability of national money supplies versus monetary variables aggregated across countries. ^{1/} A second relevant question relates to the nature of the transmission of shocks from other countries when the exchange rate is fixed, or is limited in its fluctuation. These linkages may make it more useful to use an intermediate target that accounts for developments in other countries rather than a purely domestic target such as the domestic money supply. Finally, there is the issue of the transition to EMU, which may be facilitated by giving increasing attention to other countries' monetary developments; this would permit a gradual transition from an asymmetric system in which only the money supply in the anchor country was targeted to one where all countries' money supplies were given weights proportional to their size, as in EMU.

a. Stability and predictability of money demand

There has been considerable interest in the past few years in examining whether the demands for national aggregates have desirable properties, and conversely, whether an aggregation of money supplies across EMS countries is associated with a stable and predictable money demand. An article by Bekx and Tullio (1989) presented econometric evidence that the exchange rate of the deutsche mark against the dollar was better predicted by an EMS monetary aggregate than by German money. Kremers and Lane (1990) found evidence of a stable demand for M1 aggregated across ERM countries, ^{2/} while more recent work by Monticelli and Strauss-Kahn (1992b) and Artis, Bladen-Hovell, and Zhang (1993) suggests that a stable demand for broad money also exists for a subset of EC countries. Monticelli and Strauss-Kahn (1992a) survey national demand for money studies, and find that though a majority of the EC countries exhibit stability of money demand over the 1980s, there are some curious features for those demand functions for some countries.

As discussed, for instance, in Monticelli and Strauss-Kahn (1992a) and in Kremers and Lane (1992b), there are two main factors which can affect the relative stability of national and ERM money demands, possibly in conflicting ways. First, currency substitution--that is, shifts in the currency composition of money balances--can be expected to increase within the ERM, especially as monetary union approaches. Money balances in two different currencies should effectively be perfect substitutes if their

^{1/} There is also the issue of the proper definition of national money supplies, for instance whether they should include non-resident holdings and deposits in foreign currencies with domestic banks. See Angeloni, Cottarelli, and Levy (1991) and Monticelli (1993).

^{2/} See however the comments by Barr (1992) and rejoinder by Kremers and Lane (1992).

exchange rate is expected to remain unchanged, and other factors, such as transactions costs, are similar. Conversion to a common currency (i.e., the ecu) with achievement of EMU would itself produce perfect substitutability of these currency holdings, and their anticipated conversion would therefore enhance their substitutability. Second, specification bias will affect ERM money demands, unless the functional forms of countries' demand functions are similar, and, more constrainingly, if parameter values are roughly the same. In practice, it seems that national money demands often differ both in the choice of included variables and in estimated coefficients, for instance income and interest rate elasticities. 1/ Therefore, estimation of an aggregate equation introduces a degree of specification bias, which may impair its stability, since changes in the composition of the aggregate money variable will also change apparent income and interest rate elasticities.

Currency substitution can be expected to have two effects on national money demands. First, it would tend to make them sensitive to interest rates in other ERM countries. Second, currency substitution would tend to make errors in demand functions in pairs of ERM countries negatively correlated, as shifts out of one currency into another that were not captured in the explanatory variables would show up as inverse shocks to money demands. Both of these factors would tend to make national money demands unstable, though to an extent that depends on the definition of national aggregates. Most national definitions of broad money for EC countries include foreign currency deposits of residents with resident banks, so at least part of currency substitution is internalized. (Monticelli and Strauss-Kahn, 1992a). However, even such an aggregate would likely be sensitive to the relevant foreign interest rates. As for money holdings of foreign residents (or holdings of residents abroad, even in the home currency), these are not included in conventional aggregates, so that summing these aggregates across countries will not internalize cross-border holdings. There may still be negative covariance of residuals from national demand functions--possibly because relevant interest rates are not included--and hence an ERM demand function may nevertheless have a lower error variance than national equations.

The first factor may not be adequately captured in national money demand equations, because structural changes leading to increasing substitutability would not be adequately picked up through regressions with fixed coefficients, and also because the inclusion of several interest rates may give inconclusive results because of multicollinearity. One way to allow for the second factor would be to estimate national money demand equations as a system of equations and allowing for cross-correlation of errors; in practice, national demand equations are generally estimated separately. 2/ Both factors could in principle be taken into account by

1/ See Fase and Winder (1992) and Monticelli and Strauss-Kahn (1992a) for a survey of recent empirical work on national money demand functions for EC countries.

2/ See however Lane and Poloz (1992).

creating a money variable that aggregated across the relevant countries and deposits. By internalizing shifts between money holdings, aggregation across countries could be expected to reduce residual error variance and also make unnecessary the inclusion of a large set of interest rate variables.

Specification bias may be more severe in short-run, dynamic equations than in long-run money demand relations. As argued in Monticelli and Strauss-Kahn (1992a), the properties of long-run money demand may be more critical than the short-run dynamics, given the emphasis on a medium-term horizon for money targeting, and in particular, for controlling inflation. Cointegration tests, that is, tests of whether nonstationary variables tend to "move together," help to identify long-run relationships among variables and therefore deserve special attention in the context of money demand. Studies using cointegration analysis show a degree of similarity across EC countries in price and income elasticities; interest rate semi-elasticities differ much more, partly as the result of choice of different variables. ^{1/}

The net effect of currency substitution and specification bias will influence the usefulness of an aggregated money variable. One approach for evaluating this question is to estimate the demand for an aggregate money as well as demands for its national components, and to compare the equations' properties. Kremers and Lane (1990) for instance highlight the low standard error, stability, and high speed of adjustment of EC demand for M1 compared to national demands for M1; they contend that national equations give unreasonably low speeds of adjustment, perhaps as a result of omission of relevant foreign variables which are internalized in the wider aggregate. Another approach is the joint estimation of the national equations in order to test restrictions across coefficients and to allow for the negative covariance implied by currency substitution. Such an approach does not directly estimate the demand for an EC monetary aggregate, but rather suggests whether its stability properties are the result of similarity of coefficients or of currency substitution. Lane and Poloz (1992) conclude from such a decomposition that it is the latter that seems to account for the good properties of a European monetary aggregate; however, the evidence of currency substitution in the form of a significant role for exchange rates in money demand and negative covariances among countries' money demand disturbances admits of other interpretations.

As mentioned above, the link between the good performance of an aggregation of national money supplies and the existence of currency substitution is not straightforward. Cross-border holdings are usually not included in conventional aggregates, while domestic residents' holdings with domestic banks in both domestic and foreign currencies are typically included. Therefore, a simple European aggregate will not capture a potentially important part of currency substitution related to

^{1/} See Monticelli and Strauss-Kahn (1992a), Table 5.

delocalization--though aggregates are currently being redefined to address this problem.

Angeloni, Cottarelli, and Levy (1991) recalculate national monetary aggregates in order to include in those aggregates various measures of cross-border holdings; they find that these aggregates perform consistently better than the standard aggregates for most countries. Monticelli (1993) investigates whether including cross-border holdings in EC-wide monetary aggregates improves the properties of money demand equations and the predictive power of money in explaining EC output. He concludes that extended measures of EC money which contain EC-residents' holdings outside the EC and in non-EC currencies are poor at explaining EC income, while less extended measures (including only cross-border holdings within the EC or in EC currencies) perform well. However, none of the extended measures outperforms an EC-wide measure obtained by summing traditional national definitions. No doubt further work is warranted in this area, which may become more relevant as integration proceeds; however, this is beyond the scope of the present paper. The regression results reported below use the existing national money supply data, and aggregate across countries merely by summing these national money supplies, after conversion to a common currency. 1/

b. Transmission of shocks to the anchor country

In a fixed exchange rate union, just as in the limiting case of a monetary union with a common currency, the money supply of the union as a whole is relevant for output and inflation in any single country that is a member of the union. With financial integration, a single interest rate would prevail on comparable financial instruments, and it would be fruitless to try to establish separate monetary policies in different countries or regions. Money supplies could grow at different rates, however, because of differing shocks affecting demands for money in different countries or regions--principally shocks to real activity and inflation. 2/

An intermediate target like the money supply should satisfy two criteria: (1) it should give advance indication of factors affecting ultimate targets which can only be observed with a lag, and (2) provide a variable that is under at least the indirect control of the monetary authorities, and against which their performance can be judged. From the perspective of a single country whose target is its national inflation rate, monetary indicators in other countries in an exchange rate union may provide information additional to that provided by the domestic monetary aggregate. For instance, shocks to inflation in a neighboring ERM country will show up in higher German import prices, and shocks to activity, in higher German exports and hence in greater pressures on capacity utilization in Germany. Therefore, it is in the interest of the anchor country to account for these

1/ The issue of what exchange rate to use is discussed below.

2/ As well as different trends in output and the velocity of circulation of money.

developments in setting its short-term interest rate. From the second perspective, controllability, it is the case that foreign money supplies will not be under the direct control of the monetary authorities of the anchor country, though the authorities may, through their ability to vary interest rates throughout the union, be able to influence them indirectly. This will depend on whether the demand for the aggregate is negatively related to market interest rates.

Although the ERM is not a system of irrevocably fixed exchange rates, a core group of countries--Germany, France, the Benelux countries, and Denmark--have maintained fixed central parities for at least the last six years. If exchange rates are allowed to vary as a result of occasional realignments, then the transmission effects of inflationary pressures may be offset through eventual devaluation. There is therefore less of a presumption that monetary developments among all ERM countries are relevant indicators of inflation in the anchor country. From January 1987 until the widening of the bands of fluctuation agreed on August 2, 1993, the operation of the ERM among the core group was a compromise between monetary union and a system of adjustable pegs. Though realignments were not absolutely ruled out, they were viewed as increasingly unlikely. There was reinforced monetary cooperation among the core group, for instance between France and Germany in the September 1992-March 1993 period to defend the franc against speculative pressures. In these circumstances, inflation pressures elsewhere in the core group could affect inflation in the anchor country, because Germany might not be able to sterilize effects on its money supply if speculative pressures developed. ^{1/} Hence, such inflationary symptoms would be of concern for the anchor country, and might justify its central bank's giving some weight to monetary developments in the other core-group countries. For instance, if the money supply were growing faster elsewhere in the core group than in Germany, the Bundesbank could run a tighter monetary policy than otherwise, and conversely if other countries' money supplies were growing more slowly than Germany's.

Not resisting those inflationary pressures through monetary policy gives rise to a perverse feedback that has been noted in the operation of the ERM, namely that high inflation countries have low real interest rates when fears of devaluation are absent. Adjusting interest rates in the anchor country to account for inflationary pressures in other countries would offset this bias to some extent. Notwithstanding, countries whose inflation rate is persistently high would eventually have to realign, and markets would demand higher nominal interest rates as a result. These countries would likely have substantially higher nominal interest rates than in the anchor country if their inflation rates remained high.

The recent widening of the fluctuation bands greatly reduces the potential need for intervention by the Bundesbank, making it less likely that monetary developments in other ERM countries would spillover onto

^{1/} See Deutsche Bundesbank (1993) for a discussion of the impact on liquidity in Germany resulting from the ERM crisis in 1992.

Germany. However, the widening of the bands is intended to be temporary, and deviations from central parities have so far been limited. Moreover, the Netherlands and Germany have concluded an agreement to defend the earlier narrow margins, and Belgium and Luxembourg have also expressed a desire to do so.

c. The transition to EMU

The Maastricht Treaty provides for the creation of a European Monetary Institute, which would take over from the Committee of Governors of EC Central Banks at the start of stage 2 and which would have the role of promoting monetary cooperation and facilitating the transition to EMU. However, it is clear that actual responsibility for monetary policies will continue to reside with national central banks. Therefore, the period at the end of stage 2 and the beginning of stage 3 could involve a difficult transition from an asymmetric monetary policy which is focused on economic developments in the anchor country, to one decided by the European central bank which accounts for conditions in all countries in the monetary union in a symmetric fashion. A means of smoothing the transition would be for the anchor country to give a gradually increasing weight to monetary aggregates in other ERM countries in setting its policies.

It is important to recognize that there are at least three difficulties with such a strategy, however. First, the distinction between a core group, whose money supply would be taken into account by the anchor country, and non-core-group countries, whose money supply would not, raises fundamental issues concerning the list of countries that would be able to proceed to monetary union in 1997 or 1999. The Maastricht Treaty stipulates that criteria for proceeding to stage 3 are to be based on information available in 1996 or 1998. Monetary coordination that occurs before then should not prejudice the set of countries proceeding to stage 3. Second, the assumption that the core-group countries themselves would not change their deutsche mark parities in the transition to EMU is far from certain. As argued above, if the transmission effects of inflationary pressures that arise in one country are to be neutralized by devaluation, or, if they endanger the credibility of parities, by higher risk premiums built into interest rates, it would be inappropriate to allow those pressures to lead to a tighter ERM monetary policy. Third, since the Bundesbank's mandate is to maintain the stability and purchasing power of its own currency, not to stabilize the ERM price level, it would have to be demonstrated that ERM monetary indicators were relevant to German inflation. Empirical evidence on this last point is provided in section 3 below.

2. Empirical estimates of the demand for broad money

In this section, evidence on the stability and predictability of the demand for broad money in France, Germany, and the ERM is discussed. Broad money (M3) is used, since it is the most relevant from the point of view of monetary targeting in Europe (both France and Germany currently have M3 targets). Existing studies are first briefly surveyed, and then new estimates are given for the demand for M3 in France, Germany, and a core

group of ERM countries. The new estimates are made using the methodology of cointegration, which tests whether non-stationary series move together in the long-run, that is, are cointegrated (see Granger, 1983). If they are, then it can be shown that an error correction model describes the set of variables (Engle and Granger, 1987); in particular, a dynamic equation would relate the change in money balances to deviations from the long-run money demand and possibly to changes in other variables such as income and interest rates.

a. Existing studies

(1) France

Studies for France give mixed results concerning the properties of the demand for broad money, both its long-run relationship with real income, prices and interest rates, and the stability of its short-run dynamics. Fröchen and Voisin (1986) analyze the stability of several monetary aggregates for France from 1970-84, and find that M3 especially seems to be affected by financial innovation in the 1983-84 period, leading to a sharp reduction in the income elasticity of money demand. The demand for M1 in contrast does not seem to be affected. Bordes and Strauss-Kahn (1989), using cointegration techniques, also find that M1 has more desirable properties than broader aggregates: M1 was cointegrated with income, the interest rate, and inflation but M3 was not (despite an attempt to adjust the official M3 series for financial innovation). De Bandt (1991) also does not find that French M3 is cointegrated with real GDP, the price level, interest rates, and inflation over 1981-1990, though he leaves open the possibility of cointegration when the opportunity cost of holding M3 balances is measured more precisely. Angeloni, Cottarelli, and Levy (1991), report relatively poor estimates of the demand for French M3 over 1982-1990, in that the only interest rate that enters is the short rate (a market rate, rather than the own rate), which enters with a positive sign.

(2) Germany

Available studies of money demand relate to the pre-unification period; post-unification data for both monetary variables and for GNP are subject to serious statistical problems when used in econometric relationships, as is discussed below. Studies using pre-1990 data indicate quite high income elasticities (significantly greater than unity, and sometimes over two) and a greater responsiveness to long-term interest rates than to short rates. 1/ A recent study by Schmid and Herrmann (1991), also using pre-unification west German data, finds cointegration of nominal money with nominal GNP and a market interest rate; however, it is not reported whether the constraint of a unit real income (as well as price) elasticity is tested. Post-unification stability is not examined. Estimates of the demand for a traditionally-defined M3 in Angeloni,

1/ See Section VII of "Germany - Economic Developments and Issues," SM/92/199, November 10, 1992.

Cottarelli, and Levy (1991) indicate a long-run income elasticity just over unity, and semi-elasticities of the own rate on M3 and the long-term interest rates that are both equal to 0.6, but opposite in sign; the equation is estimated over 1982-1990 using quarterly data.

(3) The EC

Studies of EC money demand have generally presented promising results.

Monticelli and Strauss-Kahn (1992b) present cointegration tests and error-correction models for broad money aggregated across the EC, using current exchange rates (Luxembourg was omitted for statistical reasons, and Greece and Portugal were excluded because they had not joined the ERM by 1991). They find evidence of cointegration of real broad money balances with EC real income and a market interest rate (no data for the own rate on M3 was available), over periods extending from, at the earliest, 1977 to 1990, third quarter. Including a simple time trend has virtually no effect; in particular, it does not lower the relatively high income elasticity, estimated to be 1.6, which the authors interpret as reflecting to some extent the omission of wealth from the equation. A segmented trend starting only in the second half of the 1980s does lower the income elasticity, to 1.3. The interest rate semi-elasticity in the cointegrating equation is -0.7, characterized by the authors as low relative to national studies. Error-correction models give satisfactory results which are similar across different specifications, with a significant and strong feedback of departures from equilibrium equal to 30 or 40 percent per quarter.

Artis, Bladen-Hovell, and Zhang (1993) present results for both M1 and M2 demand, aggregated across 7 EC countries (Germany, France, Italy, the Netherlands, Denmark, Belgium, and Ireland), using quarterly data from 1979 to 1990, and using base-period exchange rates in aggregation. Both aggregates expressed in real terms (divided by consumer prices) are cointegrated with the log of EC real income and short-term market interest rates, with coefficients of 1.2 and -0.7, respectively. In addition, error-correction models with desirable statistical properties--stability, absence of serial correlation or heteroscedasticity, etc.--are identified for both aggregates. However, the speed of adjustment to long-term disequilibrium is significantly faster for M1 (73 percent) than for M2 (37 percent).

a. New estimates

The estimates reported below use quarterly M3 data for France, Germany, and an aggregation of core ERM countries over a period extending from about the beginning of the EMS to 1990Q2 (see Appendix I for data sources). Later periods are mainly used for stability tests. There is an important break point in 1990 because of problems with post-unification data for Germany. Hence only the earlier data, for west Germany alone, are initially used in estimation. However, an adjustment was also made to pre-unification data for both GNP and M3 to scale it up to the size of united Germany, in order

to test whether an equation estimated over the earlier period could still be relevant after 1990.

Quarterly data for the following variables were used: seasonally adjusted broad money supply M_3 (m_t), real GDP or GNP (y_t), a long-term interest rate (i_t), a money-market rate (im_t), a constructed own rate on M_3 (r_{0t}), the consumer price index (p_t), and the inflation rate (Π_t). All variables, except interest rates and inflation, are expressed in logarithms.

Chart 1 plots series for the income velocity of M_3 for France and Germany, the latter using the adjusted data. It can be seen that both series exhibit a downward trend, though the French data are considerably smoother. Chart 2 plots data for interest rates, including a constructed series for the interest paid on M_3 money balances.

The estimation of a long-run money demand function for France, Germany and core ERM countries is conducted using both the Engle-Granger two-step error correction procedure and the Johansen procedure (See Appendix II for a description). The advantage of the Engle-Granger approach is its greater transparency, but its drawback is that the cointegrating vector estimated is not necessarily unique. On the other hand, the Johansen procedure provides a test of the number of cointegrating vectors among a set of variables.

The money demand functions were estimated using both short- and long-term interest rates, which provide alternative indicators of the opportunity cost of holding money. Money balances are deflated by either the GDP deflator or the CPI (either could be appropriate, depending on whether firms' or households' holdings of money are preponderant). Although all the results are listed in Tables 1-3 of Appendix II, only the most conclusive ones are discussed in the text.

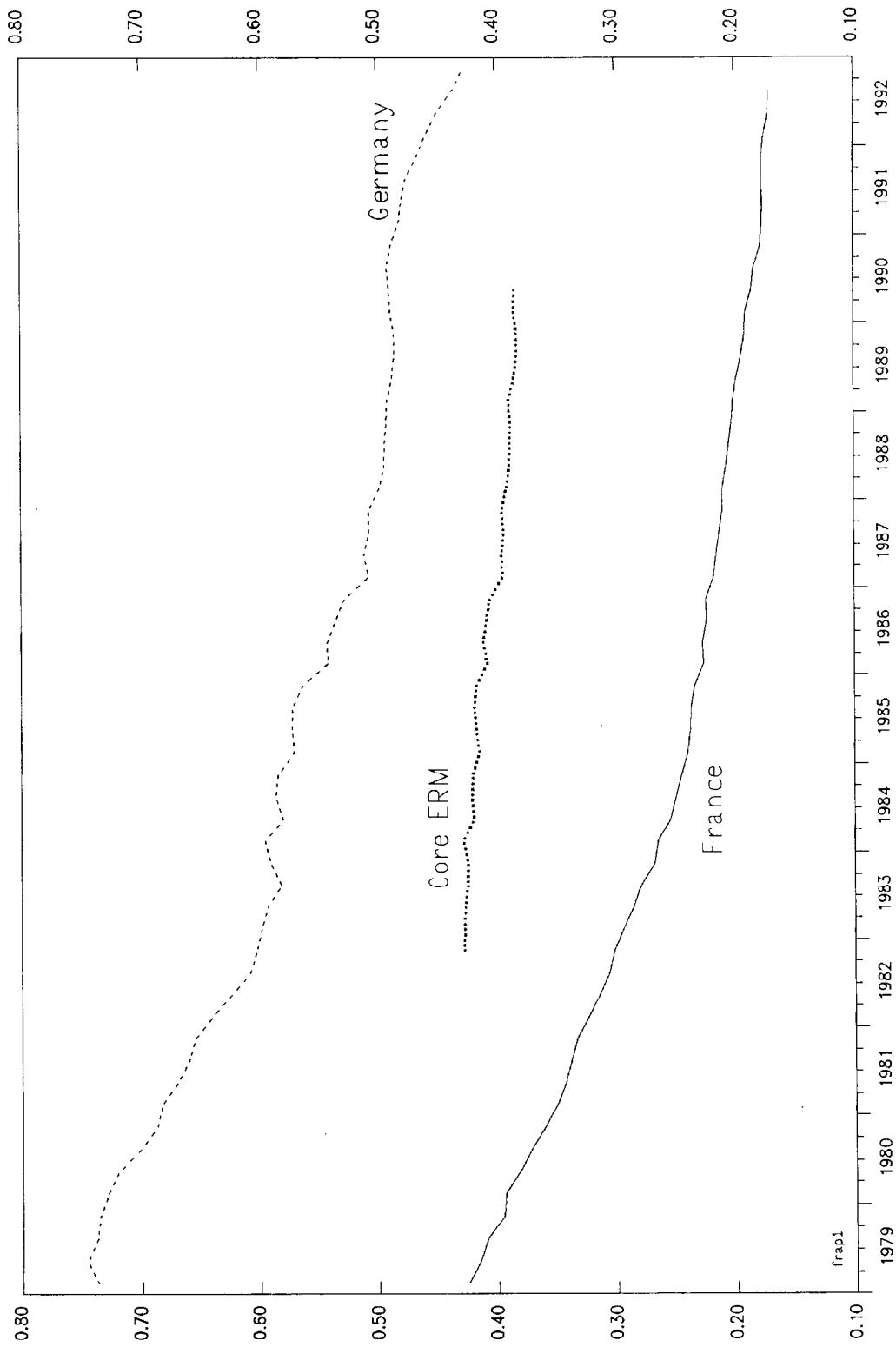
(1) France

Using the two-step procedure, the best long-run money demand function (deflated by the GDP deflator) was found to depend on real income and the difference between the long-term interest rate and the own rate on M_3 (see Table 1, Appendix II). The long-run money demand function is given by:

$$m_t - p_t = -4.91 + 1.21y_t - 0.011(i_t - r_{0t}) + \epsilon_t \quad (1)$$

A unit root test on the residuals allows the rejection of the null hypothesis of no cointegration and thereby suggests the existence of a long-run French money demand relationship. The alternative Johansen approach also suggests the existence of at least one long-run relationship which can be identified with long-run money demand (see Appendix II). In addition, contrary to the two-step approach, the Johansen procedure reveals that a long-run money demand relationship exists even when nominal money balances are deflated by the CPI. When a dummy was included to account for the

CHART 1
France, Germany, and Core ERM
Income Velocity Of Money (M3)



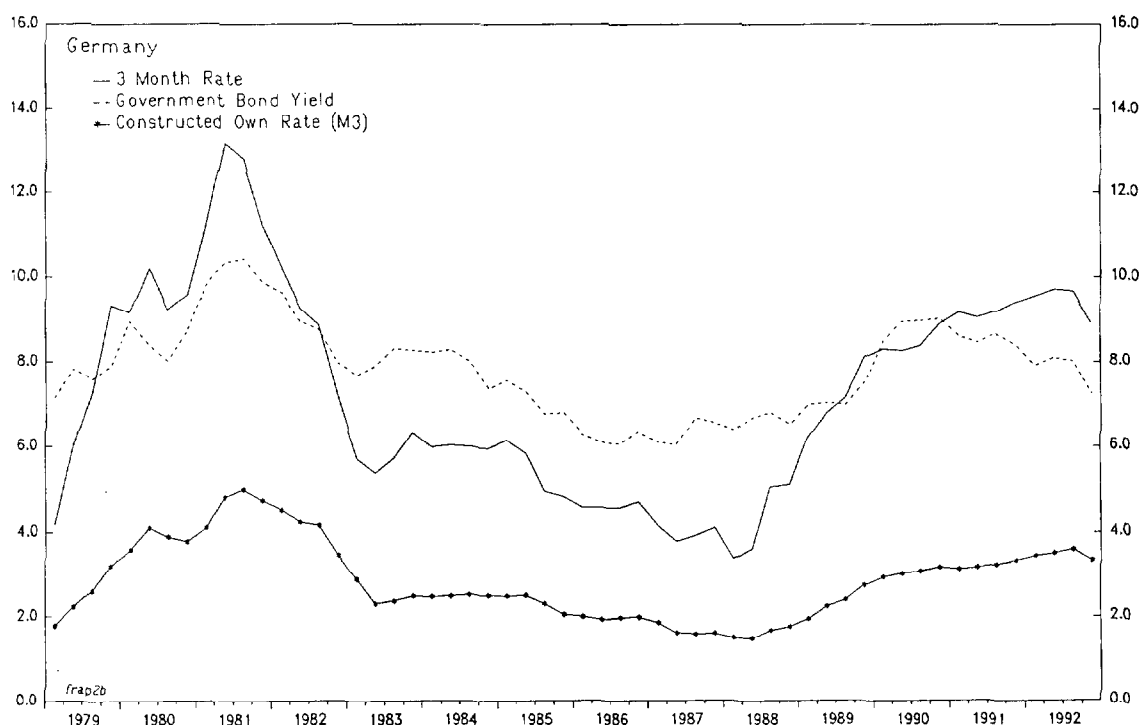
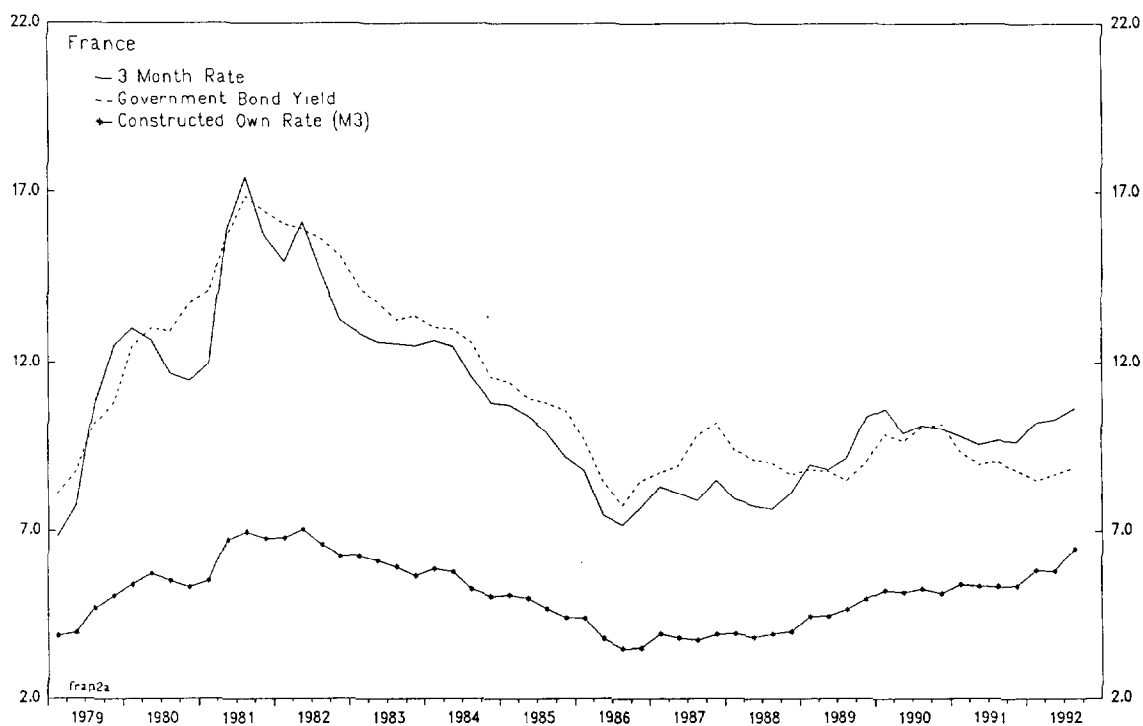
Sources: National Sources and Staff Estimates.

- 78b -

CHART 2

FRANCE and GERMANY

Interest Rate Developments



Sources: IMF, International Financial Statistics and Staff Estimates.

deregulation and financial innovations that occurred during the mid-eighties, a long-run money demand relationship was found in almost all instances.

An error-correction model was then estimated to capture the short-run dynamics, in which the disequilibrium in the previous period, represented by the lagged residuals of the long-run equation, ϵ_{t-1} , was an explanatory variable. The specification of the dynamic equation was chosen on the basis of the significance of a set of variables that included current and lagged real income growth and changes in long-term interest rates. The most satisfactory dynamic money demand function for France is given by:

$$\Delta(m_t - p_t) = 0.004 + 0.44\Delta(m_{t-1} - p_{t-1}) + 0.015\Delta r_{0t-3} - 0.004\Delta im_{t-3} - 0.267\epsilon_{t-1}^{(2)}$$

(0.002) (0.15) (0.008) (0.0025) (0.089)

$$R^2 = 0.30, \text{ SER} = 0.0083$$

Estimated coefficient standard errors are included in parentheses. The equation standard error (SER) is less than 1 percent. Diagnostic tests for serial correlation, heteroscedasticity, linearity and normality are reported in Table 2 of Appendix II; the dynamic equation passes all diagnostic tests except the linearity test. The error-correction feedback term, ϵ_{t-1} , is significant at the 1 percent level with a coefficient of 0.27 indicating a moderate adjustment of real money balances. When the equation is used to forecast money demand for 1990Q3-1992Q3, a chi-square test suggests that the stability of the equation cannot be rejected at the 1 percent level but can be rejected at the 5 percent level. 1/

Satisfactory short and long-run money demand relationships thus seem to exist, which is encouraging given the problems with French money demand discussed in section 1.a above. From the perspective of monetary control, the above dynamic equation presents interesting features, namely the presence of the money market interest rate and the own rate on M3, which are both largely controllable by the authorities. Interestingly enough, a variant of the equation in which the French-German short-term interest rate differential is also included does attribute a significant coefficient for that variable, indicating some evidence of currency substitution.

(2) Germany

Analysis of the stability and long-run properties of money demand function in Germany using data from the second quarter of 1978 to the second quarter of 1990 produces mixed results. 2/ Using either the two-step

1/ Estimating through 1991Q3 and forecasting the next 4 quarters indicates stability at the 5 percent level.

2/ Using rescaled data for west Germany to make it comparable to latter data for the whole of Germany. Since GDP and M3 are in logarithms, only the constant is affected by the rescaling.

Engle-Granger or Johansen estimation procedures, the existence of a cointegrating vector is only apparent when money balances are deflated by the CPI and the long-term interest rate is used. The estimated long-run money demand equation, using the two-step approach, is given by:

$$m_t - p_t = -8.63 + 1.74y_t - 0.016(i_t - r_{0t}) + \epsilon_t \quad (3)$$

Equation (3) implies a slightly higher elasticity for real income than that reported elsewhere, while the semi-elasticity with respect to the difference between bond yields and the own return on money (1.6) is within the range of estimates by other researchers.

The best dynamic money demand equation was the following:

$$\begin{aligned} \Delta(m_t - p_t) = & 0.002 + 0.42\Delta(m_{t-1} - p_{t-1}) + 0.32\Delta(m_{t-3} - p_{t-3}) + 0.027\Delta r_{0t-2} \\ & (.0017) \quad (.13) \quad (.12) \quad (.01) \quad (4) \\ & - 0.008\Delta i_{t-2} - 0.004\Delta i_{t-3} - 0.055\epsilon_{t-1} \\ & (.003) \quad (.0018) \quad (.04) \end{aligned}$$

$$R^2 = 0.48, \quad SER = 0.0068$$

The coefficient values and the sign of the variables are sensible and the dynamic equation passes all the diagnostic tests. The coefficient of the error-correction feedback term is however small and not significant at even the 10 percent level. Other specifications, in which the change of nominal money balances rather than real balances was the dependent variable, also produced this result. Therefore, there is some doubt about the robustness of the cointegration result reported above, even over the period before unification. As for the stability of the dynamic equation, the results reject with 95 percent confidence the stability of the equation estimated through 1990 when it is used to forecast the 1990-92 period, even when a scale adjustment is made (Table 2, Appendix II).

(3) Core ERM money demand

The next stage in the investigation is to explore aggregate money demand for the ERM core group--that is, the group of countries whose currencies have remained in the ERM narrow band for several years, and have not realigned relative to the deutsche mark since at least January 1987. These countries include Belgium, Denmark, France, Germany, Luxembourg, and the Netherlands. Data were aggregated across countries using two methods:

current purchasing-power parities (PPPs), 1/ and the ERM central parities against the deutsche mark that have prevailed since January 1987. Both methods have drawbacks: PPP weights are to some extent endogenous, as monetary policy will influence the path for prices, while central parities after 1987 are not obviously relevant for the earlier period. It turned out that estimates using PPP weights yielded more sensible results; these are reported in the text, while those using central parities in aggregation are relegated to Appendix III. Quarterly data are available for 1982Q4 through 1990Q2.

The data were first analyzed using the Engle-Granger two-step error correction procedure. 2/ Using PPP weights and data from 1982Q4-1990Q2, a simple relationship was found between real core group broad money (M3), real income (GDP), and the core group three-month interbank interest rate minus the own rate on money: 3/

$$m_t - p_t = -9.46 + 1.62y_t - 0.008(im_t - r_{0t}) + \epsilon_t \quad (5)$$

Several features of this equation are noteworthy (see Table 3, Appendix II). First, test statistics suggest the existence of a significant long-run money demand relationship for an ERM core group. Second, the short-term interest rate (money market rate minus own rate) rather than the long-term interest rate appears as one of the variables in the cointegrating equation for core-group money, thereby enhancing the controllability properties of the monetary aggregate. Third, the results obtained from the Johansen procedure also confirm the existence of at least one long-run money demand relationship among ERM countries. The ERM results appear more robust to the different combinations of interest rates and price deflators than those of either Germany and France.

Turning to the error-correction equation, the best dynamic specification was found to relate to the adjustment of nominal core-group money (aggregated and expressed in current deutsche mark), rather than for real balances as specified in the static equation. The error-correction equation estimated over the sample period 1983Q4 to 1990Q2 is as follows:

1/ Current PPP rates are derived from the rates published in the OECD's survey for 1985, by multiplying these rates by the ratio of the GDP deflators of each country to that of Germany. This is equivalent to aggregating real variables using base period weights. This method yields nominal aggregates expressed in deutsche mark, which are divided by a German price index to yield real aggregates expressed in 1985 deutsche mark.

2/ Preliminary testing revealed that first differences of all variables were stationary, as assumed by this procedure.

3/ Due to the difficulty of estimating an own rate for all the core countries, a GDP-weighted average of the French and German own rate was calculated. This is a close approximation since the two countries represent more than 80 percent of the GDP of the core group.

$$\begin{aligned} \Delta m_t = & 0.02 + 0.37\Delta m_{t-1} - 0.41\Delta p_{t-1} - 0.55\Delta p_{t-2} + 0.015\Delta r_{0t-3} \\ & (.002) \quad (.1) \quad (.19) \quad (.22) \quad (.005) \\ & - 0.005\Delta im_{t-3} - 0.32\epsilon_{t-1} \\ & (.002) \quad (.11) \end{aligned} \quad (6)$$

$$R^2 = 0.53, \quad SER = 0.0039$$

A noteworthy feature of the estimated dynamic equation is the error-correction coefficient, -0.32, which is statistically significant at the 1 percent level; it is larger in magnitude than those reported above for France and Germany, implying a faster adjustment of money balances to disequilibrium. This is encouraging, to the extent that specification errors are often reflected in low estimated error-correction coefficients (Kremers and Lane, 1992b). The estimated dynamic equation passes a range of specification tests, as reported in Table 4 of Appendix II. Short-term interest rates were found to be statistically significant in this dynamic adjustment equation, but as in the case of France and Germany, neither the long-term interest rate nor the growth of real GDP enter the dynamic equation. Finally, the standard error of the regression is significantly lower than those reported for France and Germany, implying a better fit for the ERM equation.

(4) Simultaneous estimation: France, Germany, and other core group countries

Another approach to examining money demand within the core group is to estimate money demand equations for the component countries simultaneously, in order to determine whether aggregation is justified by the data. The appropriate way to do this is to estimate money demands jointly, using the seemingly unrelated regressions (SUR) approach, and test the restrictions implied by aggregation. ^{1/}

The form of equation that best lends itself to this kind of joint estimation is the one-step dynamic error-correction equation. The dependent variable was specified as the change in real money balances while the explanatory variables were current and lagged changes in income, prices and interest rates, as well as the lagged deviation of real money balances from their long-run relationship with real income and interest rates; the long-run income elasticity and interest semi-elasticity were estimated together with the other coefficients of the dynamic equation.

To reduce the dimension of the problem, the core group was divided into three components: France, Germany, and the remaining countries--Belgium,

^{1/} As mentioned above, the restriction of equal coefficients across equations is only approximate since the dependent variable is in logs.

Denmark, Luxembourg, and the Netherlands--as a group. ^{1/} Both nominal and real variables for the remaining countries were aggregated into deutsche mark at post-1987 central parities. Money-market interest rates for the respective countries were used as the opportunity cost variable in money demand, and the own rate (which was not available for all countries) was omitted.

Money demand equations were estimated for each of these components, allowing different constant terms while constraining the slope parameters in the three equations to be equal (the *j* superscript ranges over F=France, G=Germany, and O=other core-ERM). The best joint specification for the three components was

$$\begin{aligned} \Delta m_t^j = & a^j - .15 \Delta y_{t-1}^j + .31 \Delta m_{t-2}^j + .33 \Delta p_{t-3}^j \\ & (.08) \quad (.08) \quad (.11) \\ & - .021 (m_{t-1}^j - p_{t-1}^j - 1.97 y_{t-1}^j + .03 im_{t-1}^j) \\ & (.014) \quad (.47) \quad (.02) \end{aligned} \quad (9)$$

where $a^F = -.19$; $a^G = -.20$; and $a^O = -.17$.
 $(.11) \quad (.12) \quad (.10)$

France:	$R^2 = .30$	SER = .0075	DW = 2.04
Germany:	$R^2 = .16$	SER = .0052	DW = 1.73
Others:	$R^2 = .02$	SER = .0075	DW = 1.91

This equation has a number of interesting features. First, it confirms that a common specification of money demand fits France, Germany, and the Benelux-Denmark grouping, as indicated by the low standard errors of the equations for the individual countries and because it satisfies a test that the same slope coefficients fit all three cases. Second, this is an error-correction formulation, with negative feedback of the deviation of real money from its long-run money demand relationship, as given by the last term. Within the implied long-run relationship, income and interest elasticities are within the range that is typically found in the literature: the income elasticity of almost 2, while high, is not beyond the bounds of plausibility. The money-market interest rate also enters this relationship, with a semi-elasticity of 3.0.

Perhaps the most unsatisfactory aspect of the equation is the estimated error correction coefficient of only .021 (which does not even quite reach statistical significance at the 10 percent level). This implies a very slow dynamic adjustment of real money balances to variables affecting long-run

^{1/} The shares of these components in aggregate 1987 GDP were 36.1 percent for France, 45.2 percent for Germany, and 18.7 percent for the other countries.

money demand, and in particular to changes in interest rates--which were not found to have any statistically significant influence on monetary adjustment except through the error correction term.

In conclusion, the simultaneous estimation provides some, but limited, support for the aggregation needed to estimate a core-ERM equation that is not mis-specified. The characteristics of the individual country equations using the joint specification--low standard errors, little evidence of serial correlation, and satisfying tests of common coefficients--are, on the whole, favorable. They suggest that a common money demand framework does not lead to serious misrepresentation of the behavior of the individual national components. However, the common equation estimated for the three components is not identical to the one estimated for the core group as a whole, and it has some undesirable properties. To be sure, this is not surprising since some of the changes in the individual components may be submerged in the aggregate for the group as a whole, and the money demand estimation for the core group gives more weight to the larger countries, whereas the simultaneous equations approach treats each of the components symmetrically, without regard to size. Several questions were not resolved, and remain for further work, including the appropriate method of aggregation and the best choice of interest rate variables.

3. Evidence on the transmission of monetary impulses

As discussed in section 1 above, goods market integration will tend to imply that shocks to monetary variables in foreign countries will have effects on domestic economic activity and inflation. This effect is likely to be especially important when the countries are linked by fixed exchange rates. In this section some evidence of effects of French, German, and core-ERM money on inflation in France and Germany is presented. ^{1/}

There is an extensive literature that tests for the effects of the domestic money supply on economic activity and inflation. This is usually done in the context of "causality tests," in which the additional explanatory power of a variable is tested in the context of a regression equation that already includes lags of the dependent variable, and perhaps other variables as well. Tests of cross-border effects in the European context are however recent and limited in number. Bayoumi and Kenen (1992) use causality tests to see whether the aggregate ERM money supply is a useful predictor of short-run changes in inflation and growth, over and above the domestic money supply. They find that money seems not to be systematically related to real activity, but that ERM money is at least as good a predictor of inflation as the domestic money supply in a subset of nine EC countries.

In this study, a variant of causality tests, namely the conditional linear feedback test (see Appendix II), is used because results are

^{1/} Lack of quarterly national accounts data for other core-ERM countries limited our experiments to these two countries.

generally more conclusive, as argued by Artis (1992). The purpose of the tests is to see whether French M3 or core-ERM M3 has predictive power for German inflation (and similarly for France).

The tests were done for two sample periods, 1979 to 1990 and 1983 to 1990 (see Table 5, Appendix II). The first sample corresponds to the span of the EMS until German unification. The second, shorter sample excludes the first four years of the EMS, during which there were a number of realignments and large divergences in inflation rates. The effects of French money on German inflation, and of German money on French inflation, are insignificant for the longer period, while German and French money supplies, respectively, do have significant effects. Interestingly enough, however, in the more recent sample period both monetary aggregates have a significant influence (at the 10 percent level) on each other's inflation rate. Table 5, Appendix II also shows that the ERM money supply has a significant effect (at the 10 percent level) on both French and German inflation. Therefore, it seems that the later period with more infrequent realignments produces effects that one would expect in a currency union, namely that additional predictive power exists in other countries' monetary aggregates.

4. Using core-ERM money in stage 2

The statistical results presented above are only preliminary, and more work has to be done to test their robustness. Clearly they could not form the basis for monetary policy implementation without thorough evaluation. It is nevertheless useful to consider how in principle core-ERM money might be used in the transition to stage 3. ^{1/} On the one hand, core-ERM money could serve as an additional indicator that might at times influence German monetary policy, or, on the other hand, there could be a formal target for core-ERM money.

As an additional indicator, core-ERM money could supplement the existing target for German M3. For instance, if German M3 were growing quickly but other ERM countries' money supplies were growing much more slowly, so that core-ERM M3 was growing at a satisfactory pace, then this might temper the concern for excessive German M3 growth. Conversely, too rapid growth in other ERM countries might induce caution in reducing German interest rates. In this perspective, the role of core-ERM money would be to aid in the interpretation of German developments, for example because at times the demand for German M3 might be distorted by exchange rate tensions or currency substitution.

^{1/} Use of EC-wide aggregates in the transition to EMU has been discussed by, among others, Angeloni, Cottarelli and Levy (1991), van Riet (1992), Monticelli and Viñals (1992), and Commissariat Général du Plan (1993).

As a formal target, core-ERM M3 could anticipate the mode of operation that would prevail under EMU, when monetary conditions of all countries in EMU would be given equal weight. ^{1/} This would represent a polar case, however; other arrangements might give more weight to meeting targets for German M3, and less to other core-ERM countries' M3. Allowing for a degree of symmetry in the monetary targets themselves need not involve symmetry in the implementation of monetary policy, since the anchor country could retain responsibility for determining monetary growth, while other core-ERM countries could devote their monetary instruments to maintaining their exchange rates relative to the deutsche mark.

5. Conclusions

The tentative conclusion of the preliminary work reported above is that there appears to be some evidence of a long-run money demand relationship for a core group of ERM countries, between M3, economic activity, the price level, and either domestic or German interest rates. Such a long-run relationship, together with an estimated dynamic adjustment equation, might be a useful indicator when formulating German, and ERM, monetary policy in the transition to monetary union. Though currency substitution is not tested directly, the stability of the core-ERM aggregate may reflect this phenomenon to some extent; currency substitution may also have caused the apparent lack of robustness of national money demands. Some ways in which a core-ERM monetary indicator could be used are discussed above.

Nevertheless, although the statistical results seem very promising, there are some properties of the estimated money demand equations for core-ERM countries that are not satisfactory. First, income elasticities tend to be high--though this is also a problem for some single country estimates. More work is necessary to construct other relevant variables, in particular wealth. Second, interest elasticities tend not to be precisely estimated, and contemporaneous interest rates do not enter the dynamic core-ERM equation at all. This would be a serious drawback if the equation were to be used for monetary control. However, this is again also a problem for national estimates of a broad aggregate like M3; moreover, core-ERM money demand seems to be more sensitive to money market rates than to long-term market rates, which is a plus for controllability. Finally, though tests of aggregation restrictions across the countries of the core group give support for the validity of aggregation, results of pooled estimation differ in important respects from the estimated core-ERM money demand equation.

A major difficulty in the investigation of money demand at either the national or the multi-country level is the treatment of cross-border money holdings (Angeloni et al., 1991). In principle, national monetary aggregates include only residents' deposits in resident financial institutions. For currency holdings, it is difficult to determine the holder's residency, so a demand equation for a multi-country narrow monetary

^{1/} How an EC monetary aggregate could be targeted is discussed by Russo and Tullio (1988).

aggregate may internalize some cross-border currency holdings. However, cross-border deposits will typically be excluded from traditional national and multi-country aggregates, and this may introduce measurement error in estimating the demand for a broader definition of money. If the core-ERM aggregate were adjusted for cross-border holdings, the demand for this aggregate might perform better than is indicated by the results reported here, though the results of Monticelli (1993) are not too promising on that score.

It is clear that use of a core-group monetary indicator may encounter institutional hurdles in the anchor country. In particular, the mandate of the Bundesbank is to ensure the purchasing power of the deutsche mark, not some external target. Therefore, the statistical test that core-ERM money has predictive power for German inflation is important, because it suggests that other countries' money supplies may also be useful indicators in achieving a domestic, German target. One aspect of the results that is particularly suggestive is that estimates of core-group money demand and tests of linear feedback are stronger for the period from 1983 onward, when exchange-rate fluctuations within the core group were limited. This suggests that as a zone of exchange rate stability is maintained, at least among a small group of countries, and as European integration proceeds, the relevance of core-group ERM money may increase.

Data Sources and Definitions

1. Germany

Broad Money (m): Average of end-month seasonally adjusted M3 stock. West Germany up to and including 1990Q4; united Germany thereafter. Adjusted M3 data was also calculated to make a consistent pre- and post-unification series: west German money was scaled up by 14.3 percent over 1970Q1-1990Q3 and by 12.9 percent in 1990Q4.
Source: Bundesbank tape.

Income (y): Real income based on GNP at 1991 prices. Seasonal adjustment of east German data based on west German seasonal factors. Sources: west German data from Bundesbank tape; east German data from DIW, Economic Bulletin, Vol. 30, No.2 (April 1993). To make pre-unification data consistent with post-unification data, an adjusted series was also created, in which real GDP was scaled up by 9.2 percent over 1970Q1-1990Q3, and by 8.2 percent in 1990Q4.

Long-term Interest rate (i): 10-year government bond yields.

Money market rate (im): 3-month interbank rate.

Source: Bundesbank tape.

Own rate (r0): The own rate on M3 is constructed as the sum of time and statutory deposit rates weighted, respectively, by the period-by-period shares of time deposits and statutory savings in broad money.
Sources: Bundesbank tape and Monthly Report.

Prices (p): Consumer Price Index or GDP deflator.

Source: Bundesbank tape.

Data adjustments for the cointegration tests raise west German money by 12.9 percent in 1990Q4 and by 14.3 percent in the period 1970Q1-1990Q3; raise west German nominal GNP by 7.2 percent in 1990Q4 and by 8.3 percent in the period 1970Q1-1990Q3; and raise real GNP by 8.2 percent in 1990Q4 and by 9.2 percent in the period 1970Q1-1990Q3.

2. France

Broad Money (m): Average of end-month seasonally adjusted M3 stock.

Source: IFS statistics.

Income (y): Real GDP at 1980 prices. Seasonally adjusted.

Source: INSEE national accounts.

Long-term Interest rate (i): 10-year government yields.

Money market rate (im): 3-month interbank rate.

Source: International Financial Statistics (IFS).

Own rate (r0): The own rate on M3 is a weighted average (with weights based on average shares in M3) of the returns on: M1 (assumed zero); M2-M1 (proxied with the interest rate on "comptes sur livrets A ou bleus"; M3-M2 (proxied with the call money rate or "taux au jour le jour").

Source: IFS.

Prices (p): Consumer Price Index or GDP deflator.

Source: IFS.

3. Other ERM countries

Broad money (m): M3 data, harmonized in accordance with instructions from the Committee of EC Central Bank Governors, were obtained from national sources for Belgium, Denmark, and the Netherlands. Before December 1982, a series for money plus quasi-money (IFS), seasonally adjusted, was used in place of M3 for the Netherlands. For Luxembourg, time and savings deposits (IFS) were used. The series for the four countries plus Germany and France were aggregated using the central deutsche mark parities which have prevailed since January 1987.

Income (y): Annual GDP for Belgium/Luxembourg, Denmark, and the Netherlands, was interpolated to quarterly using as a guide series French real GDP. Series were aggregated as for M3.

Source: World Economic Outlook.

Prices (p): Consumer price index or GDP deflator for Belgium, Denmark, Luxembourg, and the Netherlands were aggregated using shares of GDP in 1987.

Source: IFS.

Money market rates (im): Short-term rates.

Source: IFS.

Technical Details Concerning Estimation Results

1. Cointegration analysis

Two techniques are used to test for cointegration: the two-step procedure of Engle and Granger (1987), in which ordinary least squares are used in the first step to estimate the long-run equation, and the residuals are tested for stationarity; and the maximum-likelihood Johansen procedure (Johansen, 1988; Johansen and Juselius, 1990) in which a vector autoregression is estimated with the cross-equation restrictions implied by one or more cointegrating vectors; the existence of such vectors is examined using tests on the eigenvalues of the VAR adjustment matrix (see Table 1, Appendix II).

In the two-step procedure, stationarity of residuals is tested using either the Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1981) or Phillips-Perron (PP) test (Phillips, 1987; Phillips and Perron, 1988). The PP test differs from the ADF test in the treatment of serial correlation in the noise process. Specifically, the PP test corrects for serial correlation by adding to the original unit root test statistic a correction factor that eliminates the dependency of the asymptotic distribution on the serial correlation of the noise function. The PP approach is nonparametric with respect to noise parameters and has more power than the ADF test for models with moving average errors and positive serial correlation. However, when a parametric correction is needed, the PP test may be less reliable than the ADF test.

In the Johansen tests reported in the paper, a constant and three lags of each variable are included in estimation of the VAR.

2. Diagnostic tests

The dynamic equations were subjected to a number of tests to see whether they had satisfactory properties (see Table 4, Appendix II). The tests are described in Spanos (1986).

- Lagrange multiplier tests for first-order or first to fourth-order serial correlation. The test statistic is distributed as $F(1, n-2)$ or $F(4, n-8)$ where n = the number of time periods minus explanatory variables.
- Autoregressive conditional heteroscedasticity (ARCH) test for errors whose variance obeys first-order serial correlation. Distributed as $F(1, n)$.
- Normality test for excess skewness and kurtosis relative to a normal distribution. Distributed as $\chi^2(2)$.
- RESET test for linearity (includes powers of explanatory variables). Distributed as $F(4, n-4)$.

- Hendry test for forecast stability. Distributed as $\chi^2(p)$, where p = number of forecast periods.

3. Aggregation tests

In connection with SUR estimation of a common money demand equation for France, Germany, and the Benelux-Denmark group the restrictions of common parameters were tested. The null hypothesis is that all coefficients (except the constant term) are the same across all three equations. The test statistic is a standard F test of linear restrictions using the residual sum of squares added across the three equations. The numerator degrees of freedom are the number of restrictions implied by equal coefficients; the denominator degrees of freedom are the number of observations minus parameters in the unrestricted version. The value of test statistics for equation (9) in the text was 1.80, compared to a critical value of 1.83.

4. Conditional linear feedback tests

The conditional feedback test differs from the Granger test in that it includes leads and lags augmented with lagged dependent variables, in order to correct for the residual serial correlation that is likely to occur with one-sided tests (Geweke, 1982). A two-sided distributed lag of money growth on inflation is estimated for both France and Germany, and the exclusion of leads of money growth is tested. This provides a test of whether the particular monetary aggregate has predictive power or not (see Table 5, Appendix II).

Table 1. France: Estimates of Long-Run Money Demand Relationship
(1978Q2-1990Q2)
(t - ratios in parentheses)

	CPI Deflator	CPI Deflator	GDP Deflator	GDP Deflator
<u>(Two-Step Procedure)</u>				
Constant	-2.1	-1.3	-5.3	-4.9
y_t	0.85 (11.2)	0.74 (14.8)	1.26 (38.8)	1.21 (56.2)
$im_t - r_{0t}$	-0.016 (-5.9)	--	-0.008 (-4.9)	--
$i_t - r_{0t}$	--	-0.023 (-10.7)	--	-0.011 (-7.7)
R^2	0.84	0.90	0.97	0.98
SER	0.028	0.028	0.018	0.015
ADF	-1.65	-1.50	-2.50	-3.02
PP	-1.34	-1.34	-2.52	-2.87
<u>(Johansen Procedure)</u>				
Constant	-5.8	-3.6	-7.1	-5.5
y_t	1.46	1.09	1.56	1.31
$im_t - r_{0t}$	-0.039	--	-0.026	--
$i_t - r_{0t}$	--	-0.023	--	-0.014
Null Hypothesis				
$r = 0$ (34.9) <u>1/</u>	37.2**	40.3**	29.8	36.3**
$r \leq 1$ (20.0) <u>1/</u>	20.2**	22.4**	14.6	20.1**
$r \leq 2$ (9.2) <u>1/</u>	7.4*	7.0	4.3	6.4
No. of cointegrating vectors	2	2	--	2

1/ Critical values at the 5 percent level are in parentheses.

* Null hypothesis rejected at 10 percent significance level.

** Null hypothesis rejected at 5 percent significance level.

Table 2. Germany: Estimates of Long-Run Money Demand Relationship
(1978Q2-1990Q2)
(t - ratios in parentheses)

	CPI Deflator	CPI Deflator	GDP Deflator	GDP Deflator
<u>(Two-Step Procedure)</u>				
Constant	-8.5	-8.6	-7.2	-7.3
y_t	1.71 (31.3)	1.74 (27.3)	1.52 (31.8)	1.54 (27.4)
$im_t - r_{0t}$	-0.011 (-4.7)	--	-0.009 (-4.4)	--
$i_t - r_{0t}$	--	-0.016 (-4.7)	--	-0.0068 (-0.9)
R^2	0.96	0.94	0.96	0.94
SER	0.026	0.300	0.022	0.027
ADF	-2.66	-3.50**	-2.27	-2.50
PP	-2.56	-2.50	-2.67	-2.23
<u>(Johansen Procedure)</u>				
Constant	-16.6	-3.2	-1.1	-8.6
y_t	3.12	0.92	1.17	1.66
$im_t - r_{0t}$	-0.136	--	-0.547	--
$i_t - r_{0t}$	--	-0.090	--	0.080
Null Hypothesis				
$r = 0$ (34.9) <u>1/</u>	50.0**	40.0**	54.0**	53.0**
$r \leq 1$ (20.0) <u>1/</u>	8.0	18.7*	11.3	18.1 *
$r \leq 2$ (9.2) <u>1/</u>	2.4	3.9	2.6	2.7
No. of cointegrating vectors	1	1	1	1

1/ Critical values at the 5 percent level are in parentheses.

* Null hypothesis rejected at 10 percent significance level.

** Null hypothesis rejected at 5 percent significance level.

Table 3. Core ERM Countries: Estimates of Long-Run
Money Demand Relationship (1982Q2-1990Q2)
(t - ratios in parentheses)

	CPI Deflator	CPI Deflator	GDP Deflator	GDP Deflator
<u>(Two-Step Procedure)</u>				
Constant	-12.1	-11.6	-9.5	-9.1
y_t	1.94 (34.5)	1.88 (20.0)	1.62 (48.3)	1.58 (30.6)
$im_t - r_{0t}$	-0.017	--	-0.008 (-4.0)	--
$i_t - r_{0t}$	--	-0.012 (-2.5)	--	-0.007 (-2.6)
R^2	0.98	0.97	0.99	0.99
SER	0.017	0.020	0.001	0.011
ADF	-2.70	-2.18	-3.20	-2.30
PP	-3.07	-2.16	-3.77*	-3.00
<u>(Johansen Procedure)</u>				
Constant	-12.9	-7.7	-7.9	-5.4
y_t	2.06	1.38	1.42	1.08
$im_t - r_{0t}$	-0.046	--	-0.011	--
$i_t - r_{0t}$	--	-0.005	--	-0.0002
Null Hypothesis				
$r = 0$ (34.9) <u>1/</u>	46.1**	42.7**	36.2**	45.4**
$r \leq 1$ (20.0) <u>1/</u>	14.4	19.9*	20.9**	14.1
$r \leq 2$ (9.2) <u>1/</u>	4.1	5.6	7.2	2.5
No. of cointegrating vectors	1	1	2	1

1/ Critical values at the 5 percent level are in parentheses.

* Null hypothesis rejected at 10 percent significance level.

** Null hypothesis rejected at 5 percent significance level.

Table 4. Diagnostic Statistics 1/ for Dynamic Money Demand Equations

	France 1979Q2-1990Q2	Germany 1979Q2-1990Q2	Core ERM 1983Q4-1990Q2
Serial correlation <u>2/</u>			
First order	1.27	0.23	0.28
Lags 1-4	0.61	2.07	0.74
ARCH (1) test for heteroscedasticity	0.30	3.0	0.59
Normality test <u>3/</u>	3.06	0.26	1.02
RESET (4) test for linearity	3.14 *	0.26	0.59
Forecast stability <u>4/</u>	20.20 *	17.80 *	--

1/ All statistics are in F form unless otherwise mentioned. Test statistics exceed 5 percent critical values only when starred.

2/ Lagrange multiplier test.

3/ Jacque-Bera test, distributed as chi-square with 2 degrees of freedom.

4/ Out of sample forecast for 1990Q3-1992Q3. Distributed as chi-square with 9 degrees of freedom.

Table 5. Conditional Feedback Tests of
Effects of Money on Inflation

	<u>Inflation in:</u>	
	France	Germany
<u>(1979Q1-1990Q2)</u>		
French money growth	3.90 **	1.14
German money growth	2.26	3.22 *
<u>(1983Q1-1990Q2)</u>		
French money growth	6.00 **	3.36 *
German money growth	4.80 **	2.72 *
ERM money growth ^{1/}	2.79 *	2.79 *

The table reports the F-statistics for excluding the variable. A single asterisk indicates that the variable is significant at the 10 percent level. A double asterisk indicates that the variable is significant at the 5 percent level.

^{1/} The ERM money supply growth excludes the growth of the domestic money supply.

Core-ERM Money Demand Aggregate Using Central Parities

A long-run money demand equation for the aggregate constructed using central parities prevailing since January 1987, was estimated for the period 1980Q4 through 1992Q3: ^{1/}

$$(m_t - p_t) = -9.57 + 1.85 y_t - .010 (im_t - r_{0t}) \quad (A1)$$

This long-run equation is similar to the one obtained with PPP weights over the shorter sample: it has a fairly high long-run income elasticity (1.85) and a reasonable interest semi-elasticity (1.0). ^{2/} However, the evidence of cointegration is fairly weak, since the significance of the ADF test statistic (3.15) is borderline.

Therefore, instead of a two-step procedure, one-step estimation was performed in which lagged levels of the variables in the long-run equation were included directly in a short-run dynamic equation, along with differences of these variables, in order to see if there was significant error-correction feedback when the long-run money demand was estimated directly. The best specification of this dynamic equation was the following equation, in which the dependent variable is the change in nominal money:

$$\begin{aligned} \Delta m_t = & \quad -.35 \Delta m_{t-3} + .201 \Delta y_{t-2} \\ & \quad (.14) \quad (.093) \\ & - .024 m_{t-1} + .015 y_{t-1} - .00037 (im_{t-1} - r_{0t-1}) \\ & \quad (.006) \quad (.003) \quad (.00038) \end{aligned} \quad (A2)$$

$R^2 = .96 \quad SER = .0042 \quad DW = 2.26$

This error-correction specification implies results that are broadly consistent with those of the long-run equation--with the major exception that the coefficients on the levels of money and income imply an income elasticity of money demand (0.63) that is much lower than in equation (9). The German interest rate enters the dynamic equation only through the error-correction component; its coefficient is of the same order of magnitude as in equation (9), but is not statistically significant. The dynamic equation

^{1/} A larger series for M3 was created by extending the Netherlands data bank before 1982, and adjusting post 1990 German data for unification (see Annex I). The longer sample period was used in order to maximize the number of observations since the beginning of 1987--most relevant given the central parities used.

^{2/} If only the 1987Q1-1992Q3 period is used in estimation, the estimated coefficients on the real income and interest rate variables are 1.19 and 0.002, respectively.

passes all of the specification tests including out-of-sample forecasts when the equation was re-estimated stopping at 1990Q2 and used to forecast 1990Q3-1992Q3, with the exception of the test for autoregressive conditional heteroscedasticity.

IV. The Taxation of Returns from Personal Savings in France 1/

1. Introduction

This paper examines developments in France's financial system since the mid-1980's and their implications for the system of taxation of returns from saving. 2/ It will argue that the system is in need of a general review. The original approach to taxation of returns from saving has been overtaken by events, in particular by financial and capital liberalization and European financial market integration, and there has not been a systematic review of its goals and how they might be achieved. Instead, a number of specific taxation provisions have been introduced in a piecemeal fashion and without regard to changing financial circumstances, and have accumulated as a system that is both overly complicated and frustrating of its original (and subsequent) objectives. 3/ In addition, these provisions have severely reduced the revenues generated from the taxation of returns from saving without, at the same time, significantly increasing the overall incentive to save. The paper outlines a general perspective that might be adopted in a review of the system and makes some specific policy recommendations.

A simple cross-country comparison reveals that the French system of taxation of returns from saving is subject to a greater range of exemptions and specific provisions than others. 4/ Many of these provisions existed prior to financial liberalization of internal markets in the mid-1980s, and capital liberalization and European market integration after 1989, and are outdated. However, rather than overhaul the system, continued attempts to pursue a set of allocational goals through a system of differential tax treatment between financial instruments led to further exemptions in later years. The paper will assess the combined impact of these exemptions in terms of achieving the overall goals of the system. In this sense, it will examine whether there has been an optimal response to a changing financial environment--has the system adapted appropriately to the additional constraints imposed by global financial developments? Has it adapted such that the existing structure of the system is consistent with its professed goals?

1/ Prepared by Gary O'Callaghan.

2/ More specifically, the types of return to saving principally considered are deposit interest, interest on bonds, dividend income and capital gains on share investments.

3/ The system of taxation of savings in France was recently described by a prominent French banker as "defying logic" (Le Monde, 1993).

4/ While such observations are instructive, the value of cross-country comparisons of systems of taxation of returns from savings can be limited, and can lead to assessments that are less than conclusive. This is because financial and capital taxation systems across countries differ with the perceived goals of domestic policies (King and Fullerton, 1984, pp. 307 et seq.).

The summary review conducted here suggests three broad conclusions: First, the system as now constituted has some perverse effects which actually frustrate one of the policy goals--the goal of redistributing savings toward certain financial instruments. Second, attempts to reallocate toward specific instruments, by way of offering fiscal advantages, will be more distortionary in a liberalized financial system and are less likely to be successful in promoting the second goal of policy which is to foster an increase in aggregate savings. The third conclusion is that, not only would a uniform taxation system be preferable in a liberalized financial setting, it would also reduce channels for tax avoidance and either lead to increased taxation revenues at existing rates or allow a general reduction of tax rates. The combination of the second and third conclusions would suggest that a uniform system would improve the trade-off between tax revenues and fiscal incentives aimed at increasing saving. ^{1/}

These arguments, among others, are presented in more detail (in section 4) after a brief description of the development of the French system of taxation of returns from saving has been presented (in section 2) and the present system has been described (in section 3) and compared with those of other G7 countries. Section 5 offers some conclusions and specific policy recommendations.

2. The evolution of the current French system

Two objectives have been associated with the system of taxation of returns from saving in France: to increase the overall level of savings by offering tax advantages; and to use tax advantages as a means of reallocating savings towards specific instruments and uses (*Echanges*, 1993). Prior to financial liberalization in the mid 1980's this was attempted in the context of a banking system which was heavily regulated. Interest was (and is still) not permitted on checkable sight deposits, and most other savings instruments earned interest at regulated rates which were, for long periods, unchanged.

^{1/} A general assessment of the optimal level of taxation of returns from saving, at an aggregate level, would be of limited value in the context of this review. Studies such as Razin and Sadka (1989 and 1990) have analyzed the optimal response to financial and capital market liberalization in terms of adjusting the aggregate level of taxation. However, taxation systems (and especially the French system) are seldom defined by uniform aggregate taxation rates and provisions. Also, domestic financial assets will typically differ in range and attributes and are not perfect substitutes for one another or for foreign instruments (Mintz, 1990, pp. 355 et seq.). For these reasons, it is deemed more appropriate to examine whether the composition of the system has adapted in a manner that is consistent with its goals, and the question of whether aggregate rates should be higher or lower is not addressed.

Until 1985, some 70 percent of the broadest (non-checkable and non-currency) liquidity measure (L-M1) was comprised of savings instruments at regulated rates (see Chart 1). M2-M1, which was comprised of interest-bearing non-checkable sight deposits and non-checkable passbook savings accounts, made up almost 60 percent of L-M1 and all of the funds in M2-M1 were at regulated rates. In addition, virtually all of L-M3 was composed of contractual savings which were also subject to regulated interest rates. Only the term deposits in M3-M2 earned interest at rates that were flexible and non-regulated.

Under the earlier system, with interest rates heavily regulated, many fiscal incentives were offered to specific savings instruments in order to allocate savings among alternative uses. This also meant that there was an incentive to allocate funds to specific financial institutions which offered these instruments. In 1984, less than one fifth of M2-M1 was subject to taxation while virtually all of L-M3 was comprised of instruments that were exempt from taxation. In 1985 taxation of income from financial capital reached an historic high at some 0.72 percent of GDP and 8.8 percent of central government direct taxation (Ministère de l'Economie et des Finances, 1992).

From 1985 on, funds flowed increasingly into a range of newly created financial instruments and, in particular, certificates of deposit included in M3-M2 and treasury bonds and bills included in L-M3. By 1988, the proportion of M2-M1 in L-M1 had fallen below 45 percent, with M3-M2 having increased its proportion to 35 percent, and most of the funds that contributed to a doubling of the proportion of L-M3 (to 20 percent) were also at flexible interest rates. Clearly there had been a fundamental change in the French financial system, with more funds assigned to instruments at flexible interest rates, and this was compounded by increased European financial integration and the ability of capital to flow across borders following capital liberalization in 1989-90.

In 1989, the withholding tax rate on interest from savings deposits was reduced from 45 percent to 35 percent and the withholding tax rate on income from most bonds and commercial paper was reduced from 25 to 15 percent. In addition, the taxation of life insurance benefits was virtually abolished. These reforms were enacted in preparation for capital liberalization and the integration of markets for financial services in Europe and were prompted by an attempt to bring basic rates in line with the rest of Europe. ^{1/} Also, the marketing of foreign mutual funds that capitalize the financial income received as a means of delaying taxation was permitted in Europe from October 1, 1989. This was expected to lead to a displacement of financial intermediation outside of France and, in response, French financial institutions were permitted to sell such instruments. These added

^{1/} Capital liberalization in Europe raised the prospect of competitive tax reductions in different countries, as they tried to attract foreign funds, but attempts at establishing a uniform withholding tax rate have not been successful to date. See Gardner (1992).

substantially to the proportion of savings in instruments at flexible interest rates, in particular money market mutual funds, because of relatively high short-term interest rates.

However, rather than overhaul the system in the light of these changed circumstances, the old practice of legislating fiscal preferences for different types of savings was extended through a series of stop-gap measures. Furthermore, these have been adopted over the years without full consideration of their overall impact. A number of additional tax exempt instruments were created in response to the increase in money market mutual funds, for example, in an attempt to lengthen the maturity of savings, and these are described in detail below. However, innovations aimed at securing a particular objective have often led to results which conflicted with earlier objectives, and have resulted in the introduction of successive stop-gap measures to rectify the resulting distortions.

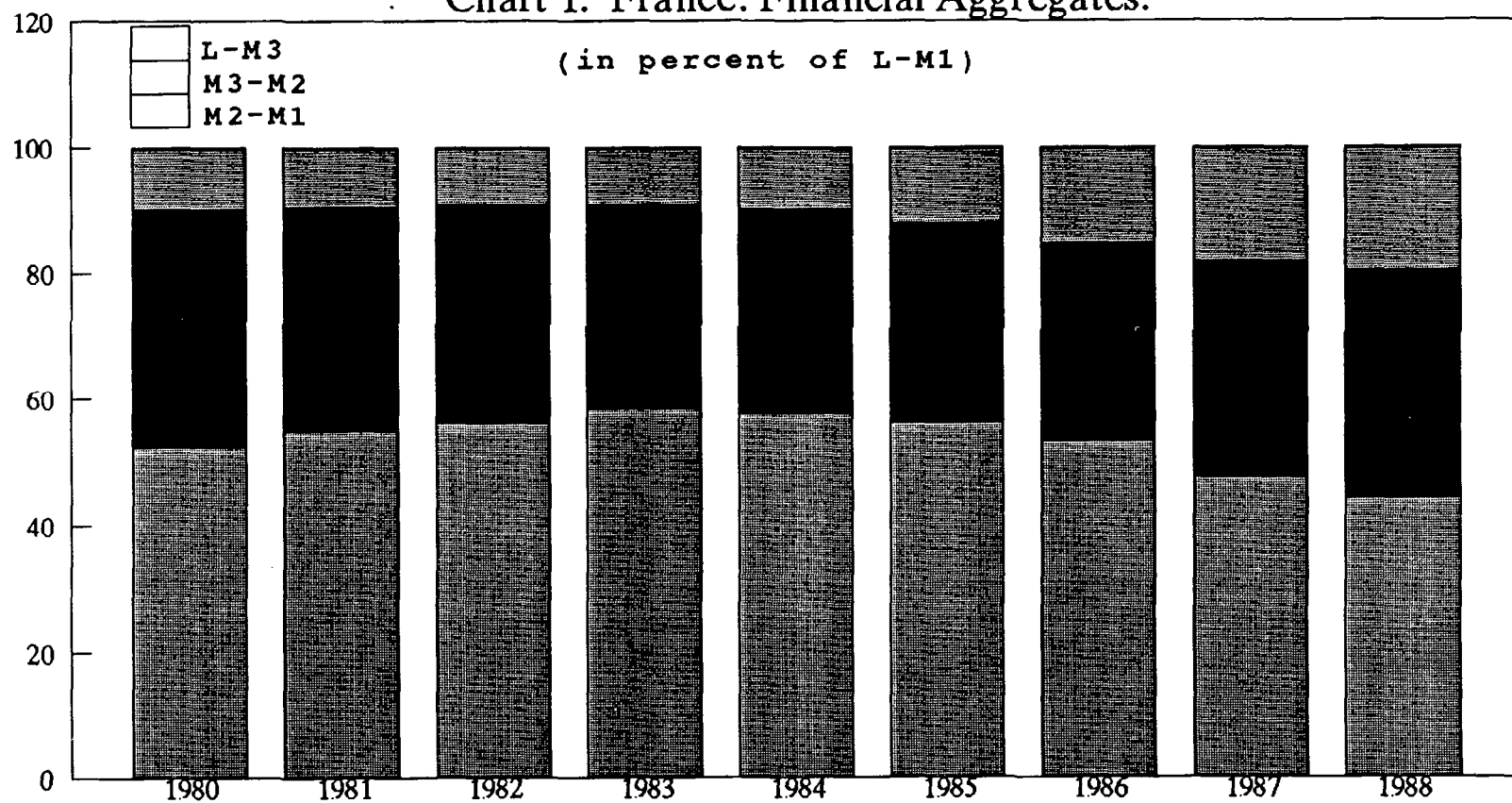
These developments also contributed substantially to an increase in the proportion of savings assigned to tax-free financial instruments. By the end of 1992, two-thirds of the (newly defined) broad financial aggregate P2-M1 was free of taxation (Chart 2). ^{1/} This compares with 40 percent in 1988. In addition, tax revenues from earnings on financial capital had halved, to 0.32 percent of GDP (from 0.62 percent) and 4.1 percent of direct taxation (from 7.7 percent).

3. Taxation systems in France and other G7 countries

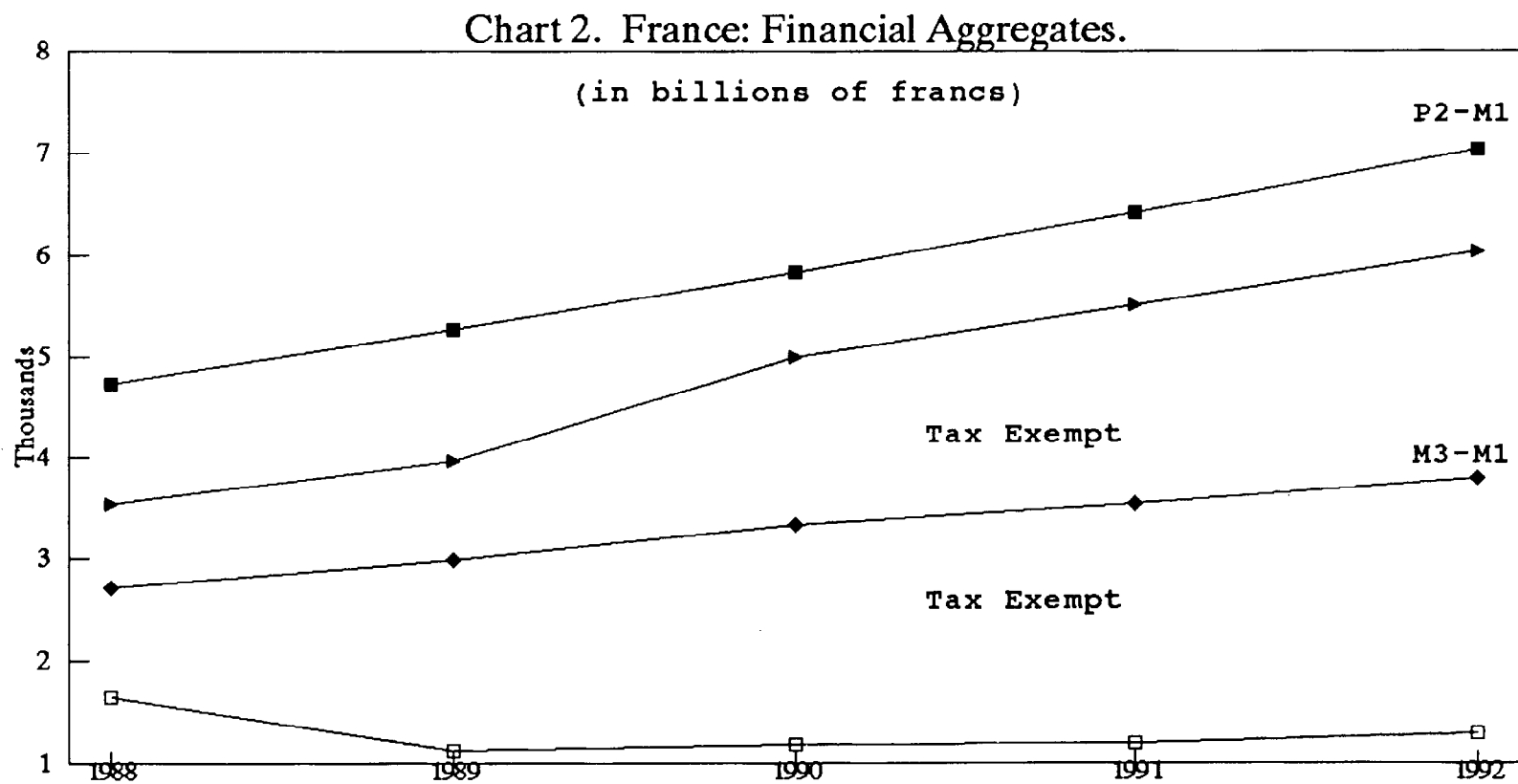
There are a number of salient features of the French system of expenditure and taxation which stand out from other G7 countries (see Table 1). First, the levels of government revenues and expenditure are among the highest, each being 8-10 percentage points of GDP above average. Second, the relative incidence of taxation on labor income is the highest among the G7 while the incidence of taxation on other income, including returns from saving, is lowest. Further examination of the structure of taxation reveals two important features: (i) taxes raised on labor income include the highest proportion of employer contributions, and the second highest contribution rates (OECD, 1991); and (ii) taxes raised via a general taxation system, which includes the taxation of other forms of income and returns from saving, are very low. The common element to these is that they both reflect a failure to extract taxes based on an individual's overall

^{1/} In addition to M3-M1 (as previously defined), P2-M1 comprises Treasury bills and certificates, commercial paper issued by non-financial companies, long-term contractual savings plans, bonds, most (i.e. non-equity) mutual funds and the compulsory reserves of insurance companies. Many of the tax-exemptions on financial instruments are limited to specified amounts (as will be described below) and Chart 2 is constructed on the basis that these limits are not exceeded.

Chart 1. France: Financial Aggregates.



Source: Banque de France, Bulletin Trimestriel (various issues).



Source: Banque de France, Bulletin Trimestriel (various issues).

Table 1. G7: General Government Revenues and expenditure in 1990
(In percent of GDP).

	France	Other G7 <u>1/</u>	West Germany	UK	US	Canada	Italy	Japan
General government revenues	48.8	38.9	40.5	39.3	33.3	43.2	42.7	34.7
General government expenditure	50.2	41.9	42.3	40.6	35.7	47.3	53.6	31.8
Social protection expenditure <u>2/</u>	26.0	18.9	24.9	20.3	14.8	18.6	23.4	11.6
Memorandum items:								
1. Structure of taxation (in percent of total)								
Labor income	46.1	26.7	36.8	17.5	29.5	14.2	33.2	29.2
o/w Employer contributions	27.3	15.6	18.8	10.0	16.6	9.7	23.6	15.2
Other personal income	11.8	30.9	27.4	28.4	35.8	40.8	26.3	26.8
Consumption	28.2	23.8	27.4	30.4	16.5	27.4	28.0	13.2
Property	5.2	7.1	3.3	8.4	10.8	9.0	2.3	9.0
Corporate income	5.4	10.4	4.7	11.0	7.3	7.5	10.2	21.5
Other	3.3	1.0	0.4	4.3	0.0	1.2	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2. Present value of accrued pension rights - Net liabilities	216	152	157	156	89	121	242	145

Sources: Revenues and expenditure - IMF (1993); Structure of taxation and pension liabilities - OECD (1992).

1/ Non-weighted average of G7 excluding France.

2/ Source: OECD (1992); for EC, data for 1988.

ability to pay and put a commensurately higher burden on purely labor income. ^{1/} This contention is supported by Kopits (1992, Chart 2).

The other notable feature of Table 1 is the extent of unfunded liabilities to workers in the form of accrued pension rights in France. These are second highest (to Italy) among the G7 and imply an alarming future burden on a taxation system which already places one of the highest burdens on an economy in the G7. Given the present structure of the tax system, with its relatively heavy reliance on taxes on labor income, this implies a growing taxation wedge on labor unless reforms to the system are coupled with a movement toward a more generalized, and broad based, taxation system.

a. The structure of taxation in France and the G7

Aside from specific exemptions, the taxation of returns from saving is first affected by the overall structure of the taxation system. In this regard, France does not at first appear to be exceptional (Table 2). Dividend, interest and capital gains taxes are included with other sources of income in the general taxation system, but this is subject to the exception that residents can opt for a final withholding tax on interest income. This also applies to the Italian system and Japan excludes interest income from the general taxation system completely. In France, savers are allowed to choose the lower of the final withholding tax on interest or the marginal liability from the general taxation system and this is an element of preferential treatment for interest income. Dividend income is allowed a fifty percent credit for corporate taxes paid, unlike in other countries, but is thereafter subjected to the marginal income tax rate. Capital gains are disadvantaged by being taxed at the marginal income tax rate and being allowed no deductions.

The structure of taxation in France in 1991 is outlined in Table 3. The general structure of the system has not changed since then although some minor changes will be noted in the description that follows. Income tax (Impôt sur le Revenu) applies to income from employment, income from dividends and interest in excess of F 8,000 per year (unless a final withholding tax is opted for, see below), pension income and capital gains on the sale of assets for more than F 20,000 (unless a "substantial interest" is held and a flat rate is applied, see below). Social security payments are deductible from taxable employment income and supplementary contributions to other pension plans are deductible subject to certain limits. While the social surcharges (line 24) have not heretofore been

^{1/} While these data are an indication of the extent of the reliance on labor income, to the exclusion of income from savings and other sources, a complete review of the taxation systems involved will be required in order to fully establish this point. This is because the OECD data cited involve broad categories which will, for some countries, include some taxation on labor with "other personal income."

Table 2. G7: Taxation Systems, 1991 ^{1/}

	France	U.K.	Germany	Italy	U.S.	Canada	Japan
Included with other income							
Dividends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interest	Yes	Yes	Yes	Yes	Yes	Yes	No
Capital gains	Yes ^{2/}	Yes	Short-term ^{3/}	Yes ^{4/}	Yes	75	Yes
Pension income	90	Yes	60	Yes	Yes	17	No
Deductions/Allowances							
Dividends ^{5/}	50	No	DM 600	No	No	No	Limited
Interest	F 8,000 ^{6/}	No	DM 600	No	No	No	...
Capital gains	No	Various	DM 1,000	No	No	C\$ 10,000 ^{7/}	Y 500,000 ^{8/}
Withholding taxes on interest							
Residents	15-50 ^{9/}	25	25	25	No	No	20
Final	Yes	No	No	Yes	...	...	Yes
Non-residents	0-35	0-25	0-25	0-30	0-30	25	15-20
Other deductions/credits							
Pension payments							
Government social security	Yes	No	Limited	Limited	No	17	100
Private pension scheme	Yes	15-40 ^{10/}	No	Limited	No	17	No
Life insurance	25	No	Limited	L 2.5 mn.	No	No	Yes
Mortgage interest	25	Yes ^{11/}	Rental only	L 7.0 mn.	Yes	No	No

Sources: Compiled from IBFD (1992) and PW (1992).

^{1/} Unless otherwise specified, numerical values are in percent.^{2/} Substantial capital gains (exceeding F 316,900) are taxable at a fixed rate of 16 percent.^{3/} Long-term gains on significant interests (25%) may be taxed.^{4/} Capital gains on shares are taxed at a flat rate of 25 percent.^{5/} In addition to an allowance for corporate taxes paid.^{6/} Applicable to both.^{7/} Lifetime exemption.^{8/} Gains on long-term assets (5 years) receive 50 percent deduction. Some gains taxed at flat rate of 25 percent.^{9/} Optional.^{10/} Percent of total income.^{11/} On loans up to Stg. 30,000.

| Signifies combined deduction.

Table 3. Personal Taxation Calculation, 1991

1	Employment income	
2	less: Social security payments	
3	Subtotal	(1 - 2)
4	Dividends and qualifying interest income	
5	less: Exemption	First F 8,000
6	Subtotal	(4 - 5)
7	Capital gains on a non-substantial interest in shares or bonds 1/	
8	Pension income	
9	less: Exemption	10 percent of (8)
10	Subtotal	(8 - 9)
11	Total	(3 + 6 + 7 + 10)
12	Income tax (<u>Impôt sur le Revenu</u>)	Calculated on (11)
13	less: Deductions:	(14 + 15)
14	Mortgage interest	25 percent of interest
15	Life insurance credit	25 percent of premium up to F 1,000
16	Sub-total	(12 - 13)
17	Capital gains tax on a substantial interest in shares and bonds 1/	16 percent
18	Sub-total	(16 + 17)
19	less: <u>Minoration</u>	0-11 percent of (18) depending on level
20	less: Dividend tax credit (<u>Avoir fiscal</u>)	50 percent of dividends
21	less: Investment credit	25 percent of investment up to F 2,500
22	Sub-total	(18 - 19 - 20 - 21)
23	Final withholding tax (<u>Prélèvement libératoire</u>)	15 to 50 percent of interest depending on debt instrument
24	Social surcharges:	(25 + 26 + 27)
25	<u>Contribution Sociale Généralisée</u>	1.1 percent on all income and capital gains
26	Complementary contribution	1 percent on all income
27	Social tax	1 percent on all income and capital gains
28	Total	(22 + 23 + 24)

Source: Compiled from IBFD (1992) and FW (1992).

1/ A substantial interest exists when transactions exceed F 316,900 per year or the taxpayer holds 25 percent or more of the shares.

deductible, an increase in the Contribution Sociale Généralisée (CSG) in July 1993, to 2.4 percent from 1.1 percent, was made deductible.

The top marginal income tax rate is 57 percent. However, this will not apply to most interest income because the tax-payer may elect to be taxed at a final flat rate (prélèvement libératoire, line 23) which depends on the instrument involved. The rates range from 15 percent on bonds or other negotiable instruments, to 35 percent on interest from savings deposits, and 35-50 percent on interest from short-term claims on certain institutions (bons du trésor or bons de caisse). Income from foreign securities is generally only taxable at graduated rates. Dividend income receives a tax credit of 50 percent of the income received (the avoir fiscal, line 20) in order to fully compensate for corporate taxes paid by the company (at the corporate tax rate of 34 percent).

Capital gains on securities representing a substantial interest (when aggregate transactions in securities exceed F 316,900 a year or the taxpayer holds 25 percent or more of the shares) are taxed separately from income and subject to a 16 percent flat rate (line 17). Capital gains arising from the sale of real property are taxable at a rate which declines with the length of time for which the asset was held. The sale of a principal residence is tax exempt. There is also a 0.6 percent habitation tax on income which is withheld to benefit local authorities and a wealth tax of 0.5-1.5 percent is imposed on wealth exceeding F 4,390,000.

b. Exemptions from taxation of returns from saving

Exemptions from taxation of returns from saving are far more extensive in France than in other G7 countries. Where there are exemptions in other systems these generally apply to government savings instruments, where the funds are at the disposal of the government, rather than to instruments in private institutions. The brief list of exemptions for the other G7 countries is presented in Appendix I and should be compared with the following description of the extensive system of exemptions in France.

In addition to the general exemption on interest and dividend income (of F 8,000) mentioned above, and the avoir fiscal on dividend income, there is a range of deposit interest income which is completely tax exempt (including from the social surcharges, line 24 of Table 3). The principal instruments are listed in Table 4, where the instrument is defined, and the maximum interest income or deposit which is free of taxation is noted. 1/ The relative magnitudes of the funds invested in the various instruments at end-1992 are also supplied and some additional provisions are noted.

The Livrets A and Bleu are designed to reallocate funds, via a government credit agency, to some socially desirable function. They each paid an interest rate of 4.50 percent at end-1991. Comptes and Plans

1/ In addition to the instruments listed in Table 4, a number of government bond issues have, from time to time, been exempted from taxation.

Table 4. Tax-free Savings Instruments and Financial Aggregates, 1992

Monetary Aggregate	Tax-free Instrument	Interest Rate	Ceiling (F,000)	Holding Period	Balance (F bn.)	Percent of Aggregate	Growth Rate (percent) ^{1/}	Remarks
M2-M1:					1202.1	100.0	-3.0	
	Livrets A et Bleus	4.5	100.0	...	738.4	61.4	-3.9	Ordinary deposit accounts have similar rates.
	Livrets CODEVI	4.5	15.0	...	91.9	7.6	2.1	Funds to benefit PMEs.
	Comptes d'épargne logement	4.0	150.0	1.5	125.0	10.4	4.2	After 1 1/2 years gain right to low interest mortgage. Some interest paid by state.
	Livrets d'épargne populaire	5.5	100.0	...	75.0	6.2	...	Only low income persons.
M3-M2:					2589.8	100.0	12.5	
	OPCVM (money market funds)	...	325.8	...	1482.3	57.2	14.3	Ceiling halved from January 1, 1993.
M4-M3:					55.1	100.0	12.2	
P1 (Housing savings plans):					1044.2	100.0	13.9	
	Livrets d'épargne entreprise (LEE)	5.5			0.6	0.1	-26.7	
	Plan d'épargne-logement (PEL)	6.0	400.0	4.0	482.5	46.2	4.3	After four years gain right to low interest mortgage. Some interest paid by state.
	Plan d'épargne populaire (PEP)	...	600.0	8.0	274.2	26.3	38.3	To encourage long-term savings but can borrow against.
	- Insurance Co.				57.2	5.5	35.5	
	- Banks				217.0	20.8	39.1	
P2 (Bonds):					2138.0	100.0	12.0	
	Life Insurance Reserves	...	...	...	918.0	42.9	19.3	Tax deduction of 25% of annuity up to F 4000.
	OPCVM (Bonds)	...	325.8	...	545.0	25.5	6.5	
P3 (Shares):					11115.0	100.0	1.6	
	OPCVM (Shares)	...	325.8	...	195.0	1.8	-2.0	
	Plan d'épargne en Actions (PEA)	...	600.0	6.0	...	...	...	Introduced at end 1992.
<u>Memorandum items:</u>								
Percent of aggregates exempt from taxation ^{2/}								
P3 - M1					26.1			
P2 - M1					64.7			

Source: Banque de France, Annual Report 1992.^{1/} Nominal growth in 1992.^{2/} Assuming 80 percent of life insurance tax-free.

d'Epargne Logement are intended to encourage saving for housing and offer rates ranging from 2.75-6.00 percent.

CODEVI accounts (Comptes pour le Développement Industriel) were created with the objective of providing financial and tax incentives for small and medium-sized firms (PMEs). They are special tax exempt accounts, which pay a fixed interest rate (4.50 percent at end-1991), and whose funds are reserved for loans to PMEs. In August, 1991 the ceiling on deposits was raised to F 15,000 (from F 10,000), and the rate of interest charged to PME's was lowered to 8.75 percent (from 9.25 percent).

Mutual funds or OPCVM (Organismes de Placements Collectifs en Valeurs Mobilières) comprising Sicav (Sociétés d'Investissement à Capital Fixe) and FCPs (Fonds Commun de Placement), have been established and exonerated from taxes on income earned since January 1989. Tax-free withdrawals are limited to F 325,800 per year (at end-1992). High money market rates have led to a substantial increase in money market mutual funds, which reached F 1,300 billion in April 1993 (from about half that level at the beginning of 1990), and the tax-free limit (on withdrawals from money market funds only) was halved as of January 1, 1993. ^{1/} Withdrawals beyond the ceiling are taxable at the 15 percent flat rate (on negotiable securities) plus the three social taxes (including the CSG).

The substantial increase in money market mutual funds led to a concern that there had been a substitution of short-term for long-term savings. In response, a tax-free deposit at savings institutions (the PEP or Plan d'Epargne Populaire) was introduced in 1990 to encourage long-term savings, but this meant that dividend income was then at a disadvantage. To rectify this, PEA (Plan d'Epargne en Actions) mutual funds were introduced with similar incentives for share investment in 1992.

PEP accounts were introduced on January 1, 1990 (to replace an old age saving scheme) and experienced substantial growth in 1992. They are offered by (approved) banks and insurance companies only and the funds cannot be withdrawn for 8 years (an account can only be open for 10 years). They were designed to promote long-term saving, earning an annual interest rate of 5.50 percent at end-1991 (which was subsequently raised to 9 percent), and the maximum deposit is F 600,000 (or double for a married couple).

PEA mutual funds were introduced in October, 1992 and were designed to encourage savings in shares. They are limited to F 600,000 per individual (or F 1.2 million per household) and are held with (approved) institutions. They are exempt from taxation on dividends and capital gains if held for 6 years and cannot be held for more than 8 years. They were intended to "level the playing field" because the PEP had changed the incentive structure away from investment in shares.

^{1/} This limit will not apply, however, to funds transferred to specified long-term mutual funds or invested in bonds to finance privatization (Bons Ballardur) before end-1993.

The combination of the measures outlined above allows investors in France to avoid virtually any taxation on returns from saving. However, as is demonstrated in section 4, the system is unlikely to be successful in achieving its goals and a general review of those goals, and the manner in which they might be achieved, is warranted.

4. A general review of the system of taxation of returns from saving

A few general points regarding the overall structure of the system, and the effect of changing financial circumstance, are warranted before the effect of exemptions for specific instruments is examined.

a. Overall taxation of returns from saving

The application of a final withholding tax on resident interest income is also found in three other European countries--Belgium, Greece and Portugal (Gardner, 1992, p.60). There are two aspects to the process of capital liberalization and financial market integration in Europe which have severely constrained individual countries in levying taxes on interest income of resident individuals and prompted the introduction of final withholding taxes. First, the ability of funds to flow across borders without detection has been eased and it is more difficult to apply the residence principle of taxation whereby taxes are levied by the country of residence on an individual's global income. In these circumstances, an investor may only have to pay the foreign withholding tax on interest earned abroad and, unless there is a final withholding tax in the country of residence, resident investors will have to pay higher marginal income taxes at home. Unless there is an equivalent (or lower) withholding tax at home there will be an incentive for residents to invest abroad. The second problem is that, in the absence of harmonization of withholding tax rates on returns from saving across different countries, there may be competitive reductions of withholding tax rates as countries attempt to attract foreign funds. This would reduce the tax take for all countries (see Gardner, 1992).

France has responded by lowering withholding taxes but still has one of the higher withholding tax rates on interest income in Europe. However, the increasing reliance on tax exemptions may also have been a response to the fact that withholding taxes in some countries (most notably, Luxembourg) are set at zero. The efficacy of specific exemptions is examined below but, more broadly, agreement between EC countries on a minimum amount of withholding of tax or on the reporting by financial institutions would be desirable. 1/

With such considerations pertaining to interest income, and because capital gains and dividend income are taxed at marginal tax rates, interest

1/ The Belgian Prime Minister has recently indicated his intention to try to establish a universal withholding tax of 15 percent in Europe (L'Echo, 1993).

income receives a significant tax advantage over other forms of revenue from savings. Retained corporate earnings, which should ultimately produce a capital gain for individuals when shares are sold at a higher price, are effectively taxed at the marginal rate of taxation (unless a substantial interest is held) and this is a disincentive to investing in shares.

b. Effect of exemptions

Most studies of the taxation of returns from saving have been conducted at an aggregate level where an optimum uniform rate of taxation can, at least in theory, be determined. Taxing income from savings will generate revenue but will also reduce the availability of savings at any given interest rate and (by shifting a savings function inward) result in a reduction in capital accumulation and productive capacity. The optimum level of taxation will be determined in the context of this trade-off between tax revenue and productive capacity. It will also be influenced by similar decisions regarding the taxation of other bases (income, consumption and wages) which cause other distortions. Auerbach and Kotlikoff (1987), for example, examine such questions in a dynamic setting where overall welfare is maximized by limiting the distortions to economic growth that are caused by the combined rates of taxation.

There is a second (inter-related) level at which decisions regarding taxation of income from savings must be made, however, and this is the degree to which preferential tax treatment is given to specific sources of returns from saving. This is particularly applicable to France, given its wide range of tax exemptions, and these have become increasingly distortionary over time as the financial circumstances in which they were introduced have changed. A simple analytical model is presented in Appendix II and can be used to support four basic points relating to the adaptation of the French system of taxation of returns from saving to financial and capital liberalization.

First, the pressure of competition from foreign financial instruments (including SICAVs) bearing flexible interest rates has prompted the introduction of domestic competitors. These have been afforded similar tax exemptions to the pre-existing regulated instruments. Liberalized financial instruments bear higher interest rates but have lower non-pecuniary advantages such as acquired rights to mortgage financing or simple convenience. However, because the same system of tax advantages is applied to both, and because this alleviates taxes on interest income, it will actually serve to increase the relative incentive to invest in the (higher interest bearing) liberalized instruments. This obviously frustrates the original intention of offering tax exemptions to regulated instruments.

Second, to the extent that a system of tax advantages for regulated instruments still exists, but in a liberalized financial setting, this causes larger distortions to preferences than in the old system where tax advantages were assigned solely to certain regulated instruments. This is because the range of instruments available has increased. Also, because the new instruments (certificates of deposit, for example) generally bear higher

interest rates there will be increased incentives to incur transactions costs and switch between instruments in order to take advantage of tax breaks but then borrow against the regulated (and tax exempt) instrument. It is possible, for example, to use a PEP as collateral against a loan. More generally, a system of preferential tax incentives is not compatible with financial liberalization which allocates funds on the basis of market incentives.

Third, to the extent that one of the goals of policy is to encourage increased savings by providing tax incentives, a system of specific exemptions will increase the incentive to incur transactions costs (as outlined above) and these will commensurately reduce the overall increase in the return to saving provided by the tax exemption. This results in a worsening of the trade-off between tax revenues and the levels of saving and capital accumulation. More significantly, perhaps, it can cause substantial economic losses for individuals by increasing the economic costs associated with acquiring the preferred set of instruments.

Fourth, the application of thresholds to fiscal exemptions can be self-defeating. Exemptions are secured by allocating funds to different financial instruments, up to the extent of the ceiling established, and this means that, while there is an incentive to allocate funds to specific instruments, there is also an incentive to allocate to others (with exemptions) when the ceiling is reached. Thus exemptions which aim to favor one instrument may frustrate the incentives to invest in another.

The original set of tax exemptions was introduced in an attempt to increase the effective return on savings available and reallocate savings toward some specific regulated instruments. This was successful in a regulated environment even though it did cause financial distortions. However, the successive introduction of financial and capital liberalization serves to (i) increase the distortions caused by tax incentives and (ii) ultimately frustrate the original policy goals. This is because a third goal of policy has been implicitly added to the original two, which is to limit the extent of intermediation occurring abroad, and the third is not compatible with reallocation toward a specific regulated domestic asset. Furthermore, financial liberalization involves the implicit expression of a fourth goal of policy, which is to allow capital markets to allocate funds freely and take advantage of market efficiency. All four goals cannot be simultaneously retained.

The lesson from this is that, because of the possibility of funds flowing to foreign (and effectively tax-free) financial instruments, the goal of reallocating toward specific domestic instruments must be relinquished. Henceforth, the maximum rate of taxation must be dictated by what is possible in the context of liberalized capital markets and, thereafter, the same rate of taxation should be applied to other instruments. If reallocation is attempted through lower tax rates on specific instruments this will cause distortions which are far larger than in a regulated financial environment. The effectiveness of attempts to introduce specific incentives is diminished in a liberalized setting, which

is a strong argument for a uniform system of taxation which will allow the relative benefits of instruments to attract investors. Overall, tax advantages will aggravate allocative distortions and are less likely to succeed in a liberalized financial environment.

The extent of returns from saving relief is accentuated by the range of instruments that are exempted. This allows savers to reallocate savings instruments in response to changing market and interest rate conditions. This has been a principal feature of the French system in recent years with large scale fund re-allocation in response to changing market conditions. There are many other fiscal incentives toward savings involving exemptions for life insurance contributions, pension contributions, mortgage interest relief and flat rate taxes on capital gains on a substantial interest. These incentives generally take the form of exemptions from direct taxation and provide further avenues to protect income from savings from any real taxation. There are also subsidized interest payments on certain instruments (see Table 4).

There are a number of other distortions caused by a system of tax exemptions which detract from an efficient allocation of savings and increase transactions costs:

A number of incentives (e.g., PEP and PEA) are offered on instruments which lock in funds for a particular time period. These are designed to increase the term for which savings are undertaken. This intention is, of itself, questionable on the basis that individuals may have a preference to maintain a flexible portfolio in case financial circumstances change. In reality, however, it is possible to borrow using these funds as collateral, and the lock-in effect only serves to increase transactions costs. This is a prime example of the type of problem referred to above.

Financial intermediaries are faced with difficult planning decisions because many of the specific instruments are only offered by specific financial institutions and there are large flows of funds between instruments in response to changes in fiscal regulations and market conditions. For example, banks cannot offer Livrets, and these are likely to become more popular as short-term flexible interest rates decline. This frustrates attempts at financial planning where large-scale balance sheet changes can occur in response to fiscal incentives.

5. Conclusion and recommendations

The overall conclusion from the foregoing is that the system of taxation of returns from saving in France is overly complicated and produces less revenue than in other G7 countries. At the same time, many of the goals of the system have been frustrated by financial and capital liberalization. The present system has been overtaken by financial developments but has not been subjected to review. Instead, a plethora of exemptions has ensued which have successively reduced tax revenue from savings without necessarily achieving their assigned objective.

A complete review of the system should consider the following points:

First, the goals of the system of taxation of returns to saving should be clearly expressed and prioritized with reference to the following considerations. If the system aims at securing a high level of revenues, this should be exercised in the most efficient manner, and would involve minimizing the set of potential loopholes when exemptions are employed to avoid taxes. At the same time, if the system aims to minimize the disincentives to saving, it should avoid introducing unnecessary transactions costs which are caused by the same exemptions. The elimination of exemptions would also enhance the efficient allocation of savings to their most desirable ends by allowing the liberalized financial system to operate. None of these intentions are consistent with attempts to allocate funds toward specific financial instruments and this latter goal of policy is only achieved at a high cost in terms of sacrificing the others.

Second, in a liberalized financial system the practice of granting a range of specific tax exemptions can be counter-productive in terms of reallocating savings. Exemptions should be considered in a general context, where their full effects are taken into account, rather than in terms of the effects they would have in isolation. This would lead to a more general appreciation of their shortcomings.

Third, the most overriding argument for eliminating a system of specific tax incentives is that they can significantly increase transactions costs. These costs are likely to have increased with financial liberalization and detract significantly, and unnecessarily, from the benefits of market allocation.

Fourth, to the extent that an incentive is considered desirable for small savers, the universal tax exemption (of F 8,000) would serve as a more effective incentive. A reduction in transactions costs would increase the return to savings and this exemption could, if considered desirable, be extended.

Fifth, and more generally, a more uniform tax code should be used to reduce the disadvantage accorded to dividend income and retained earnings. This would be preferable to the introduction of schemes such as the PEA to encourage investment in shares.

Exemptions to Taxation of Returns from Saving in the G7

Germany: In general interest income is not exempt although there are some exemptions granted for interest deriving from certain favored sources, e.g., interest from qualifying life assurances, Government inscribed debt, etc. In general, an allowance of DM 600 is granted to individuals (DM 1,200 for spouses filing a joint return)

Italy: An exemption from taxes on income is granted with respect to interest on Treasury bonds, Post Office bonds and some other public debt instruments. In addition, exemptions apply to some specialized public bonds issued under laws aimed at encouraging investment in certain industries or regions.

United Kingdom: Each individual is exempt from income tax on the first Stg. 70 of interest received on deposits at the National Savings Bank and on all interest received on limited holdings of National Savings certificates. With a Personal Equity Plan (PEP) an individual may invest up to Stg. 6,000 per year in an investment fund PEP and Stg. 3,000 in a single company PEP, both investments being exempt from income tax and capital gains in the hands of the PEP investor. According to the "business expansion scheme," an individual may deduct the amount invested in shares in a trading venture company from taxable income to a maximum of Stg. 40,000. (This scheme will end after 1993).

United States: Interest on federal obligations of the United States have been subject to income tax since 1941 (with one minor exception). Interest on debt instruments issued by the States are exempt from federal taxes if they are issued for government activities, certain environmental activities or for mortgage subsidies. Tax shelters can be used to offset taxes on passive investment income only.

Japan: Interest received on certain government bond issues is exempt.

Canada: Contributions to a number of registered savings plans are deductible for tax purposes.

An Analysis of Exemptions from the Taxation of Returns from Saving

This appendix will attempt to demonstrate why a uniform tax rate on returns from saving is preferable to a system of specific provisions and exemptions. It does this by developing simple measures of both the incentives and distortions generated by specific provisions in the same analytical framework. In general, attempts to reallocate savings toward specific financial instruments will be less effective in terms of increasing the return on savings, and will cause greater distortions, than a generalized tax exemption aimed at increasing the rate of return on savings. This result is likely to be strengthened with financial liberalization. Furthermore, attempts to reallocate toward a specific regulated financial instrument may be counterproductive.

Four points regarding the effectiveness of, and distortions resulting from, a system of specific provisions are demonstrated:

(a) A tax exemption introduced to benefit a particular financial instrument, even in a regulated financial environment, may not be fully reflected in an increased after-tax return on savings. The incentive effects will be offset to the extent that transactions costs are incurred in capturing the tax advantage but then re-asserting individual preferences for an alternative instrument;

(b) A system of individual thresholds on tax exemptions, instead of a generalized exemption on all instruments, will increase the likelihood that these transactions costs are incurred and will therefore have a smaller impact on the rate of return on savings;

(c) The incentive to incur transactions costs, and therefore the level of transactions costs affecting the system, increases with the extent of financial liberalization; and

(d) The introduction of a system of generalized exemptions, in a liberalized financial system, can lead to results that are contrary to their original intentions.

a. A regulated financial market--instruments bearing the same rate of financial return

Consider a setting in which there are two financial instruments (A and B) available. Each receives the same rate of (fixed) financial return (i^*) but has, in addition, a different set of non-pecuniary advantages to the representative agent (respectively, σ_a and σ_b for each instrument). Assume, for simplicity, that the non-pecuniary advantages are constant (i.e. that they do not diminish with an increase in the holdings of a particular instrument). Then, the representative agent will hold all of one instrument (there will be a corner solution), depending on the total (pecuniary and non-pecuniary) total returns (r_a or r_b), where:

$$\begin{aligned} r_a &= i^* + \sigma_a \\ r_b &= i^* + \sigma_b \end{aligned}$$

and:

$$r_{a,b} = r_a - r_b = \sigma_a - \sigma_b$$

is the relative return to instrument A.

Assume also that the overall level of savings will depend on the return received on the chosen instrument:

$$s = \begin{cases} s(r_a), & \text{where } \sigma_a - \sigma_b > 0, \\ s(r_b), & \text{where } \sigma_a - \sigma_b < 0. \end{cases}$$

Returns from saving are initially taxed at a rate τ but a tax exemption is offered to instrument B in order to both increase the overall level of savings and reallocate savings toward B. Therefore, the total after tax rates of return are:

$$\begin{aligned} r_a &= i^*(1-\tau) + \sigma_a \\ r_b &= i^* + \sigma_b \end{aligned}$$

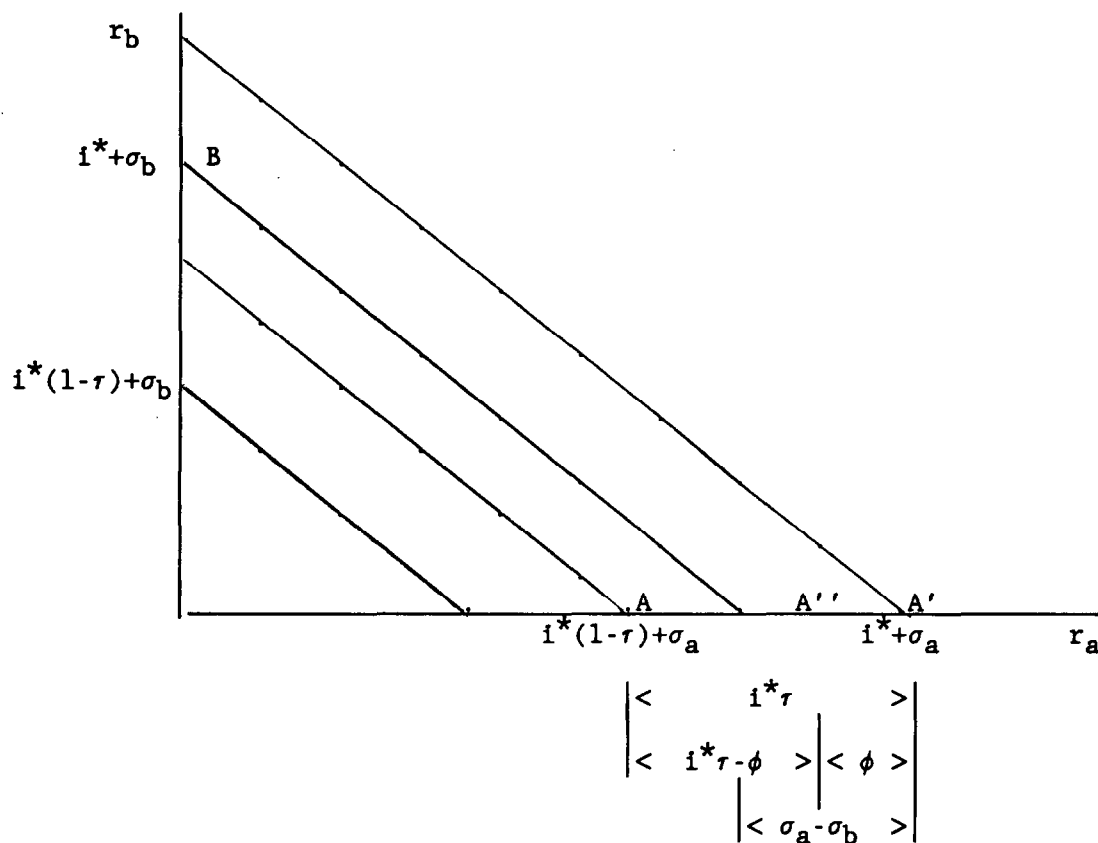
and the relative return on B becomes:

$$r_{b,a} = i^*\tau - (\sigma_a - \sigma_b)$$

Figure 1 (where the diagonal lines are at 45°) describes the options available to the investor under the assumption that $\sigma_a - \sigma_b > 0$. Initially, funds are allocated at point A. Then, with a tax exemption available on B, funds are switched to B. However, there is another alternative available, which is to take advantage of the tax exemption on B, and then borrow funds against this deposit and redeposit in A (to take advantage of higher non-pecuniary gains). If borrowing and lending rates are the same, and there are no intermediation or transactions costs, this would allow the investor to move to point A'. There will, however, be costs incurred on such a transaction (ϕ) and these will limit the investor's ability to move to A'. The higher the costs, the more the investor's maximum possible return (at some point A'' to the left of A') is reduced. The maximum return is reduced to $i^* + \sigma_a - \phi$. If ϕ exceeds $\sigma_a - \sigma_b$ (which is the return at A' less the return at B) no switching for tax purposes will occur and the investor retains instrument B only.

This setup permits a breakdown of the tax reduction ($i^*\tau$) into two components: The effective increase in the rate of return on savings ($i^*\tau - \phi$) and transactions costs (ϕ). The maximum transactions costs incurred will be $\sigma_a - \sigma_b$. This also allows one to assess the cost of the distortion to preferences caused by the tax incentive, if these are defined as the maximum transaction costs that an investor will be willing to pay to reassert his preferences, after taking advantage of the tax break.

Figure 1. Attainable After-Tax Rate of Return



The effects of the introduction of the tax incentive are summarized in Table 5 in terms of: (i) the increase in the rate of return on savings (which will increase the overall level of saving); (ii) the influence on a final reallocation toward instrument B (which is only achieved if the original set of preferences is not re-established); and (iii) the distortion caused (as here defined). The attempt to increase savings is unambiguously successful and a final reallocation toward B will succeed, in spite of causing a distortion, if intermediation costs are sufficiently high relative to the distortion. In general, the smaller the distortion, the more successful is the policy in terms of (i) increasing savings rate and (ii) reallocating toward B. However, there are costs to the policy, in addition to the foregone taxes, which are the smaller of the allocative distortion and transactions costs.

Table 5. Effects of Tax Exemption with Regulated Market

(i)	Return on savings:	$i^*r - (\sigma_a - \sigma_b),$ where $\phi > \sigma_a - \sigma_b$ $i^*r - \phi,$ where $\phi < \sigma_a - \sigma_b$
(ii)	Final reallocation toward B:	iff $\phi > \sigma_a - \sigma_b$
(iii)	Distortion:	$\sigma_a - \sigma_b$

b. The problem with thresholds on exemptions

In a similar setting to that above, but with a general tax exemption and without thresholds assigned to specific instruments, the investor can choose the instrument upon which to obtain the tax advantage. In these circumstances there will be no distortion caused by the tax incentive, no transactions costs will be incurred, and the full extent of the tax incentive will accrue to the rate of return on savings. This is outlined in Table 6.

Table 6. Effects of General Tax Exemption with Regulated Market and No Threshold to Exemptions

(i)	Return on savings:	i^*r
(ii)	Final reallocation toward B:	no switching
(iii)	Distortion:	0

c. Distortions with financial liberalization

Financial liberalization will increase the range of instruments available to savers and these will be at a flexible and higher rate of interest. A similar analysis to that conducted above can be used to analyze the potential success and costs of an attempt to reallocate from a liberalized instrument bearing the higher rate of interest (C) to the regulated instrument (B). The own and relative rates of return on these instruments, with and without tax exemptions, are presented in Table 7(a) and (b) respectively. The tables present the own rate of return on the relevant instrument in the boxes on the downward sloping diagonal and the relative rate of return from the instrument on the row, over that in the

Table 7. Relative Returns on Financial Instruments
(Relative Return on Instrument in Row over Column)

a. With Tax Exemptions for B and D.

Instrument:	A	B	C	D
A	1. $i^*(1-\tau)+\sigma_a$	2. $(\sigma_a-\sigma_b) - i^*\tau$	3. $-(i-i^*)(1-\tau) + \sigma_a-\sigma_c$	4. $\sigma_a-\sigma_d + i^*\tau - (i-i^*)$
B	5. $i^*\tau-(\sigma_a-\sigma_b)$	6. $i^*+\sigma_b$	7. $\sigma_b-\sigma_c + i\tau - (i-i^*)$	8. $\sigma_b-\sigma_d - (i-i^*)$
C	9. $(i-i^*)(1-\tau) - (\sigma_a-\sigma_c)$	10. $-i\tau + i-i^* - (\sigma_b-\sigma_c)$	11. $i(1-\tau)+\sigma_c$	12. $\sigma_c-\sigma_d - i\tau$
D	13. $i\tau + i-i^* - (\sigma_a-\sigma_d)$	14. $i-i^* - (\sigma_b-\sigma_d)$	15. $i\tau - (\sigma_c-\sigma_d)$	16. $i+\sigma_d$

b. With no tax exemptions.

Instrument:	A	B	C	D
A	1. $i^*(1-\tau)+\sigma_a$	2. $\sigma_a-\sigma_b$	3. $\sigma_a-\sigma_c - (i-i^*)(1-\tau)$	4. $\sigma_a-\sigma_d - (i-i^*)(1-\tau)$
B	5. $-(\sigma_a-\sigma_b)$	6. $i^*(1-\tau)+\sigma_b$	7. $\sigma_b-\sigma_c - (i-i^*)(1-\tau)$	8. $\sigma_b-\sigma_d - (i-i^*)(1-\tau)$
C	9. $(i-i^*)(1-\tau) - (\sigma_a-\sigma_c)$	10. $(i-i^*)(1-\tau) - (\sigma_b-\sigma_c)$	11. $i(1-\tau)+\sigma_c$	12. $\sigma_c-\sigma_d$
D	13. $(i-i^*)(1-\tau) - (\sigma_a-\sigma_d)$	14. $(i-i^*)(1-\tau) - (\sigma_b-\sigma_d)$	15. $-(\sigma_c-\sigma_d)$	16. $i(1-\tau)+\sigma_d$

column, in the other boxes. This, by following the same argument as in section (a) above, allows one to draw the following summary (Table 8):

Table 8. Effects of Tax Exemption with Financial Liberalization

(i)	Return on savings:	$i^*r - (i-i^*) + (\sigma_b - \sigma_c),$ $\text{where } \phi > (i-i^*) - (\sigma_b - \sigma_c)$ $i^*r - \phi,$ $\text{where } \phi < (i-i^*) - (\sigma_b - \sigma_c)$
(ii)	Final reallocation toward B:	iff $\phi > (i-i^*) - (\sigma_b - \sigma_c)$
(iii)	Distortion:	$(i-i^*) - (\sigma_b - \sigma_c)$

Note that the policy can again succeed in reallocating savings toward B in spite of causing a distortion. However, with a larger increase in interest rates following financial liberalization ($i-i^*$), the policy is less likely to work and the distortion is greater. Again, a final reallocation will only occur to the extent that transactions costs exceed the distortion. On the other hand, if the incentive to reallocate toward C is sufficiently large relative to ϕ , substantial transactions costs will be incurred.

d. Distortions with financial and capital market liberalization

The effect of capital liberalization and market integration has been to severely limit the tax rate that can be imposed on the liberalized financial instrument. This is because it now competes with similar instruments abroad which may effectively bear only a limited withholding tax. As a result, a third goal of policy is now introduced, which is to limit the extent of financial intermediation of domestic financial assets occurring abroad. This was the case in France where exemptions were granted to SICAVs so that they could compete with similar foreign instruments. However, this has meant that the pre-existing system of granting tax exemptions has perverse results in terms of reallocating resources toward regulated domestic instruments.

If a financial instrument with a free interest rate and a tax exemption (D) is introduced, for the purpose of limiting the flow of funds abroad, the effect of the tax exemptions on instruments D and B is to increase the relative preference for D over the regulated domestic instrument B. As is evident from Table 7, the relative preference for D with tax exemptions $[(i-i^*) - (\sigma_b - \sigma_d)]$, from Table 7(a), box 14] is greater than without tax exemptions $[(i-i^*)(1-r) - (\sigma_b - \sigma_d)]$, from Table 7(b), box 14]. Thus, the system of tax exemptions has become counterproductive as regards allocating toward regulated domestic instruments and the exemptions reduce the likelihood of a reallocation toward B. These results are summarized in Table 9. The distortion introduced between these instruments amounts to $r(i-i^*) - (\sigma_b - \sigma_d)$

and increases with the tax rate. However, it is lower than for a liberalized financial instrument with no tax exemption (C) because both instruments (B and D) are given the same tax treatment.

Table 9. Effects of Tax Exemption with Capital Liberalization

Return on savings:	$\tau i^* - (i - i^*) + (\sigma_b - \sigma_c),$ <p style="text-align: center;">where $\phi > \tau(i - i^*) - (\sigma_b - \sigma_c)$</p> $i\tau,$ <p style="text-align: center;">where $\phi < \tau(i - i^*) - (\sigma_b - \sigma_c)$</p>
Reallocation toward B:	<p>iff $\phi > \tau(i - i^*) - (\sigma_b - \sigma_c)$</p> <p>and</p>
Distortion:	$\tau(i - i^*) - (\sigma_b - \sigma_c)$

V. Trade and Trade-Related Industrial Policy 1/

This study describes in section 1 the principal objectives, priorities, and concerns of, as well as the main developments in, France's trade policy. The accompanying appendix discusses these issues in greater detail. section 2 draws some conclusions.

France does not have an independent trade policy. The Treaty of Rome provides for the European Community (EC) to follow a common trade policy, determined at the level of the Community. 2/ France, however, as one of the largest economies in the EC, has a key role in shaping the EC's trade policy; it has been in the forefront of several EC initiatives, and involved in important disputes, concerning trade policy.

1. Objectives, priorities, and developments

Trade policy in France is aimed at promoting international specialization and achieving growth and promoting employment through the successful completion of the Uruguay Round at the multilateral level, and the implementation of the Single Market Program at the level of the EC (Appendix, section 4). However, the current downturn in output and the rise in unemployment has heightened concerns about the short-term impact of increased foreign competition, including the effects of so-called "social dumping." This term refers to the view that allegedly low standards of social protection in foreign countries confer on them an "unfair" comparative advantage. Such concerns have led to a more cautious policy stance toward market opening in both the multilateral context of the Uruguay Round, and the regional non-EC context, particularly in relation to central and eastern European countries (CEECs). In addition, certain sectors--agriculture, steel, bananas, and automobiles--considered sensitive for social or political reasons, continue to face adjustment problems in the face of increased international competition. France has also expressed concern about restrictive developments that have affected its exports to third markets, for example, in the steel sector.

a. Uruguay Round

The protracted delay in the Uruguay Round since end-1990 has, to a substantial extent, been related to the inability of the United States and the EC to resolve differences, in particular, in agriculture and in market access in industrial products and services. 3/ In May 1993, the French government issued a memorandum stating its objectives for the Round and its position on several of the outstanding issues (Appendix, section 1). The

1/ Prepared by Arvind Subramanian.

2/ Xafa et. al. (1992).

3/ However, at the Tokyo Summit of the G-7 countries in July 1993, an agreement on tariff reductions in industrial products was reached between the trade ministers of the U.S., Canada, EC, and Japan, which has allowed the resumption of the multilateral negotiating process. (See below).

objectives include the promotion of growth and employment, strengthening the multilateral institutional framework, and reinforcing European integration. The French position is that it is in favor of a successful conclusion to the Round, but not at any cost. In order to promote growth and employment, France is seeking greater market opening in goods and services, including by Japan and the newly industrializing countries. ^{1/} With a view to strengthening multilateral institutions, France is seeking the establishment of a Multilateral Trade Organization, which would oversee trade in goods and services and intellectual property rules, and also place effective curbs on the use of unilateral instruments to address trade problems. However, France would like to place certain limits on liberalization in agriculture, in certain industrial products and in the audio-visual sector.

b. Agriculture

In May 1992, the EC adopted proposals aimed at reform of the Common Agricultural Policy (CAP). In November 1992, the United States and the EC Commission concluded an agreement (the Blair House agreement) to resolve their long-standing differences over trade in agriculture, which was also expected to be an important step in unblocking the impasse in the Uruguay Round. The agreement was concluded against a backdrop of trade sanctions threatened by the United States (against selected imports from the EC, notably wine) in response to the refusal of the EC to implement two GATT panel rulings, which had found the EC's oilseeds regime to be contrary to GATT rules. The Blair House agreement addressed two issues: oilseeds and agriculture in general. France rejected the Blair House agreement initially. However, in June 1993, it declared that it could accept the agreement as it related to oilseeds. This acceptance was made possible after EC agriculture ministers agreed to increase France's share of total area devoted to oilseeds cultivation and to increase the compensation payments to farmers for set-asides and price cuts agreed under the CAP reform. France, however, continues to oppose the agriculture section of the Blair House agreement on the grounds that it is incompatible with reform of the CAP (Appendix, section 3).

c. Relations with CEECs

The EC Commission has signed preferential trade agreements ("Europe Agreements") with the Czech Republic, Slovak Republic, Bulgaria, Hungary, Poland, and Romania which aim at establishing a free trade area between the EC and the above countries in ten years (Appendix, section 5). In June 1993, the EC adopted further proposals to broaden the scope and accelerate the pace of the liberalization commitments embodied in the Europe Agreements. These proposals were in response to criticism that the Europe Agreements were not sufficiently forthcoming in terms of market opening toward countries that were in a difficult stage of transition. The new

^{1/} This was also reflected in the G-7 summit communique asking other countries to match the results of the Tokyo agreement through comparable market opening.

proposals (Table 1) represent some improvement in industrial products, where quotas have been increased; 1/ however, they fail to significantly improve market access in the sensitive sectors. Suggestions to make the quotas more flexible and to allow the CEECs greater flexibility in importing intermediate inputs from the European Free Trade Area (without losing preferential access to the EC market), which would have provided less restrictive access, were not adopted because of objections by France and some other countries. In relation to the prospects for further improvement in access to the CEECs, the position of France is that generous terms of market access have been offered given the depressed macroeconomic climate and the unemployment situation in France, and French industry would find it difficult to support any further acceleration of the liberalization schedule.

d. Social dumping

The difficult unemployment situation in France is tending to erode public support for the principles of liberal trade. With 11.6 percent of the labor force estimated to be unemployed, discussions about liberal trade are increasingly focused on the impact of foreign competition manifested in the concerns about "social dumping." This refers to the view that allegedly low standards of social protection in foreign countries--including low minimum wages and inadequate labor, health and safety standards, child labor laws, and benefits--confer an unfair comparative advantage, which merits a policy response to offset or penalize it by trade restrictions or subsidies, or by inducing or requiring countries to raise their standards of social protection. These concerns not only apply to trade in goods, but also to foreign direct investment, as the movement of capital to low wage countries is perceived to be a threat to local jobs. 2/

The position of the French government is that issues such as social dumping, environment and competition policy have to be addressed soon by the international community. Although France would not seek to include these in the Uruguay Round, they should form part of the post-Round agenda of the

1/ From the viewpoint of the CEECs, an important development at the June summit of the EC was the explicit commitment to EC membership for the associated countries, once they are able to assume the economic and political obligations of membership.

2/ Concerns about social dumping have gained prominence with the rise of the newly industrializing countries and the competitive threat they have posed to industries in France and other OECD countries in a period characterized by prolonged recession and persistently high unemployment. Whether lower standards constitute an unfair source of advantage is debatable. It could be argued that countries derive comparative advantage not only from differences in factor endowments but also from varying social and cultural preferences that influence the nature of regulatory standards on health, labor, safety and the environment; attempts to artificially harmonize domestic policies might negate the very differences that lead to international trade and increased global welfare.

Table 1. Summary of EC Concessions to Association Agreement Countries (Czech Republic, Slovak Republic, Hungary, and Poland)

Product	Immediate	1-5 Years	5-10 Years	June 1993 Initiative
<u>General industrial products</u>				
<u>Group 1</u> (chemical products, leather products, household appliances, industrial machinery)				
Duties	Eliminate with exceptions below.			
QRs	Eliminate with exceptions below.			
<u>Annex 1a</u> (mineral products, inorganic chemical products, ferro-alloys)	50 percent reduction upon entry into force.	Eliminate in year 2.		
<u>Annex 1b</u> (zinc, aluminum, ferro-silicum)				
Duties	20 percent reduction.	20 percent reduction per year. Abolished in 4 years.		Abolish in two years.
<u>Annex 2</u> (cement, organic and inorganic chemical products, leather products, glass products, automobiles, fertilizer)				
Duties on goods meeting quota requirements	Reduce by 15 percent per year (10 percent, Hungary), begin 1992.	Reduce by 15 percent per year (10 percent, Hungary) 4 years. Eliminate remainder in year 5.		Eliminate one year earlier.
Quotas	Increase by 20 percent per year (15 percent, Hungary), begin 1992.	Increase by 20 percent per year (15 percent, Hungary).		Quotas increase by 10 percentage points more per year.

Table 1. Summary of EC Concessions to Association Agreement Countries (Czech Republic, Slovak Republic, Hungary, and Poland) (continued)

Product	Immediate	1-5 Years	5-10 Years	June 1993 Initiative
<u>Agricultural goods</u>				
<u>Group 1</u> (ducks, geese, potato starch, pork)				
Equalization charges	Reduce by 50 percent upon entry into force.			
Quotas		Increase by 10 percent per year, 5 years.		
<u>Group 2</u> (wild game, honey, onions, etc.)				
Duties		30-100 percent reductions over 5 years.		
Quotas		Eliminate over 5 years.		
<u>Group 3</u> (young cattle)				
Equalization charges	Reduce by 75 percent, begin 1992.	Reduce by 75 percent.		
Quotas	Increase by 10 percent, begin 1992.	Increase by 10 percent.		
<u>Group 4</u> (beef, pork, meat, mutton, poultry, dairy products)				
Import charges	Reduce by 20 percent.	Reduce 20 percent per year, 3 years.		Total duty reduction and quota increase applied 6 months earlier.
Quotas	Increase by 10 percent.	Increase 10 percent per year, 5 years.		

Table 1. Summary of EC Concessions to Association Agreement Countries (Czech Republic, Slovak Republic, Hungary, and Poland) (concluded)

Product	Immediate	1-5 Years	5-10 Years	June 1993 Initiative
<u>Group 5</u> (most fruits and vegetables)				
Duties	Differentiated reductions.	Differentiated reductions.		
Quotas	10 percent increase.	10 percent increase per year.		
<u>Group 6</u> (process agricultural products)				
Duties	10 percent reduction; 20 percent for milk.	10 percent reduction per year (20 percent for milk).		
Quotas		Most concessions phased over 5 years.		
<u>Textiles and clothing</u>				
Duties		Phased reductions from entry into force.	Phased reductions. Eliminate in sixth year.	Eliminate in fifth year.
QRs			Quota elimination in half time specified in Uruguay Round (not prior to 1996).	
<u>ECSC products</u>				
Duties		Steel: Phase out in 5 years (base level of 5 percent). Coal: eliminate in one year (exc. Spain/Portugal, 4 years to eliminate; and Hungary, 4 years).		Steel: phase out over 4 years.
QRs	Steel: eliminate, with some exceptions.	Coal: Eliminate within one year after entry into force, or four years in special cases. All quotas eliminated by 1996.		

GATT. Meanwhile, France would endorse the more active use of commercial policy instruments, such as safeguards, antidumping and countervailing measures, to ensure fair competition for EC producers.

e. Sectoral developments

In the case of bananas, a new common EC-wide regime, implemented under the Single Market Program, came into effect on July 1, 1993, and has led to friction with Latin American banana exporters (Appendix, section 3.e). In the automotive sector, Japan agreed to restrict its exports of cars to the EC in April 1993 by 9.4 percent in response to an estimated decline in car sales of 6.5 percent; the French and other European car industries are seeking further export restrictions on the grounds that the slump in the automobile market in the EC is greater than had been envisaged (Appendix, section 7). The steel sector has been affected by growing overcapacity, reflecting the global recession and the intensification of foreign competition, including from central and eastern European sources. Attempts are being made to restructure the industry in France by reducing capacity and employment, while eliminating the provision of state aid. However, there has also been a simultaneous intensification of protectionist pressures (Appendix, section 8).

2. Conclusions

The magnitude and structure of France's foreign trade, and, in particular, its revealed comparative advantage in manufacturing and services, show that France has an important stake in the international trading system, and stands to gain substantially from the liberalization that would result from a successful completion of the Uruguay Round (Appendix, section 2). Thus, a protectionist response to the current macroeconomic situation would entail significant welfare losses for France, and would not address the problem of long-term unemployment (see below). In agriculture, acceptance of the Blair House agreement would confer welfare gains stemming from liberalization of this highly protected sector, and would also contribute toward the successful conclusion of the Round (Appendix, section 3).

The high level of unemployment is increasingly leading to concerns about increased foreign competition from low wage countries--social dumping. The empirical significance of such competition is uncertain. ^{1/} Moreover, the invocation of social dumping to justify protection is premised on the view that protection can prevent job losses; although protection may preserve jobs in certain sectors in the short run, it imposes costs on, and could lead to job losses in, other more efficient sectors. In the medium term, it is questionable whether protection could improve the employment

^{1/} Imports from the newly industrializing countries, which are alleged to provide low levels of social protection, accounted for 2.3 percent of French imports between 1989 and 1992. If imports from the CEECs are added, this figure rises to 4.5 percent.

prospects for the economy as a whole. 1/ Social dumping arguments could also distract from the need to take appropriate measures in the labor market to remedy unemployment. 2/

The threat of increased competition from CEECs in so-called "sensitive" sectors has led to a cautious approach toward market opening vis-à-vis CEEC exports. Although recent proposals represent some improvement in market access, they fail to significantly open up markets in key sectors where the binding constraints remain the quotas and threat of safeguard and anti-dumping actions, whose use is illustrated in the case of steel imports from some CEEC countries (Table 2). The French position on liberalization of the sensitive sectors is conditioned in part by the economic importance of these sectors, especially in certain regions, and by the high degree of import penetration in these sectors. 3/ However, the CEEC countries account for a very small fraction of total import penetration in France (less than 2 percent), supporting the view that imports from these countries could increase further without serious ill effects on EC producers. 4/ There are also considerable gains that have accrued to France and the EC from liberalization by these countries. 5/ France should therefore support further market opening initiatives to facilitate the transition of the CEECs toward market economies since it would also benefit French exports.

Finally, restrictive developments appear to have characterized certain sectors--bananas, automobiles, and steel--which have led to frictions with

1/ It is usually contended that the level of employment is determined at the macroeconomic level, depending in the short run on aggregate demand, and in the long run, on the natural rate of unemployment (Krugman (1993)).

2/ The experience in industrial countries with "unfair" trade arguments and remedies used to offset perceived unfair trade has been less than salutary: such arguments are necessarily subjective, susceptible to manipulation by vested interests, and in the past have led to a proliferation of trade restrictions.

3/ Appendix, section 5.

4/ This is supported by estimates of producer losses in the face of a large hypothetical increase in exports from these countries. For France as a whole and in selected regions (Table 10), these losses are very small as a percentage of corresponding GNP, prompting the conclusion that the "scale of the adjustments required by liberalized trade with eastern Europe seems quite manageable" (Rollo and Smith, (1993)).

5/ French exports to the CEECs grew on average by 18.7 percent between 1989 and 1992, while imports grew by 9.9 percent over the same period. Moreover, between 1991 and 1992 the growth rates for exports and imports were 69.8 and 26.0 percent respectively, compared to the figures for the EC of 20.1 and 20.6 percent respectively. France averaged a trade deficit with the CEECs of about \$1.4 billion between 1989 and 1992, which had virtually been eliminated in June 1992. It is estimated that overall imports by the CEECs in 2010 could reach \$400 billion (at 1990 prices), of which half would represent purchases from the EC. Currently, France accounts for about 12 percent of EC exports to the CEECs. (OECD (1993b)).

Table 2. Restrictions on EC Steel Imports from CEECs

June 1992	The CSFR agreed to a "partial reorientation" of its steel exports.
August 1992	The EC authorized France, Germany, and Italy to restrict steel imports from the CSFR.
November 1992	Provisional antidumping duties (10.8-30.4 percent) were imposed on seamless steel tube imports from the CSFR, Hungary, and Poland.
December 1992	The EC set import quotas on some steel products from Bulgaria and Romania.
February/March 1993	Unlike earlier agreements, the new Association Agreements with Bulgaria and Romania include safeguard provisions for steel.
April 1993	The split of the CSFR provided the EC with the opportunity to amend the Association Agreements; a tariff quota system was introduced to replace the provisional antidumping duties of November 1992. Restrictive quotas were set on six steel products from the Czech and Slovak Republics limiting imports to 1992 levels until 1995.

trading partners. Trade restrictions, especially where adequate domestic adjustment has not taken place (as in the case of automobiles and bananas), are not the appropriate response to attaining long-run viability in the face of increased foreign competition. 1/

1/ Table 3 shows that in 1989, the European car industry was less efficient than its Japanese and American counterparts, as measured by many indicators of performance. Continuing trade protection for the industry leads to sizeable welfare losses for the economy and, in the absence of adjustment by the domestic industry, could lead to demands for continuing protection, even beyond 1999, which is the current target for complete liberalization of the industry. On the other hand, the steel sector faces problems despite adjustment efforts over several years aimed at reducing capacity and improving long run competitiveness.

Table 3. Characteristics of Car Assembly Plants in North America, Japan, and Europe, 1989 1/

	Japanese in Japan	Japanese in North America	American in North America	Europe
Productivity (hours/vehicle)	16.8	21.2	25.1	36.2
Quality (assembly defects/ 100 vehicles)	60.0	65.0	82.3	97.0
Training of new workers (hours)	380.3	370.0	46.4	173.3
Absenteeism	5.0	4.8	11.7	12.1

Source: GATT, "Trade Policy Review Mechanism: European Communities," 1993.

1/ Averages per plant; volume producers (all Japanese producers; GM, Ford, Chrysler; Fiat, PSA, Renault, Volkswagen).

This Appendix discusses in greater detail the issues raised in the text.

1. French Memorandum on the Uruguay Round

In May 1993, the French government issued a memorandum stating its objectives for the Uruguay Round and its position on several of the outstanding issues. In order to promote growth and employment, France is seeking (i) a reduction in tariffs of about 33 percent in line with the agreement at the Mid-Term Review of the Uruguay Round, and expects substantial market opening moves by all trading partners, including Japan and the newly industrializing countries; (ii) increased market access in the services sectors, notably in relation to financial services; 1/ and (iii) greater liberalization of government procurement by increasing the number of public entities, at all levels of government, subject to multilateral disciplines. With a view to strengthening multilateral institutions, France is seeking the establishment of a Multilateral Trade Organization, which would oversee trade in goods and services and rules on intellectual property, and also place effective curbs on the use of unilateral instruments to address trade problems.

However, France would seek to place certain limits on market opening, as reflected in its position that (i) parts of the Blair House agreement on agriculture negotiated between the United States and the EC Commission in November 1992 should be renegotiated (see below); (ii) tariff reductions should be less ambitious in certain sensitive sectors, including nonferrous metals (notably aluminum), electronic products, and wood and paper products; 2/ (iii) market opening in the audio-visual sector should be restricted on the ground that important cultural interests are at stake; 3/ and (iv) the scope of subsidies that would not be actionable by trading partners should

1/ In the basic telecommunications sector, the position of France is that the scope and pace of liberalization can only be determined after the EC has concluded its internal deliberations on the subject.

2/ The agreement on tariff reductions reached at the Tokyo G-7 summit in July 1993 (EBD/93/125) provided for the elimination of tariffs and nontariff barriers in eight sectors--pharmaceutical, construction equipment, medical equipment, beer, steel and steel products (subject to certain conditions), agricultural equipment and furniture (subject to certain exceptions), and certain distilled spirits--and for the reduction of tariffs on chemical products to a low level. Trade negotiators also set a goal of cutting tariff peaks (defined as tariffs above 15 percent) by half, which would cover glassware, ceramics, textiles, and apparel. However, no concrete agreement was reached on five categories--scientific equipment, wood and paper products, nonferrous metals and electronics--except for a commitment to reduce tariffs in further negotiations by at least one-third on average; most of these categories are considered "sensitive" by France.

3/ In France, there are requirements on the proportion of programming to be of European (60 percent) and French (40 percent) origin; these requirements apply during the day as well as during prime-time.

be enlarged, and that the general stricter disciplines on subsidies should not apply to the agricultural and civil aircraft sectors. 1/

2. Structure of foreign trade

This section describes the magnitude and structure of France's foreign trade, and illustrates the relative contributions of the various sectors-- agriculture, manufacturing, and services--to the French economy; the discussion of France's comparative advantage also provides a broad indication of the specific sectors that might gain from a successful conclusion of the Uruguay Round.

With exports of about \$236 billion in 1992, representing 6.5 percent of world exports (up from 6.1 percent in 1980), France has an important stake in the international trading system. In 1990, France was the fourth largest exporter and importer of goods in the world, and in 1992 had a trade share in GDP of about 45 percent. 2/ Furthermore, France was the second largest exporter (after the United States) of commercial services in 1990 (\$82 billion, compared to \$55 billion of third-placed United Kingdom and \$52 billion of fourth-placed Germany). Table 4 shows the composition of France's output, employment, exports and imports. The primary sector (agriculture, forestry and fishing) accounts for only 3.4 percent of GDP, 6 percent of employment and only 5 percent of total exports of goods and services. Manufacturing, and especially services, account for the largest shares of GDP (21.1 and 69.9 percent respectively), of employment (18.8 and 72.6 percent respectively), and of exports (66.1 and 27.5 percent respectively). In 1990, the service sector showed a surplus in the balance of payments of \$16.4 billion, compared to a surplus of \$6.4 billion for agriculture, and a deficit of \$11.9 billion for manufacturing.

In Tables 4 and 5 an index of comparative advantage for France has been computed. This index--revealed comparative advantage--is defined as the ratio of a country's share in the exports of a particular commodity group to its share in total exports, and is useful for illustrative purposes, for example, in determining which sectors may be favorably affected by global liberalization stemming from the Uruguay Round. 3/ In Table 4, the index has been computed at the level of the EC, and in Table 5, at the level of

1/ The Draft Final Act of the Uruguay Round includes subsidies for research, but not for development, in the so-called "green box" of non-actionable subsidies. France is seeking to extend the green box to include development subsidies.

2/ Exports and imports of goods and services divided by GDP.

3/ The index of revealed comparative is subject to several limitations, for example it is not independent of protection in foreign markets nor of domestic policies that boost exports. This is reflected in the fact that the agricultural sector scores high on this index as a result of the high degree of government support that it receives.

Table 4. Selected Sectoral Indicators

Product	Employmt.	Value added		Exports		Imports		Revealed comparative advantage ^{1/} 1991
	1990	1990	Share of	Total	Extra EC	Total	Extra EC	
	('000)	(US\$bn)	GDP (%)	(US\$bn)		(US\$bn)		
<u>Agriculture, forestry and fishing</u>	1,339.1	40.1	3.4	15.7 ^{2/}	2.5 ^{2/}	9.3 ^{2/}	4.6 ^{2/}	2.0
<u>Mining and quarrying ^{3/}</u>	71.3	2.6	0.2	0.6	0.1	11.4	10.2	0.3
<u>Manufacturing, of which:</u>	4,167.6	251.7	21.1	194.2	74.5	206.1	81.6	1.0
Food products	440.5	27.1	2.3	14.4	3.9	13.7	3.9	1.1
Beverages and tobacco	51.6	6.2	0.5	7.5	3.4	2.3	0.1	2.0
Textiles	192.6	7.9	0.7	8.0	2.6	11.3	4.0	0.8
Clothing	146.1	5.9	0.5	3.3	1.3	5.2	3.5	0.1
Leather and footwear	69.3	2.4	0.2	2.1	1.2	3.7	1.6	0.7
Furniture and wood products	164.7	6.8	0.6	3.2	1.0	5.4	1.7	0.8
Paper and printing	317.3	18.6	1.6	6.2	1.8	8.9	3.5	1.0
Chemicals, of which:	290.3	23.1	1.9	29.4	11.3	24.6	7.1	1.1
Basic industrial chemicals	76.2	7.8	0.7	10.0	3.1	16.0	4.0	0.8
Fertilizers	57.3	4.0	0.3	4.3	1.9	4.9	1.1	1.5
Pharmaceuticals	77.0	5.5	0.5	3.9	2.3	2.2	0.9	1.1
Petroleum and coal products	23.3	15.7	1.3	0.3	0.0	11.2	9.9	0.1
Rubber products	90.5	3.3	0.3	3.0	0.8	2.0	0.3	1.5
Plastic products	108.6	6.3	0.5	2.1	0.5	2.8	0.6	0.8
Glass and other mineral products	169.4	12.0	1.0	4.0	1.5	3.9	0.5	0.9
Iron and steel	180.3	8.3	0.7	8.8	2.8	7.1	1.1	1.1
Non-ferrous metal industries	49.0	6.2	0.5	4.2	1.0	5.9	2.6	1.0
Metal products	332.0	17.4	1.5	8.0	3.2	9.4	1.9	0.9
Machinery	862.9	49.2	4.1	39.8	15.8	45.7	20.5	0.9
Transport equipment, of which:	519.2	28.5	2.4	40.7	18.0	31.4	11.5	1.2
Shipbuilding	20.0	0.8	0.1	1.8	0.8	1.0	0.2	0.8
Motor vehicles	343.0	19.3	1.6	26.6	6.0	23.6	2.4	1.2
Aircraft	107.6	5.6	0.5	20.0	9.8	16.2	6.5	2.6
Professional & scientific equipment	62.0	4.2	0.4	6.1	2.7	7.9	4.5	0.9
<u>Services</u>	16,082.0	830.6	69.6	81.8	...	65.4	...	...
<u>Total economy ^{4/}</u>	22,140.0	1,193.8	100.0	212.9 ^{5/}	78.7 ^{5/}	230.3 ^{5/}	96.2 ^{5/}	...

Source: GATT, "Trade Policy Review Mechanism: European Communities," 1993, and staff estimates.

^{1/} Calculated as the ratio of France's share in EC exports of a commodity group to its share of total exports of the EC. A value greater than one indicates comparative advantage in that group, and a value less than one disadvantage.

^{2/} 1990 data.

^{3/} All data refer to 1989.

^{4/} Figures may not add up because all data are not for the same year.

^{5/} Trade in goods only.

Table 5. Revealed Comparative Advantage, 1980-90 1/

	<u>Revealed Comparative Advantage</u>	
	1980	1990
Food	1.5	1.8
Raw materials	0.7	0.8
Ores and other minerals	0.7	0.9
Fuels	0.6	0.6
Nonferrous metals	0.9	1.1
Iron and steel	1.4	1.4
Chemicals	1.3	1.3
Other semi-manufactures	1.1	1.1
Power generating machinery	0.9	1.4
Other nonelectrical machinery	0.9	0.8
Office and telecommunication equipment	0.6	0.6
Electrical machinery and apparatus	1.1	0.9
Automotive products	1.0	1.0
Other transport equipment	0.8	1.0
Textiles	1.1	1.1
Clothing	1.4	1.0
Other consumer goods	1.0	0.9

Source: Staff estimates based on data from GATT, "International Trade 1990-91."

1/ Revealed comparative advantage is measured as the ratio of a country's share in world exports of a particular commodity category to its share in "world" exports. A value greater than one indicates comparative advantage in that category, and a value less than one disadvantage. For this table "world" comprises the United States, EC, Canada, Japan, Hong Kong, and Singapore.

the "world." 1/ In brief, the tables show that France has comparative advantage in the following sectors: nonferrous metals, iron and steel, chemicals and pharmaceutical, power generating machinery, semi-manufactures, and civil aircraft. 2/ The pattern of comparative advantage has remained broadly unchanged between 1980 and 1990. 3/

Orders of magnitude of the gains to France from a successful conclusion of the Round can be discerned indirectly from the gains estimated for the EC as a whole. According to an OECD study, the EC stands to gain 1 percent of GDP from market liberalization in the Uruguay Round, which is greater (as percent of GDP) than the corresponding gain for the world as a whole.

4/ This is likely to be an underestimate because the assumptions underlying the calculations do not include liberalization of services. Another study calculates the gain to the EC at 0.8 percent of GDP. 5/ France, which is the Community's largest exporter of services, and the second largest exporter and importer of goods is thus likely to be a major beneficiary of the Uruguay Round. 6/

3. Agriculture

a. Blair House agreement

In November 1992, the United States and the EC Commission concluded an agreement (the Blair House agreement) to resolve their long-standing differences over trade in agriculture, which was also expected to be an important step in unblocking the impasse in the Uruguay Round. The Blair House agreement addressed two issues: oilseeds and agriculture in general.

1/ Because of lack of data, not all countries are included in the calculation of the index at the global level. The countries included constituted about 70 percent of world exports. The two tables give contradictory assessments of comparative advantage in some instances, for example, textiles and clothing. Some differences, for example, in relation to transport equipment, are also due to the different levels of product aggregation in the two tables.

2/ In three of these sectors, namely, steel, pharmaceutical, and chemicals, the Tokyo tariff agreement calls for zero or very low tariffs.

3/ Freudenberg and Müller (1992) compares French and German comparative advantage in 1989 at a more disaggregated level and shows that French specialization is concentrated in products whose export unit values are in the intermediate range relative to the European average. Germany, on the other hand, specializes in products with high export unit values.

4/ Goldin and van der Mensbrugghe (1993). The assumptions underlying the analysis--a 30 percent reduction in all tariff and nontariff barriers on agricultural and industrial products, and a 30 percent reduction in agricultural input subsidies--reasonably approximate the Draft Final Act of the Uruguay Round.

5/ Nguyen, Perroni and Wigle (1991).

6/ This is likely especially since some of the major tariff cuts are concentrated in sectors in which France has comparative advantage.

The oilseeds section of the Blair House agreement prescribes limits on the area devoted by the EC to oilseeds cultivation. Starting from a base of 5.128 million hectares, the area under cultivation would be reduced by 10 percent every year for the next three years. Any excess would lead to the imposition of a penalty. Oilseeds cultivation for industrial purposes is not included in the above calculation; however, should the production of by-products resulting from the cultivation of oilseeds for industrial purposes exceed 1 million tons of soya meal equivalents, the EC would take corrective action. The EC agreed to undertake binding arbitration in case the United States believed the agreement had been breached. In return, the United States would give up any claims for further compensation and consider its GATT dispute with the EC as settled.

The salient features of the section on agriculture in general, which would apply to all parties, are as follows.

(1) Market access

All nontariff barriers are to be converted to their tariff equivalents calculated on the basis of barriers prevailing between 1986 and 1988. The simple average of all tariffs is to be reduced by 36 percent over six years from the average of the levels prevailing between 1986 and 1988, with a minimum reduction of 15 percent for each product. A variable element--special safeguard--is to be added automatically to the tariff if the c.i.f import price falls by more than 10 percent below the average 1986-88 import price. This variable element grows proportionately with the difference between the actual and average 1986-88 import price. The purpose of this safeguard is to offset surges in imports, resulting in particular from exchange rate changes, that might adversely affect domestic producers. Minimum import opportunities--"minimum access"--equal to 3 percent of domestic consumption initially and growing to 5 percent after six years, must be provided. This is not a target for ex post measurement, but for ex ante opening.

(2) Internal support

Internal support as measured by the aggregate measurement of support (AMS) for agriculture as a whole will be reduced by 20 percent over six years compared to average support in the years 1986-88. ^{1/} Direct support, provided it is based on fixed areas and fixed yields, and is implemented in the context of a production limiting program, as provided for under the CAP reform, is excluded from this reduction.

(3) Export subsidies

The value of export subsidies is to be reduced by 36 percent and the volume of subsidized exports by 21 percent over six years, on a product

^{1/} The AMS includes all price support for outputs and inputs, but does not include general support not linked to the volume of production.

by product basis, from the average levels prevailing in 1986-90. (Current export levels are far higher than the average for 1986-90. As a result, actual reductions relative to current levels will be much larger.)

(4) Rebalancing

The United States and EC agreed that if EC imports of nongrain feed ingredients increased relative to the average 1986-90 level, they would consult with a view to finding a mutually acceptable solution.

(5) Peace clause

Both parties agreed to a clause under which each would refrain from initiating action in the GATT on the other's internal support and export subsidy measures.

b. Reform of the common agricultural policy

The main features of the CAP reform agreed in May 1992 in the main sectors are as follows. In cereals, the intervention price is to be reduced by 29 percent over 3 years to Ecu 100 per ton in 1995/96. Compensatory income payments, made on a per hectare basis, are contingent on farmers who produce more than 92 tons per year (equivalent to an average acreage of 20 hectares) setting aside 15 percent of arable land. ^{1/} The payments are based on a historical yield figure in order to reduce the incentives to increase production through increasing yield. The principles of reform for oilseeds are similar to those agreed for cereals. As for the beef sector, a 15 percent reduction in the intervention price is envisaged which will be spread equally over three years beginning 1993/94. In order to compensate for this reduction, the current premium for male bovine animals will be raised. The economic impact on this sector will be further mitigated because the reduced cereal prices consequent upon reform will lower feed costs for this sector. In the dairy sector, annual milk quotas are to be cut by 2 percent over 1993/94 and 1994/95, and butter prices are to be reduced by 5 percent over these two years. The reform plans will not significantly affect production in this sector.

c. Outstanding issues

France rejected the Blair House agreement initially. However, in June 1993, it declared that it could accept the agreement as it related to oilseeds. This acceptance was made possible after EC agriculture ministers agreed to increase France's share of total area devoted to oilseeds cultivation and to increase the compensation payments to farmers for set-asides and price cuts agreed under the CAP reform. For French oilseed

^{1/} The 29 percent reduction is relative to prices in 1991/92. The intervention prices for 1993/94 and 1994/95 are Ecu 117 and 108 per ton, respectively. The basic amount of the compensatory payment is 25, 35 and 45 Ecus per ton in 1993/94, 1994/95, and 1995/96 respectively.

farmers, this would mean a payment of F 2,600 per hectare, up from F 2,000 per hectare.

France continues to oppose the agriculture section of the Blair House agreement on the ground that it is incompatible with reform of the CAP agreed last year. It believes that the commitment to reduce subsidized export volume by 21 percent each year would reduce EC exports by more than that implied by CAP reform in cereals, milk and meat products. In the cereals sector, the Commission's calculations suggested an exportable surplus of 25 million tons under CAP reform as against 23.4 million tons under the Blair House agreement. ^{1/} According to the French authorities, the figure of 25 million tons is an underestimate as it assumes too low a yield figure compared to the recent historical average and overestimates EC demand for cereals resulting from substitution away from noncereal feeds and from increased production of white meat. In the dairy sector, although there may not be problems in relation to butter or skim milk powder, the export of cheese would be constrained to 305,000 tons as against 500,000 tons that would have been possible under CAP reform. The export of beef would also be restricted by the Blair House accord to about 817,000 tons compared to over 1 million tons under CAP reform. In the sectors mentioned above, there was also the concern that any reduction in the volume of subsidized exports would be allocated between EC member states in a manner that did not adequately take into account France's comparative advantage within the EC. For example, Table 6 shows that in 1991 French productivity, measured in yield per hectare, was the highest of the EC's significant cereal producers.

France was also concerned about other aspects of the Blair House agreement. The so-called "peace clause" created a presumption that the stricter general disciplines on subsidies contained in the Draft Final Act of the Uruguay Round would apply to agriculture after the six-year period covered by the agreement. France wanted to make the peace clause permanent to ensure that agriculture would benefit from special rules on subsidies. The provision on "rebalancing" in the agreement provided no legal guarantee against increased imports of nongrain animal feeds. The safeguard clause in the agreement was considered inadequate because it did not provide adequate protection against fluctuations in the Ecu/dollar exchange rate, which was important in determining the competitiveness of domestically-produced cereals against imported animal feeds such as corn gluten. Finally, France had reservations about the minimum access commitment because it could be interpreted as being product-specific, whereas France preferred to see it applied on a sectoral basis.

d. Protection/gains from liberalization

In France, the levels of assistance to agriculture in 1991, as measured by the producer subsidy equivalent (PSE), were high (about 56 percent) and

^{1/} The Commission's estimates for the various sectors are described in the supplement to the European Report, November 28, 1992.

Table 6. Cereals Sector: Selected Indicators

	Production (In million tons)		Productivity (In 100 kg per hectare)	
	1985	1991	1985	1991
Germany	25.9	27.5	53.1	62.4
Spain	20.5	18.6	27.3	24.1
France	55.8	60.3	57.5	65.5
Italy	16.7	17.8	36.2	42.5
United Kingdom	22.5	22.6	55.9	64.6
EC 12	160.3	169.0	44.9	50.0

Source: EC Commission, "The Agricultural Situation in the European Community, 1992 Report."

higher than for the EC as a whole (49 percent). For the EC, except for a decrease in 1989, the PSE has remained close to 50 percent, implying that about half of EC farm revenue results from policy interventions, through import restrictions or direct budgetary assistance. The corresponding figure for all OECD countries is 44 percent and for the United States, 30 percent. 1/ The PSE for France remains one of the highest in the EC because France's composition of agricultural products is biased in favor of those crops--cereals, milk, beef and oilseeds--which are most protected. Table 7 shows that France is also the largest recipient of direct financial support for agriculture from the EC.

Given the high degree of protection, it is not surprising that studies estimate that agricultural reform will increase economic welfare in France and the EC. One study estimates that a 50 percent reduction in agricultural protection will increase the EC's welfare in 2000 by \$14.1 billion (in 1985 prices). 2/ A study by the Central Planning Bureau of the Netherlands indicates that CAP reform would increase economic welfare in France in 2002, as measured in equivalent consumer expenditures, by Ecu 2.1 billion (at 1992 prices), compared to Ecu 1.6, 1.6, and 1.1 billion in the UK, Germany, and Italy respectively. 3/

e. Bananas

In February 1993, a uniform regime for the import of bananas into the EC was approved by the EC's Agricultural Council. The new regime aims at replacing the earlier system of national quotas by a common EC-wide regime (as necessitated by the Single Market Program), while attempting to avoid erosion of preferences for ACP countries. France had obtained an Article 115 authorization pending the coming into force of the new regime on July 1, 1993. In May 1993, a GATT panel found that the earlier regime contravened GATT rules. In particular, it found that restrictions imposed by France and 5 other countries on imports from Latin American countries ("dollar bananas") went against GATT rules prohibiting quantitative restrictions; it also ruled that the tariff preferences granted by the EC to the ACP countries under the Lomé Convention were also against GATT rules. Latin American exporters have meanwhile lodged another complaint against the new regime in the GATT, and a panel has been instituted to investigate the complaint.

Under the new regime, "traditional suppliers" from ACP countries would be allowed duty-free access to the EC up to the highest level of the volume of imports from these countries in any year before 1991, while a tariff quota of 2 million tons would be opened for other countries, with the tariff

1/ OECD (1993a).

2/ Tyers and Anderson (1992).

3/ Folmer, et al., (1993). The study does not calculate producer surplus losses and could hence overestimate total welfare gains; however, it does show that real value added in agriculture (and hence farm income) in France would be higher with CAP reform than without it.

Table 7. EC Expenditures on Agriculture by
Member State, 1986 and 1991 ^{1/}

	<u>Total</u>		<u>Per inhabitant</u>		<u>Per farm worker ^{2/}</u>
	(million ECU)		(ECU)		(ECU)
	1986	1991	1986	1991	1991
Belgium	995	1,499	101	150	15,140
Ireland	1,293	1,900	365	540	12,340
Netherlands	2,300	2,700	158	180	9,220
Denmark	1,089	1,238	213	240	8,200
Germany	4,504	5,435	74	85	5,860
France	5,656	6,820	102	120	5,430
United Kingdom	2,091	2,502	37	36	4,470
Italy	3,223	5,680	56	100	3,120
Spain	358	3,828	9	100	2,850
Greece	1,527	2,485	153	240	2,800
Luxembourg	4	10	10	25	1,580
Portugal	64	629	6	65	740
Total EC	23,109	34,794	72	105	4,170

Source: GATT, "Trade Policy Review Mechanism: European Communities," 1993.

^{1/} Guarantee and guidance expenditure under the European Agricultural Guidance and Guarantee Fund.

^{2/} Persons employed in agriculture, forestry, and fishing (including self-employed and unpaid family workers).

amounting to about 20 percent. This quota is equivalent to the average exports of Latin American bananas to the EC in 1989-90, but 20 percent less than the amount supplied in 1991. Shipments beyond this quota would face very high duties (about Ecu 850 per ton or about 170 percent for Latin American suppliers and slightly less, Ecu 750 per ton, for ACP countries). The possibility is kept open of an increase in the future quota should demand developments warrant it. The quota system will be managed through a system of import licenses allocated to importers from nontraditional and traditional sources in the ratio 66.5 and 30 percent respectively, with 3.5 percent allocated to other importers.

Of the total banana consumption of 3.68 million tons in 1991, 19 percent was domestically sourced, 16 percent from ACP countries and 65 from Latin American suppliers. Domestic EC production of bananas is located mainly in the French overseas departments of Martinique and Guadeloupe, but also in the Canary Islands. Germany, which under a special exemption from the Treaty of Rome was allowed to import bananas duty-free, sought an injunction from the European Court of Justice against the new arrangement, which, in Germany's view, would be more restrictive than the old one and lead to an increase in prices in Germany by 70 percent. In June, the Court turned down an appeal for interim measures, but is reviewing the main case challenging the new regime.

4. Single market program

The Single Market Program, designed to give a boost to efficiency and growth through freeing the movement of goods, labor, capital and services within the EC, went into effect on January 1, 1993. As of June 1993, France had transposed into its national law about 83 percent of the 215 directives necessary for the establishment of the single market; ten more directives will be transposed later this year, and some of the remaining 32 are likely to be reviewed or rendered unnecessary because of the principle of subsidiarity. France's recourse to Article 115 authorizations, which allow EC member states to erect national barriers with the approval of the Commission, declined from 10 in 1991 to 2 in 1992, and 1 so far this year. This trend is in keeping with the objective of the single market to eliminate national barriers.

The Single Market Program's efforts to eliminate intra-EC barriers to trade in goods have focused on simplification of cumbersome internal customs procedures, reduction of technical barriers to trade, and opening up the EC market in the area of government procurement. Similarly, intra-EC barriers in services sectors, notably financial services, have been reduced, and further opening is envisaged for other sectors such as transport and telecommunications. The Single Market Program has improved access in the EC in goods and services, and the substitution of EC-wide regulations for national ones has also enhanced transparency and legal security for both EC and non-EC producers.

5. Relations with CEECs

The EC Commission has signed preferential trade agreements ("Europe Agreements") with the Czech Republic, Slovak Republic, Bulgaria, Hungary, Poland, and Romania. The Europe Agreements aim at establishing a free trade area between the EC and the above countries in ten years. They generally oblige the EC to phase out tariffs and quantitative restrictions more quickly than the CEECs (see Table 1). On many industrial goods (such as machinery), tariffs were eliminated immediately after the agreements entered into force; however products such as chemicals, fertilizer, automobiles, glass and leather goods will witness progressive duty reductions and quota increases until all restrictions are eliminated, no later than in five years. However, trade in textiles, coal and steel, as well as agricultural products (which together account for more than half of all CEEC exports to the EC) are considered "sensitive", and hence subject to protocols, which are in general more restrictive. In the case of Bulgaria, the association agreement excludes wine products, which represent about 20 percent of Bulgaria's exports to the EC.

In June 1993, the European Community adopted proposals aimed at broadening the scope and accelerating the pace of the liberalization commitments that were embodied in the Europe Agreements. The French position--that it would be difficult to envisage further liberalization in sensitive sectors--could be explained in part by their importance, especially in certain regions. ^{1/} Furthermore, import penetration in these sectors is relatively high--about 25 percent in France--fueling the perception that further import penetration could result in a loss of jobs.

A recent study has estimated the importance of the sensitive sectors for the CEECs and the scope for further liberalization by the EC. ^{2/} These sectors, and trade with the EC in these sectors, are very important for the CEECs. ^{3/} Although some factors conditioning the French position are mentioned above, Table 10 shows that the CEEC countries account for a very small fraction of total import penetration in France (less than 2 percent) and in the EC (less than 1 percent), supporting the view that imports from these countries could increase further without serious ill effects on EC producers. These findings are also supported by estimates of

^{1/} The share of these sectors in value-added in manufacturing and financial services is about 22 percent for France as a whole, but reaches 37 percent in the Nord-Pas-de-Calais region and about 30 percent in the Est region.

^{2/} Rollo and Smith (1992).

^{3/} In general, with the collapse of trade with the former USSR, the EC has become a significantly more important trading partner for the CEEC, and now accounts for about 50 percent of CEEC trade compared with about 25 percent in 1989. In 1989, the sensitive sectors accounted for a sizeable portion of the CEECs' value-added in manufacturing, employment in manufacturing (Table 8), and exports, especially exports to the EC (Table 9).

Table 8. Selected Indicators of Sensitive Products in CEECs, 1989

	Bulgaria	CSFR	Hungary	Poland	Romania
<u>(In percent of value-added in manufacturing)</u>					
<u>Share of value added</u>					
Iron and steel (ISIC 371)		12.4	6.4	6.6	4.3
Chemicals (ISIC 351, 352)		6.7	12.9	6.3	3.7
Footwear, textiles, and apparel (ISIC 21, 322, 324)		10.9	8.9	15.7	18.8
Food and live animals (ISIC 311, 3312)		7.2	7.4	6.2	9.2
Total		37.2	35.6	34.8	36.0
<u>(In percent of employment in manufacturing)</u>					
<u>Share of employment</u>					
Iron and steel (ISIC 371)	2.9	6.4	4.5	4.3	
Chemicals (ISIC 351, 352)	4.5	4.6	5.8	5.3	
Footwear, textiles, and apparel (ISIC 21, 322, 324)	16.7	15.7	16.2	19.2	
Food and live animals (ISIC 311, 3312)	8.5	6.8	14.8	11.3	
Total	32.6	33.5	41.3	40.1	
<u>(In percent of total exports)</u>					
<u>Pre-transition export destinations</u>					
EC		15.7	25.0	28.9	
U.S.S.R.		30.5	25.1	24.5	
Other Eastern Europe		23.3	15.9	16.2	

Source: Rollo and Smith (1993).

Table 9. Pre-transition Exports of Sensitive Products by CEECs, 1989

(In percent of total exports)

	<u>Bulgaria</u>		<u>CSFR</u>		<u>Hungary</u>		<u>Poland</u>		<u>Romania</u>	
	Total	EC	Total	EC	Total	EC	Total	EC	Total	EC
Iron and steel (SITC 67)	...	10.5	6.4	12.5	4.7	4.9	3.6	5.3	...	5.0
Chemicals (SITC 5)	...	11.8	6.4	11.6	12.3	10.0	7.2	6.7	...	4.4
Footwear, textiles, and apparel (SITC 65, 84, 85)	...	11.6	6.2	12.6	3.6	17.6	5.4	11.7	...	19.5
Food and live animals (SITC 0)	...	16.3	2.2	8.0	18.5	25.3	9.9	19.9	...	3.8
Total	...	50.2	21.2	44.8	39.1	57.8	26.1	43.8	...	32.6

Source: Rollo and Smith (1993).

Note: Exports to EC measured as EC imports.

Table 10. Selected Indicators of Sensitive Products in France

	<u>Metalliferrous products</u>	<u>Chemical products</u>	<u>Textiles etc.</u>	<u>Sum of sensitive non-agriculture</u>	<u>Manuf. and finance as proportion of total value-added</u>	<u>Industry</u>	<u>Agriculture</u>	<u>Food products</u>	<u>Food and Agriculture</u>	<u>Sum of industry and agriculture as percent of regional GNP</u>	<u>All sectors</u>
<u>(In percent of value-added in manufacturing and financial services)</u>											
<u>Regional shares of sensitive sectors</u>											
France	6.2	9.5	6.7	22.4	26.6						
Ile de France	2.3	15.2	3.5	18.3							
Bassin Parisien	6.1	10.8	6.3	23.3							
Nord-Pas-de-Calais	14.7	8.2	13.5	36.5							
Est	16.0	6.4	7.0	29.4							
Ouest	1.7	3.9	7.5	13.2							
Sud-Ouest	3.1	9.2	9.2	21.5							
Centre-Est	4.7	10.0	7.4	22.0							
Méditerranée	7.9	12.5	3.8	24.2							
<u>(In Ecu millions)</u>											
<u>Regional producer losses</u>											
France						157	859			0.16	
Ile de France						32	24			0.03	
Bassin Parisien						33	277			0.29	
Nord-Pas-de-Calais						18	35			0.15	
Est						21	53			0.14	
Ouest						10	180			0.29	
Sud-Ouest						12	127			0.24	
Centre-Est						20	70			0.13	
Méditerranée						11	85			0.16	
EC						1,267	3,741			0.16	
<u>(In percent of gross production)</u>											
<u>Imports as fraction of gross production</u>											
<u>All extra-EC import shares</u>											
France	33.1	15.9	31.4	25.3			15.1	5.7	9.8		9.0
EC4 1/	14.4	9.1	13.9	12.0			14.9	4.6	8.2		6.1
EC total	14.7	10.5	13.6	12.6			15.2	4.6	8.4		6.6
<u>CEEC import shares</u>											
France	2.2	1.0	2.9	1.9			0.6	0.6	0.6		0.4
EC4 1/	0.8	0.5	1.0	0.7			0.5	0.3	0.4		0.2
EC total	0.8	0.5	1.0	0.7			0.4	0.2	0.3		0.2

Source: Rollo and Smith (1993).

1/ Germany, France, Italy, and the United Kingdom.

producer losses in the face of a large hypothetical increase in exports from these countries. For France as a whole and in selected regions (Table 10), these losses are very small as a percentage of corresponding GNP, prompting the conclusion that the "scale of the adjustments required by liberalized trade with eastern Europe seems quite manageable." 1/ There are also considerable gains that have accrued to France and the EC from liberalization by these countries.

6. Relations with countries of the former Soviet Union (FSU)

The EC signed trade and cooperation agreements (nonpreferential) with Estonia, Latvia and Lithuania in May 1992. 2/ In December 1992, the EC Council authorized the start of negotiations to conclude similar nonpreferential agreements with the FSU countries. A mandate sought by the Commission to start negotiations on a preferential trade agreement with Russia was not granted by the EC Council. The position of France is that it would be premature to consider a timetable for such liberalization because the underlying political and economic circumstances in Russia are not yet appropriate. Meanwhile, on a strictly temporary and noncontractual basis, the EC has granted GSP status for Russia on some products in 1993, which could be renewed in 1994. 3/

7. Automotive sector

The automotive sector in France is protected through formal or informal trade and trade-related measures such as quotas, trade restraint arrangements, and restrictive standardization and car registration procedures. Chart 1 shows the market share of passenger cars imported from Japan by EC member states and EFTA countries. France has among the lowest shares (about 4 percent). In 1991, the EC and Japan reached a consensus on conditions for imports of Japanese cars. The main features are: (i) complete liberalization of the car market in 1999; (ii) abolition by the EC of all Article 115 restrictions on imports from Japan from 1993; and (iii) monitoring by Japan of its exports of vehicles to the five "restricted markets" in the EC, the understanding being that shipments in 1999 would reach 1.23 million units in a total EC market estimated to be 15.1 million units. 4/ Of the 1.23 million units, 150,000 or 5.3 percent of the market would be supplied to France. It appears that the 1991 consensus excludes any trade restrictions on cars produced in EC-based Japanese brand-name plants. 5/ Bilateral consultations are held twice a year to monitor export trends. The EC's expectation is that in case of a shortfall in demand, Japan would reduce shipments by two-thirds of the shortfall.

1/ See Rollo and Smith (1992), p.165.

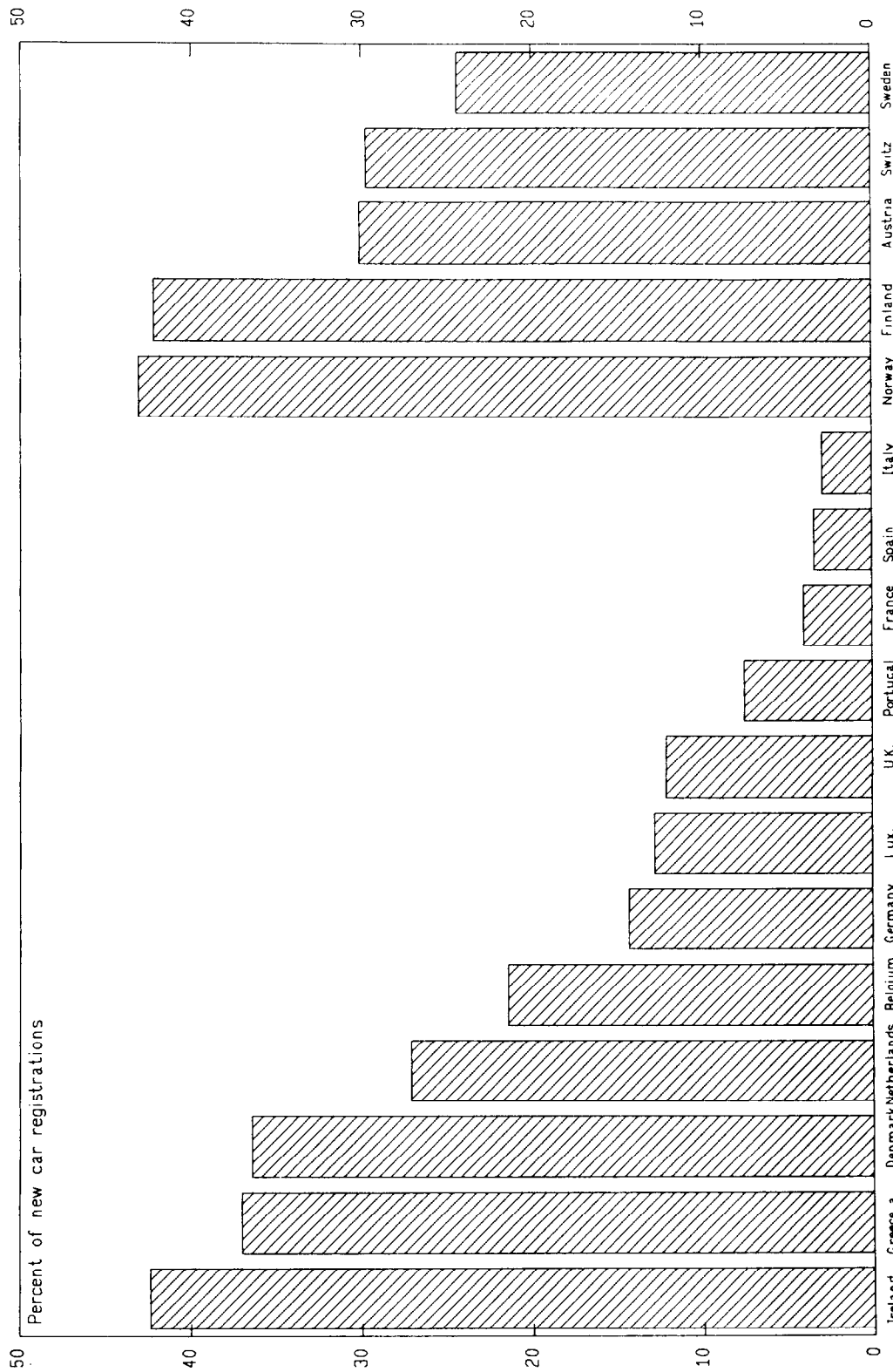
2/ Similar agreements were also signed with Albania and Slovenia.

3/ France is seeking restrictions on aluminum imports from Russia.

4/ The five "restricted" markets are: France, Italy, Spain, Portugal, and the United Kingdom.

5/ GATT (1993), p. 148.

Chart 1
Market Share of Passenger Cars Imported from Japan in EC and EFTA, 1992



Source: GATT "Trade Policy Review Mechanism: European Communities," 1993.

a. 1990 data

In April this year, Japan agreed to cut exports by 9.4 percent to 1.1 million vehicles based on an estimated decline in sales of 6.5 percent from 13.94 million vehicles in 1992 to 13.03 million vehicles in 1993. The forecast for the decline is now about 15 percent (in the first five months of 1993, car sales declined by 17.6 percent) leading to calls from the French car industry and others for further cuts in Japanese exports and for the inclusion of cars made in Europe by Japanese manufacturers in determining the export quotas (the current production of cars manufactured by Japanese manufacturers in Europe--the so-called Japanese transplants--is estimated to be about 450,000.)

8. Steel

The situation in the steel industry in France and in the rest of the EC is characterized by overcapacity, reflecting the global recession and the intensification of competition, including from CEEC sources. Attempts have been made over the last several years to restructure the industry by reducing capacity and employment, while eliminating the provision of state aid. However, there has been a simultaneous intensification of protectionist pressures manifested in the extension of EC surveillance for all iron and steel products with the "purpose of monitoring trends in current imports and swiftly identifying adverse effects on the Community industry concerned" (Commission Decision No. 1856/92/ECSC), in the safeguard and antidumping actions (which have also involved the French industry) taken against imports from the CEEC countries (see Table 2), and in the reported special safeguard clauses for steel in the association agreements with Bulgaria and Romania which are more restrictive than the agreements with other CEECs. According to a study, price surveillance has led to a remarkable stability in steel prices despite large increases in quotas to CEEC producers. ^{1/} The study infers that price surveillance, trade restrictions and the increasing EC ownership of CEEC production capacity have contributed to an effective cartelization of the industry.

At the same time, French exports have also been affected by restrictive actions taken in the North American market. In January, provisional antidumping and countervailing duties were imposed by the United States against steel exports from France and other EC countries; it is estimated that about F 1 billion of French exports were affected. In June, these provisional duties were confirmed and levied at rates ranging from 44 to 80 percent on French exports. In July, following a ruling by the United States International Trade Commission, tariffs on all French steel exports, except galvanized sheet products, were removed. The EC has filed a complaint against the United States action in the GATT. Similarly, Canada imposed preliminary antidumping duties in June on French cold-rolled sheet steel exports amounting to 38.1 percent which were confirmed in July.

Meanwhile efforts are under way to negotiate a multilateral steel agreement, which would aim to eliminate all tariff and nontariff barriers,

^{1/} Messerlin (1992).

as well as all trade-distorting subsidies. 1/ France is willing to accept these disciplines, but is also seeking restraints on the use of antidumping and countervailing measures, which have adversely affected its steel exports. France also sees the spate of antidumping and countervailing actions in the United States as an attempt to influence the multilateral negotiations on steel.

9. Civil aircraft

In July 1992, the United States and the EC signed a bilateral agreement limiting government support for civil aircraft programs, including those related to Airbus Industrie, in which France is a major shareholder. Under the program, future production support is banned; direct development support is limited to 33 percent of development cost and is to be repaid within 17 years; and indirect support, including through preferential access to military R&D contracts, is limited to 3 percent of the industry's overall sales.

10. Government procurement

In January 1993, the EC Utilities Directive, which covers government procurement by public utilities in the telecommunications, water, energy and transportation sectors, went into effect. The United States threatened to retaliate against the directive because of a discriminatory provision (Article 29) which allowed EC governments to reject tenders where the non-EC content exceeded 50 percent, and obliged governments to give a 3 percent preference to EC bids. In April, the United States and the EC reached an agreement which guarantees access for both parties to the other's electrical equipment market, but no agreement was concluded on telecommunications. France considers it particularly important that the agreement set in train a process which will lead to the eventual elimination of the "Buy American" provisions (implemented at subfederal levels in the United States) which discriminate against foreign bidders. However, because of the failure to reach agreement on telecommunications, the United States imposed sanctions against the EC by denying access to United States telecommunications procurement, which led to counter-retaliation by the EC preventing United States firms from bidding for \$15 million worth of EC government contracts. 2/

1/ The agreement on tariffs at the G-7 summit in Tokyo provides for the elimination of all tariffs on steel, but conditional on a successful negotiation of a multilateral steel agreement.

2/ In June, France expressed concern about a decision by Germany not to apply Article 29 of the Utilities Directive to United States companies and also not to apply the sanctions agreed by the EC against the United States, on the ground that both actions were contrary to EC law.

11. State aid

According to the Third Survey of State Aids published by the Commission last year, the volume of state aid granted by France to the manufacturing sector, though declining between 1986-88 and 1988-90, remained large in absolute terms (Table 11). In 1991, moreover, state aid to industry increased in absolute terms. France accounted for about 17 percent of total state aids in the EC in the two periods 1986-88 and 1988-90. Measured as a share of value-added, France's state aid, which was less than the EC average during 1986-88, was equal to the EC average in 1988-90, and higher than the corresponding figures for Germany and the United Kingdom. France's overall state aid (including agriculture and services) was lower than the EC average when expressed as a percent of GDP, but higher than the EC average when expressed as a percent of total government expenditure, or in terms of person employed (Table 12). Table 13 shows that in France, sector-specific aid far exceeded aid for horizontal objectives such as R&D promotion, trade promotion, etc. The transport, coal and the shipbuilding sector were the largest beneficiaries of state aid. Table 14 shows that in the shipbuilding sector, state aid as a percent of value-added was extremely high in France, and significantly higher than the corresponding average for the EC as a whole; in this sector, France also completely restricts imports of a variety of ship categories. In the coal mining sector (Table 15), although France has a high level of state aid on a per capita basis, the support for current production accounts for a small and rapidly declining share of total aid; the high levels of aid were used to finance social/redundancy expenditures necessitated by the far-reaching restructuring and rationalization programs aimed at reducing production.

Table 11. State Aid to the Manufacturing Sector

(Annual average 1986-88 and 1988-90)

	<u>In percent of value added</u>		<u>In ECU per person employed</u>		<u>In million ECU 1/ 1986-88 1988-90</u>	
	1986-88	1988-90	1986-88	1988-90	1986-88	1988-90
Belgium	4.3	4.1	1,606	1,655	1,175	1,211
Denmark	1.9	2.1	593	634	316	333
Germany	2.7	2.5	994	984	7,869	7,865
Greece	24.3	14.6	2,983	1,502	2,074	1,072
Spain	6.8	3.6	1,749	936	4,491	2,499
France	3.8	3.5	1,437	1,380	6,479	6,106
Ireland	6.4	4.9	2,114	1,734	447	368
Italy	6.2	6.0	2,139	2,175	10,760	11,027
Luxembourg	2.3	2.6	988	1,270	37	48
Netherlands	3.1	3.1	1,215	1,327	1,101	1,225
Portugal	2.2	5.3	302	758	245	616
United Kingdom	2.6	2.0	770	582	4,101	3,133
EUR 12	4.0	3.5	1,325	1,203	38,835	35,503

Source: EC Commission, "Third Survey on State Aids in the European Community," 1992.

1/ 1986-88 averages in 1989 prices.

Table 12. Overall State Aids in EC Member States 1/

	<u>In percent of GDP</u>		<u>In ECU per person employed</u>		<u>In percent of total Government expenditure</u>	
	1986-1988	1988-1990	1986-1988	1988-1990	1986-1988	1988-1990
Belgium	3.2	2.8	1,153	1,040	6.0	5.4
Denmark	1.0	1.1	385	409	1.8	1.9
Germany	2.5	2.4	964	971	5.3	5.2
Greece	4.5	3.1	640	387	9.2	6.0
Spain	2.7	1.8	668	480	6.5	4.2
France	2.0	1.8	779	735	4.0	3.7
Ireland	2.7	2.0	703	564	5.2	4.5
Italy	3.1	2.9	1,016	982	6.2	5.6
Luxembourg	4.0	4.0	1,390	1,389	7.4	7.6
Netherlands	1.3	1.3	513	528	2.1	2.2
Portugal	1.5	2.2	167	245	3.4	5.0
United Kingdom	1.1	1.1	300	312	2.6	2.9
EUR 12	2.2	2.0	728	657	4.6	4.3

Source: EC Commission, "Third Survey on State Aids in the European Community," 1992.

1/ Annual Average 1986-88 and 1988-1990, in Percent of GDP, per Person Employed, and Relative to Government Expenditure.

Table 13. State Aid in EC Member States by Sector and Function, Annual Average 1988-90

(Percent and billion ECU)

	B	DK	F	D	GR	IRL	I	L	NL	P	E	UK
<u>Agriculture/fisheries</u>	6	27	14	11	14	20	15	7	21	20	4	10
<u>Industry/services</u>												
Horizontal objectives	24	18	5	9	58	30	15	7	37	12	12	17
Innovation	4	11	6	4	1	2	2	1	17	1	4	3
Trade/export	4	3	14	1	16	23	3	0	0	0	0	6
Small & medium firms	8	0	4	2	7	5	5	4	15	0	2	4
Others	8	4	1	2	25	0	5	2	5	11	6	4
Particular sectors	64	54	57	62	17	25	43	74	36	65	82	60
Coal	28	0	17	32	0	0	0	0	0	0	19	42
(current production)	(4)	(0)	(7)	(17)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(28)
Steel	0	0	0	0	0	0	3	0	0	16	12	0
Shipbuilding	0	10	3	1	2	0	2	0	1	19	4	3
Transport	35	42	30	26	13	20	36	74	31	11	35	10
Others	1	2	8	2	1	5	2	0	2	19	12	5
<u>Regional aid</u>	6	1	4	18	11	25	27	12	6	3	2	13
<u>Total</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
(Billion ECU)	(3.8)	(1.1)	(16.0)	(25.8)	(1.5)	(0.6)	(22.7)	(0.2)	(2.6)	(0.9)	(6.0)	(8.2)

Source: EC Commission, "Third Survey on State Aids in the European Community," 1992.

B: Belgium; DK: Denmark; F: France; D: Germany; GR: Greece; IRL: Ireland; I: Italy; L: Luxembourg;
 NL: Netherlands; P: Portugal; E: Spain; UK: United Kingdom.

Table 14. Aid to Shipbuilding in EC Countries,
Annual Average 1986-88 and 1988-90

(In percent of value added in this sector)

	1986-88	1988-90
Belgium	22.4	14.5
Denmark	30.3	66.4
Germany	20.3	25.1
Greece	17.0	13.0
Spain	10.4	34.1
France	117.8	55.0
Ireland	--	--
Italy	59.7	84.8
Luxembourg	--	--
Netherlands	16.3	23.4
Portugal	10.1	78.6
United Kingdom	24.0	10.8
EUR 12	34.5	(34.3)

Source: EC Commission, "Third Survey on State Aids in the European Community," 1992.

Table 15. State Aid to the Coal Mining Sector,
Annual Average 1986-88 and 1988-90

	1986-88		1988-90	
	<u>ECU per person employed</u>	<u>Aid to current production 1/</u>	<u>ECU per person employed</u>	<u>Aid to current production 1/</u>
Belgium	112,126	24	252,412	14
Germany	47,006	52	60,219	52
Spain	21,882	40	27,517	44
France	74,538	16	108,349	7
Portugal	2,799	92	4,117	100
United Kingdom	12,180	33	40,071	68

Source: EC Commission, "Third Survey on State Aids in the European Community," 1992.

1/ In percent of total aid.

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