OECD ECONOMIC SURVEYS

1999

SPECIAL FEATURES
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Research and innovation

FRANCE

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1998-1999

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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Publié également en français.

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BASIC STATISTICS OF FRANCE

THE LAND

Area (1 000 km²), 1996	549.2	Major cities (thousand inhabitants), 1990:	
Agricultural area (1 000 km²), 1996	301.4	Paris	2 152
		Marseille	801
		Lyon	415

THE PEOPLE (1997)

Population (thousands)	58 604	Total labour force (thousands)	25 642
Number of inhabitants per km²	107	Percentage of employment in:	
Average annual increase (thousands) 1990-97	267	Agriculture	4.3
		Industry and construction	24.9
		Services	70.7

PRODUCTION (1997)

Gross domestic product at market prices		Origin of the gross domestic product,	
(FF billion)	8 127.6	at market prices (per cent):	
Gross domestic product per capita ($)	23 758	Agriculture	2.4
Gross fixed investment as a		Industry	23.8
per cent of GDP (current prices)	17.1	Construction	4.6
		Services	69.1

GENERAL GOVERNMENT (1997)

ESNA concept, as a per cent of GDP:	
Current expenditure	51.6
Current revenue	50.7
Current fixed investment	2.8

FOREIGN TRADE (1997)

Exports of goods and services (% of GDP)	26.7	Imports of goods and services (% of GDP)	22.9
Main exports as a percentage of total		Main imports as a percentage of total	
exports (SITC):		imports (SITC):	
Food, beverages and tobacco	13.1	Food, beverages and tobacco	9.5
Machinery and transport equipment	41.7	Machinery and transport equipment	36.1
Iron and steel products	4.8	Iron and steel products	5.2
Chemical products	14.9	Chemical products	12.4
Textiles	2.5	Mineral fuels, lubricants and related	
		materials	8.3

THE CURRENCY

Monetary unit: franc		Currency units per $, average of daily figures:	
		Year 1997	5.84
		December 1998	5.60
		Currency units per euro, since	
		31 December 1998	6.55957

Note: An international comparison of certain basic statistics is given in an Annex table.

This Survey is based on the Secretariat's study prepared for the annual review of France by the Economic and Development Review Committee on 4 December 1998.

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After revisions in the light of discussions during the review, final approval of the Survey for publication was given by the Committee on 11 January 1999.

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The previous Survey of France was issued in February 1997.

Assessment and recommendations

A new era opens

In more ways than one, France has entered a new era. The political and economic context has changed radically since the last OECD *Survey* was published two years ago. The snap legislative elections held in May 1997 brought a new government into power and ushered in a new period of *cohabitation*. Whereas the recovery was still only a scenario two years ago, it has since outstripped forecasts that were deemed optimistic at the time. The introduction of the euro at the start of 1999 fundamentally modifies the macroeconomic policy framework. Finally, the extra-European environment, which gave a powerful impetus to the recovery, has since worsened dramatically, to a point where doubts are being cast on the vigour and sustainability of the expansion.

From one recovery to another: first led by exports, the expansion is continuing, pulled by domestic demand

Whereas the recovery of the mid-1990s was short-lived and weak, the growth of the past year and a half, which has been running at an annualised average rate of over 3 per cent, is reminiscent in certain ways of the cycle that France experienced at the end of the 1980s. In both cases, strong foreign demand boosted manufacturing output. French firms have been able to benefit more from the recovery this time thanks to their competitiveness, as attested by a trade balance now in structural surplus. While then, accelerating domestic demand came on top of buoyant exports, the driving force of the recovery this time has shifted to a greater extent to consumption and investment. The strength of fixed capital formation can be explained in both cases by a previous latency period and favourable financial conditions.

The objective of a stable general price level has been achieved

Another major difference pertains to inflation. Whereas consumer prices at the end of the 1980s were rising at an annual rate of about 3 per cent, underlying inflation has on average not exceeded 1 per cent since 1995. Industrial prices have been falling since end-1997, pushed down by the collapse of world commodity prices. Such a degree of stability of the general price level has not been seen for more than half a century. The final objective of monetary policy, which since 1994 has been defined as an inflation rate of less than 2 per cent during the current year as well as over the medium run, has thus been largely achieved. An important disinflationary factor has been the relative wage moderation during the present recovery.

Growth has become distinctly richer in jobs, including those at the bottom end of the wage scale, and unemployment has started to come down

Again unlike previous recoveries, the growth of employment has followed that of activity very closely, and to a larger extent. The apparent improved responsiveness of the labour market can be explained by a combination of factors: the greater flexibility stemming from the growth of contracts which are suppler than traditional full-time open-ended contracts, and especially of temporary contracts; social contribution exemptions for wages close to the minimum wage, which significantly reduce the cost of unskilled labour; and the increase in the number of subsidised jobs in the non-market sector. The acceleration of the rate of job creation led to a significant fall in the unemployment rate, from 12.5 per cent in spring 1997 to 11.5 in November 1998.

Growth should continue above its potential rate barring a further deterioration in the international environment

Recent conjunctural data confirm the signs of a slowdown observed since mid-1998. However, if the extra-European economic climate does not deteriorate further, the buoyancy of domestic demand should suffice to maintain growth above potential in the next two years, against a background of very low inflation. Historically low nominal interest rates should help to stimulate investment, including residential investment. Consumption would benefit from a still strong rate of job creation and the modest reduction in the saving ratio partly associated with a gradual reduction in the unemployment rate. The current balance would continue to show a substantial surplus of around 2½ per cent of GDP. This scenario may not materialise, however, owing to the risks associated not only with the international environment

but also with domestic policies, both in the fiscal area and as regards structural reforms.

Monetary policy is becoming unified and the margins of manoeuvre of fiscal policy are currently limited

Up to 1997, the priority of macroeconomic policy was to ensure that France met the Maastricht Treaty criteria for joining the European Monetary Union. This objective having been met, and with the euro about to be introduced, the thrust and instruments of macroeconomic policy are being redefined. Monetary policy henceforth comes directly under the European Central Bank, which will act in the light of conditions in the entire euro area. Insofar as France's position in the economic cycle is close to that of the eleven member countries as a group, this transfer of sovereignty should not create problems. However, the amount of fiscal leeway is limited in the context of the Stability and Growth Pact as long as the medium-term objective of a general government structural balance close to equilibrium is not reached. It is also limited by a public debt approaching the Maastricht limit of 60 per cent of GDP, and by the increase in social transfers that will occur as the numerous first post-war cohorts reach retirement age.

The pace of fiscal adjustment has significantly slowed

The general government deficit was cut by 0.9 point of GDP per year on average between 1994 and 1997 to 3.0 per cent of GDP. Adjusted for the effects of the cycle on revenue and expenditure and a large non-renewable accounting operation in 1997, the rate of adjustment was of the order of 0.6 point per year. To achieve this result, a distinct tightening of fiscal policy was required in 1997, which took the form of tax increases, mainly on firms, and expenditure freezes. The 1998 Budget, however, marks a sharp slowdown in the rate of adjustment, and the outturn should be only a small decline in the structural deficit.

The 1999 Budget is part of an overly gradualist strategy of reducing the weight of general government

As in 1998, the government is aiming to reduce the structural deficit by 0.2 point of GDP in 1999. Several factors explain the modesty of this objective, which will be all the easier to achieve as a substantial fraction of 1999 tax revenue will be based on activity in 1998. The rate of tax and social contributions is set to fall by 0.2 point of GDP, slowly continuing the reduction begun in 1998 after five years of

uninterrupted hikes. At the same time, the share of public spending in GDP will decrease by 0.8 point, after falling by 1.2 point in 1998, corresponding to an increase in the volume of public spending of over 1 per cent. This partly reflects the authorities' desire to support domestic demand at a time when the international environment has worsened. It implies, however, that in the event of a more marked slowdown, little room will be available for automatic stabilisers or discretionary measures to offset it. The 2000 Budget should therefore be more markedly oriented towards consolidation over the medium term. Furthermore, a precautionary margin could be brought about if, as in the Netherlands and Canada, a conventionally prudent growth assumption were to underpin the budget.

Several fiscal challenges still lie ahead, however

Among the long-term reforms launched in recent years is that of the tax system and, more broadly, of the State. Whole chunks of the tax system are archaic or sources of distortions detrimental to growth and employment. The widening of the base of the *contribution sociale généralisée*, the reduction of social security contributions on low wages, the cut in stamp duties on property sales and the reform of the *taxe professionnelle* thus go in the right direction. However, modernisation should be conducted without exacerbating the sometimes chronic instability of the system, which is difficult with an approach based on sequential tinkering rather than a general overhaul. Efforts are also being made to try and improve government efficiency, notably by delegating more budgetary responsibilities to certain government departments through deconcentration and contractual arrangements. Regarding budgetary posts, stabilising recruitment at the current level would make it possible to start reducing the number of civil servants while reducing their average age. The untapped sources of productivity gains seem sufficiently large, in particular *via* the introduction of new information technologies and the redeployment of staff they facilitate, to ensure that the volume and quality of public services would not suffer. The health care reforms initiated since 1995 and recently amended aim to curb medical spending by improving the economic incentives of the actors concerned, but their impact, once fully implemented, remains to be seen. Regarding the pension

problem, the magnitude and urgency of which has often been underlined by the OECD, there have been few new measures since the reform of the general scheme in 1993. The recent decisions to continue to index pensions on prices and to create a reserve fund are encouraging though of limited scope. Discussions are under way under the aegis of the Plan on the future of all the pension regimes, including the special schemes. It is to be hoped that they will lead to a consensus ensuring the long-run viability of the pension system as a whole.

Despite the implementation of numerous measures and its recent decline, unemployment is still much too high

Notwithstanding the noteworthy fall in unemployment since the fall of 1997, its rate is still very high, both historically and compared with the majority of other OECD countries, and despite the large number of sometimes costly schemes that have been set up. Public expenditure on employment, excluding the general social contribution rebates on low wages and basic income support, exceeds 3 per cent of GDP. The frequent adjustments to the rules governing the various schemes and the addition of new mechanisms, including the streamlining or refocusing of certain programmes on targeted groups, to a large extent reflect a concern to come to grips with the difficulties of the day experienced by the unemployed. However, they make the system of assistance harder to understand for all concerned and fuel expectations of further changes. At the same time, the relative and absolute effectiveness of the various measures is sometimes difficult to establish.

Youth employment measures have been stepped up

The authorities put particular emphasis on helping those who are the most vulnerable to unemployment, and especially the young, to find jobs. An ambitious youth employment programme was launched at the end of 1997, which as of mid-November 1998 covered 152 000 persons and aims to cover 350 000 by 2000, or one-eighth of the economically-active 18 to 25 year-old population. While some of these jobs replace other types of subsidised jobs, the total number of subsidised jobs is nonetheless set to rise considerably. The new programme aims to make young people more employable but only partly concerns those who have the greatest difficulty finding a job. Eventually, some of the jobs in this programme are likely to become permanent jobs in

the state or parastatal sphere, especially those in the education and police sectors.

Measures have been taken to overcome the poverty and unemployment traps but they are insufficient

The combination of the unemployment compensation system and basic income support that to a large extent is unavailable if the person receives work-related income, tends to discourage some unemployed and inactive persons, creating poverty and unemployment traps. Steps were taken in 1998, in particular in the law to combat exclusion, to limit these distorting effects by allowing some temporary benefit and wage cumulation. These distortions are, however, far from being eliminated, notably in the case of housing benefits. Another impediment to employment, this time on the side of employers, is the high cost of labour at the level of the minimum wage (SMIC). The French authorities do not call into question the existence and level of the SMIC, but the reductions in social contributions on low wages in the past few years facilitate the hiring of people whose productivity is below the cost of labour at the SMIC level, thereby attenuating the rationing effect of the tax wedge, although at a significant budgetary cost (given the large number of employees concerned). It would be desirable to stabilise the parameters of the degressive rebate, possibly after a reduction of the associated implicit marginal tax rate, which can create a low-wage trap.

The statutory working week is reduced from 39 to 35 hours...

The shortening and reorganisation of working time, which had already been encouraged by the Robien Law of June 1996, has become a prominent element of the government's policy to combat unemployment, with the Law of June 1998 fixing the new statutory working week at 35 hours as from 1 January 2000 for firms with more than 20 employees, and two years later for the others (except in particular for the civil service, where many employees already work much less than 39 hours). The government's intention with this reform is to give a new impetus to collective bargaining and to trigger a virtuous circle of job creation and lower unemployment. In the eyes of its promoters, the acceleration of hirings during the upturn would avoid that some of those who became unemployed during a cyclical downturn irreversibly become long-term unemployed. In their view, productivity gains coupled with wage modera-

tion and the foreseen public aid would limit its impact on unit production costs. They further expect that the budgetary impact of these subsidies allocated to firms that reduce the working time by at least 10 per cent while creating or preserving a sufficient number of jobs would be offset to a large extent by the savings on social transfers and the additional social contributions and tax revenue.

... but will not lead to a massive reduction in unemployment

The reduction of the statutory working week is a more interventionist approach than what the *Jobs Strategy* recommends. It is important to avoid that it be accompanied by a significant increase in unit labour costs and it should be implemented in such a way as not to stray too far away from the recommendations of the OECD in *Maintaining Prosperity in an Ageing Society*. It is still too early to assess the impact of this reform with its complex ramifications, as only 1 055 agreements covering less than 108 000 employees had been signed by mid-December. It would seem that the bulk of these agreements, like those concluded under the Robien Law, provide for much more flexible working hours and wage restraint, but this first set of agreements is not necessarily representative of those that will be concluded later on. The econometric simulations carried out by the OECD Secretariat and elsewhere suggest, however, that the job dividend is uncertain. The reform could contribute only moderately to reducing unemployment, especially given the eventual weakening of potential and actual output that it will entail if it leads to significantly higher unit labour costs. Over the next two years, its contribution should be less than that from the youth employment programme. The induced job creations will depend *inter alia* on parameters which the government has decided to set only in a second piece of legislation at the end of 1999, including provisions regarding overtime and permanent public support. The decisions which will be taken in 1999 on the indexation of the monthly and hourly minimum wage benchmarks will also have a major influence.

The modalities of the reduction in working time which still have to be finalised should be framed in such a way as not to discourage job creation

An increase in unit labour costs, and the substitution of capital for labour which might ensue, would adversely affect employment and run counter to the other policy objective of reducing the cost of unskilled labour by cutting employers' social contributions on low wages. Therefore, in line with the *Jobs Strategy*, it is crucial to set the overtime rate for hours between the 35th and 39th, the quota of overtime hours not requiring administrative authorisation and the obligations regarding compensatory leave in such a way as to limit the increase in unit labour costs. The same applies for the use of flat-rate rather than hourly-based remunerations for managers and other categories for whom the notion of fixed working hours is not relevant and, more generally, for the scope for annualising working hours. Such an approach would promote flexibility other than by very short contracts, as well as lengthen the utilisation time of the capital stock, which is required if the productivity gains expected from a greater responsiveness of supply to demand fluctuations are to materialise. Moreover, it is essential to encourage wage restraint, notably in the public sector, where wage policy is more directly under the control of the authorities, and even more at the level of the SMIC. It is also necessary to examine whether, instead of the permanent aid which is planned to be provided to firms reducing working time, and which presupposes an additional raft of administrative controls, it would not be preferable to reduce still further the social contributions on all low wages. In the longer term, as working time in relation to working life is already relatively short in France, and as population ageing is going to augment the pension burden, it would be necessary to envisage increasing the average retirement age.

Mobility should not be impeded

The degree of segmentation of the labour market, and the social exclusion it reinforces, partly depend on the fixed costs which firms have to bear when hiring or releasing an employee, which are rather high in France. Recent court decisions on redundancies would tend to confirm this diagnosis. The measures being prepared in this area should be framed in such a way as not to discourage potential hirings. On the employee side, geographical mobility has been facilitated by the recent reduction in stamp duties on property sales (which nonetheless remain high).

Progress is still required in the area of training

Vulnerability to unemployment is closely dependent on the level of skills. Too many school-leavers, however, are barely employable, and access to adult education and training remains unequal, to the detriment of unskilled workers and workers in small and medium-sized enterprises (SMEs). Among the measures taken or planned are the strengthening of remedial courses and of information technology and foreign language teaching in schools, an increase in the number of apprenticeships and the number of training places for the long-term unemployed, and more effective exploitation of educational and vocational attainments. These measures go in the right direction but are probably insufficient.

Competition is intensifying in the network sectors

The process of gradually opening up the network sectors to competition has intensified, especially in the telephone, electricity, gas and railway sectors, even though France is moving ahead less rapidly than other European countries in some sectors. The amount of cross-subsidisation is being reduced and users have already benefited from substantial price cuts and a wider range of services. The obligations laid down in the European directives liberalising these sectors should not, however, be construed restrictively. As for the financial sector, it is preparing for the increase in competition that will accompany the introduction of the euro (and for the millennium bug, which will affect it more than other sectors). In this new environment, certain distinctive features of the French financial landscape such as the non-remuneration of sight deposits, savings products with regulated interest rates, and the provision of cheques free of charge, will have to change soon.

The State is continuing to withdraw from the capital of public enterprises, while restructuring proceeds in this sector

The State has continued to withdraw from the still vast public enterprise sector. The opening up of the capital of these enterprises should impose an obligation of greater transparency and financial accountability on them, facilitate international alliances with foreign partners, and put an end to certain conflicts of interest between the State as shareholder and the State as overseer. This process must continue as rapidly and completely as the stock market situation allows. The same holds for the restructuring of ailing enterprises, especially in the financial sector, which

must cope not only with monetary union but also with the repercussions of the crises in the emerging countries.

The legal and tax environment for business needs further improvements

Initiatives have been launched to ease the administrative and tax constraints on entrepreneurship. Several packages of measures simplifying and easing the rules have already been introduced. The reforms concerning company law and commercial courts which are being prepared seek to meet a real need for modernisation and improved standards in business life. While selective tax reductions have been implemented or announced over the past year, the fiscal burden broadly defined is still excessive in France, reflecting the size of public expenditure, including on direct or indirect job support or on reducing the participation rate. The medium-term public finance objectives should therefore include a significant reduction in the overall tax and social contribution rate while taking into account the relative mobility of the various tax bases.

Supporting growth and job creation also requires ensuring that the research and innovation potential is exploited more effectively

In France as in other OECD countries, innovative companies drive growth and create the largest number of skilled jobs. It is therefore essential to ensure that innovation in the broad sense is not hampered by regulatory, tax or other kinds of impediments. While France has a considerable human and technological capital stock, this comparative advantage could be exploited more fully. Indeed, France's innovation performance does not match its scientific potential and R&D expenditure, which remain considerable notwithstanding some levelling-off in recent years.

Innovation remains hampered by certain traditional features of the French R&D system...

Despite significant changes in recent years, France's R&D system still suffers from its concentration around a few sectors and major companies, and the weight of the State and defence in particular. High-tech *colbertisme* has produced some spectacular breakthroughs in areas like aerospace and nuclear power. Its limitations have become more apparent, however, with the end of certain major programmes, the opening up of markets and the hardening of budget constraints. This has been illustrated in the information technology sector, for example, which relies less on state orders and where new firms are the main vehicles of

development of new technologies. The diffusion of the latter throughout the economic fabric, and particularly to SMEs, which has started, remains insufficient. While there is a wide and varied range of schemes for promoting R&D, they lack transparency and co-ordination, and their effectiveness varies greatly. Innovation has also been hampered for a long time by the lack of private venture capital, especially in the pre-start-up phases of business creation. It has also suffered from the fact that public research has not been sufficiently commercialised, mainly due to the institutional rigidities of public research bodies and the excessive compartmentalisation between such bodies and the business world.

... and by certain features of the framework conditions

The dynamism of innovation also depends on the framework in which it is conducted: competition and intellectual property rules, bankruptcy provisions, taxation, and labour and capital markets. Impediments and disincentives to business creation and to risk-taking in general have long existed in each of these areas.

Important initiatives have been launched to encourage innovation

The authorities are aware of the growing cost of these rigidities and a series of measures has been implemented since the last *Survey* to improve technological innovation and diffusion incentives, drawing on the experience of other OECD countries. Share subscription right certificates have been launched to enable young innovative SMEs to attract the talent they need. Tax incentives are now provided for life insurance contracts partially invested in venture capital companies and for capital gains reinvested in young companies by business angels. A public venture capital fund has been launched, the aim of which is to provide leverage for private venture capital. The scarcity of capital or the timidity of investors should thus no longer hamper innovation, all the more as the *Nouveau marché* inaugurated in 1996 also provides rapidly-growing companies with a source of outside capital. Start-up funds, most of the capital of which is private, are emerging in the information technology, new materials and biotechnology sectors. A first "thematic" research network has also been set up in the telecommunications sector to improve co-operation between public laboratories and private enterprises.

Other measures are being prepared

The supply of venture capital should also be boosted by the easing of the regulations for mutual funds investing in innovative companies and the simplification of the tax status of venture capital companies, envisaged for 1999. Also, the commercialisation of public research findings is promoted in a bill on innovation due to come before Parliament soon. It will allow universities and research bodies to engage in industrial and commercial activities and to set up business incubators, and authorise researchers and academics to sit on company boards or to create their enterprise while on leave from the civil service. It will also allow public research bodies to do more contract research, and thus ensure that public research is more responsive to demand.

Much still remains to be done, especially...

While these measures should boost research and innovation, they do not go far enough. It is still necessary to continue to rationalise the administrative support systems for research and innovation, to reform the policy of government research contracts, and to put in place effective evaluation procedures.

... improving the transparency and co-ordination of the administrative support systems

The roles of the various bodies administering support for research need to be clarified by better taking into account the ability of firms to set their own research objectives within the framework of more open and competitive markets, and of the increased availability of private venture capital. The existing decentralised mechanisms should be overhauled so as to eliminate those that are superfluous or lack proper focus. However, existing distortions (lack of co-ordination between administrative bodies, SMEs' insufficient access to public programmes) should not be tackled by introducing offsetting measures which themselves entail additional distortions (creation of new bodies to co-ordinate existing bodies, supplementary measures for SMEs) but dealt with directly. The adequacy of the various financial incentives in relation to the objectives sought should be reviewed, in particular the mix between subsidies (which should be refocused on projects which though unprofitable generate high positive externalities) and grants which are reimbursable in the event of success (which are an insurance). As for the research tax credit, it needs to be

amended further than currently envisaged, in particular to immunise its impact more against conjunctural ups and downs.

... reviewing the public procurement policy...

Reform of the policy of government research contracts should seek to improve the allocation of public and private resources. Institutional inertia freezing the sectoral allocation of public funding needs to be overcome. A more active policy with regard to dual technologies should be pursued so as to exploit more effectively the synergies between civil and military research and thereby reduce costs. While the contraction in public R&D spending in recent years has hit orders to industry, the level of research done by the public sector itself has been largely maintained; as much as it is vital to maintain a basic research capability, the continuation of this trend would contradict the general thrust of government policy.

... putting in place better evaluation procedures...

Without qualified and independent evaluations of research programmes, it will be difficult for the government to assess the effectiveness of the reforms carried out. The government has acknowledged this, but to this day no significant action has yet been taken. At the same time, the bill on innovation will encourage mobility amongst researchers only if the evaluation criteria which apply to them throughout their careers also evolve to take account of their work on exploiting their findings.

... and, more generally, improving framework conditions

Other specific reforms in the R&D and innovation area would also be desirable, in particular concerning the European dimension (insufficient co-ordination with national programmes, need for a less costly European patent). However, support for innovation takes place within a more general context which has a bearing on outcomes. For example, firms' access to patient capital could be facilitated by the creation of pension funds. The success of measures to promote the mobility of researchers and all those who produce, disseminate and use innovations hinges on the evolution of the training system and the labour market. Those should give less weight to rents (associated with diplomas or job security), and more to risk-taking and entrepreneur-

ship, which presupposes in particular the acceptance of the notion of learning through mistakes.

To sum up

All told, there has been a sharp improvement in France's macroeconomic performance since the last *Survey*. The recovery is based on sound fundamentals though its vigour and sustainability are not immune to a possible deterioration in the international environment. Macroeconomic policy made it possible to meet the criteria for joining the European Monetary Union, though since then it has seemed to err on the side of excessive gradualism, leaving little scope for manoeuvre in the event of a more marked economic slowdown. Over the medium run, fiscal consolidation should be pursued resolutely and the tax burden broadly defined should be lowered significantly. Moreover, it is necessary to step up structural reforms, notably as regards the labour and product markets, so as to boost growth and to reduce still excessively high unemployment. The reduction of working time involves considerable risks and must be implemented flexibly, so as not to reverse the current trend towards a more responsive and dynamic labour market. The opening up of traditionally sheltered sectors to competition, the improvement in incentives to innovate and the more effective exploitation of public research, should be pursued in order to bolster the French economy's growth potential.

I. The features of the recovery

When the previous *Survey* came out early in 1997 the recovery had only just begun and still seemed uncertain, especially as the rebound that occurred in the mid-1990s proved to be short-lived. It seems that this time the French economy has entered a more durable phase of expansion, in a new context of virtual price stability. With the notable exception of still very high unemployment, symptomatic of deeper structural problems, France is embarking on Monetary Union in favourable domestic macroeconomic conditions, even if the international environment outside Europe has tended to deteriorate.

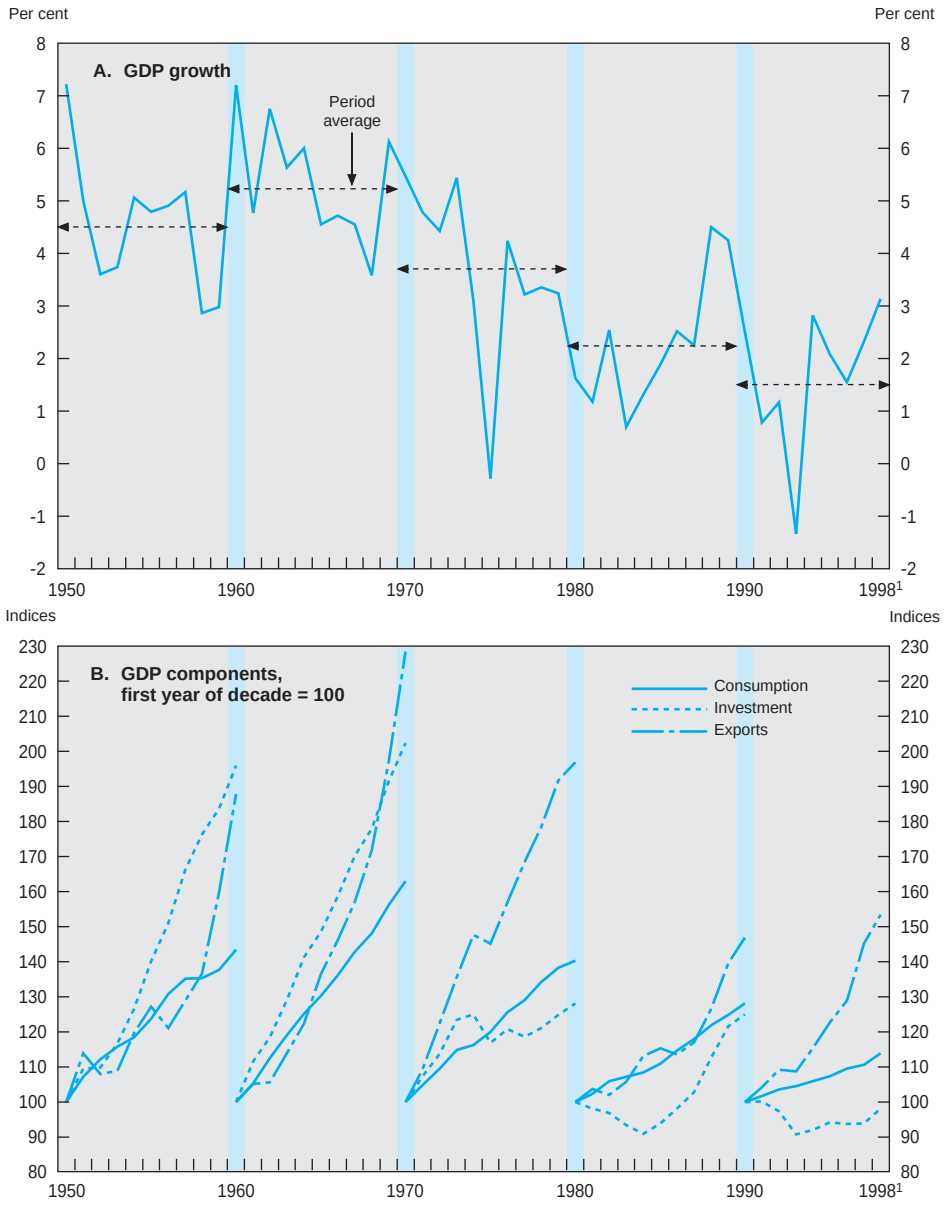
Growth is increasingly driven by domestic demand

Whereas initially the growth pick-up was essentially export-led, domestic demand has progressively taken over the running. Investment has emerged from a prolonged lull, aided by very supportive financing conditions, and consumption has been particularly dynamic.

France has begun to close its growth gap

Over the long term the French economy's growth rate has gradually declined, like in most other OECD countries. It decreased from 5½ per cent a year on average during the 1960s to 2¼ per cent during the 1980s, and 1½ per cent in the period 1990-96 (Figure 1).[1] Growth rates up to the early 1970s were admittedly very high relative to secular trends (Toutain, 1997), but the fact remains that growth performance in the first half of the 1990s fell short of potential.[2] This relative sluggishness was due more to demand factors than to supply shortfalls, and the apparent slowdown in total factor productivity since 1990 may simply have been the sign of a particularly pronounced cycle (Accardo and Jlassi, 1998). The acceleration of growth in 1997, which was running at an annualised rate well exceeding 3 per cent between the second and fourth quarters, enabled the output gap to begin closing. Furthermore, and in contrast with 1996, the average

Figure 1. **Real GDP and its components in the long run**



1. OECD projection.
Source: INSEE and OECD.

annual outturn (2.3 per cent) was consistent with the growth forecast underlying the budget.

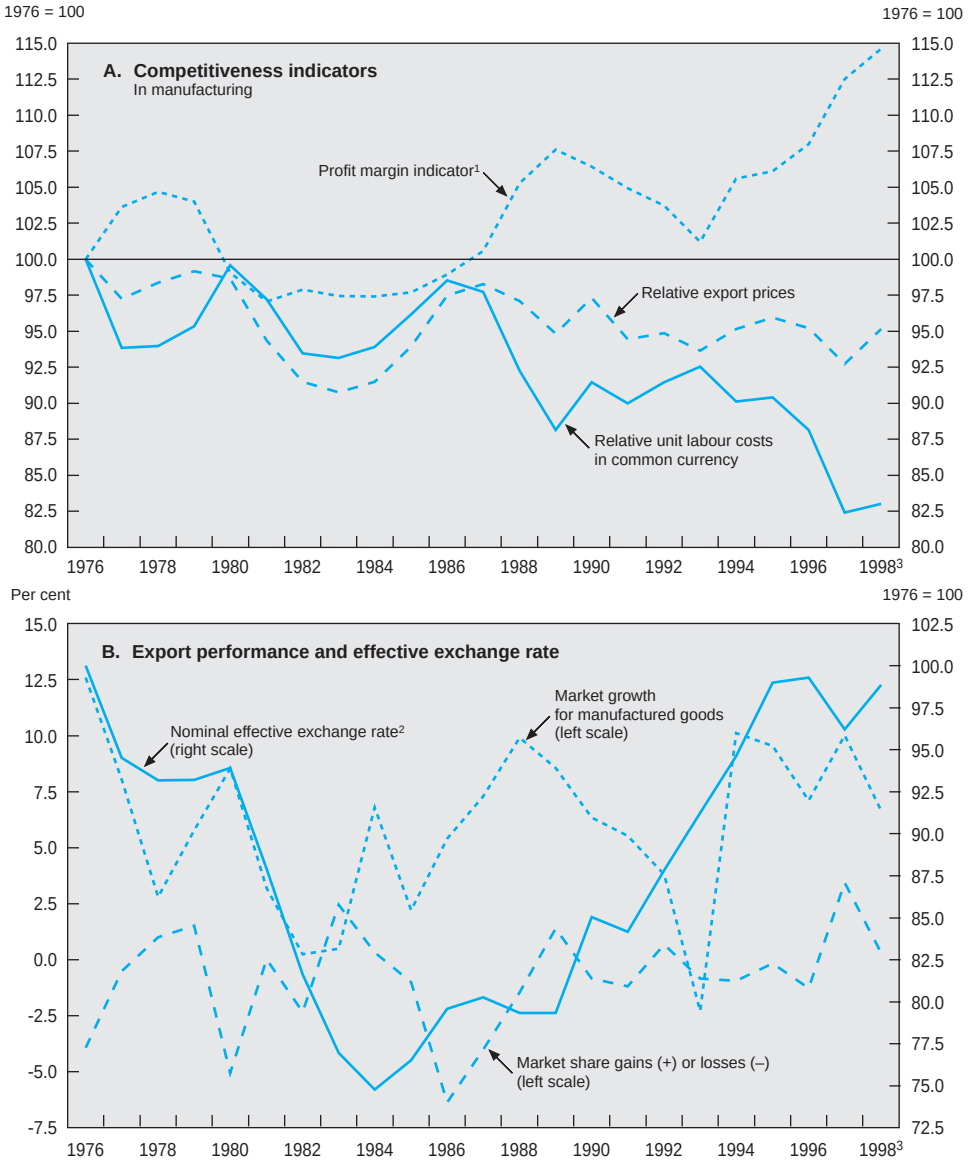
The acceleration of growth initially reflected industrial performance, with an annual rate of output increase peaking at 12 per cent in the spring of 1997, the momentum then spreading to other sectors. Certain business services, in particular, are booming. This is the case with temporary work agencies, to which manufacturers have had extensive recourse. The volume of temporary work grew by 23.5 per cent in 1997, its share of total employment approaching or exceeding 6 per cent in the automotive industry and manufacture of electrical and electronic components. Likewise, computer services were much in demand because of the changeover to the euro and the approach of the year 2000 rollover. In agriculture, the volume of deliveries grew by 3.2 per cent in 1997, twice as rapidly as the trend rate for the last twenty years.

Exports buoyant in 1997, losing momentum in 1998

A combination of very strong foreign demand, depreciation of the nominal effective exchange rate and moderate increases in unit production costs caused exports to lead the upturn in 1997. World demand for manufactures, which had slowed in 1996, accelerated sharply in 1997. The franc's nominal effective exchange rate depreciated by 3.5 per cent in 1997, with relative export prices easing by 2.5 per cent and unit labour costs in common currency falling by 6.6 per cent (Figure 2). In this context, and helped by the trend in world commodity prices, exporters of manufactured goods were able to relax their profit squeeze. The trade-volume impact of the crises that erupted in Asia during 1997 was initially perceptible only in certain sectors like luxury goods. It became more tangible in 1998, and French exports to the emerging Asian economies[3] in the first half of 1998 were down 14 per cent from a year earlier. Overall, and with the appreciation of the franc's effective exchange rate causing French exporters to squeeze profit margins again, the annual rate of export growth fell back to 1.9 per cent in the first half of 1998 as against 13.6 per cent a year earlier, the contribution from foreign trade to growth becoming negative.

Even with imports rising briskly, the trade and current payments surpluses continued to increase, reaching record levels (Table 1, Figure 3). The trade surplus recorded in 1997 includes all-time high agro-food and industrial surpluses of FF 64 billion and FF 134 billion, respectively (cif-fob). The surplus for the automotive industry alone amounted to FF 64 billion, a large part of which reflects asynchronous demand.[4] Services, too, posted a bigger surplus, amounting to FF 103 billion, due largely to earnings from tourism. In the first half of 1998 the current account surplus stabilised at FF 116 billion or 2½ per cent of GDP. The accumulation of current surpluses since 1992 and the increasing flows of outward

Figure 2. **Measures of international competitiveness**



1. Relative export prices/relative labour costs in manufacturing.
2. Computed *vis-à-vis* 40 currencies.
3. OECD projections.

Source: OECD.

Table 1. **Balance of payments**[1]

Balances, FF billion

	1995	1996	1997	1997[2] S1	1998[2, 3] S1
Current account	54.5	105.0	230.1	114.4	115.6
Goods	54.9	76.5	164.3	72.8	78.3
Services	71.6	77.3	102.6	46.4	50.2
of which: Tourism	55.9	54.3	66.7	30.6	32.8
Other goods and services	17.9	6.0	0	0	0
Revenues	–41.0	–10.0	19.2	8.7	5.7
Current transfers	–49.0	–44.8	–56.0	–13.5	–18.6
Public sector	–49.7	–40.3	–46.8	–10.7	–15.2
Other	0.8	–4.5	–9.1	–2.8	–3.4
Capital account	2.6	6.3	8.6	5.3	3.0
Financial account	–40.4	–115.9	–264.4	–161.1	–126.6
Investment					
Direct	39.5	–43.3	–72.4	–24.5	–18.2
Portfolio	31.2	–309.0	–149.1	–51.9	–260.5
Other	–107.5	237.6	–8.6	–65.3	203.0
Reserves	–3.6	–1.2	–34.3	–19.5	–50.9
Net errors and omissions	–16.7	4.6	25.7	41.5	8.0

1. The economic territory of France has been redefined for statistical purposes to henceforth include the metropole and the Overseas Departments. This change, introduced in January 1997, has been incorporated for previous years in the table.
2. Raw data, not adjusted for seasonal variations nor for working days.
3. Provisional data.

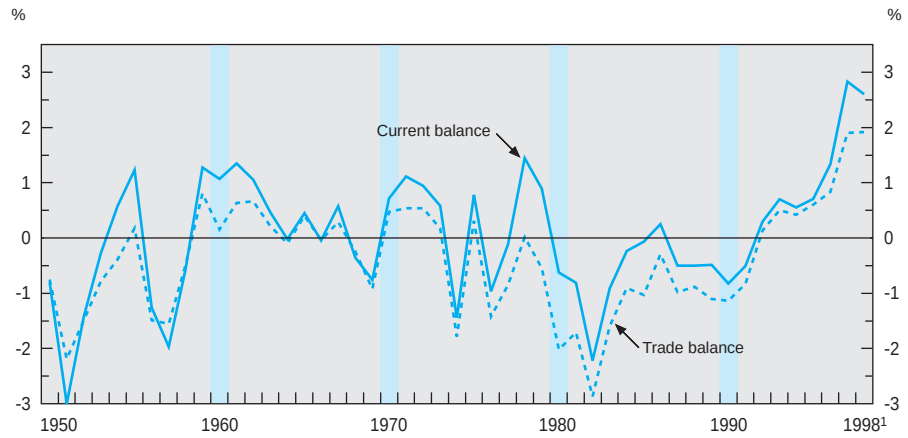
Source: Bank of France.

investment explain the progressive rebalancing of revenues, which showed a surplus of FF 19 billion in 1997.[5]

The bumpy path of household consumption and their saving effort

Household consumption slowed sharply in the first half of 1997, essentially because of a steep fall in car purchases and low expenditure on energy. The government subsidy offered between October 1995 and September 1996 for the replacement of an old car, and commonly known as the *"juppette"*, caused many households to bring forward their car purchases, which subsequently led to a temporary slump in registrations.[6] Expenditure on energy was down as a result of mild weather. Consumption gathered momentum in the second half of the year as disposable income accelerated. The latter's growth was helped by the upturn in employment and the 4 per cent rise in the minimum wage in mid-year, but it also reflected the rise in financial income of households. However, most of the

Figure 3. **Emergence of a large external surplus**
In percentage of GDP



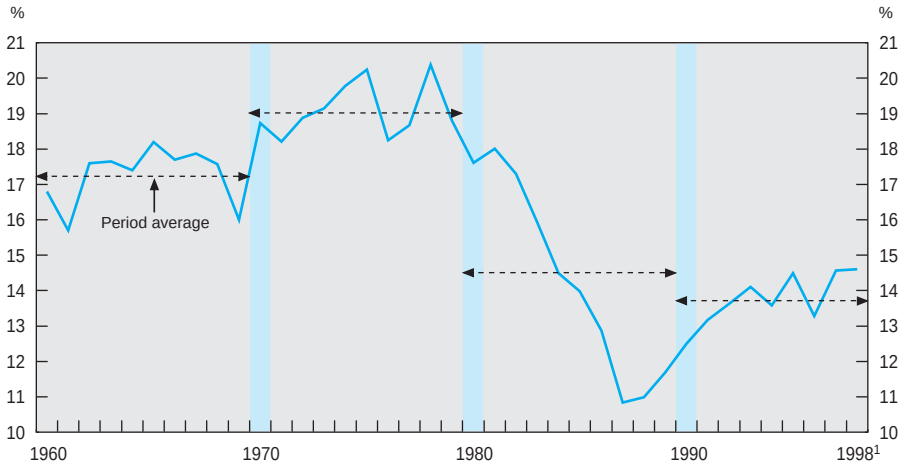
1. OECD projection.
Source: OECD.

increase in disposable income was channelled into saving, partly to reverse the dissaving connected with the subsidy.

More generally, the appreciable rise in the household saving ratio since the late 1980s (Figure 4), in a context of sluggish growth and high real interest rates, suggests among other things that the precautionary motive may have been accentuated by the increasing risk of unemployment.[7] It could be, too, that fiscal consolidation in the context of European convergence and worries about the future of pensions prompted neo-Ricardian behaviour, with households putting aside sums to cover the anticipated rise in direct taxation (Cotis *et al.*, 1998). Another part of the answer might lie in the composition of saving, an increasing share of which is tied to medium- or long-term commitments (Babeau, 1997). The proportion of saving which goes to repay housing loans is now over 20 per cent, more than double what it was in the 1970s (when inflation lightened the burden); and the interest accrued on life insurance contracts, home ownership savings plans and individual savings plans, which has grown considerably, is automatically reinvested and now represents more than one-third of saving, compared with only 6 per cent in the mid-1980s.

Household consumption, buoyed by rising employment, continued to show strong growth in the first half of 1998. Sales of brown goods soared during

Figure 4. **Household saving ratio**
In percentage of disposable income



1. First six months.
Source: INSEE.

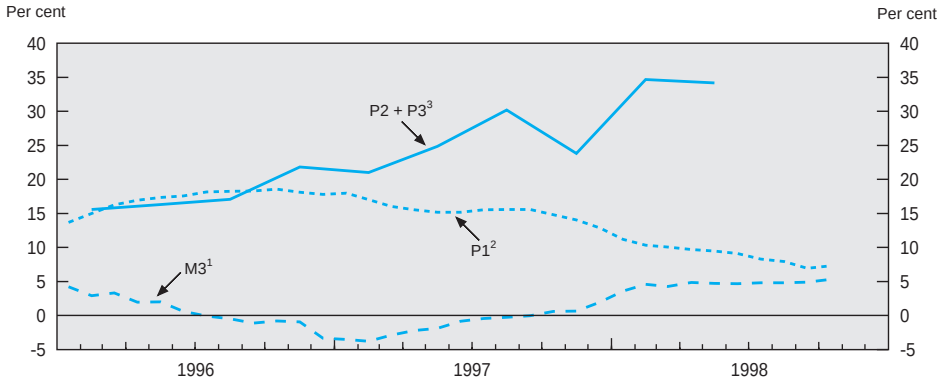
the months leading up to the soccer World Cup (giant screen TVs, satellite dishes). Sales of mobile telephones and microcomputers continued to grow briskly, as in 1997. By mid-December 1998, the mobile phone market numbered 10 million subscribers, compared with 5.8 million at end-1997 and 2.4 million at end-1996.

The propensity to save a substantial portion of income gains helped to keep financial asset and money aggregates buoyant (Figure 5). However, the growth of the former is even more a reflection of the surge in stock market prices, the SBF 250 index rising by 73 per cent between the beginning of 1997 and mid-1998.[8] Fixed-interest sight deposits grew rapidly as a result of relatively attractive rates (the rate on *livret A* deposit accounts remaining unchanged from March 1996 to June 1998 at 3½ per cent). So did liquid monetary holdings, owing to strong domestic demand. Contractual saving decelerated somewhat, but continues to grow briskly.

Belated but genuine investment revival

For several years an investment recovery seemed imminent, at least given the apparent backlog accumulated since the last big wave in the late 1980s

Figure 5. **Money and financial asset aggregates**
12-month rate of change



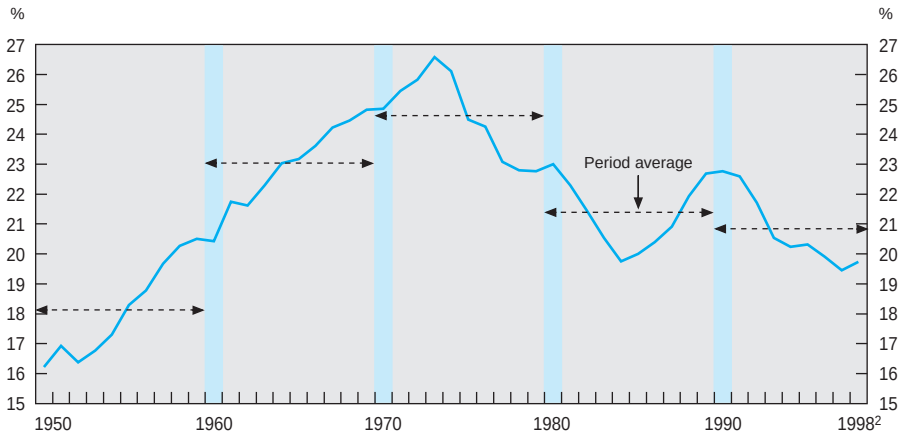
1. Since 1994 the monetary policy target for M3 has been 5 per cent annual growth. From 1997, the Bank of France evaluates jointly the evolution of narrow and broad aggregates with reference to a benchmark of 5 per cent per year.
2. Contractual saving (*plans d'épargne logement, plans d'épargne populaire,* etc.).
3. P2 comprises bond investments, and P3 shares and similar instruments (quarterly data).

Source: Bank of France.

(Figure 6). The improvement in corporate finances furthered this prospect, as did traditional econometric equations of the profit-accelerator type. Yet it was only during 1997 that the first real signs of recovery became apparent. The long period of sluggishness was due to several factors. Despite the decline recorded since 1995, real interest rates remained very high, encouraging businesses to reduce their indebtedness and adjust their capacities by lengthening plant running times (Lecoupeur, 1998).[9] The financial ease of non-financial corporations as indicated by their self-financing capacity, which became positive in 1993, is due in large measure to debt cancellations by banks; adjusted for these, the indicator does not become positive until 1996. Productive capacity utilisation did not return to its medium-term level until 1998, after falling very steeply (Figure 7).[10] The weakness of total investment notably reflects that in the building sector, a consequence of over-investment in this sector around the turn of the decade (Irac and Jacquinot, 1998). Lastly, part of intangible investment does not show up in gross fixed capital formation (Box 1).

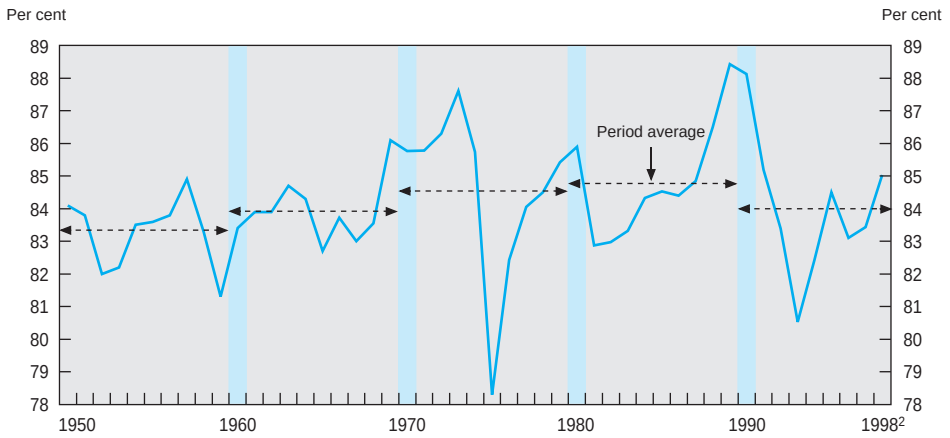
The revival in investment showed itself first, as from the second quarter of 1997, in a rise in corporate purchases of equipment which accelerated in the first half of 1998, one-third of businesses in industry reporting bottlenecks.

Figure 6. **Long-run investment trends**
Gross fixed capital formation, in percentage of GDP[1]



1. 1980 prices.
2. OECD projection.
Source: INSEE and OECD.

Figure 7. **Capacity utilisation ratio**
Industry, total[1]



1. Excluding agro-food industries.
2. For the first three quarters of 1998, seasonally-adjusted data.
Source: INSEE and OECD.

Box 1. Changeover to the new national accounts base

In the course of 1999 the 1980 base of the French national accounts is to be replaced by the 1995 base, in accordance with the standards of the 1995 version of the European System of National Accounts.* This change of base is accompanied by major conceptual adjustments and will have considerable repercussions on certain macro-economic variables.

The chief methodological amendments include the following:

- Inclusion of the Overseas *Départements* in the geographic area covered.
- Enlargement of the scope of gross fixed capital formation, which will now include an estimate of investment in computer software, mineral exploration and literary or artistic originals, plus defence budget spending for purposes that need not be military (buildings, airports, etc.).
- Renewal of the consumption and income concepts, a distinction being established between expenditures directly incurred by households and their actual final consumption, which includes government subsidisation, social benefits in kind and non-market goods and services that can be individualised (such as education and hospital treatment).
- Valuation of output at base prices, corresponding to what producers receive, excluding product taxes and including subsidies.
- More specific treatment of trade margins, so as to trace their trend over time.
- Change in the content of the research sector, notably with inclusion of research services sold by firms belonging to other sectors.
- Estimate of undeclared employment (for activities to which such employment is attributed) in relation to the activity of all businesses, as against single proprietorships exclusively.
- Valuation on an accrual rather than cash basis, especially for general government accounts.
- Treatment of exemptions from employers' welfare contributions as decreases in contributions and no longer as subsidies.
- Introduction of a new nomenclature (the former "services supplied principally to enterprises", representing about one-tenth of GDP, is now broken down into nine branches), disappearance of the institutional sector comprising the *grandes entreprises nationales* (major national enterprises) and abolition of the distinction between market and non-market GDP.

These changes will affect the looks of a certain number of series. In particular, for 1992:

- The level of GDP will be up by nearly 2 per cent.
- The level of gross fixed capital formation will be some 6 per cent higher.
- The level of real and imputed rents will be scaled up appreciably.
- The GDP share of commercial research will be up from 0.1 to 0.9 per cent.
- Trade margins will be scaled down significantly.
- The increment to activity added by undeclared employment will be increased by FF 25 billion.

(continued on next page)

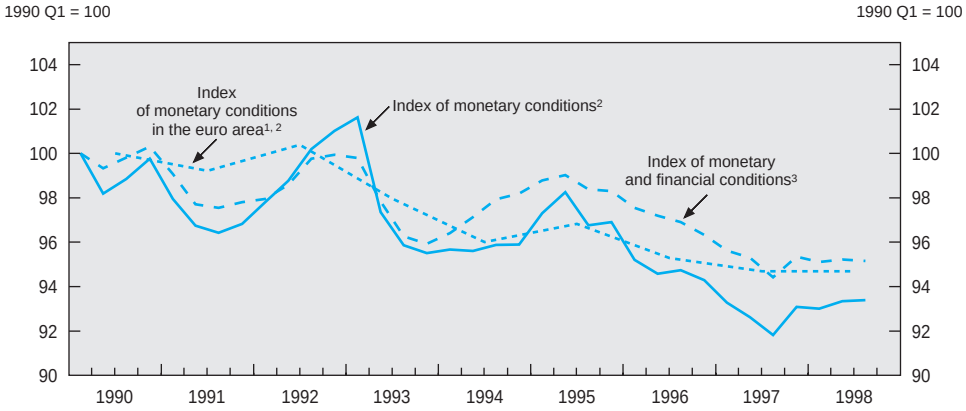
(continued)

– The household saving ratio as a percentage of disposable income will be down by about one point.
– Direct taxation will be reduced by the amount of exemptions from employers' social contributions.

* Denmark and, more recently, the United Kingdom have already changed over to the 1995 base. All other European Union countries are scheduled to do so by mid-1999.

Increased capacity utilisation also helped to put a stop, at the beginning of 1998, to a phase of inventory rundown.[11] The investment take-off was stimulated by favourable prospects for domestic and foreign demand. It was facilitated by the consolidation of corporate finances, with insolvency ratios (net interest payments/ gross operating surplus) falling to historically low levels and an improvement in profitability. At the same time it was helped by the easing of monetary and financial conditions (Figure 8). Nominal interest rates declined to very low levels

Figure 8. **Monetary and financial conditions**



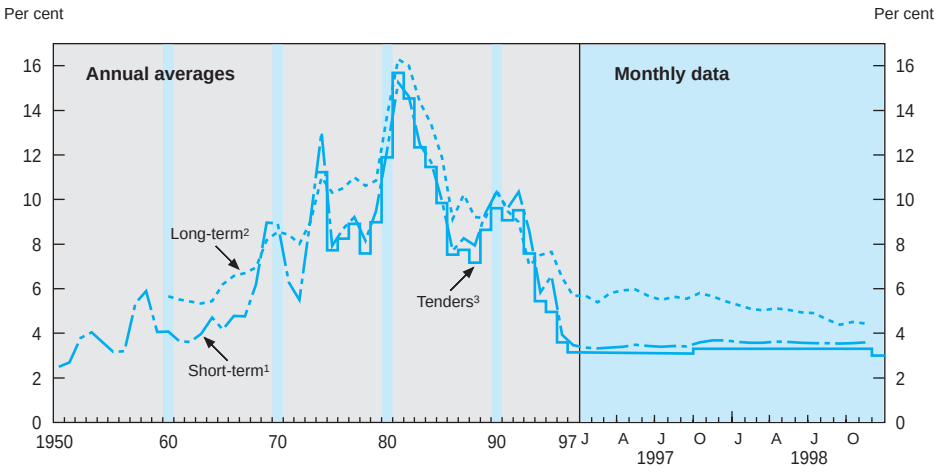
Note: The computation of these indices relies on the real effective exchange rate *vis-à-vis* 40 countries, based on the CPI for France and on unit labour costs in common currency terms for the euro area.
1. Annual averages, 1990 = 100.
2. Calculated by the OECD, reflecting short-term interest rates.
3. Calculated by the Bank of France, reflecting short and long-term interest rates (weighted respectively .35 and .65).

Source: Bank of France and OECD.

(Figure 9). The average cost of medium- and long-term business credit, which in autumn 1996 was still close to 7 per cent, had fallen below 5 per cent a year later and stood at 4½ per cent in autumn 1998. Against this background, business credit began to grow again during 1997 (Figure 10).

On a yearly average basis real estate investment, both corporate and household, continued to decline in 1997.[12] The decline in housing investment by households was limited, however, owing to attractive market interest rates and incentives such as the zero-interest loans and certain temporary tax breaks (like the preferential depreciation scheme for investment in rental housing under the Périssol Law). The steep rise in the number of building permits issued in the first nine months of 1998 is confirmation of a significant upturn in construction activity, both for separate dwellings and for apartment buildings. Whereas corporate investment in equipment began to pick up in 1997, corporate investment in buildings, in virtually continuous decline since 1993, did not follow suit until 1998 and then at a distinctly slower pace.

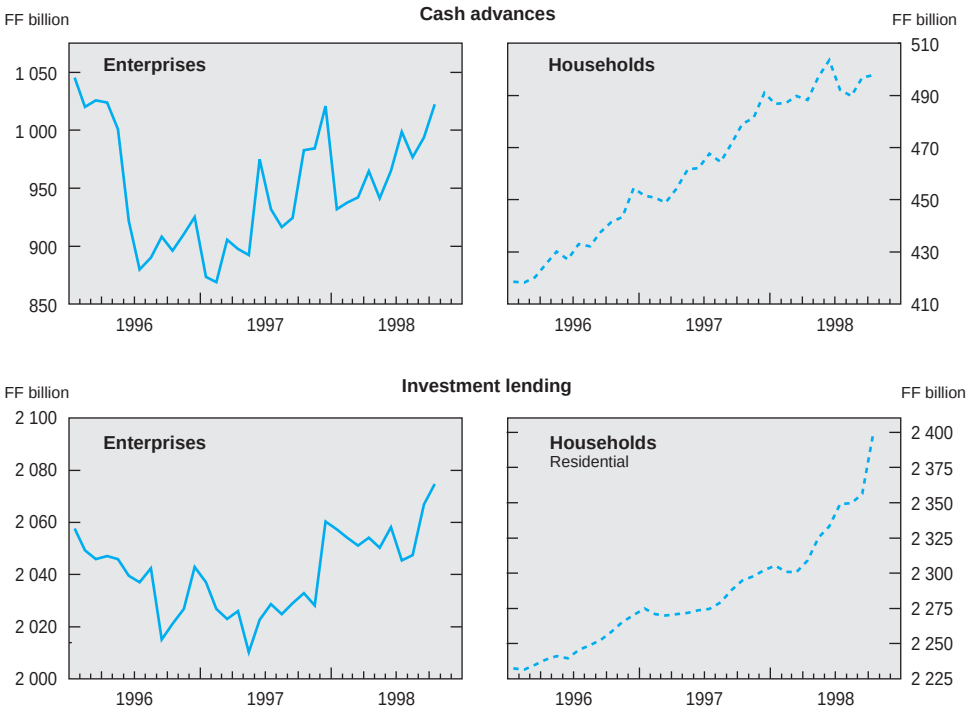
Figure 9. **Nominal interest rates**



1. Three-month money market rate (offered rate).
2. Public and semi-public sector bonds.
3. Bank of France tender rate; available since 1974.

Source: INSEE, Bank of France and OECD, *Main Economic Indicators.*

Figure 10. **Credit**
End-of-month nominal credit outstanding



Source: Bank of France.

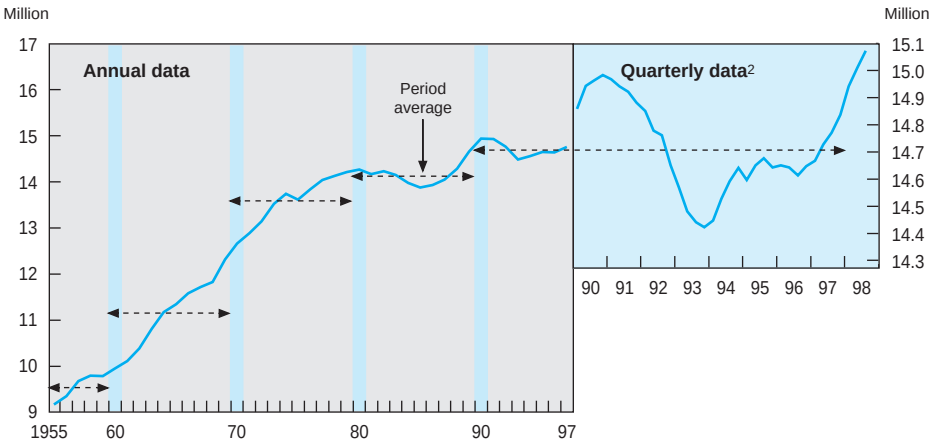
Employment has picked up but unemployment remains high

The labour market situation has been distinctly improving since 1997, but more rapidly for employment than for unemployment, given the expansion in the labour force.

The employment upturn

Having remained flat in 1996, employment began to rise again in 1997, especially as from the fourth quarter. Non-farm market-sector dependent employment grew by 1.2 per cent year on year in 1997 (Figure 11). In 1998 it may rise by over 2 per cent (280 000 jobs), thus exceeding its peak of 1990.[13] Whereas

Figure 11. **Dependent employment**[1]
Non-farm market sectors



1. Former SMNA coverage.
2. Seasonally adjusted.
Source: INSEE and OECD.

employment in industry and building/public works was still falling in 1997, although much more slowly than in 1996, net job creation should be observed in all major sectors in 1998, for the first time since the end of the 1980s.[14] The employment outlook has also improved for management personnel, after a number of difficult years.

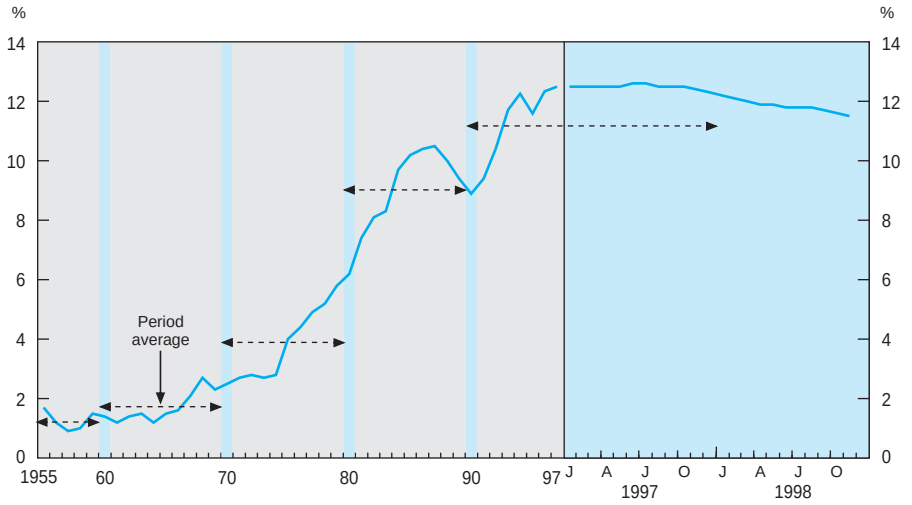
The job content of this recovery is higher than that of earlier ones. This is partly due to the steep increase in more flexible types of work contract and to cuts in employers' social security contributions to encourage part-time working and reduce the cost of low-skilled labour (Chapter II). The effects of these measures, which date back to 1992-93, have been working through gradually. They are still difficult to quantify accurately,[15] but are very discernible in certain sectors, notably retailing. The measures have certainly contributed to the upturn, since the mid-1990s, in the proportion of low-skilled labour in total employment. To market employment should be added the hirings associated with the 21 500 youth jobs launched by the end of 1997 and the 130 000 youth job creations expected by the government for 1998 (Chapter II).

After reaching a high plateau in 1997, unemployment has started to fall

From mid-1996 to autumn 1997 the unemployment rate on the International Labour Office definition remained virtually unchanged at the long-run peak of 12.5 per cent reached two years earlier (Figure 12).[16] It began to fall significantly in the fall of 1997, descending to 11.5 per cent in November 1998 (seasonally adjusted), which represents close to 3 million persons. Recourse to partial unemployment fell steeply as of early 1997 and by mid-1998 was affecting only 285 000 full-time workers (against 926 000 two years earlier).[17] The relative slowness of the decrease in unemployment is due to the large number of net labour market entries, which amounts to 140 000 persons per year. Those reflect the expansion of the population of working age, the elasticity of the labour force to the economic cycle and the fact that the development of part-time work draws more people into the labour force.

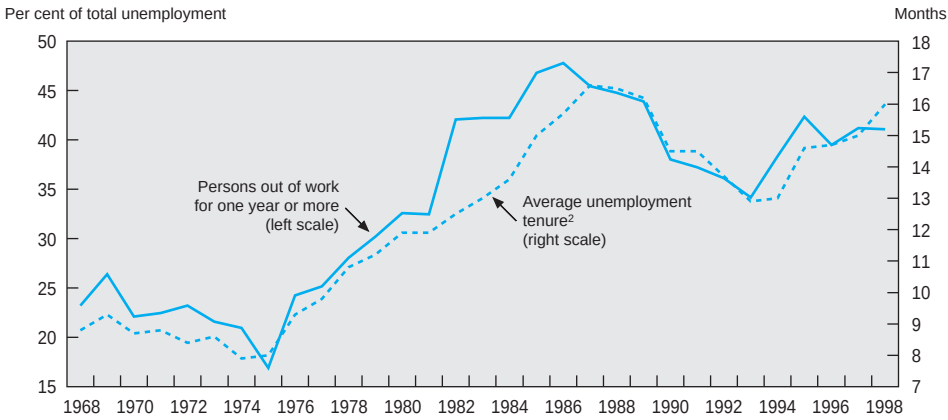
Long-term unemployment continues to account for a large share of the jobless total; it has been rising since 1993 and now stands at over 40 per cent (Figure 13).[18] The average unemployment tenure has continued to lengthen, reaching 16 months in March 1998. The long-term unemployed are finding it more difficult to find work: half of them have been out of work for more than two years, and the number of those out of work for more than three years has risen steadily

Figure 12. **Unemployment rate**
ILO basis, per cent of labour force



Source: INSEE, *Marché du travail, séries longues* and OECD, *Main Economic Indicators.*

Figure 13. **Duration of unemployment**
ILO basis[1]



1. Excluding jobless whose length of unemployment is not known.
2. Time elapsed, at the time of the survey, since the beginning of the unemployment spell. Total unemployment duration is therefore longer.

Source: INSEE, *Marché du Travail, séries longues*, and *Enquête sur l'emploi de 1998* ; OECD, *Employment Outlook.*

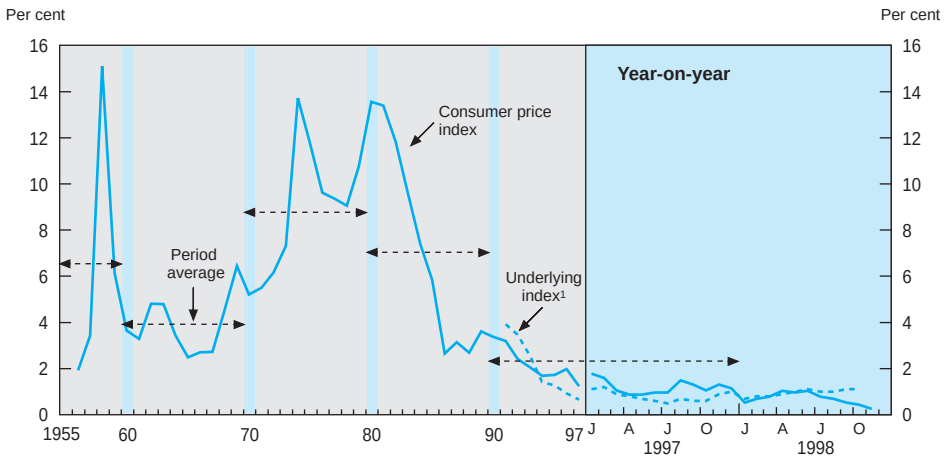
since 1993. As a consequence, large numbers of people are receiving basic income support: about 1.1 million are getting the *revenu minimum d'insertion* or RMI (social minimum income) and nearly half a million the solidarity allowance payable after entitlement to unemployment benefit has been exhausted.

The youth unemployment rate has fallen back more than the rates for the other age groups since 1997 but is still very high, more than one in four labour force participants aged 15 to 24 being out of work. Indeed, recent measures to combat unemployment have focused largely on youth (Chapter II).

The general price level has been virtually stable for several years

Since mid-1995 the underlying annual rate of consumer price inflation has remained most of the time below one per cent, and since mid-1996, the 12-month growth rate of the CPI has remained well below the medium-run ceiling of 2 per cent set by the Bank of France (Figure 14).[19] On the basis of the harmonised CPI, France has one of the lowest inflation rates in the European Union. The decline in industrial selling prices for intermediate goods, which began in 1995, continued

Figure 14. **Consumer prices**
Rate of increase



1. Underlying aggregate index, excluding public utility charges and products with volatile prices, adjusted for taxation and seasonal variations.

Source: INSEE and OECD, *Main Economic Indicators.*

despite a temporary uptick in the first half of 1997; in November 1998 they were down 2.1 per cent from a year earlier.

The absence of inflationary pressures as the recovery took hold, and despite the franc's depreciation against the dollar, is due to a number of factors. The promotional efforts made by auto makers after the "*juppette*" subsidy expired, the fall in world prices of raw material imports (including oil) and the slowdown of food prices have played an important role. High unemployment and the "productivity cycle" (*i.e.* the increase in labour productivity in a phase of accelerating production) had a moderating influence. The prospect of the 35-hour workweek may have dampened labour costs. Deregulation in certain sectors (telecommunications and air transport) and the price decreases for certain products (electronic equipment and computers) further acted in the same direction. Lastly, the effective exchange rate of the franc remained strong overall.

The fiscal context

Fiscal consolidation continues, albeit at a significantly slower pace since the deficit on the Maastricht definition has been reduced to 3 per cent of GDP,

and even as the major longer-term challenges confronting public finances remain much the same.

Efforts to reduce the deficit have made it possible to meet the fiscal convergence criteria

Between 1994 and 1997 the general government deficit on a European accounts basis was reduced from 5.7 to 3.0 per cent of GDP (Table 2 and Figure 15).[20] With economic growth short of its potential, the apparent structural deficit was reduced over the same period from 4.3 to 1.8 per cent of potential GDP. However, the adjustment effort was not as big as these figures suggest, since in 1997 an accounting transaction served to reduce the deficit by nearly 0.5 per cent of GDP.[21]

With real interest rates remaining well above the economic growth rate, the pace of deficit reduction was insufficient to prevent continuation of the rapid rise in the public debt, which climbed from 35.8 per cent of GDP in 1991 to

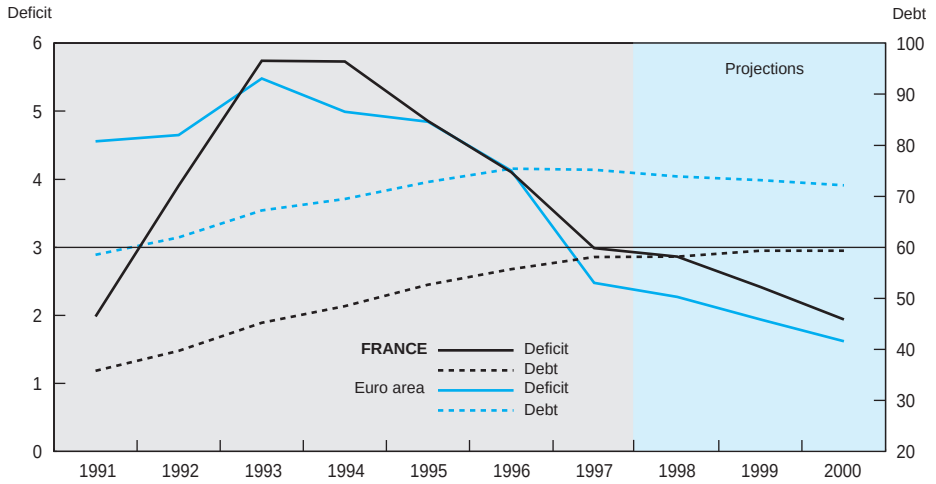
Table 2. **Financial balances by level of government**

	1994	1995	1996	1997	1998[1]	1999[1]	2000[1]
	Per cent of GDP						
Net lending							
General government	–6.0	–5.4	–4.7	–3.5	–3.4	–2.8	–2.3
Central government	–4.8	–4.2	–3.9	–2.9	–3.3	–2.7	–2.3
Local authorities	–0.2	–0.2	0.0	0.2	0.1	0.1	0.1
Social security	–1.0	–1.0	–0.8	–0.8	–0.2	–0.2	–0.2
Maastricht adjustments	0.3	0.5	0.6	0.5	0.5	0.4	0.4
Deficit[2]	–5.7	–4.9	–4.1	–3.0	–2.9	–2.4	–1.9
Memorandum items:							
Debt[2, 3]	48.5	52.7	55.7	58.1	58.8	59.3	59.3
	Percentage changes						
General government							
Current receipts	3.3	4.8	5.7	4.1	4.1	4.1	3.9
Total expenditure[4]	3.1	3.7	4.7	2.9	3.1	3.1	3.1
Nominal GDP	4.4	3.7	2.7	3.3	3.9	3.5	3.9
Real GDP	2.8	2.1	1.6	2.3	3.1	2.4	2.6

1. Projections.
2. Maastricht definition.
3. Not taking into account the exceptional movements in the net asset position associated with the refinancing of the CADES in 1998.
4. Current and net capital outlays.

Source: INSEE and OECD Secretariat.

Figure 15. **Public deficit and debt**
Maastricht basis, per cent of GDP



Source: OECD.

48.5 per cent in 1994 and 58.1 per cent in 1997. Even so, France is still one of the four European Union countries (and one of the three Monetary Union countries) in which the debt ratio is below the Maastricht benchmark of 60 per cent.

The 1997 Budget was tightened in the course of the year...

As the previous *Survey* foreshadowed, the target of a Maastricht deficit of 3.0 per cent of GDP in 1997 was beyond reach without fiscal tightening in the course of the year. Following the parliamentary elections in May and the installation of a new government, a public finance audit was conducted and its results published in a report on 21 July (Bonnet and Nasse, 1997). The report projected a deficit of 3.5 to 3.7 per cent on a European accounts basis on unchanged policies.[22] A corrective plan was announced the same day to reduce the deficit to between 3.1 and 3.3 per cent of GDP: an exceptional increase of 15 per cent was applied to corporation tax for businesses with a turnover of more than FF 50 million, bringing the rate for the latter to 41.6 per cent (this hike is to be reduced to 10 per cent in 1999 and terminated in 2000); the preferential 19 per cent tax rate on long-term financial corporate capital gains was abolished; and expenditure savings of FF 10 billion were announced.

The reduction of the general government borrowing requirement in 1997 reflects a decrease of FF 27.7 billion in the deficit of the State from its 1996 level and of FF 17.1 billion from its level in the initial budget law (on a budget accounting basis, see Table 3). This result was achieved through a 0.15 point of GDP increase in the rate of tax pressure, combined with relative expenditure restraint, with outlays up by 0.8 per cent (0.2 per cent without budgetisation of France Télécom pension payments). The more moderate trend in expenditure was facilitated *inter alia* by lower-than-expected interest rates.

The deficit of the social security general scheme narrowed by FF 19.9 billion to FF 33.3 billion in 1997. Even so, this result was slightly short of the FF 30.4 billion target written into the first Social Security Finance Law passed in late 1996, partly because of smaller-than-expected wage growth. More globally, the overall borrowing requirement of social security institutions as defined in the national accounts increased slightly in 1997 to FF 65.9 billion. Reasons for the slippage include the December 1996 agreements on recycling of the unemployment insurance surpluses (used to lower contribution rates and increase certain benefits) and the unexpected success of the employment replacement allowance (Chapter II).

Table 3. **Central government budget**

FF billion

	1996 Outcome	1997		1998		1999 Draft law
		Law	Outcome	Law	Projection	
Direct taxes	603.5	590.1	626.7	646.9	653.4	688.2
Indirect taxes	1 016.9	1 054.6	1 055.7	1 080.5	1 112.4	1 151.8
Repayments and tax relief	–260.8	–249.4	–265.8	–279.2	–306.7	–306.7
Fiscal receipts, net	1 359.6	1 395.3	1 416.6	1 448.2	1 459.1	1 533.3
Other receipts	227.9	155.1	221.4	155.0	163.8	183.2
Transfers to local authorities and EU	–243.0	–253.9	–252.8	–256.0	–254.7	–271.0
Total receipts	1 344.5	1 296.5	1 385.2	1 347.2	1 368.2	1 445.5
Compensation	601.7	591.4	617.6	610.7	614.3	652.1
Public debt service	239.1	250.6	239.9	248.7	250.0	253.2
Other current expenditure	186.6	578.7	619.9	592.5	604.4	612.8
Capital expenditure	612.6	160.6	175.5	153.2	154.2	164
Total expenditure	1 639.9	1 581.3	1 652.9	1 605.1	1 622.8	1 682.1
Balance	–295.4	–284.8	–267.7	–257.9	–254.6	–236.6

Source: Ministry of Economics, Finance and Industry.

Local authorities, whose accounts overall were in balance in 1996, achieved a financial surplus of FF 17.6 billion in 1997. This was essentially due to a rapid increase in their tax revenues, up by 5.8 per cent. Their expenditure grew more rapidly than that of central government, by 3.4 per cent. Local authority debt service continued to decrease, as a result of lower interest rates and debt rescheduling.

... but execution of the 1998 Budget is relatively easy

The budget for 1998 aimed to begin reducing the rate of taxes and social contributions while holding the Maastricht-defined general government deficit down to 3.0 per cent of GDP. Taking the France Télécom operation into account, it therefore envisaged a downward adjustment of one half-point of GDP for the book deficit and a small decrease of the underlying structural deficit.

On the revenue side, a number of the provisioning arrangements for corporations have been adjusted or abolished. Tax incentives for job and business creation have been introduced (Chapters II and III). Regarding households, the five-year reform of personal income tax begun in 1997 has been abandoned and taxation of savings income has been increased, especially in the case of life insurance savings plans. The social levy on savings income has also been raised substantially to a rate of 10 per cent (except for the so-called "popular" saving schemes).[23] It was decided to abolish various tax niches, such as the system of *quirats* (collective ownership shares of merchant ships) and overseas tax exemption packages (Pons Law). A major change in the structure of direct taxation has been the switching of almost all of the labour force participants' health insurance contribution to a broader-based *contribution sociale généralisée* (CSG) (Chapter II). The law on social security financing aimed to bring the general scheme's deficit down to FF 12 billion. Finally, a reduction was projected in the surpluses of local authorities and various central government departments.

General government expenditure is budgeted to grow by 1.45 per cent, which in real terms was to represent a slight decrease for central government and a 1.6 per cent increase for social security.[24] The priority sectors, for which budgets rise faster than average, include employment (Chapter II), national education, research (Chapter III), culture, housing, land use and development, justice and security. The defence budget is down 2.1 per cent, due to downsizing of the armed forces (reduction of the number of draftees) and capital spending cuts. The health insurance budget is up 2.2 per cent. Family allowances are subjected to means-testing, saving approximately FF 4 billion.

The decline in interest rates and the faster-than-expected expansion of the fiscal/social tax bases, due in particular to the buoyancy of domestic demand and employment, have facilitated the execution of the 1998 Budget, leading the government to scale down the projected deficit for general government from 3.0

to 2.9 per cent. Contrary to what was becoming customary practice, there has not been any spending freeze along the way. Furthermore, a number of taxes have been reduced or abolished with effect from September (the tax on sales of dwellings was cut by 1.6 point to 6 per cent on average and the stamp tax on national identity cards and examination fees for the driving test was abolished). The deficit on the social security general scheme should show only a marginal overshoot despite higher-than-expected health spending, since contribution receipts have been exceeding forecasts.

Major challenges remain over the long term

The trend decrease in the deficit notwithstanding, there remain a number of fundamental problems described in the previous *Survey* and underlined in the afore-mentioned audit. The rate of taxes and social contributions rose continuously between 1992 and 1997 to reach a peak of 46.1 per cent (45.3 per cent if social contribution reliefs are deducted, instead of being booked as subsidies). Although such international comparisons are naturally fragile,[25] this rate is about 3 percentage points higher than the European average and 8 points higher than the OECD average, in a context when economic and monetary integration reduces the obstacles to factor mobility and facilitates tax arbitrage.

The ratio of public spending to GDP fell by 0.3 percentage point in 1997 to 55.4 per cent (against an all-time high of 56.1 per cent in 1993). Even so, it too is well above the averages recorded in Europe or, more widely, in OECD countries. In these circumstances the question of the efficiency of the State's services is inescapable. The previous *Survey* discussed some of its aspects, notably personnel and pay (including pensions). Few structural changes have been observed since. The number of State employees has remained unchanged since the beginning of the decade, at nearly 2.1 million (excluding draftees),[26] during which time employment around the public sector has expanded (including a high proportion of the new youth jobs).

Health spending, which had slowed for a while, accelerated in 1998, leading the government to announce a set of emergency measures in July 1998, including a change in the pricing of radiological services and a levy on pharmaceutical laboratories. The social security finance bill for 1999 amends the system of financial penalties introduced by the previous government to encourage doctors to stay within the spending limits set: in the event of a collective overrun of fees or prescriptions (beyond a "tolerance range") doctors would have to pay back a portion of their overcharge or over-prescription. Pharmaceutical laboratories would also be penalised in the event of overrun.[27] The bill also aims to promote the use of generic medicines by enabling pharmacists to replace a prescribed medicine with a generic medicine of the same nature but cheaper because it has entered the public domain.[28] The government further proposes to

create a voluntary severance benefit in the public hospital service so as to begin to reduce the over-staffing in that sector.[29] Better economic regulation of health spending is being hampered by, among other things, the resistance of certain practitioners to computerisation.[30]

As regards pensions, a reform of the general scheme was begun in 1993, with a lengthening of the contribution period giving entitlement to a full pension and of the benchmark period used in calculating the best-salary base. To date this reform has not been extended to the special schemes. A law setting up pension funds (Thomas Law) was passed in early 1997 but the new government decided not to apply it.[31] Work is now under way in the National Planning Office to update and supplement earlier analyses.[32] The urgency of the need for broad-ranging structural measures is growing with the approach of the next decade's demographic shock (as the large post-war cohorts start to reach retirement age), even though population ageing will mean a decrease of welfare spending on the young. A modest but commendable first step was taken with the creation, provided for in the 1999 social security finance law, of a reserve fund with the proceeds from the financial surpluses projected in the short run for the old-age solidarity fund. This reserve fund would also be financed by the anticipated levies on the savings banks when they undergo a change of status (which would total FF 18 billion over four years). The decision to keep pensions indexed to prices rather than wages also goes in the right direction.[33] Lastly, the government has confirmed its intention to scrap the Thomas Law and announced that in 1999 it would present a bill creating a new saving scheme, which would consist of pension savings funds at the enterprise (or otherwise at the industry) level.

France is embarking on Monetary Union in favourable domestic conditions

The domestic economic situation on the eve of the euro's introduction is the best in ten years, enabling France to enter the Monetary Union in satisfactory conditions. Risks remain, however, mostly related in the short run to the evolution of the international environment, and in the longer run to the overly gradual pace of some structural reforms, which may hamper the reduction in the still far too high level of unemployment.

France in the Union: monetary and fiscal policies

For several years already the objectives of monetary policy and its implementation have been meant to ensure that, in the changeover to the single money, the French franc would be one of the most credible currencies. Since 1994 the Bank of France's intermediate target for money supply growth over the

medium term has been 5 per cent a year, the final objective being to hold inflation below 2 per cent both in the current year and over the medium run. Against this background, the Bank of France has adjusted its money market intervention rate upwards in October 1997. In a joint move with the other members of the European System of Central Banks, the Bank of France in early December 1998 decided to lower this rate from 3.3 to 3 per cent, at which level Monetary Union is to start.

With the euro about to being introduced, monetary conditions in the eleven involved countries as a whole are close to those prevailing in France, which should facilitate the implementation of Monetary Union. The latter has necessitated, among other things, a redefinition of the terms of reference of the central bank, which were formalised by a law enacted on 12 May 1998 (Box 2).[34]

Box 2. Role of the Bank of France in the Monetary Union

The Bank of France shall be an integral part of the European System of Central Banks (ESCB) and shall participate in carrying out the tasks and complying with the objectives conferred upon the ESCB, in accordance with the principle of subsidiarity. Definition of the guidelines for monetary policy and the operational decisions concerning its execution shall fall within the competence of the European Central Bank (ECB). In the person of its Governor, the Bank of France shall take part in defining the single monetary policy within the Governing Council.

The Monetary Policy Council shall examine monetary trends and analyse the implications of the monetary policy formulated within the framework of the ESCB. In accordance with the guidelines and instructions of the ECB, the Monetary Policy Council shall specify the terms and conditions for buying or selling, outright or under repurchase or resale agreements, lending or borrowing, discounting or taking as collateral claims, and issuing interest-bearing bills, as well as the nature and scope of the collateral to be attached to the loans granted by the Bank of France.

The Bank of France shall remain the natural partner of the credit institutions established in the country for the implementation of monetary and exchange-rate policy. It shall perform regular financing transactions, manage the operation of standing facilities (Lombard-type rediscount and deposit facility) and the system of compulsory reserves (which shall be interest-bearing), as well as fine-tuning operations. The TARGET system, the sole point of access to central money, shall ensure the interconnection of payment systems and the settlement of cross-border transactions within the framework of the unified euro money market. The Bank of France shall be an integral part of the mechanism of collection of monetary and credit statistics and shall continue to produce a balance of payments.

Box 3. The Stability and Growth Pact

The European Union's Pact for Stability and Growth, finalised at the Amsterdam Summit in June 1997, clarifies the Maastricht Treaty's provision for dealing with "excessive deficits" and provides an institutional framework for its enforcement, in part through strengthened surveillance and co-ordination of economic policies *via* the annual review of national stability programmes. The Pact also calls on participants in the Economic and Monetary Union (EMU) to adopt budgetary balance (or even a surplus) as a medium term objective.

For countries participating in EMU, the Pact considers a general government deficit above 3 per cent as excessive unless the Council judges it to be temporary and that there are special circumstances. By temporary is meant that, according to the projections of the Commission, the deficit would fall beneath the 3 per cent threshold in the following year. In the case of an excessive budget deficit, the Council of Ministers will, on the recommendation of the Commission, propose a course of action for the country which should be followed by effective measures within four months. The Council will monitor the measures and if they are found to be inappropriate it will make more detailed proposals, which will be published. If corrective measures have not been implemented within ten months, sanctions will be imposed. These would initially take the form of non-remunerated deposits, with a fixed component equal to 0.2 per cent of GDP and a variable component rising in line with the size of the excessive deficit. Such deposits are limited to a maximum of 0.5 per cent of GDP per year, but would accumulate each year until the excessive deficit is eliminated. Provided the excessive deficit is corrected within two years the deposits are returned to the country, otherwise the deposits will become non-refundable. In the event that the measures taken by a country are ineffective, the whole process will be restarted but sanctions will be imposed within three months.

When a country is judged to be in recession, which is defined as an annual fall in real output (GDP) of at least 0.75 per cent, the Pact will be enforced in a differentiated manner. If economic output in a member country declines by 2 per cent or more – and provided the deficit is temporary – exemption from the procedure is granted automatically. In the event GDP falls by between 0.75 per cent and 2 per cent, exemption can be granted in special circumstances by the Council of Ministers. The country would need to convince the Council that the economic decline was "exceptional" in terms of its abruptness or in relation to past experience.

The budget guidelines are set within the framework of the European Stability and Growth Pact (Box 3). One of the aims is to allow a sufficient safety margin over the medium term so that the automatic stabilisers can come into play in the event of adverse shocks. Illustrative simulation results suggest that if the government maintains a cyclically-adjusted deficit of around 1 per cent of GDP, the recorded deficit would remain below the 3 per cent threshold over a three year horizon, without any need for discretionary fiscal policy adjustments (Dalsgaard and De Serres, forthcoming). The French authorities envisage to reduce

the deficit below 2 per cent of GDP in 2000, which would allow to initiate a reduction in the debt-to-GDP ratio around the turn of the century. The medium-term fiscal consolidation objectives will be specified in the French stability programme which will soon be put forward.

In this context, the Finance Bill for 1999 aims to bring the Maastricht deficit of general government down to 2.3 per cent of GDP, which would reduce the structural deficit by 0.2 percentage point. Given a reduction in the share of public spending in GDP on the order of 0.8 percentage point, this would permit a slight decrease in the rate of direct taxation. Taxes (excluding social security contributions) will, on this reckoning, fall by FF 16 billion if the measures announced earlier but not applicable until 1999 are counted in. The State's primary balance would be in surplus for the first time since 1991.

The chief tax measures include the first stage of the phase-out of the payroll component of the *taxe professionnelle* (business tax) and of the alignment of the spread between excise taxes on diesel oil and on unleaded gasoline with the European average, replacement of the five existing pollution taxes by a single general tax on polluting activities, a reduction of certain conveyancing taxes, an increase in the yield from the solidarity tax on wealth (creation of an additional bracket at 1.8 per cent and measures to counter avoidance), and a few selective cuts in VAT (notably on electricity and gas subscriber charges and sorted waste treatment). A number of tax reforms have been announced in the context of this budget's preparation that will not be applied until after 1999. This is the case with the updating of the property rental value bases of local taxes (dating back to 1970) and the revision of the equalisation mechanisms for the residential poll tax.

Central government expenditure is set to increase by 2.3 per cent in nominal terms (correcting for classification changes).[35] The priorities are much the same as those of the previous budget. In particular, the appropriations allocated to employment, education, solidarity and urban policy have been increased overall by 4.2 per cent (3.9 per cent for the employment budget, in order to finance the shorter workweek and jobs for youth). Appropriations earmarked for the environment have been increased by about 15 per cent. As in 1998, the number of civilian employees of the State is held unchanged, but redeployments are planned. With regard to social security, the target for the general scheme is a zero balance, which should permit a surplus of 0.15 point of GDP for the social security accounts as a whole. Achievement of this target will depend very much on the rate of employment growth and the effectiveness of expenditure control.

Beyond 1999, the medium-term fiscal strategy envisaged by France should be spelled out shortly in the context of EMU. As noted, and as the next chapter underlines, tax pressure broadly defined remains too high. It is therefore desirable that the rate of tax and social security contributions would continue to decline significantly over the next few years. At the same time, the reduction of

the public deficit should proceed so that fiscal policy would soon recover sufficient margins for manoeuvre. The contours of the fiscal strategy as they are currently known, however, suggest that the programmed adjustment efforts are overly timid. Additional measures are thus called for to restrain the growth of public spending more strictly.

Sustaining growth

The declared ambition of the French government is to turn the 1997-98 recovery into sustainable growth, necessary if employment is to expand sufficiently to bring unemployment down. Improved functioning of the labour market and continuing liberalisation and European integration of product markets, discussed in the chapters that follow, will have an important part to play here. These developments should help to support the investment effort made in 1998 and which has to continue if supply-side conditions are not to hold back growth in the longer run.

The impact on growth of the crises afflicting the emerging economies since 1997 has so far been cushioned by the concurrent upswing in domestic demand, which itself has been accentuated by some of the more indirect effects of these crises, including easier monetary conditions, other things being equal, and lower import prices. Nonetheless the impact has been tangible, as evidenced by the significant slowdown in exports and the size of the provisions made by the leading French banks against their results for the first half of 1998.[36] All told, this external factor may have slowed growth in 1997-98 by a few tenths of a percentage point per year. Despite its foreseeable impacts over the projection horizon, including through the effects on growth in the other regions of the world, the OECD Secretariat's baseline projection suggests that growth, if it does slow, should remain above potential and above growth in the other large countries of the euro area (Table 4).

The rate of export growth would pick up somewhat over the projection period but remain below the average for the decade to 1996, consistent with the projected trend of world demand addressed to France (on broadly unchanged market shares). However, growth in 1999-2000 would continue to be led by domestic demand. Consumption would remain buoyant, supported by net job creation. The same would apply to investment, which towards the year 2000 would regain the level that a traditional investment equation of the profit-accelerator type would predict. Against this background, unemployment would fall to around 10½ per cent by 2000. The progressive closing of the output gap would be accompanied by a slight acceleration of prices, spurred also by a limited rise in oil and commodity prices. Finally, the current account surplus would decrease marginally but still remain very large.

Table 4. **Outcomes and short-term projections**

Percentage change, 1980 prices

	1996	1997	1998	1999	2000
Private consumption	2.0	0.9	3.4	2.6	2.4
Government consumption	2.6	1.2	1.5	2.0	2.2
Gross fixed investment	–0.5	0.0	4.6	4.6	4.2
General government	–7.5	0.2	0.9	2.3	2.6
Private residential	–1.0	–0.6	2.1	3.8	3.4
Private non-residential	2.0	0.3	6.8	5.6	5.0
Stockbuilding[1]	–0.7	0.0	0.5	0.1	0.0
Total domestic demand	0.9	0.8	3.9	3.0	2.7
Exports of goods and services	5.2	12.5	5.7	4.0	5.1
Imports of goods and services	3.0	7.7	8.2	5.7	5.5
Foreign balance[1]	0.6	1.5	–0.6	–0.5	–0.1
GDP	1.6	2.3	3.1	2.4	2.6
Employment	0.1	0.4	1.2	1.3	1.3
Unemployment rate[2]	12.3	12.4	11.8	11.2	10.6
Household saving ratio[3]	13.3	14.5	14.4	14.3	14.3
Private consumption deflator	1.8	1.1	0.5	0.9	1.2
GDP price deflator	1.2	0.9	0.7	1.0	1.3
Interest rates (yearly averages, per cent)					
Short-term	3.9	3.5	3.5	3.0	3.1
Long-term	6.5	5.7	4.7	4.1	4.3
General government balance[4]	–4.1	–3.0	–2.9	–2.4	–1.9
Current balance[4]	1.3	2.7	2.6	2.4	2.4

1. Contribution of change to GDP growth.
2. Per cent of the labour force.
3. Per cent of disposable income.
4. Per cent of GDP.

Source: OECD Secretariat.

The realisation of this scenario, however, hinges on the assumption that the international environment would not worsen over and beyond what the Secretariat currently foresees (OECD, 1998*j*). It also assumes that household confidence remains high and that business confidence does not deteriorate over and beyond the erosion recorded during the autumn of 1998. Finally, it rests on the premise that the ongoing structural reforms, and in particular the reduction in working time, are implemented in such a way that they do not lead to the opposite of their stated objectives.

II. Structural policy developments

Bringing down unemployment remains one of the top priorities in France as in other European OECD countries. In the context of the OECD *Jobs Strategy*, the previous *Survey* provided a comprehensive analysis of the different dimensions of the problem. This chapter uses the same framework to examine the structural policies conducted since, the focus being on recent or forthcoming changes. Major initiatives have been taken by the government installed in mid-1997 concerning labour market measures as such but also the State's progressive divestiture and the creation and diffusion of technological know-how. The first two aspects are discussed here, while encouraging innovation is the subject of the next chapter.

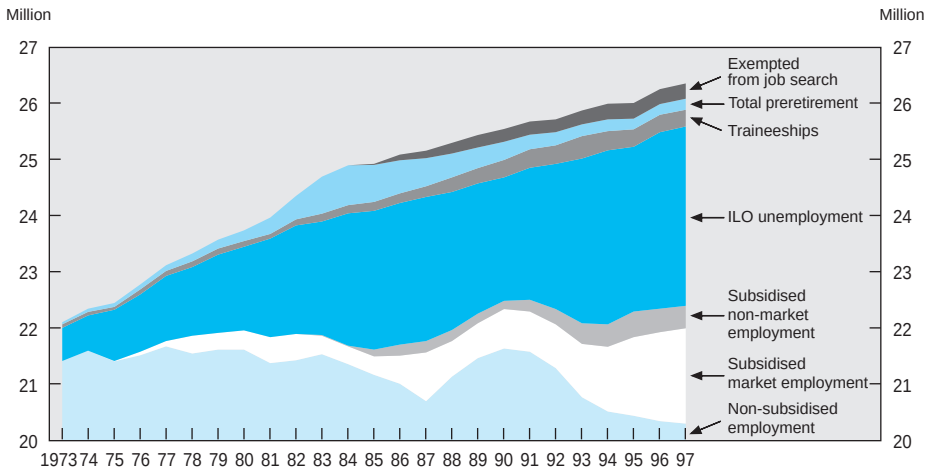
Labour market reforms[37]

Although unemployment has begun to edge down, its "equilibrium rate", whichever definition or estimation method is used, remains very high. The structural component of the unemployment rate is estimated at more than 10 percentage points by the OECD.[38]

In an attempt to contain unemployment, spending on employment has grown enormously over the long run, from 0.9 per cent of GDP in 1973 to 3.9 per cent in 1996 (4.4 per cent if the generalised cuts in employers' social contributions on low wages are included).[39] The number of persons covered by the different special programmes (market and non-market subsidised employment, traineeships, pre-retirement schemes, etc.) rose from 0.1 to 2.2 million between 1973 and 1997 (Figure 16). The use of this aid is difficult to control and its effectiveness deserves to be enhanced.[40] In particular, the many schemes successively introduced have been unable to prevent a long-run deterioration in the relative employment position of the young (Figure 17).

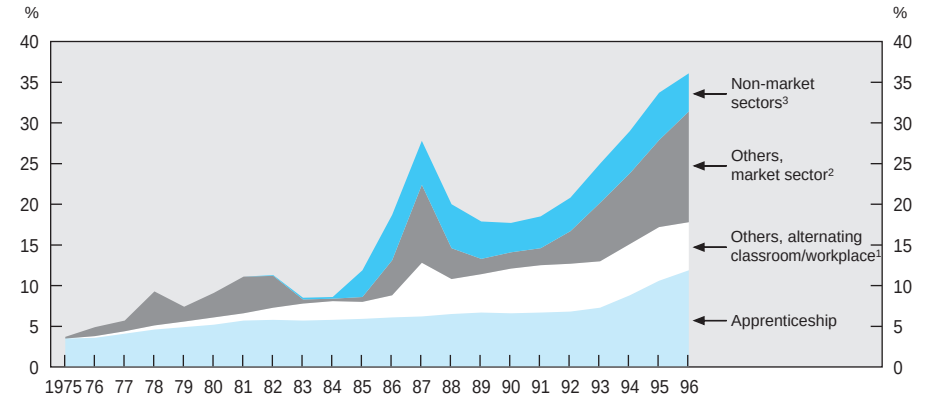
Since the previous *Survey* a number of measures have been taken to try to improve labour market performance, the new government having highlighted employment as one of its top priorities.

Figure 16. **Employment, unemployment and employment policy measures**
Annual average stocks[1]



1. Provisional data for 1997.
Source: DARES, *La politique de l'emploi,* and INSEE.

Figure 17. **Share of subsidised youth employment**
Yearly averages, per cent of total employment of 16-25 year-olds



1. Youth employment pacts, skills and job training contracts.
2. In-firm training with employer tax exemption on hiring, exemption for hiring young persons without qualifications, exemption for hiring of a first employee, exemption for part-time working.
3. Community work, employment solidarity contracts.
Source: DARES, *Premières informations et premières synthèses,* 97.12, No. 52.1, and INSEE.

Flexibility of wage and labour costs

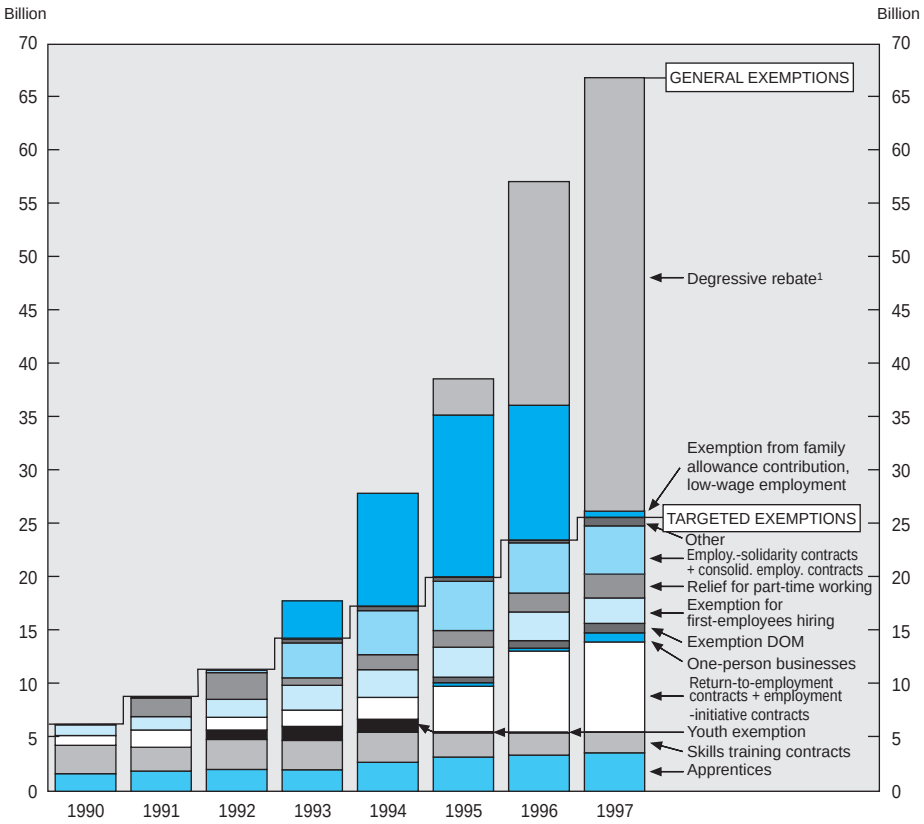
Considering that the problem is not so much the cost of labour in general as the relative cost of low-skilled labour, governments in recent years have taken several sets of measures in an attempt to reduce the latter.

The exemption from family contributions and the degressive reduction of social contributions for low-wage workers were merged into a single degressive rebate in October 1996. The latter was amended in early 1998: the rebate is again proportional to the number of hours worked (so as not to unduly favour part-time work) and applicable for up to 1.3 times the SMIC. It can be combined with the 30 per cent reduction on employers' social contributions for part-time workers and with the relief allowed by the Robien and Aubry laws (see below). The rebate reduces the cost of labour by 12.6 per cent at the level of the SMIC and for several years has been the largest of the social contribution exemptions (Figure 18).[41] In 1997, it concerned 5.1 million employees, of whom 3.6 million full-time, and its cost amounted to FF 46.7 billion out of a total FF 82.7 billion in social contribution relief. The number of jobs generated would be between 10 000 and 50 000 over five years per FF 10 billion financed by a reduction of expenditure or a compensating levy (CAE, 1998).[42] It has been proposed to extend the range of the rebate up to 2 times the SMIC and to perpetuate it in the form of a graded scale as opposed to an exemption, while reducing its steep progressivity at the lower end of the wage ladder so as to avoid creating a "low-wage trap".[43] According to the French authorities, the problem of the cost of labour at the lower end of the wage scale stems from the tax and social contribution wedge rather than from the level of the SMIC, which in fact limits unemployment traps. The level of the gross SMIC (including the social contributions paid by the employee) nonetheless remains relatively high in France (Table 5).[44]

In 1997, the rate of employees' social contributions was reduced by 1.3 points, while the CSG tax was raised by one point and its base broadened. This shift was accelerated a year later when 4.75 of the 5.5 points of the employee contribution were switched to the CSG, resulting *ceteris paribus* in a purchasing power gain estimated by the authorities at 1.1 per cent. In this way the resources of the various health insurance funds should be better cushioned against cyclical swings.

To further reduce the cost of labour, the wage component of the *taxe professionnelle* base is to be phased out over five years as from 1999.[45] The *taxe professionnelle*, introduced in 1975 and amended a great many times since, has become very complex and a source of distortions. The reform would ultimately reduce tax revenues by FF 50 billion, of which FF 7 billion in 1999, but its net cost, allowing for the resultant increase in the corporation tax base, would be about half that amount (before macroeconomic feedback).[46] This would eventually reduce the average cost of labour by 2 per cent, and the government is hoping

Figure 18. **Evolution of social contribution exemptions**
In billions of 1990 francs



1. From October 1996, rebate and family allowance exemption merged.
Source: DARES, *Premières informations et premières synthèses,* 98.05, No. 21.1.

that as a result 25 000 jobs will be created in 1999 and 100 000 ultimately.[47] Given the arrangements for its implementation, the reform will first of all benefit SMEs, and particularly the highly labour-intensive sectors (services, building and commerce).

Assistance to enterprises that have shortened working hours and created or preserved sufficient jobs takes the form of a flat-rate cut in their social contributions (see Annex I). The structural component of this deduction is therefore a measure of the reduction in the cost of labour, with stronger leverage at the lower

Table 5. **Minimum wage per hour**[1]
End-1997, in US$[2]

	Market exchange rates	PPPs
Belgium	6.77	6.40
Canada	4.53	5.33
Czech Republic	0.39	0.92
France	**6.58**	**5.56**
Greece	2.74	3.06
Hungary	0.48	1.05
Japan	4.88	3.38
Korea	1.05	2.15
Luxembourg	7.23	6.91
Mexico	0.38	0.59
Netherlands	6.42	6.00
New Zealand	4.07	4.46
Poland	0.74	1.57
Portugal	1.78	2.32
Spain	2.53	2.94
Turkey	0.72	1.38
United States	5.15	5.15

1. For adults. For countries where the minimum wage is not usually expressed as an hourly rate, the given rate has been converted to an hourly basis assuming a working time of 8 hours per day, 40 hours per week and 173.3 hours per month.
2. Market exchange rates refer to end-December 1997. The PPPs refer to provisional estimates of purchasing power parities for final private consumption expenditure for December 1997.

Source: OECD, *Employment Outlook,* June 1998.

end of the wage scale. By definition, however, this aid is inseparable from the increase in the cost of labour due to shorter working hours.

Another measure designed to reduce, indirectly, the cost of labour and to encourage hiring has been the introduction, under the 1998 Finance Law, of a tax credit of FF 10 000 for each net job creation in 1998, 1999 or 2000. This advantage applies only to the first 50 jobs created, thereby focusing the incentive on SMEs. The tax credit can be set against the 10 per cent payment of corporation tax up to a limit of FF 500 000 and is not refundable.

The government is also considering reducing VAT on home services to individuals, on the grounds that in France home services constitute a major source of jobs which has barely been tapped, while needs are bound to grow because of population ageing.

Systems of unemployment compensation and related benefits

The rules governing unemployment compensation were tightened as of 1993, notably with the introduction of a steeper degressive benefit scale and

more restrictive entitlement criteria. The previous *Survey* underscored that the rates and duration of compensation were still fairly generous for benefit recipients compared with the OECD average. Since then a number of measures have been taken which reinforce that finding. The unemployment benefit minimum was raised from FF 2 805 per month to FF 3 100 in early 1997, its rate of reduction was slowed (every six instead of every four months), the period of full-rate entitlement for jobless persons aged at least 49 with a record of 14 months' work during the previous 24 months was extended from seven to nine months, and the 25 per cent benefit deduction for those unemployed having worked four months in the past eight months was abolished.

As the previous *Survey* noted, the relative generosity of benefits for the jobless may encourage some of them to remain non-active (unemployment trap). Similarly, the effective marginal tax rate applicable to certain categories of low-wage workers receiving basic income support (RMI) or other benefits is very high and may deter them from working more (poverty trap).[48] Various steps have been taken to mitigate these adverse effects. Since March 1998, unemployment benefit recipients can continue to receive them while earning income from part-time work for up to 136 hours per month (as against 78 previously).[49] The 29 July 1998 Law against exclusion reinforces and expands the possibilities of temporarily combining wage income with basic income support. More specifically, a person receiving the RMI who takes a low-paid job may now combine these two income sources in full for the first three months, the income support being reduced by half the amount of the pay received during the following nine months.[50] This type of measure certainly encourages a return to work, but it poses an equity problem *vis-à-vis* low-paid workers who have never received income support (Garnier, 1998). Furthermore, the housing allowance, which is income-tested, tends in some cases to create a trap, since the RMI is not included in the benchmark income base (Fleurbaey *et al.*, 1998).

The anti-exclusion Law also stipulates that the specific solidarity allowance (ASS) paid to unemployed persons who have exhausted their benefit entitlement and the young first-job seeker's allowance will be inflation-proofed and not attachable (like the RMI). The same law prescribes non-attachability for family allowances and a number of sickness benefits below certain thresholds. It also introduces a series of benefits in kind (fare reductions for travel by local public transport, free basic supply of water, energy and telephone service). Finally, in the context of procedures applying to over-indebted households, it defines a subsistence level to be left after attachments, corresponding to the amount of money needed to cover the current expenditure of the indebted person and which may not be lower than the RMI.[51]

The total number of beneficiaries from the various pre-retirement schemes has risen since the end of 1996, reaching 286 000 by mid-1998 (excluding

civil servants). The number of early retirees under State-subsidised schemes has fallen, but that of early retirees receiving the employment replacement allowance (ARPE) has risen from 50 000 to 72 000. The ARPE, introduced in September 1995, is due to expire at the end of 1998 but may be renewed. It entitles older employees with 40 years' affiliation to the old-age insurance scheme to retire with an allowance equal to 65 per cent of their former gross pay calculated up to age 60, provided that each employee concerned is replaced by an unemployed person.[52] This allowance makes it easier for businesses to rejuvenate the age structure of their workforce and reduce their wage bill without redundancies, the departing employees often being replaced by young persons who are paid considerably less, but it is costly (FF 120 000 per beneficiary per annum).[53] A new allowance targeting the elderly jobless was introduced in late 1996 for persons with 40 years of contributions to the old age scheme; by mid-1998 there were 62 000 recipients. This allowance is paid, at a maintained rate, until age 60.

Finally, unemployment benefit administration and job placement have been reformed. Job-seeker registration, formerly handled by the local employment agencies, has been progressively transferred to the unemployment insurance funds (ASSEDIC) in order to simplify the administrative formalities for job-seekers, to shorten the time needed to obtain unemployment benefits and to refocus the activity of the employment agencies (ANPE) on placement of the unemployed. Against this background, the number of branch offices of the 52 ASSEDICs has thus risen from 400 to 636, and their total staff from 12 600 in 1996 to 13 500 in 1998, while efforts have begun to expedite reception and inform visitors of their rights and the action being taken on their applications. Furthermore, in the context of the National Plan of Action for Employment and of the Anti-exclusion Law, France has undertaken to increase placement staff by 500 persons per annum for five years starting in 1998.[54]

Employment protection legislation

The last major reform of redundancy legislation dates back to 1993, when the conditions applying to mass redundancies were tightened. By comparison with other OECD countries, the degree of protection against dismissal offered by French legislation and collective agreements is not particularly low. The administration is nevertheless considering various new measures to prevent redundancies or cushion their consequences, including better forward-looking skills management, improved access to retraining, and a clarification of the judicial procedures creating uncertainties for employees and employers. The re-establishment of administrative dismissal authorisations is not planned. In the meantime, regional and departmental authorities have been instructed to be particularly alert as regards dismissals for economic reasons and to use State aid selectively so as to ensure that redundancy plans are not confined to the pay-

ment of compensation or premia, or to early retirement.[55] These authorities are requested to encourage solutions other than dismissals, by adapting employees' skills to those associated with vacancies, or by the reorganisation or reduction in working time one way or another. When dismissals are unavoidable, these authorities are to check that employers get involved in the outplacement of laid-off staff. Besides, for firms employing over 50 persons, it has been decided to double the specific contribution payable for the dismissal of employees aged 50 and over.[56] This type of measure may discourage the hiring of some individuals approaching that age.

As regards recent developments in case law, certain court rulings have increased the employer's obligations. The Labour Chamber of the *Cour de cassation* ruled that a redundancy plan containing no particulars on retraining arrangements within the group of enterprises whose activities could permit labour crossovers is invalid.[57] It also ruled that the letter notifying an employee of dismissal on economic grounds must now set out a specific reason.[58]

The government is also planning to facilitate workforce sharing among several enterprises, while guaranteeing a modicum of job security for the employees concerned. It is studying ways to remove the obstacles to these kinds of activities, notably as regards paid leave, overtime and health care on the workplace, and to encourage the development of employer groups making personnel available to their members.

Active labour market policies

In response to the persistent problem of youth unemployment, one of the major initiatives of the government that took office in June 1997 has been the launching of the "New Services, New Jobs" programme, which aims to encourage the creation of jobs that will fill emerging needs not met by the public sector nor by the market, notably in educational, cultural, sporting, environmental and neighbourhood service activities. These jobs are reserved for young people between the ages of 18 and 25[59] and subsidised by the State to the tune of 80 per cent of the SMIC, including the employer's ordinary social contribution, for a period of five years (at a present annual cost of FF 93 843 per year). One-fifth of these jobs are to go to young people from distressed neighbourhoods. The idea is that these jobs should not compete with the market sector or the private non-profit sector, or take the place of pre-existing or traditional jobs. In this way, an effective demand for the services performed would be revealed and ensure their maintenance over the medium term. In addition, the young people in the scheme would acquire a skill negotiable in the labour market. The target is to create 350 000 youth jobs of this type by 2000, of which 150 000 by end-1998. By mid-November 1998, 152 000 such jobs had been set up, of which nearly 109 000 had already translated into hirings. The youth jobs were first set up mainly in national

education (65 000) and the national police (8 250) but are now principally to be found in other sectors (79 000) (Box 4).

Furthermore, the 1998 Finance Law provided for 200 000 new employment-initiative contracts (CIE), as against 213 000 signed in 1997 and 289 000 in 1996, for the neediest (long-term unemployed, RMI or ASS recipients, young under 26 with no qualifications and receiving no welfare benefit, unemployed aged over 50, handicapped, etc.).[60] The number of traineeships offered to the long-term unemployed was set to increase by 30 000 in 1998 to a total of 200 000. Finally, 240 000 new apprenticeships were budgeted, compared with 211 000 in 1997, together with 100 000 new skills training contracts.

Various new measures have been written into the anti-exclusion legislation to offer a new start to job-seekers, and more particularly to youth and the long-term unemployed. The job-seekers concerned will receive personalised offers in the form of a job vacancy, a training scheme, contractual facilitation or social facilitation in cases of severe social handicaps. By and large, this necessitates a better linkage between the competent bodies – notably between the ANPE and the National Association for Adult Vocational Training (AFPA) – and closer targeting of the population categories to be given priority.

More specifically, a new programme entitled TRACE (*trajet d'accès à l'emploi* – pathway to employment) has been introduced which offers needy young people aged 16 to 25 an 18-month path to a first job, which can be extended in special circumstances and which provides pay or, where necessary, emergency financial assistance. The aim is to cover 40 000 persons in 1999 and 60 000 in 2000. On an experimental basis, the law is extending eligibility for the skills training contracts hitherto reserved for young people under 26, to adults who have been unemployed for more than six months, which might ultimately concern 25 000 persons a year. The *contrats emploi-solidarité* (CES – employment-solidarity contracts) – which provide 80 per cent plus State-subsidised part-time jobs in the public sector (with an exemption from employer social contibutions) – are being refocused on the neediest cases, the number of these contracts being set to fall from 450 000 in 1998 to 425 000 in 1999.[61] The *contrats emplois consolidés* (CEC – consolidated job contracts) – which provide five-year jobs with associations and local authorities and are intended to satisfy hitherto unmet community needs, and which are subsidised by the State up to 80 per cent for those most in need, and also benefit from an exemption from employer social contributions – are now available to the same needy persons without the requirement of their being previous holders of a CES; the number of new CECs is to increase from 30 000 in 1998 to 60 000 in 1999. In the case of an ailing enterprise, the law now allows serving and laid-off employees who take over the business a social contribution exemption, free health insurance coverage for one year and a repayable advance.

Box 4. Local initiative youth jobs

The first local initiatives for youth-job creation were taken by associations or other non-profit bodies (mutual benefit societies, works councils), communities and legal entities under public law (public housing offices, hospitals) or corporations managing public services (mixed-economy enterprises). They aim, in particular, to improve the human environment, transport security and access to housing. Sports and tourism are also well represented. The level of qualification required varies greatly, as shown by the examples listed below.

Youth jobs

	Employer	Level of qualification or skills required[1]
Education, culture, new communications technologies		
Assistant organiser of children's town councils	Municipality	Bac
Schools cinema promoter	Association	Certificate of lower secondary education
Promoter of book-reading in the community	Municipality	2 years post-secondary
Cyber-organiser to manage an Internet site for youth opportunities	Work council	Bac
Travelling toys and games library assistant	Socio-cultural centre	Level IV
Family, health, solidarity		
Co-ordinator of a women's community service network in a sensitive neighbourhood	Association	Legal training
Exclusion-prevention appointee to follow up unpaid utility bills	Water supply corporation	Bac + 2
Trainer of guide dogs for the blind	Association	Level III-IV
Youth outreach worker	Young workers' club	First level
Transport, housing, prevention, mediation, safety and security		
Bus passenger supervisor	Employers' association	First level
Neighbourhood mediator to establish supervisory presence and dialogue in sensitive neighbourhoods	Association	First level
Assistant for social and educational support of prisoners	Association	Bac
Supervisor of public places to reduce anti-social behaviour and damage	Association	Unspecified
Adviser on home accident prevention	Mixed-economy enterprise	Bac
Adviser on household energy saving	Mixed-economy enterprise	Bac
Neighbourhood legal assistant	Association	Level III

(continued on next page)

(continued)

Youth jobs *(cont.)*

	Employer	Level of qualification or skills required[1]
Environment, protection of national heritage		
Wetlands keeper to maintain and enhance wetland sites	District	Level V
Waste sorting ambassador	District	Interpersonal skills
Officer for control of wastage and promotion of waste-recycling awareness	Association	CAP or BEP
Site amenities and environmental teamworker	Municipality grouping	First level
Tourism, leisure, sport, community life		
Organiser in a holiday village for handicapped persons and their families	Association	BTS
Promoter of national heritage	Mixed-economy enterprise	Bac + 2
Organiser of sports activities in socially sensitive neighbourhoods	Regional sports committee	Bac + 2

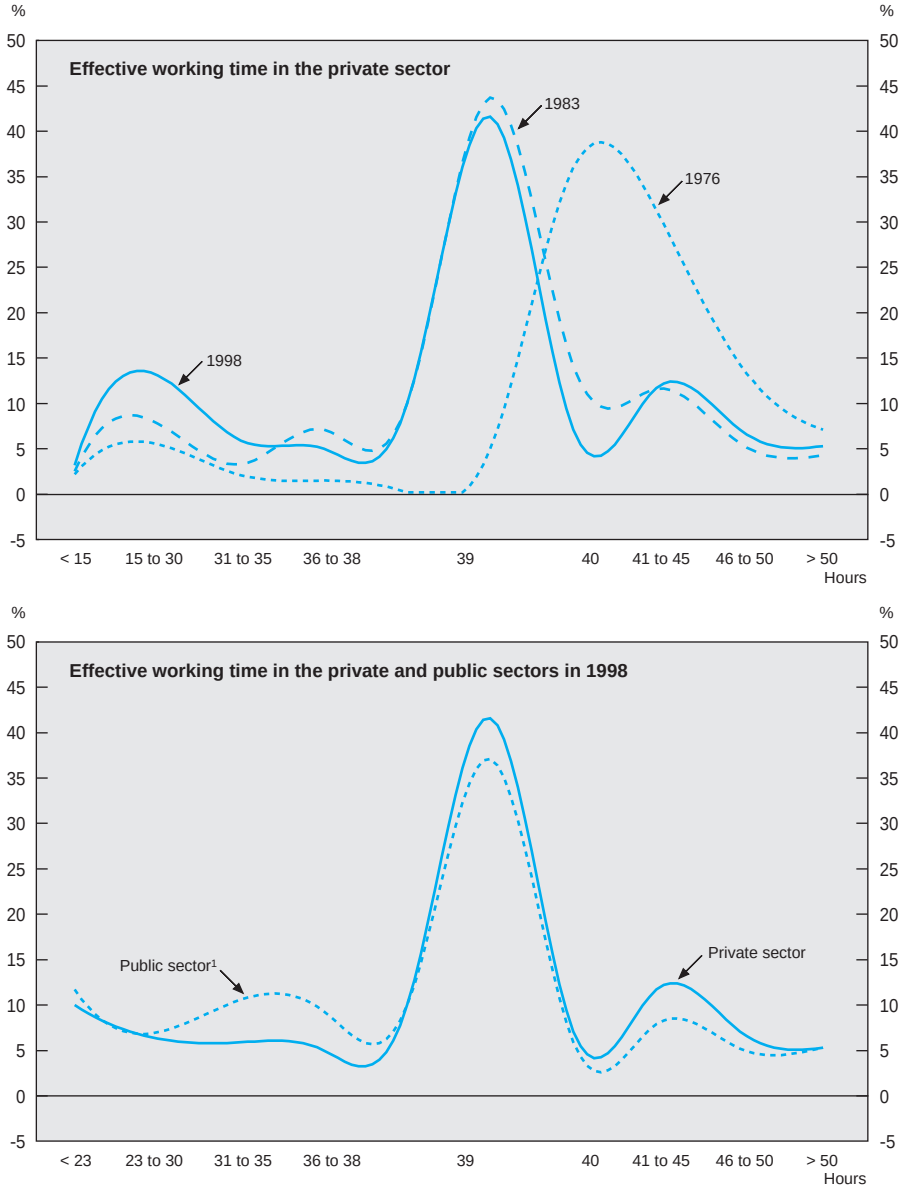
1. In some cases it is specified that applicants must be from sensitive neighbourhoods. Qualification levels are defined as follows: the I-III level graduates are classified according to their higher education diploma: *license* at least for levels I and II, "bac + 2" or analogous for level III; the IV-V level individuals are grouped in accordance with the class they reached: the *terminale* at least for level IV, and at least a CAP/BEP *terminale* or the *seconde* for level V.

Source: http://www.travail.gouv.fr/sources/actualités, 21.07.98.

Duration and flexibility of working time

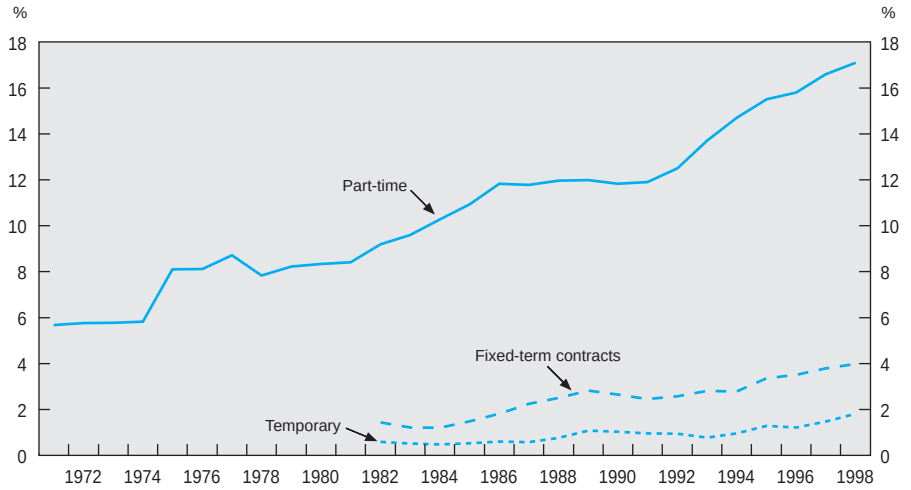
Over the past twenty years or so, effective working time has diversified considerably (Figure 19).[62] Part-time work, whether chosen by the employee or accepted as better than nothing, has developed greatly, helped in large measure by strong inducements in the form of socio-fiscal tax exemptions (Figure 20). In March 1998, more than one male employee in six and nearly one female employee in three were working part-time. The share of "involuntary" part-time is distinctly higher in France than in most other European countries, with four out of ten part-timers declaring they wish to work more.[63] Fixed-term contracts have also become more frequent, now accounting for some 4 per cent of total employment. In addition, temporary employment has soared in recent years, no longer serving simply as a short-term adjustment variable but becoming more and more a structural component of the firm's workforce, especially in such sectors as the automotive industry (Gorgeu and Mathieu, 1998). Working-time regulations have tended to give way to increasingly decentralised collective agreements, the restrictions on week-end working having been eased, for example.[64] The number of collective enterprise agreements has thus increased tenfold since 1982,

Figure 19. **Distribution of hours worked weekly**
Per cent of total



1. Excluding teachers.
Source: INSEE, *Enquêtes emploi.*

Figure 20. **Part-time working, fixed-term contracts and temporary work**
Per cent of employed labour force

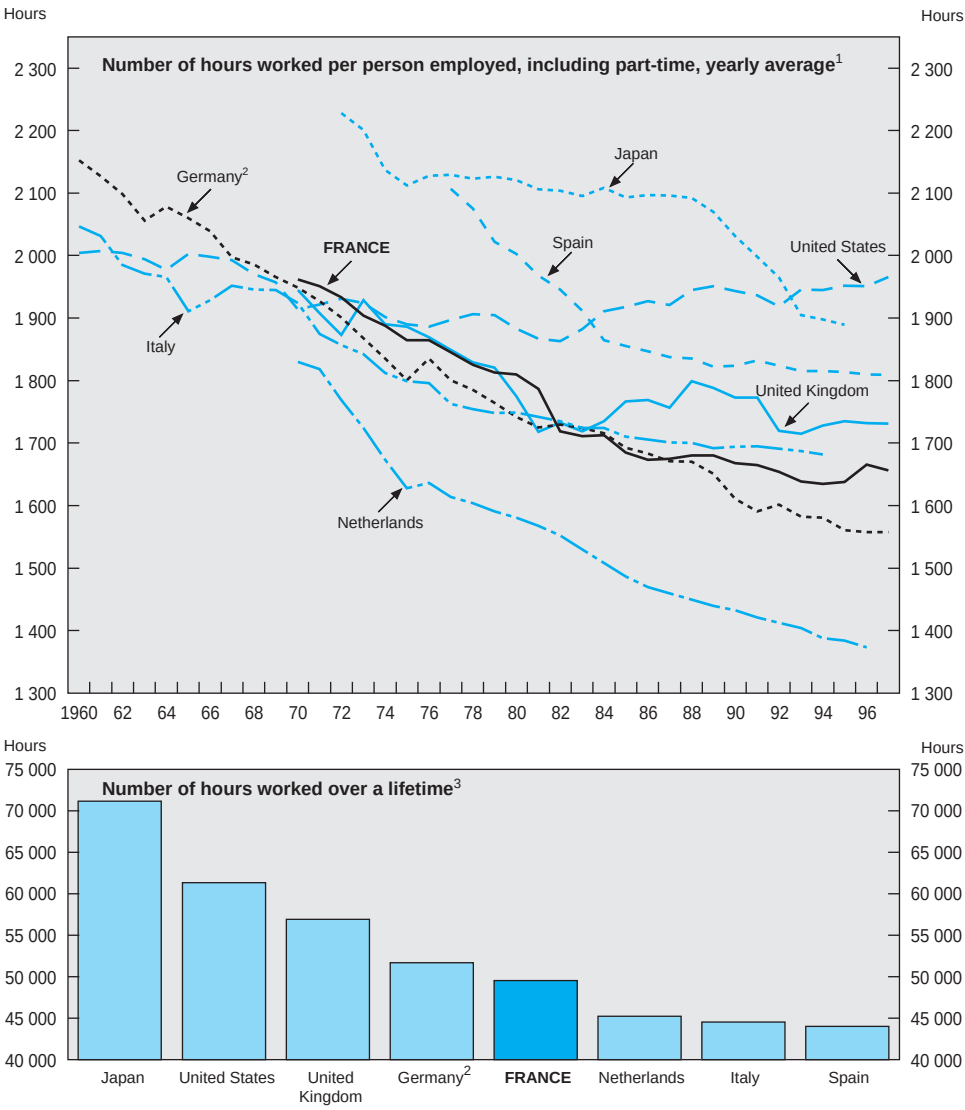


Source: INSEE, *Marché du travail, séries longues,* 1994, and *INSEE Première, chômage et emploi.*

approaching 12 000 in 1997. A growing proportion of employees, amounting to 9 per cent in 1997, state that they no longer work customary hours. Considering that the development of fixed-term and temporary contracts fragilises employment, the government has recently announced that measures were being envisaged to encourage enterprises heavily using such contracts to transform them into open-ended contracts. It is important, however, not to discourage fixed-term and temporary hires, which in recent years have considerably contributed to employment creation.

The shortening of average hours worked since the mid-1980s (Figure 21, upper panel) essentially reflects the development of part-time working in its various forms. The statutory limit for total hours worked, which on an annual basis was reduced by 4.5 per cent in 1982,[65] has remained unchanged. The number of hours actually worked by full-time employees has held steady at around 42½ hours per week, whereas the number of hours worked by part-time employees has increased by nearly two hours to close on 23 hours per week in 1997. Thus, assuming an unchanged structure of employment, average weekly hours have even lengthened somewhat since 1982. Cross-country comparisons show that in 1997 effective working time in France was about halfway between working time in the Netherlands, which has shortened very considerably over the

Figure 21. **Hours worked: international comparison**



1. Data pertain to total employment, except for Italy and the Netherlands, where they pertain to dependent employment. Given the differences of definition across countries, and in some cases over time in the same country, these series are only indicative.
2. West Germany.
3. Estimate for employees, assuming present work habits have remained unchanged, on the basis of data for 1992.

Source: Ministry of Economics, Finance and Industry; OECD, *Employment Outlook.*

long term, and working time in the United States, which has tended to lengthen. Over an entire working career, however, the number of hours worked is relatively low in France (Figure 21, lower panel), notably because of somewhat later starts and somewhat earlier withdrawals from the labour force, but also owing to a high rate of unemployment.[66]

Faced with an alarming rise in the unemployment rate at the start of the 1990s, the authorities encouraged a reduction of working hours with a view to employment sharing. The five-year employment Law of 20 December 1993 introduced the possibility for employers, by negotiation, to annualise working time in return for a reduction in the total number of hours worked, without specifying by how much. Few agreements of this type were concluded and the related reductions of working time were generally small. The same law also allowed employer contribution relief for three years under these agreements, provided *inter alia* that the employer first cut total hours worked by at least 15 per cent and then hired at least 10 per cent more staff, but this possibility was hardly used at all. An interprofessional agreement was concluded on 31 October 1995 inviting industries to negotiate a reduction of working time, but of the 400 industries concerned only about 30 did so, with very limited effects (Freyssinet, 1997).

The Robien Law of 11 June 1996 aimed to speed up the process by offering substantial reductions in social contributions for seven years to employers who cut work time by 10 or 15 per cent and increased their workforce commensurately for at least two years (offensive action) or undertook to maintain a job when a redundancy was planned (defensive action). The impact of this scheme, too, was limited, with fewer than 3 000 agreements signed covering barely 280 000 employees and an average rate of job creation or preservation of about 12 per cent of that coverage, ignoring windfall effects (Annex I).

Against this background, a framework law organising the reduction of the statutory working week to 35 hours was announced in October 1997 and passed in June 1998. The law sets the statutory weekly working time at 35 hours as from the beginning of 2000 for enterprises with more than 20 employees, and two years later for smaller businesses. However, it encourages enterprises to make the adjustment earlier by offering more generous tax incentives for agreements concluded before the cut-off dates. Unlike the Robien Law, this assistance is flat-rate so as to favour low-wage employment. The job creation threshold for aid eligibility is lower, at 6 per cent for a 10 per cent reduction in working time (9 per cent for a 15 per cent reduction, entitling the firm to a higher level of assistance). Annex I sets out the provisions of this law in more detail.

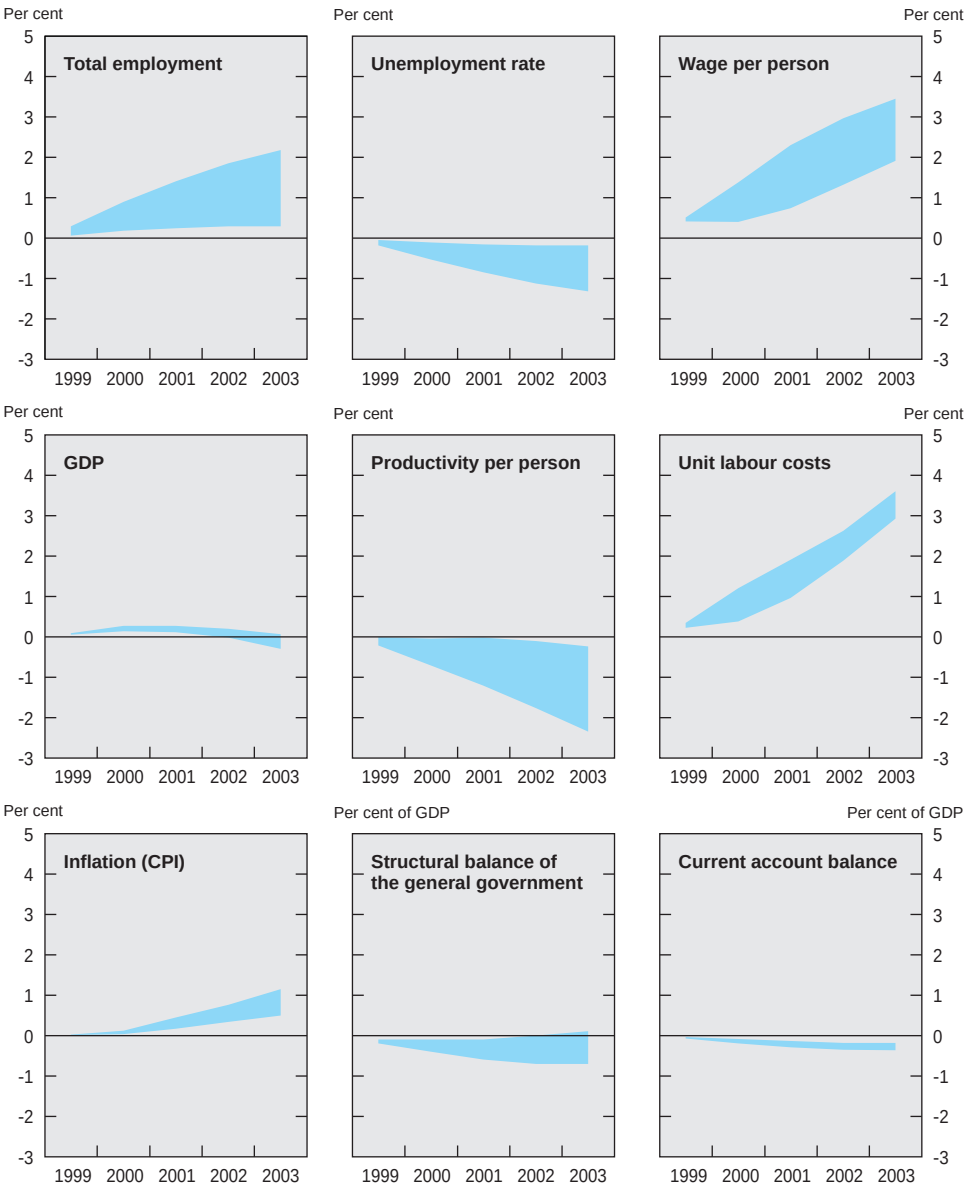
At present any assumption as to the 35-hour scheme's implementation is necessarily tentative. The law was enacted several months behind schedule, which invalidates the phase-in hypotheses built into most of the scenarios published in 1997 and early 1998. By mid-December 1998, negotiations had started

in about one hundred industries and finalised in a twenty or so, including metal-working,[67] textile, car servicing, building trades, cleaning services, the meat industry, dairy co-operatives and the sugar industry.[68] As of that time, 1 055 labour agreements had been concluded covering close to 108 000 employees.[69] Many firms, however, have decided to wait until the end of 1999 when a second law will clarify the as yet undetermined aspects, including the overtime regime, the arrangements for adjusting the SMIC, permanent aid for the reduction of working time and treatment of public holidays.[70]

The authorities have presented this reform as permitting the creation of several hundred thousand jobs. Accelerating hires would avoid that some of those who became unemployed during a downturn would irreversibly become long-term unemployed. This reform aims to spur the revival of in-firm and branch-level collective bargaining, simultaneously dealing with working time and organisation, job creation and wages. The simulations carried out in French government offices and elsewhere show divergent outcomes, with net job creation at a horizon of several years varying according to the model used and, most importantly, behavioural assumptions in a range of –0.4 to +5 per cent.[71] The differences across evaluations mainly reflect the impact of the reduction in working time on unit labour costs, which essentially depends on the assumptions regarding wage dynamics. As shown also by the OECD Secretariat's simulations set out in detail in Annex I, it is very difficult to gauge the impact precisely[72] (Figure 22). The exercise is complicated by the fact that some of the key parameters of the new scheme will not be fixed until end-1999, in the light of the negotiations conducted meanwhile. It is also difficult to predict how the 35-hour week will affect the development of part-time work.

Beyond the optional period, the implementation of the new scheme poses a series of problems and involves several kinds of risks. To establish a virtuous circle of working time reduction and job creation without any marked deterioration in competitiveness and public finances, substantial scope for productivity gains must exist and be tapped and the social partners must agree on a marked moderation of wage developments. This productivity reserve probably exists in some enterprises, but to a variable extent: it is probably limited where working hours are already flexible and downtime minimised, and in firms which have already reorganised and reduced working time (in whose case the problem of equality of treatment arises, since they are not eligible for assistance). One tangible risk is that some firms may choose to substitute capital for labour (DARES, 1998), relocate a larger share of their production (not necessarily by creating plants outside France but also through increased sub-contracting abroad), or close down their least profitable lines of activity. Threshold effects may also emerge, as may deadweight losses. Cases of indivisibility may prevent a reduction of working time for various categories of personnel, not only in some SMEs, but also for small teams operating in large undertakings, such as bank

Figure 22. **Simulation of the effects of the reduction in the statutory working week**
Deviations from a baseline scenario of unchanged statutory working time



Source: OECD.

branches (Maarek, 1998). In some sectors, the possibilities of substitution between overtime working and hiring of jobless persons are limited owing to skill mismatches (Fitzgerald, 1998). Finally, there is the problem of managers' working hours, which in many cases are not booked, are somewhat longer than in other countries and far exceed the legal or contractual thresholds (Gaudin *et al.*, 1998).[73]

Labour force qualifications and skills

The risk of unemployment is three times higher for young persons leaving the formal education system without qualifications than for higher education graduates, and three times higher for manual workers than for management personnel. The job-entry paths for young people are now longer and more unstable: 44 per cent of young people with a job are temporaries, apprentices, or on fixed-term or subsidised contracts. The importance of improving lifelong training access and quality thus cannot be overstated.

The number of young people who leave school each year without having obtained a first level of qualification has been halved over the past ten years, but is still too high at around 50 000. The government aims to gradually reduce this number, by developing personalised support in lower and upper secondary schools (re-arranged classes assigned to specialist teachers, for example), amplifying "positive discrimination" in favour of economically and culturally disadvantaged areas (priority education zones), and facilitating stage-by-stage access to the certificate of vocational competence by dividing the course into individual units.

In order to facilitate the school-to-work transition, major efforts are being made to speed up the introduction of information and communications technologies in schools, including by link-up to the Internet (Chapter III). More emphasis is also being placed on foreign languages and promotion of teaching methods that allow students more initiative. A richer menu of professional baccalaureates is now furthermore on offer. Finally, action is being taken to foster entrepreneurial attitudes.

In higher education, too, the number of school leavers having failed to obtain the desired professional qualification is still too high. The government is seeking to broaden the range of training offered so as to re-accommodate first-cycle students who have failed to qualify, by introducing partnerships with business and increasing the intake capacity of existing courses. The orientation procedures for DEUG students have been modified in 1997 to allow them to change tracks after the first semester. The government also plans to differentiate in-firm training periods across vocational streams, the present arrangements being overly rigid. The idea has also been floated of bunching these periods in the final year of studies with the hope of increasing the chances of entry into employment. Over the longer term, alternating classroom/workplace training for teachers themselves

might be developed by requiring them to attend in-firm training during their initial studies and giving them an in-firm training credit for use throughout their career.

Finally, a reform of continuing education is about to be undertaken in consultation with the social partners. The French system dates essentially from 1971 and suffers largely from the fact that access to vocational training continues to be unequal, to the detriment of low-skilled employees, SMEs and women workers. In addition, insufficient credit continues to be given for work experience or knowledge acquired through continuing education. The government accordingly plans to facilitate access to diploma status by better taking those into account, by the certification of occupations and by splitting up diplomas into smaller units for which credit could accrue over time. It also wants to make training entitlements more easily transferable from one situation to another in order to encourage mobility. Draft legislation on vocational training is due to be presented in the summer of 1999.

Regulatory reform and competition

In France, as in many other OECD countries, over-regulation and constraints on competition tend to reduce potential and actual growth (OECD, 1997*b*). This finding underlies the efforts in France, but also more broadly at the European level, to improve the regulatory framework of economic activity.

Certain hitherto very closed sectors are gradually opening up to competition

The opening of public monopolies to competition, which began in the mid-1980s with air transport, is gradually continuing, extending specifically to telecommunications, electricity, natural gas, rail transport, and financial institutions. This makes it necessary to review the legal form and management system of the undertakings concerned, together with the status of their personnel. In this context, it has also appeared that the advantage to be gained from developing external alliances, and the application of rules and financing systems comparable to those of competitors, require exit from the public sector or at least significant partial privatisation.

An important step was taken at the beginning of 1998 when the telecommunications sector was opened up to competition.[74] The Telecommunications Regulation Authority (ART), set up in early 1997, enforces compliance with the new rules of the game, manages numbering, assigns frequencies and determines the technical and financial conditions for interconnection.[75] A dozen or so new operators have been granted licences. The development of competition in this market is making it possible to extend the range of services supplied and reduce

their price, France Télécom having already implemented several steep rate cuts. Its favoured position as the original operator endows France Télécom with considerable potential market power, however, which should not be misused.[76]

In the case of electricity, a draft bill on the sector's organisation was approved by the Council of Ministers in early December 1998, following consultations among the different parties concerned (government, trade unions, electricity undertakings, consumers).[77] It incorporates into French law the European directive of 1996 defining the common rules for the internal market in electricity, but *a minima* and with some delay.[78] The directive stipulates that 25 per cent of the market must be open to competition in February 1999, 30 per cent in 2000, and 33 per cent in 2003. This will enable the big consumers (essentially industrials) to choose their suppliers in France or in Europe and conclude contracts accordingly. Independent producers will be able to set up operations in France. In addition, the draft bill stipulates that vertically integrated undertakings like *Électricité de France* (EDF) – whose activities comprise power generation, transmission and distribution – must keep separate accounts for these different activities (in order to avoid cross-subsidisation from monopolistic to competitive activities). On the other hand, certain arrangements are left to the discretion of Member States, such as definition of the assignments of general interest given to undertakings, their legal status (and that of their personnel), regulation of the sector and energy policy choices. EDF will retain its public corporation status and remain an integrated operator for power generation, transmission and distribution. The present organisation of distribution remains unchanged for the time being, France opting for the "single buyer" rather than the "third party access" system. The bill envisages to extend the status of EDF personnel to that of its potential competitors. An independent authority is to be set up, empowered to impose sanctions, to deal with questions relating to the access of third parties to the transmission and distribution network and to the maintenance of separate accounts (but not, unlike the ART, to verify the absence of cross-subsidisation). Consumer charges, which started to come down a few years ago, can be expected to continue falling as a result of the keener competition that will develop. It is important that those price cuts do not benefit large customers only, but SMEs and households as well.

Opening of the natural gas market to competition has also begun, although the process is less advanced. The Law of 2 July 1998 authorises the municipalities not served by Gaz de France (GDF) and not scheduled for connection to the GDF network to set up a gas utility under public management or to license gas distribution out, which was hitherto prohibited.[79] However, the law restricts the possibility of becoming a gas supply operator to undertakings at least 30 per cent of whose capital is held by the State or by government corporations (this restriction did not appear in the government's initial project and contravenes, if not the letter, at least the spirit of the European rules of the game).

In the rail transport sector, a major move was the separation, in early 1997, of infrastructures from transport services as such. An industrial and commercial government corporation, Réseau Ferré de France (RFF) was set up to take over the ownership and management of French rail infrastructures together with the debt of FF 134 billion representing past borrowing by the Société Nationale des Chemins de Fer (SNCF) to finance the infrastructures. RFF collects traffic-linked tolls, which in 1997 amounted to some FF 6 billion. This level of charge runs well below the usage cost of infrastructure. It will therefore have to be raised, but care must be taken that its flat-rate component does not constitute an entry barrier for potential new operators. RFF also receives financial assistance from the government in the form of capital grants and subsidies. In mid-1998 the government announced a payment of FF 37 billion to RFF over three years to stabilise its debt. Besides, trans-European freightway-type corridors were opened in late 1997 under a co-operation agreement among several infrastructure managers (in this case, the French, Belgian, Luxembourg, Spanish and Italian railways). The next stage could be the allocation of time slots for trains without any co-operation agreement (freeways).[80]

In the financial sector, measures have been taken and others are under consideration concerning interest-rate regulation, which applies to a large proportion of deposits (Table 6). In June 1998, the rate on taxable savings accounts (*livret B*) was fully deregulated, and the procedure for setting the rate for tax-exempt accounts (*livret A*) was modified and the rate itself lowered by half a point to 3 per cent. *Livret A* interest will henceforth range between a floor equal to the inflation rate plus one point and a ceiling equal to the short-term market rate less half a point.[81] A committee has been set up in December 1998 to advise on the appropriate levels for the rates that remain regulated. This partial liberalisation could foreshadow wider-ranging measures on deposit interest, including interest for sight deposits. The competitive pressures associated with entry into Monetary Union imply that the French rule of "no interest on sight deposits, no charge for cheques", from which foreign currency accounts are already exempt, has to be reconsidered.

Various other sectors have also been opened wider to competition since the previous *Survey*. For example, the last remaining restrictions on access to domestic air routes for European airlines have been lifted, domestic road transport has been opened up to European competition, the French Navy has begun to open its dockyards to competitive tender, and the local monopolies on funeral services have been terminated. In the postal service, where competitive pressures of a technological nature are intensifying (development of fax and electronic mail, computerisation of social security medical forms, etc.), regulations are also being eased.

Table 6. **Savings at regulated rates**

	Aggregates End-month, gross FF billion	Interest Annual nominal rate		
	June 1998	February 1994	March 1996	June 1998
Livrets A	704	4.50	3.50	3.00
Livrets bleus	98	4.50	3.50	3.00
CODEVI	227	4.50	3.50	3.00
Comptes d'épargne-logement[1]	167	3.50	3.50	3.00
Plans d'épargne-logements[1]	1 086	5.25	5.25	4.00
Livrets d'épargne populaire	219	5.50	4.75	4.75
Livrets jeunes	30	–	4.75[2]	4.00[3]
Livrets ordinaires et B	303	4.50	3.50	3.00[4]
M3	5 499			
Memorandum items:				
3-month interbank rate[5]		6.30	4.27	3.57
Yield on State-guaranteed bonds (TMO)[5]		5.61	6.63	4.95

1. Including premium.
2. May 1996.
3. Rate applied by most banks. Since mid-June 1998, it does not have to be the same for all banks, but it cannot be lower than the Livret A rate.
4. Rate applied by most banks. Since mid-June 1998, this rate is freely set by banks.
5. Monthly average.

Source: Bank of France.

Distortions hampering competition remain, however, even in sectors which have opened up more to competition. This is for instance the case in insurance, where the Postal Service, the Public Treasury, the mutual societies as defined under the *Code de la mutualité* and the *institutions de prévoyance* continue to benefit from a special tax regime, less stringent accounting and prudential rules, subsidies or aid in kind. While those privileges are to some extent the counterpart of particular obligations, the latter do not fully justify them, particularly as concerns mutual societies (Lambert, 1998).[82] Besides, the absence of an independent regulator in the water sector has led to distortions as regards competition in this area.

Administrative simplification, tax incentives and employment

Recognising that job creation is being hampered by the heavy administrative constraints on enterprises, and particularly on SMEs, the authorities have taken several sets of initiatives since the last *Survey*. A package of 37 simplification measures was announced in late 1997 for SMEs and especially small enterprises.[83] These measures are now being phased in. They are designed to expe-

dite enterprise creation, facilitate the hiring of a first employee for the 1.2 million one-person businesses, ease the administrative constraints that burden very small businesses and deter them from starting up new activities (notably by simplifying the wage slip and reducing the requirements as to bookkeeping, declaration and supply of statistics), improve small-business access to public contracts, facilitate SME exports, and increase the efficiency of interaction between small business and the administration by substituting electronic communication for paperwork for certain procedures.

In addition to the measures aiming to encourage the creation and development of innovating enterprises, described in detail in Chapter III, a number of specific arrangements have been announced or are being phased in. The Finance Bill for 1999 provides for an easing of tax formalities for very small businesses. At present, firms with an annual turnover not exceeding FF 100 000 can ask to be exempted from VAT and to be taxed on a net profit basis computed as their sales minus a flat-rate allowance. The eligibility threshold for this simplified tax treatment would be raised to FF 175 000 for service firms and fee-earning professions, and FF 500 000 for retail businesses. This measure would benefit approximately half a million micro-enterprises.

Various steps have been taken to simplify administrative formalities for users, and particularly SMEs, and to provide them with publicly collected information. The Ministry of Economy, Finance and Industry has posted on its Internet site several dozens of forms and circulars, together with directions for use and explanations, most of which can be downloaded. More generally, the Internet sites of the principal government departments are expanding rapidly.[84]

The 1999 Finance Bill also includes tax reliefs to encourage business handovers prior to the death of the owner. The tax reliefs applicable to the different types of donation would be amalgamated and set at 50 per cent when the donor is aged under 65 and 30 per cent when he or she is aged between 65 and 75. This will ensure greater tax neutrality in the choice of the person to take over the business, taxation being traditionally biased in favour of heirs, and increase the mobility of business assets.

If competition is to operate fully, efficient and equitable treatment of commercial disputes and business failures is necessary. As several official reports have attested, the functioning of the commercial courts leaves much to be desired. The situation in France is special inasmuch as commercial justice is not dispensed by courts with a mixed membership of elected business persons and professional magistrates or by ordinary courts (except in Alsace-Moselle), with the result that, as business persons, the commercial court judges are too close to the

litigants and may even sometimes be their direct competitors (Coutant, 1998). The geographic distribution of the 227 commercial courts is partly outdated. The fact that commercial court judges are not paid for their services means that too much use is made of proxy liquidators. Some of the clerical services offered on the *Minitel* telecommunications system (consultation of the commercial register or court rulings, for example) are extortionately priced (FF 9.21 per minute). Finally, the system of payment of court officers does not sufficiently provide them with the incentive to save activities and jobs that can be saved. The government is planning an extensive reform of commercial justice, which would include a redrawing of the circuit map, the introduction of professional magistrates alongside commercial court judges, a requirement for the latter to disclose their business interests, a tightening of disciplinary procedures, a revision of the rules applying to remuneration of court-appointed administrators and receivers, and redefinition of their role and the mode of access to those professions. Measures are also planned which will speed up the treatment of business failures, notably a shortening of liquidation procedures and, in the case of small liquidations, substitution of a simple administrative removal from the commercial register.

More generally, an overall modernisation of company law, the present structure of which dates back to 1966, is in preparation. In the spring of 1998, preliminary draft legislation was sent to professionals for consultation, and a text should be put before Parliament in 1999. One of the measures planned under this reform is a relaxation of the rules governing limited liability companies, with no ceiling any longer on the number of partners. The incorporation of joint-stock companies would be facilitated, by reducing the minimum number of partners from seven to three. Recourse to other forms of incorporation, such as simplified joint-stock companies, would be encouraged. The rules governing share issue would be simplified. A system permitting identification of non-resident shareholders would be introduced. As regards corporate governance, a natural person could hold no more than eight board seats in corporations established in France, the authorised number of other company boards on which a board president may serve being reduced to four. The functions of company president and chief executive officer would be more clearly differentiated. The powers of minority shareholders would be increased: shareholders holding 5 per cent of the capital stock (as against 10 per cent at present) would be authorised to question the board about the management of the company and – a new development – of its subsidiaries and, in the event of unsatisfactory answers, would be able to get the commercial court to appoint an expert to look into the matter. Renewal of the auditors' mandate within six years of its expiration would be prohibited. Finally, given the importance of group accounts, a new concept of group law would be introduced.

Privatisation and restructuring

As pointed out in the previous *Survey*, France's public enterprise sector is both extensive and varied. However, a number of public enterprises are being privatised, notably because sell-offs are often seen as the best way to raise funds or form alliances with foreign partners and hence carry out the needed restructuring.

Privatisation and capital-opening operations have continued

Since the last *Survey*, privatisation, capital-opening and partial sell-off operations have continued in industry, banking, insurance, transport and telecommunications (Table 7). With the help of a very buoyant stock market, gross receipts from privatisation rose steeply in 1997, amounting to FF 53.9 billion compared with FF 17.7 billion in 1996.[85] Nearly 72 per cent of the receipts booked in 1997 came from the opening up of the capital of France Télécom (public offering of FF 19.2 billion, guaranteed placement of FF 22.3 billion with institutional investors, and sell-off of FF 1.3 billion to France Télécom employees), and 17 per cent from the sell-off of the State's residual holding in Elf-Aquitaine (which took place in 1996). Divestiture procedures vary depending on the sector and corporation concerned and prevailing market conditions. In some cases more than one attempt has been necessary to complete the operation (Thomson-CSF), and in others it has had to be suspended (Crédit Foncier de France). Privatisation does not necessarily entail a sell-off of State-held shares, there have also been private buy-ins (Thomson-CSF), in which case no privatisation receipts are booked. The degree of divestiture is also variable, the State in some cases retaining a majority or controlling interest or a golden share (Elf-Aquitaine). However, as shown by the floating of a second block of France Télécom's capital in November 1998, this reflects a graduated approach taking into account the social, political and stock market context more than a desire to maintain the State as the major shareholder in competitive sectors.

The receipts from the above-mentioned operations have financed equity loans, grants and contributions to public enterprises, which rose from FF 15.6 billion in 1996 to FF 59.1 billion in 1997. Last year the main payments went to the Crédit Lyonnais (FF 13.5 billion) and the Comptoir des Entrepreneurs (FF 3.4 billion) for purposes of debt defeasance, Thomson Multimédia (FF 11 billion), GAN (FF 9.2 billion), RFF (FF 8 billion), GIAT Industries (FF 8 billion), Charbonnages de France (FF 2.5 billion) and Compagnie Générale Maritime (FF 0.4 billion). In many cases, enterprises receive equity grants several years running: Air France has thus received FF 20 billion over the 1994-96 period, and GIAT Industries FF 11.7 billion since 1996. As noted by the *Cour des comptes* (1998), certain grants cover current expenses and should therefore be regarded as subsidies (which, unlike capital contributions, add to the budget deficit).

Table 7. **Privatisation, capital openings and sell-offs**

Principal operations since 1996

Enterprise	Principal activity	Date	Gross receipts (FF billion)	Residual State holding (per cent)[1]
Elf-Aquitaine	Oil	1996	10.1	0.0
Total	Oil	1996	3.1	0.0
Crédit local de France	Banking	1996	1.0	0.0
Compagnie générale maritime	Transportation	1996	..[2]	0.0
AGF	Insurance	1996	9.3	0.4
Renault	Motor vehicles	1996	2.0	44.2
Seita	Tobacco	1997	0.05	5.0
Bull	Computers	1997	0.6	17.5
Usinor	Steel	1997	2.1	0.1
France Télécom	Telecommunications	1997	42.6	75.0
Péchiney	Aluminium	1998	2.3	1.1
Crédit industriel et commercial	Banking	1998	13.4	0.0
GAN S.A.	Insurance	1998	..[2]	0.0
Thomson CSF	Electronics	1998	0.0	42.9
Société marseillaise de crédit	Banking	1998	..	0.0
Caisse nationale de prévoyance	Insurance	1998	..	1
France Télécom	Telecommunications	1998	..	62
Thomson MM	Multimedia	In progress	..	70
SNPE	Chemicals	Announced	..	..
Air France	Transportation	Announced	..	53
Aérospatiale	Aerospace	Announced	..	48
Crédit Lyonnais	Banking	Announced	..	< 10
Crédit foncier de France	Banking	Suspended	..	..
Hervet	Banking	Envisaged	..	..

1. Envisaged in the case of operations in progress or announced. In some cases (*e.g.* Bull or the Caisse nationale de prévoyance) a large share of the capital continues to be held by public bodies other than the State.
2. Receipts paid to the mother company.

Source: Ministry of Economics, Finance and Industry.

Important restructuring operations are under way or to come

These injections of public funds are intended to assist the restructuring operations now in progress. A major case in point is the SNCF, chronically in deficit and with a debt exceeding FF 45 billion at end-1997 despite the debt takeover described earlier. Progressive downsizing of its workforce (from 221 000 in 1993 to 210 000 in 1997) and the regionalisation scheme now being tried out[86] should help to improve its financial position and ensure better utilisation of the rail network. In the armaments sector, GIAT industries announced its fifth redundancy plan since 1987, with a four-year phase-out of at least 4 000 jobs (out of 10 600). A large proportion of these layoffs would take the form of early retirement or return of seconded personnel to their original government agencies. Several sites are concerned and the Defence Ministry will factor them into its plan for restructuring the armed forces, so as to prevent the same geographical areas from being too severely affected. In the coal sector, the gradual process of restructuring and pit closure has continued. Three Charbonnages de France pits were closed down in 1997 and the group's coal output decreased by 16 per cent to 6.8 million tonnes. Turnover fell by 4 per cent to FF 7.7 billion and the group's workforce was trimmed by 9 per cent to 13 700, mainly by way of early retirement. Despite an increase in funding from the State, from FF 4.8 billion in 1996 to FF 5.5 billion in 1997 (of which the FF 2.5 billion equity grant mentioned earlier), the group's financial debt has grown from FF 31.4 billion to FF 33.3 billion.

In the banking sector, although the overall indicators of strength and performance improved distinctly in 1997 and in the first half of 1998, several banks have not yet completed the necessary restructuring. The Crédit Lyonnais, in particular, submitted to the European Commission a corrective plan that included job cuts totalling 5 000 persons between mid-1996 and end-1998. The State's holding in the bank is to be reduced to 10 per cent at most by October 1999. The total cost of the State's assistance to the bank includes the final losses of the defeasance body, a consortium that took over the bank's doubtful assets (currently estimated by the French State at FF 96.5 billion), less the proceeds of the sell-off of Crédit Lyonnais, the amount of which will depend on the success of the privatisation operation.[87] Other banks are going through a very difficult time, namely the Crédit Foncier de France (for which the search for a taker is proving difficult), the Société Marseillaise de Crédit (a small bank into which the State has pumped nearly FF 6 billion since 1996 and which was privatised in October 1998) and, to a lesser extent, the Comptoir des Entrepreneurs. In the insurance sector, too, some companies have received very large capital injections from the State (GAN in particular).

Major structural transformations are also ongoing in agriculture. Since the start of the 1990s, the number of farms has fallen by a quarter, their average surface has increased by over a third – now exceeding 40 hectares – and agricul-

tural employment has declined by about 20 per cent. In the meantime, the composition of aid to agriculture has evolved, direct income support partly replacing price subsidies, in line with the changes in the Common Agricultural Policy since the beginning of the decade and with the commitments taken on in the framework of the multilateral commercial negotiations.[88] In this context, and in the context of the forthcoming reforms of those common policies, a framework bill on agriculture was recently presented to Parliament. One of its ambitions is to base agricultural policy on contractual arrangements which would arrest activity concentration, employment losses and the deterioration of territorial and environmental equilibria, all trends considered by the French authorities as stemming from a system wherein aid is too closely linked to the size of farms. This bill underlines the multifonctionality of agriculture and aims to reinforce its role in land occupation and the preservation and renewal of natural resources. It proposes the gradual introduction of five-year territorial management contracts which would be agreed between farmers and the State, in line with requirements set at the national, regional and departmental levels, which involve economic, social and environmental commitments.[89] It also seeks to promote the production of high value-added items rather than that of low-priced basic products, to facilitate the installation of young farmers, to improve the social protection of those who work in this sector and to create protected zones in suburban areas.

Assessment

With France about to enter Monetary Union, improving labour and product market performance along the lines of the recommendations of the OECD *Jobs Strategy* is even more important than before (OECD, 1998*d*). While real progress has been made in several areas, some of the problems identified in the previous *Survey* persist, and certain measures have tended to aggravate the latter (Table 8).

Employment subsidies still represent a substantial amount of money and concern a growing number of individuals, though their pattern is changing. Some of the big subsidised employment programmes are now tending to focus on the more vulnerable population categories. An ambitious youth-job programme has been launched which is intended to cover one-eighth of labour force participants aged 18 to 25 by the year 2000. Measures to reduce the cost of low-skilled labour in general are increasingly emphasised. Finally the reduction and reorganisation of working time, promoted earlier by the Robien Law, have become a cornerstone of the government's policy to combat unemployment, with the law introducing the 35-hour week.

By and large it is difficult to gauge the relative or absolute effectiveness of all these schemes, notably because of the numerous adjustments made to

Table 8. **The OECD *Jobs Strategy*: follow-up on recommendations**

Recommendations	Measure(s) since the last *Survey*	OECD comments
Increase wage and labour cost flexibility		
• Reassess the role of the minimum wage	None	In the context of the reduction in the statutory working week, reconsider the method of indexation of the SMIC
• Phase out the use of administrative extensions of sectoral wage agreements	None	Should be considered
Reform unemployment and related benefit systems		
• Further reduce both the maximum duration and replacement rates for long-term unemployed	Minimum unemployment benefit raised and rate at which it decreases over time reduced Suppression of the reduction in benefit for unemployed who have worked 4 out of the previous 8 months Increase in the duration of unemployment benefit entitlement of unemployed aged 49 and over	These measures increase the risk of unemployment traps but this impact is partially offset by the increased possibility of combining benefits with income from work
• Tighten job search controls and sanctions where necessary	None	Job-seekers should be required to have more frequent contacts with public placement services
• Scale back early retirement and associated schemes	Reduction in the number of persons eligible for FNE early retirement schemes Creation of an allowance for the elderly unemployed Creation of a ''end of activity leave'' for civil servants Modification of the conditions of eligibility for the ARPE	The total number of beneficiaries of State-financed early retirement schemes has dropped but the total number of early retirees has increased owing to the development of the ARPE
Reform employment security provisions		
• Reduce lay-off restrictions for collective dismissals	Draft reform of redundancy legislation designed to prevent collective lay-offs or to cushion their impact	The introduction of a more restrictive legislative framework should be avoided, all the more as court rulings on redundancies have already become more restrictive

Table 8. **The OECD *Jobs Strategy*: follow-up on recommendations** *(cont.)*

Recommendations	Measure(s) since the last *Survey*	OECD comments
• Ease restrictions on the renewal of fixed-term contracts	None	Should be considered
Enhance active labour market policies		
• Evaluate active labour market policies on an ongoing basis	Efforts to carry out evaluations more systematically	Should be continued
• Target programmes closely on high-risk groups	Refocusing of the CIE and CES Launch of the TRACE programme Access to the CEC widened	Should be continued Should be reserved to the most vulnerable categories
• Reduce the frequency of changes to programmes and aim at a reduction in control and compliance costs	None	Should be taken into account
• If the minimum wage is not reconsidered, continue with the general reduction in non-wage labour costs for workers at the low end of the wage scale	Existing exemptions merged into a single degressive reduction which is once again prorated to the duration of work	The system should be stabilised
• Improve co-ordination in the management of unemployment benefits, placement services and labour market programmes	Registration of job-seekers transferred to the ASSEDIC Creation of 500 posts per year for a period of five years in the ANPE	Efforts to improve co-ordination between the ANPE and labour market programmes should be continued
Increase working-time flexibility		
• Accelerate annualisation of working hours	Most of the agreements on working time reduction promote annualisation	Hours could be taken into account over a period longer than one year
• Reduce incentives to offer part-time jobs	Limitation of the scope of financial incentives, the authorised range of daily working hours, and the number and length of breaks	This should reduce the amount of "involuntary" part-time work

Table 8. **The OECD *Jobs Strategy*: follow-up on recommendations** *(cont.)*

Recommendations	Measure(s) since the last *Survey*	OECD comments
Improve labour force skills and competences		
• Improve the attractiveness of vocational/technical education and make training better adapted to labour market needs	Launch of new professional baccalaureates in the service sector Efforts to systematically analyse the job content when professional diplomas are created or renewed	
• Ensure that graduates of first-level vocational education programmes have better access to more advanced studies	Increase in the offer of professional baccalaureates	The number of students in those baccalaureates has significantly increased in 1997-98
• Require work experience as a compulsory part of vocational/technical education and further strengthen the links between schools and employers	Submission of a bill on innovation allowing schools to sell services in the context of transfers of technology to enterprises, and teachers to be paid for such services Reactivation of the "Engineers for schools" scheme, which seconds engineers and management personnel from large firms to schools for three years	See Chapter III The number of partnership agreements between professional lycea and enterprises has increased Ongoing
• Strengthen counselling for entrants into higher education	Start of the DEUG by an orientation semester at the end of which students can change track	
Enhance the creation and diffusion of technological know-how		
• Evaluate and rationalise technology schemes for small and medium-sized enterprises	Several measures taken or announced	See Chapter III
Enhance product market competition		
• Enhance competition in network sectors	Air transport sector entirely opened up to European competition since 1 April 1997 Rail infrastructure/transport services separated since February 1997 Telecommunications sector opened up to competition as from 1 January 1998 Partial opening up of the electricity sector to competition scheduled for 1999	Should be continued where liberalisation is still incomplete

Table 8. **The OECD *Jobs Strategy*: follow-up on recommendations** *(cont.)*

Recommendations	Measure(s) since the last *Survey*	OECD comments
	Deregulation of the remuneration on taxable savings accounts and easing of the rules regarding the livret A	The principle of no remuneration on sight deposits and no charge for cheques should be reconsidered
• Pursue privatisation opportunities and restructuring of ailing state-owned enterprises	Acceleration of the State's withdrawal from the capital of public enterprises Restructuring continues	Should be continued
• Reassess legislation which reduces competition and results in a heavy administrative burden	Reduction of stamp duties on property sales Draft reform of commercial courts Measures simplifying administrative formalities for SMEs adopted or forthcoming: – Procedures for starting a business speeded up – Pay slips simplified – Fewer accounting, reporting and statistical obligations – Certain administrative procedures now paperlesss – simplification of tax formalities for very small firms	In percentage terms, these stamp duties are still relatively high Should be continued
• Promote entrepreneurship *via* an overall reduction in the tax burden	Selected tax reliefs to encourage business creation and facilitate the transfer of businesses	The tax burden is still high

Source: OECD.

them over the years, but also because they cover a fairly wide range of objectives. The gross cost of subsidisation per job created or saved as booked in the budget (as well as their cost net of substitution and deadweight losses and after factoring in macroeconomic feedbacks) varies considerably depending on the scheme and its time frame, and has to be assessed by reference to the employability of the targeted groups. The fact remains that the use of certain subsidies is insufficiently monitored, perhaps in part because local employment authorities sometimes seem more eager to sign as many agreements with employers as possible than to check that these are being strictly applied.

A significant proportion of the youth jobs created to date are much like the *contrats emplois consolidés,* the number of which is likewise set to rise steeply. Other youth-jobs resemble and sometimes take the place of *contrats emploi-solidarité*. In most cases the arrangements for their maintenance remain uncertain, with a real risk that they may ultimately lead to an expansion of an already oversized public sector.

The unemployment benefit system for those who receive compensation is still rather liberal, and in some respects a bit more so than two years ago. However, in the context of the recent anti-exclusion law, important albeit still insufficient measures have been taken to limit the related risks of unemployment and poverty traps. Such traps nonetheless continue to exist in some cases, particularly in connection with the housing allowance, and are difficult to avoid entirely. In addition, the total number of early retirees has risen since the end of 1996, in particular with the development of the ARPE. Finally, job-seeker registrations have been transferred to the ASSEDIC unemployment insurance funds, which should make it possible to minimise formalities and refocus the action of the ANPE on job-search assistance.

The general measures to reduce labour costs have been expanded. At the low end of the wage ladder the degressive rebate has been simplified and reworked, so as not to encourage part-time hirings unduly. This arrangement should now be stabilised, possibly by somewhat reducing the related implicit marginal rate of taxation, which may otherwise create low-wage traps. The switching of several percentage points of the employee's social contribution over to the CSG tax in 1997-98 and the first step in the phase-out of the wage component of the *taxe professionnelle* are also intended to stimulate job growth. However, in the long run, the advisability of maintaining the *taxe professionnelle* should be reconsidered.

Another way of reducing unit labour cost is to achieve better labour utilisation. The more or less spontaneous development, in recent years, of arrangements for annualising work hours, or at least for making working time more flexible, has helped here. The process should accelerate as the shorter working week is phased in. But if jobs are to be created, there must at the same time be a

real effort at wage moderation. This will depend in part on how the difficult problem of the "double SMIC" is handled, which is all the more tricky as, according to opinion polls, the majority of workers, and certainly low-wage earners, prefer higher pay to extra free time.[90] The rules governing overtime, as to quota and pay, also need to be relaxed. Otherwise, the shortening of working time might lead to a rise in the structural unemployment rate, which is already very high.

The segmentation of the labour market in part depends on hiring and firing costs borne by employers, which in France are rather high. The recent developments in case law on dismissals have not tended towards a reduction of firing costs. The measures now being prepared in this area need to be carefully tailored so as not to discourage potential hirings. As regards employees, the recent reduction of registration duties on real estate sales is an incentive to geographical mobility.

Educational attainment, too, conditions labour market performance. The shortcomings of the French education and training system are well-known, and various remedial measures have been announced or are planned, in the knowledge that a long time frame is involved. These measures include personalised support for students, an increase in the number of traineeships for the long-term unemployed and the number of apprenticeships, promotion of computer literacy and foreign language learning in schools, and better crediting of acquired academic and professional skills.

Product markets have evolved considerably since the last *Survey*. Competition is intensifying in the network sectors as the European directives are applied. The effects are already being passed on to consumers in the form of substantial cuts in utility rates and a wider range of services offered. Generally speaking, the European commitments should not be seen as constraints to be only just complied with, but rather as minimum objectives. It is also important that regulatory authority should be transferred from the State to the new autonomous bodies that are nominally responsible, notably in the electricity sector.

The State's withdrawal from the capital of public enterprises, which had tended to mark time in the mid-1990s, has continued. Privatisation is compelling these enterprises to achieve greater financial transparency and putting an end to certain conflicts of interest between the State as shareholder and as controlling body. It is making these enterprises and their stakeholders (employees, bankers, customers and suppliers) more accountable by lessening the sense of reassurance for stakeholders stemming from the presence of a majority stockholder who cannot be declared bankrupt. Even so, the public sector in France is still vast, and it is desirable that State divestiture should go ahead as resolutely as stock market conditions permit. The same applies to the restructuring of ailing public enterprises, particularly in the financial sector, given the advent of Monetary Union and

the direct and indirect impacts on banks' balance sheets of the crises in emerging economies.

Commendable efforts are under way to reduce the traditionally heavy burden of administrative and fiscal constraints that hamper entrepreneurship. Several packages of simplification and relaxation measures have already been put into effect and others have been proposed. As will be seen in the next chapter, major initiatives have been taken to encourage enterprise creation and innovation. A modernisation of the legal framework for economic activity is desirable, and here the reforms in preparation with respect to commercial justice and company law should make a significant contribution. Finally, despite the selective reliefs introduced or announced since last year, aggregate tax pressure is still excessive in France, reflecting the importance of public expenditures, including those aimed at directly or indirectly supporting employment or at reducing the participation rate.

III. Technology research and innovation policy

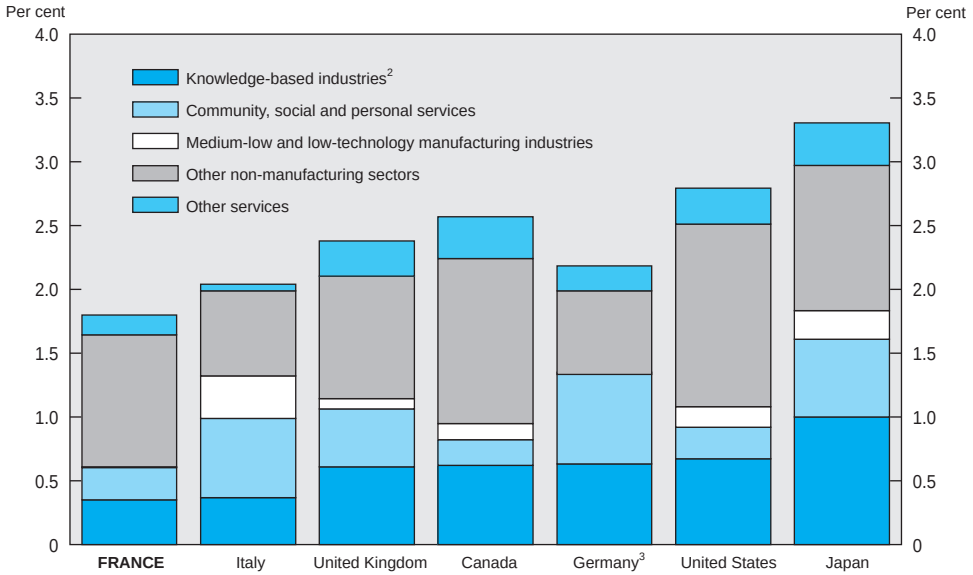
The potential and actual growth of an economy largely reflect that of productivity, which itself depends on the dynamism of technological research and innovation. Since the last *Survey* was conducted, the French authorities, intent on turning the economic recovery into sustainable growth, have taken major initiatives to improve incentives to innovate and to remove the institutional barriers affecting technological research and diffusion. After reviewing the linkages between technology, growth and employment, this chapter goes on to provide an overview of research and innovation policies in France, analysing them in the light of those of other major OECD countries, and evaluates measures taken recently or under preparation.

Technology, growth and employment

High-technology businesses are making an increasing contribution to value added, intangible investment is rising, and the share of skilled employees in the labour force is on the increase, while the use of information technologies is spreading to, and radically transforming, every area of economic and social activity. These trends can be observed throughout the entire OECD area, although at different speeds across countries (Figure 23). Their impact is mostly positive, since they set the stage for sustainable productivity, income and employment growth. Leaving aside their beneficial overall effects, these trends nevertheless impose major costs on certain sectors of the economy, because technological change is a process of creative destruction: in part, new firms emerge at the expense of traditional businesses. In some countries, the hurdles encountered by this substitution process have limited the associated net employment creation.

The endogenous growth theories that emerged during the 1980s attempted to account more fully for these trends, stressing the role of knowledge accumulation in the form of more effective equipment, disembodied technologies and human capital (Aghion and Howitt, 1998). The growing scale of knowledge generation and diffusion activities raises questions about their direct and indirect impact on the economic structure, employment, wages and living standards.

Figure 23. **Contribution to the growth of value-added in the enterprise sector**
1980-95[1]



1. Each sector's contribution represents its average annual growth rate weighted by its average share in total enterprise GDP.
2. The knowledge-based industries comprise the high and medium-high technology industries, plus communications services and the finance and insurance sectors.
3. Data cover the period 1985-95.

Source: OECD, STAN and ISDB databases, 1997.

Rising investment in intangibles

Firstly, the structure of investment is changing. Intangible investment in research and development (R&D) activities and in training (human capital) is playing an increasing role.[91] Some industries in some OECD Member countries, including France, invest roughly as much in research as in equipment. Investment in training has also increased, in response to changes in demand for skills. Investment in information and communications technologies (ICT) – both hardware and software – is rising rapidly.

Innovation and productivity

This investment translates into productivity gains. It is at the firm level that the positive relationship between technology and productivity is most evi-

dent. Studies on France, the United States, Japan and Canada have demonstrated that both the level and growth rate of labour productivity are higher in innovative firms and firms that undertake R&D than in others (Barlet *et al.*, 1998, OECD, 1998*e*) although other factors – staff training, organisational structures and management capabilities – are also key. How these microeconomic gains show up at the macroeconomic level, through the diffusion of new products and processes, varies across countries, reflecting, among other things, the importance of the framework conditions that are necessary for the efficient allocation of resources through factor and product markets.

Sectoral redistribution of value-added

These technological trends are instrumental in transforming economic structures. Sectoral redistribution is the result of changes in relative prices and productivity between sectors and of demand trends (which are themselves influenced by the higher income generated by productivity gains). In France, the service sector's share of business enterprise value-added rose by more than 10 percentage points from the start of the 1980s to the mid-1990s and now stands at about two-thirds (close to the average for OECD Member countries). The service sector's share in the total R&D expenditure of the business enterprise sector is rising steadily. In the manufacturing sector, the high-technology segment – defined as comprising computers, electronics, aeronautical engineering and pharmaceuticals[92] – is becoming increasingly important. Its share of value-added has risen by 2.5 points in the course of the past 15 years in France.

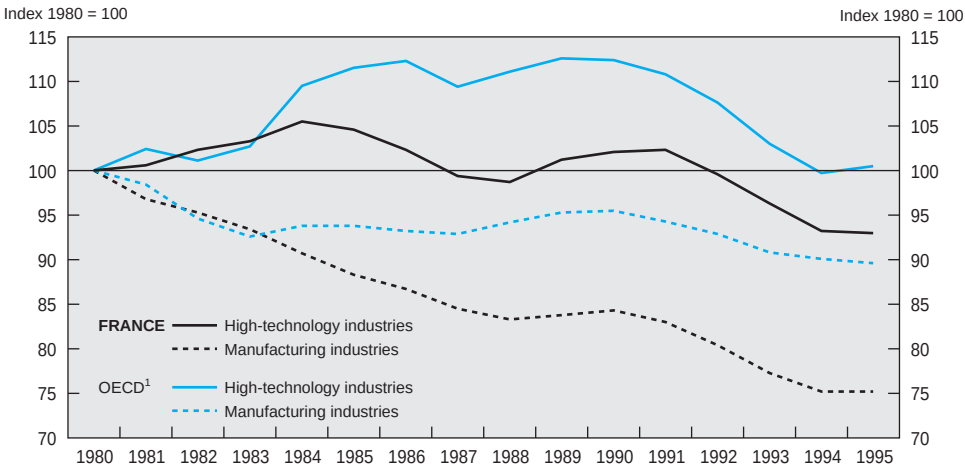
Technological trends and the labour market

In France more so than in other OECD Member countries, employment in the manufacturing industry has declined until the mid-1990s (Figure 24). The high-technology segment has been less affected, however, thanks to demand growth. Net job creation is concentrated in the service sector. The ICT sectors in particular have created numerous jobs, doubling their share of private sector salaried employment to 300 000 jobs over the period 1981 to 1996.[93]

Microeconomic studies show that in France, as in other countries, employment growth is strongest in innovative firms and, among new firms, in those in the technology field (Greenan and Guellec, 1996; François and Favre, 1998). At the macroeconomic level, the impact of technological innovation on employment is less direct. It largely takes the form of additional demand, chiefly for services, as a result of higher incomes. The reallocation of labour to businesses that are potential job creators depends on skills adaptability, labour market flexibility and the regulatory and institutional framework in general.

In OECD Member countries as a whole, the percentage of highly skilled labour has increased steadily since the beginning of the 1980s, while that of non-

Figure 24. **Employment in high-tech industries**



1. Fourteen countries: United States, Japan, Germany, France, Italy, United Kingdom, Canada, Australia, Netherlands, Sweden, Norway, Denmark, Finland and Mexico.

Source: OECD, STAN database, 1998.

skilled labour has declined (OECD, 1998*l*). This can be attributed in particular to the complementarity between human capital and technical change (Machin *et al.*, 1996). The wage gap between skilled and non-skilled labour widened substantially in some countries from the beginning of the 1980s but less so in France (Goux and Maurin, 1997) where there has been significant substitution of capital for labour since the early 1980s (*e.g.* in certain services to the general public, such as mass retailing) and low-skilled labour had been harder hit by unemployment.[94]

Technology development and innovation: changing systems

Since the 1980s, research and technology development policies in most OECD Member countries have changed substantially (OECD, 1998*f*). Traditionally, support measures for R&D activities were justified by the existence of externalities (the economic value of knowledge exceeds the revenues accruing to its inventors) and other market imperfections (chiefly related to information asymmetries, which reduce access by innovating firms to external financing). More recently, they have focused more on improving the processes of diffusing technology and knowledge (correcting systemic failures).

A widespread phenomenon

The growth slowdown in most countries and keener international competition played a part in these developments. Exploiting research and promoting innovation across the entire economic fabric have become increasingly important in designing and implementing technology policies. Governments have tried to strike a better balance between measures aimed at promoting public and private investment in R&D and other measures to strengthen the innovative capacity of private enterprise and public research bodies. Often, the result of this approach has been to bring the public and private sectors closer together.

Budget constraints have prompted most governments to review their support structures with a view to increasing the returns from public spending. In the vast majority of countries, the share of public funding in corporate R&D has declined substantially over the past decade. In many countries, funding is now based on incentives rather than support measures, which helps to give public spending more leverage over private investment in R&D.

In several countries, including France, defence-related activities have traditionally absorbed a large share of total public spending on R&D and contributed to structure R&D activities in certain large firms. Consequently, the end of the cold war raised special problems regarding the redeployment of R&D potential to high-tech activities that are more driven by the market and by social demand than by government contracts for weapons systems. Moreover, in fulfilling its defence role, the government has become more reliant upon technologies developed for commercial purposes.

These factors have prompted governments, although not at the same pace in all countries, to revisit their research, technology development and innovation policies. The new policies that are emerging are based on frameworks that are largely common (OECD, 1997*d* and 1998*g*, and Metcalfe, 1995) but whose implementation has to take into account the specific features that determine a country's innovation dynamics. These concern chiefly the institutional characteristics that facilitate or hamper the commercial exploitation of knowledge, the diffusion of technology and the innovating capacity of firms.

Features specific to the French system

France's breakthroughs in fields such as aerospace, nuclear energy and inland transport in which the government, through public procurement, has played a decisive role, can largely be attributed to the specific features of the French innovation system. However, this hands-on approach in the large multi-year projects has not produced the hoped-for results in technological fields that are closely tied to market trends (information technology). More generally, the specificities of the French system are partly responsible for the relatively weak

innovative capacities of French firms (in particular SMEs) compared with the amount of investment in R&D and the public support they benefit from. To some extent, these features can be ascribed to the government's major role in directing and funding R&D, but to a larger extent they derive from the idiosyncrasies of the French innovation system and the structural rigidities that have been the subject of numerous studies and analyses in the past (OECD, 1986). Measures aimed at promoting the commercial exploitation of research and innovation have been taken in France since the 1980s, but they have often led to mitigate the impact of these rigidities rather than to eliminate them. The limitations of this approach became evident as the economy world-wide came to be based on new ways of generating and diffusing knowledge and technology.

The French government, aware of the growing costs of these rigidities, has undertaken ambitious structural reforms in order to increase the economic efficiency of technology research and innovation policies and their impact on the innovative dynamics of firms. This commitment, based on in-depth studies – particularly the Guillaume (1998) and Boyer and Didier (1998) reports – was announced at the Innovation Congress in May 1998. It is changing the incentive systems to encourage technology diffusion and the commercial exploitation of innovations. These reforms aim at liberating and mobilising market forces and reducing inefficiencies, in order to facilitate the creation and expansion of innovative firms. It is important that they be accompanied by structural reforms improving institutional mechanisms for the administration of aid for research, innovation and technology development as well as the framework conditions for competition, tax and the employment and capital markets in order to overcome the forces of inertia impeding the incipient changes. The first measures implemented and those now in preparation – in particular the innovation bill which should be sent to Parliament in early 1999 – are important steps in the right direction.

Research and technology: efforts and performance

In terms of the financial and human resources dedicated to R&D and technology, France ranks among the leading countries. Given developments over the past decade, the question is how far the committed resources have been matched by economic performance, particularly as concerns innovation.

A major research effort...

Domestic expenditure on R&D (GERD) in France amounted to FF 182 billion in 1996, *i.e.* 21 per cent of the European Union (EU) total and just over 6 per cent of the total for the OECD area as a whole (Table 9). At 2.3 per cent of GDP, this research effort is just above the average for the OECD and almost as high as

Table 9. **Country shares in OECD research expenditure**

In per cent at market exchange rates

	1985	1990	1993	1995	1996
France	**6.6**	**6.9**	**7.0**	**6.3**	**6.1**
Germany	9.2	9.3	9.6	8.9	8.7
United States	48.3	44.8	43.6	42.4	42.8
Japan	15.8	18.2	18.2	17.6	17.0
United Kingdom	6.0	5.8	5.6	4.9	4.7
European Union	30.8	31.8	32.0	29.5	29.3

Source: OECD, MSTI Database, 1998.

expenditure in Germany, although substantially lower than expenditure in Japan and the United States (Table 10). The same holds for expenditure on R&D in the business enterprise sector (BERD), which stood at 1.9 per cent of non-government GDP in 1996. There are approximately 150 000 researchers in France, *i.e.* 18 per cent of the EU total and just under 6 per cent of the OECD total.

In France, as in other major EU countries, research expenditure has tended to level off since the beginning of the 1990s (Figure 25), reflecting *inter alia* the economic slowdown, high real interest rates and the stabilisation or cutbacks in public spending on research, partly as a result of the sharp decline in spending on defence research. However, the slowdown came after more than ten years in which expenditure had risen steadily, more rapidly than GDP.[95] In France, spending levelled out somewhat later, but for a longer period than in other countries.

Table 10. **R&D expenditure as a percentage of GDP**

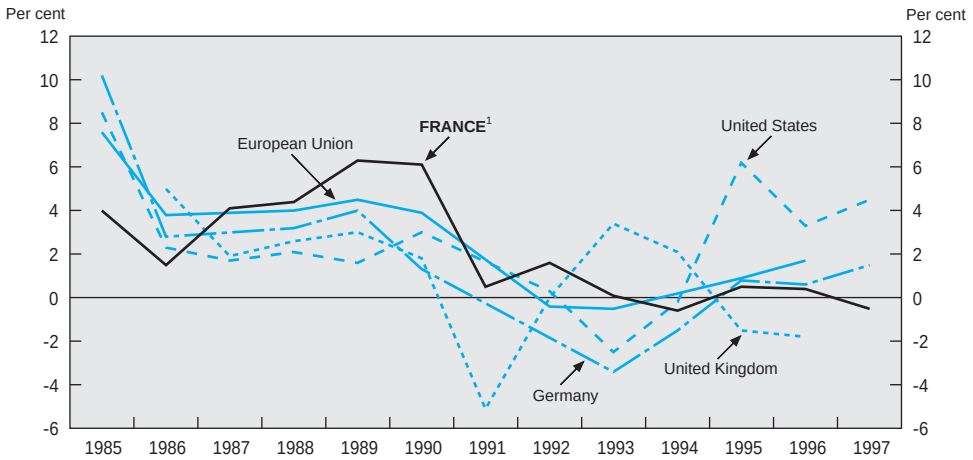
In per cent

	GERD/GDP[1]		BEPD/non-government GDP[2]	
	1992	1996	1992	1996
France	**2.42**	**2.32**	**1.99**	**1.91**
Germany	2.48	2.28	2.16	1.92
United States	2.74	2.62	2.27	2.18
Japan	2.95	2.83	2.25	2.24
United Kingdom	2.13	1.94	1.98	1.68
OECD	2.23	2.18	1.84	1.73[3]
European Union	1.92	1.84	1.59	1.49[3]

1. Domestic expenditure on R&D as a percentage of GDP.
2. Business enterprise expenditure on R&D as a percentage of non-government GDP.
3. 1995.

Source: OECD, MSTI Database, 1998.

Figure 25. **Gross domestic expenditure on R&D**
Annual growth rates at constant prices



1. Provisional figure for 1997.
Source: OECD, MSTI database, 1998.

Unlike most countries, including in Europe, it seems that France has yet to see research expenditure recover. The slight recovery in 1996 appears to have stalled in 1997, at least as far as large firms are concerned. The contrast is even starker when developments in France are compared with the surge in research expenditure reported in Scandinavian countries and Finland in the 1990s.

Proportionally, the share of France and the rest of Europe in R&D expenditure by OECD Member countries increased from the mid-1980s to 1993, from which time it declined (see Table 9). This trend was even more marked for enterprise research. Other things being equal, one might therefore expect France's performance in science and technology to show a similar profile, albeit perhaps with a slight lag.

... with mixed results

France's scientific performance, as measured on the basis of published articles, has been good, even showing a slight improvement from the beginning of the 1990s (Table 11). This analysis is corroborated by a review of article citations (OST, 1998).[96] In this respect, performance has thus mirrored outlays.

France's performance in the technology field is rather more mixed. Its share of patents issued in the United States has shown an overall decline since

Table 11. **Country shares of scientific publications**

In per cent

	1981	1989	1995
France	**5.0**	**4.9**	**5.4**
Germany	7.3	6.8	7.0
United States	35.9	34.9	32.5
Japan	6.8	8.1	9.0
United Kingdom	8.3	7.6	7.5

Source: National Science Foundation (1998).

the end of the 1980s. The same holds for Germany, for which the level nevertheless remains twice as high as for France (Table 12). The decrease for France is, however, slightly less marked than that for the EU countries overall.[97]

France's share of the export market in high-tech goods remained roughly constant in the 1990s (Figure 26), while Germany's deteriorated. The deficit of the technology balance of payments (trade in patents and licences, study costs, technical assistance) has remained stable during the 1990s, around FF 4 billion per year.

In the ICT field, France's position has weakened in the 1990s, like that of other European countries. French inventors' share in US patents in this area fell from 1990 to 1996 (Table 13). This said, it has declined at a slightly slower rate than that of the United Kingdom and Germany. The worst deterioration has been in France's position in the information technology field, while its position in communication technologies showed only a slight erosion. No French firms and

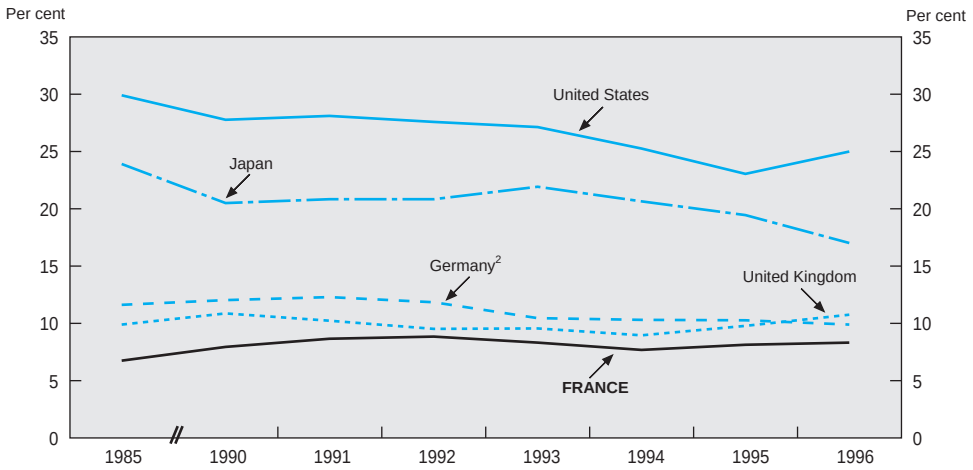
Table 12. **Country shares of patents issued in the United States**

In per cent

	1980	1988	1996
France	**3.4**	**3.4**	**2.5**
Germany	9.4	9.4	6.2
United States	60.2	51.9	55.6
Japan	11.5	20.7	21.0
United Kingdom	3.9	3.3	2.3
OECD	98.5	98.5	97.1
European Union	21.8	21.2	15.3

Source: CHI Research and OECD, 1998.

Figure 26. **Shares of export market in high-tech goods**[1]



1. Share of countries in total OECD exports. The OECD total includes Mexico from 1991 onwards and Korea from 1994 onwards.
2. Data from 1991 are for reunified Germany.

Source: OECD, STAN database, 1998.

few European firms were among the world's leading electronics and information technology firms of the 1990s. Only SGS-Thomson had a significant share of the world market in semi-conductors. Bull, France's largest information technology company, saw its position decline drastically.[98] This loss of ground relative to the United States in ICT innovation was until recently accompanied by some delay in technology diffusion in both France and Europe (Annex II). However, France witnesses a rapid expansion of activities surrounding the software industry, in particular as regards computer service enterprises, for which the largest European players are French and German.

In contrast, the French high-tech industry performed extremely well in the aerospace field (Airbus, Ariane), as evidenced by the increase in its share of the export market since the early 1990s. In other, less high-tech, fields such as automobile or railway (TGVs) engineering, French firms' innovation performance has also been good.

Overall, the position held by French technology, like that of the EU, deteriorated slightly in the course of the 1990s ever though research efforts were sustained longer in than other countries (up to 1993). This decline can mainly be

Table 13. **ICT patents issued in the United States**

Average annual rate of increase over the period 1990-96, in per cent

	France	Germany	Canada	United States	Japan	United Kingdom	OECD	European Union
Computers software	**14.7**	12.1	45.0	31.7	17.8	17.7	26.0	16.5
Electronic circuits	**0.4**	–3.6	22.3	9.1	9.6	1.5	7.7	–0.9
Telecommunications	**11.0**	8.5	19.5	17.1	11.6	7.5	15.5	13.0
ICT total	**9.6**	6.3	25.0	21.0	13.5	9.3	17.6	10.2
Note:								
Total patents	**–0.3**	–1.7	3.4	4.8	3.0	–1.9	3.3	–0.8

Source: CHI Research and OECD, 1998.

attributed to ICT-related sectors. The gap between relative effort and results could be due to a decline in the economic efficiency of French and European research compared to the United States in particular. In the United States, cutbacks in the research effort in the early 1990s were accompanied by radical restructuring aimed at increasing economic productivity (market-driven research, decline in exploratory research). France, like the other European countries, did not adopt this approach to the same extent.

The similarity of French and European trends suggests that institutional factors specific to research do not fully explain France's decline. Innovation systems across Europe differ a great deal, hence there must be other factors at work too. These may indeed be institutional, but they encompass much more than just technological innovation, including product, capital and labour markets, taxation and macroeconomic factors as well. However, it will be seen that some country-specific features, relating to the influence of the government in general and defence in particular may have played an important role in France. In addition, until recently, France's position in the ICT field has probably revealed specific weaknesses in the national innovation system. The fact that innovation in the ICT sector is largely market-driven is key from this standpoint, since its links to the market seem to be the weakest point of the French research system.

In the context of a return to growth, the question arises of whether the pace of technological innovation activities is picking up. Some of the signs are promising. Physical investment picked up in the second half of 1997, and research typically keeps pace with it, since both have a number of determinants in common. The presence of innovating firms in industry began to increase again several years ago, rising from 39 per cent in 1990-1993 to 41 per cent in 1994-1996 (François and Favre, 1998). Furthermore, in 1997-98, France saw a surge in venture capital investment and in the number of entries onto the stock-market of innovating firms. In contrast, research expenditure by major firms appears to have been sluggish in 1997, which could indicate a shift in the French innovation system towards a larger role for small firms (for which no figures are yet available).

The "French model" of research and innovation is evolving

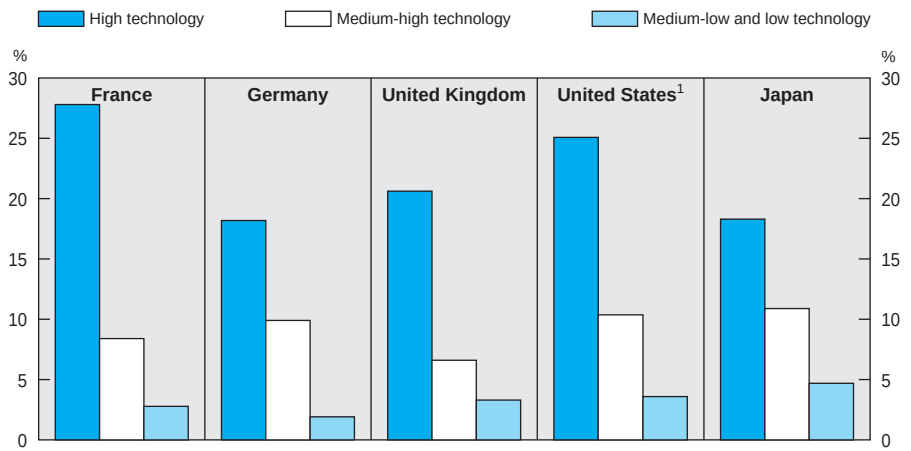
In the technology field, France's position reflects the sectoral specialisation of French research, the importance of the government and the major public enterprises and an internationalisation centred on Europe. However, certain underlying trends have emerged over the past few years and it is against this backdrop that the current reorientation of government policy must be seen.

French research is concentrated

Half of French manufacturing industry's R&D expenditure is in high-tech sectors, as is the case in the United States and the United Kingdom, as opposed to only one-third in Germany and Japan. In France, this expenditure centres mainly on the aerospace industry and particularly the telecommunications equipment and electronic components industries. The research intensity of sectors is more differentiated in France than in other countries, and is especially high in the high-tech fields and very low in low-tech fields (Figure 27). Germany and Japan thus exhibit a higher intensity, by comparison, in medium-high technology sectors (automobile, electrical engineering, chemicals). Government defence contracts play an important role in this polarisation in France. As a result, of the major OECD countries, France conducts the least information technology research (ranking only above the United Kingdom). The share of aerospace has declined substantially in France since the beginning of the 1990s, in line with similar trends in the United States and the United Kingdom. Lastly, the share of the service sector in research is increasing in France but is still far behind that observed in other countries (United States, United Kingdom, Switzerland, Australia and the Nordic countries).

Figure 27. **R&D intensity by industry types**

R&D expenditure in the enterprise sector as a percentage of value-added in 1995



1. 1994.

Source: OECD, ANBERD and STAN databases, 1998.

A second feature of the French system is the concentration of research expenditure on a small number of firms. The fifteen major firms that spend the most on research account for 37 per cent of total expenditure and the three leading firms alone for 15 per cent.[99] While there may be a similar concentration in other countries, France is exceptional in that its public funding is substantially channelled towards large firms, with the same 15 top firms receiving over 70 per cent (excluding tax incentives such as the research tax credit).

Foreign firms carry out 15 per cent of all industrial research in France, a little less than in Germany. While the United States and Japan are the main investors in Germany (and in the United Kingdom), the main investors in France tend to be European firms. Similarly, the share of other EU countries in patents for inventions made in France but controlled by foreign firms is much higher than in Germany. While the EU share has declined slightly in France since 1990 it has fallen more sharply in Germany, widening the gap between the two. The greater European orientation of French research is also reflected in the figures for patents held by French firms on inventions in other countries.

Government influence remains strong

In France, the first distinctive feature of the system of public funding of industrial research is its sheer scale. In France the government has much more say in both the funding and execution of research than in other countries, including in Europe (Table 14). The second is the importance of defence which, although

Table 14. **Share of public sector in research expenditure**[1]

In per cent

	Domestic expenditure (GERD)			
	Performed		Funded	
	1992	1996	1992	1996
France	**37.5**	**38.5**	**53.4**	**51.7**[2]
Germany	31.4	33.7	38.3	39.2
United States	28.0	26.8	41.7	37.5
Japan	31.3	28.9	28.9	26.6
United Kingdom	33.1	35.1	49.4	52.7
OECD	31.9	31.7	41.0	38.7
European Union	36.9	37.7	47.0	47.5[2]

1. Includes non-profit bodies, universities and public element of overseas finance (in particular the European Space Agency).
2. 1995.

Source: OECD, MSTI Database, 1998.

declining, is still decisive (although less so than in the United States or the United Kingdom). Consequently, the French government's influence is much the same as that of the German government on civil research and that of the governments of the United States and the United Kingdom on defence research.

Government departments fund over half and conduct nearly 40 per cent of French research. From 1992 to 1996, however, the government cut its funding to industrial research by some 30 per cent, while public sector research was up by 6 per cent. Public sector research centres have largely been spared funding cuts, probably due to concerns about employment. The decline in public funding did not prevent industrial firms from continuing their research activities, for which they increased their own finance.

Changes are under way

Not only is the influence of government and defence beginning to decline, other changes are also taking place. The public share offering of France Télécom and other firms is taking major research centres out of the public sector (in this case the CNET, with over 2 500 research staff). Funding through venture capital and the financial markets increased substantially in 1997-98. In a more piecemeal way, efforts have been initiated in many public research institutions to work more with companies. Still scattered and often tentative, such efforts mark the beginnings of a change in attitude among the research community. The measures implemented or announced by the government are likely to encourage this trend. The object of these measures is, firstly, to create the climate for a public research sector and a public funding system for industrial research that is more responsive to the needs of the economy and to public demand and, secondly, to promote innovation in the private sector, particularly by small firms. This first set of measures includes policies and projects on links between the public and private sectors (partnerships, technology transfer), the reform of incentive credits, the promotion of SMEs in public programmes, and support for developing new technologies (especially ICT and biotechnology). The second set contains regulatory, fiscal and financial measures aimed at facilitating the establishment and growth of innovating firms by private investors.

The public support system for innovation and R&D

The government influences innovation through procurement and research contracts with firms, its own research institutions – such as the National Centre for Scientific Research (CNRS) and the Atomic Energy Commission (CEA) – and a variety of financial incentives: subsidies, research tax credits, refundable loans (Figure 28). This section examines the extent to which these different types of

Figure 28. **Funding and implementation of R&D**

1997

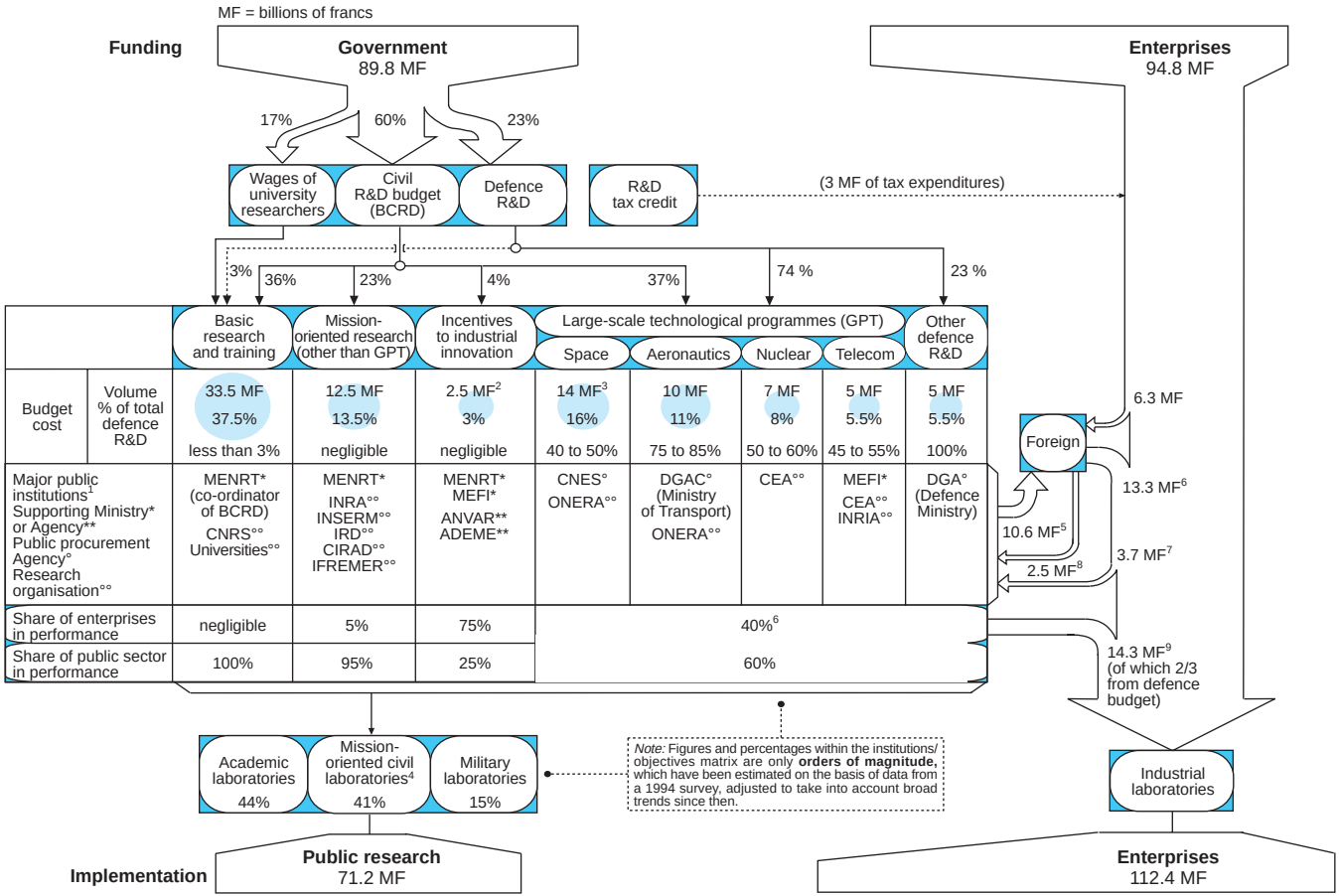


Figure 28. *(cont.)* **Funding and implementation of R&D**
1997

1. Each institutions is characterised according to its main mission, which does not exclude its involvement in others.
2. Excluding the R&D tax credit and the European FPRTD.
3. Including the French contribution to the European Space Agency.
4. Including international public laboratories.
5. French participation to international research organisations (including the contribution to the research budget of the European Union).
6. Including R&D procurements to enterprises by international organisations (*e.g.* FPRTD, ESA).
7. R&D procurements to enterprises by French public organisations.
8. R&D procurements to French public organisations by international organisations (including FPRTD).
9. Excluding R&D procurements to enterprises by international organisations (*e.g.* FPRTD, ESA).

Glossary

ANVAR: Agence nationale de valorisation de la recherche
ADEME: Agence de l'environnement et de la maîtrise de l'énergie
CEA: Commissariat à l'énergie atomique
CIRAD: Centre de coopération internationale en recherche agronomique pour le développement
CNES: Centre national d'études spatiales
CNRS: Centre national de la recherche scientifique
DGA: Délégation générale à l'armement
DGAC: Direction générale de l'aviation civile
ESA: European Space Agency
FPRTD: Framework Programme for Research and Technological Development of the European Union
IFREMER: Institut français pour l'exploitation de la mer
INRA: Institut national de la recherche agronomique
INRIA: Institut national de recherche en informatique et automatique
INSERM: Institut national de la santé et de la recherche médicale
IRD: Institut de recherche pour le développement
MENRT: ministère de l'Éducation nationale, de la Recherche et de la Technologie
MEFI: ministère de l'Économie, des Finances et de l'Industrie
ONERA: Office national d'études et de recherches aérospatiales
OST: Observatoire des sciences et des techniques

Source: OECD Secretariat from budget data, MENRT statistics, and OST indicators.

support for industrial research spur innovation, the barriers that they encounter and potential adjustments. Annex III provides comparable international figures.

Government research contracts

Policy on government research contracts with the business enterprise sector is centred essentially on four Major Technology Programmes (GPT) – nuclear, aeronautical engineering, space, and electronics-telecommunications. The objective of these programmes is to produce certain "complex technology systems" in civil or defence areas that are considered "strategic" (*i.e.* affecting national or European independence in defence, energy, technology and industry) and for which the government is, directly or indirectly, the major client and/or for which concentration of resources is a necessary condition for entering oligopolistic markets. The programmes require substantial funding over very long periods of time. They are financed mainly by the government, but are carried out by public research bodies and industry to varying degrees (OST, 1998).[100]

In 1994, these programmes accounted for almost half of all public research funding, totalling FF 35 billion, of which 39 per cent for space, 27 per cent for aeronautical engineering, 20 per cent for nuclear and 14 per cent for electronics-telecommunications (OST, 1998).[101] At the same time, industry financing for these programmes amounted to FF 19 billion. Half of the Major Technology Programmes are undertaken by the private sector, except for the nuclear programme (one-third).

As well as producing breakthroughs in technology (nuclear, aerospace, telecommunications), the programmes have sometimes resulted in technical or commercial failures (the *Plan Calcul*). Typically, the administration of these programmes is very complicated – often involving many different government departments – and lacks transparency; the fact that some bodies are both principals and agents is no doubt a contributing factor. This makes it difficult to evaluate them from the outside. It seems that some large firms benefit from the bulk of the contracts, both civil and defence, with the result that diffusion of the findings is limited. Through their sheer scale, these programmes exert a major influence on the direction of research in the participating firms, and have encouraged them to abandon areas that better accommodate trends in non-public sector demands (particularly electronics) but that are less attractive, because they are more competitive and therefore less lucrative.

In France, just as in the United States and the United Kingdom, defence accounted for around 15 per cent of research expenditure in 1996. Its share has been declining since 1993, albeit a few years behind the decline registered in the United States and the United Kingdom from the end of the 1980s onwards. Changes in defence strategies since the end of the cold war, cuts in defence spending, the escalating costs of weapons systems development, the predomi-

nance of civil markets in driving technological development in many areas, were behind wide-ranging initiatives to increase the synergies between civil and military research in the United States and the United Kingdom. Often referred to under the umbrella term ''dual-use'' application programmes (Box 5), these initiatives are aimed at reducing costs, improving the quality of public defence procurement and increasing the economic returns from public R&D expenditure by eliminating compartmentalisation. They use two types of instruments: financial incentive programmes aimed at encouraging the development of technologies that meet both defence needs and market demands; institutional and regulatory

Box 5. Dual research in the United States and the United Kingdom

In the United States, the Technology Reinvestment Program was launched in 1992 to support the development of dual technologies by granting financial aid to selected projects on the basis of their potential to further defence-related objectives, with the financial contributions of eligible firms (at least 50 per cent) theoretically ensuring that projects are commercially viable. Between 1993 and 1995, the Department of Defense earmarked some $700 million to underwrite 131 projects. In 1997, this programme was replaced by the Dual-Use Applications Program. Endowed with $120 million in 1997, the latter subsidises dual R&D projects and projects that incorporate commercial technologies into existing weapons systems.

Institutional and regulatory reform is the other component of US dual research policy and the primary instrument of the United Kingdom's policy. In the United States, the Federal Acquisition Streamlining Act of 1994 removed some of the obstacles to transactions between the Department of Defense and the commercial sector. The Pentagon considerably reduced the number of specifically military technical standards in order to facilitate the adoption of commercial technologies and the development of dual technologies. In the United Kingdom, a major institutional change took place in 1995 with the creation of the Defence Evaluation and Research Agency, which consolidates all of the previously scattered (non-nuclear) military research activities, and whose role is to develop ties with the commercial sector. Under the authority of the Secretary of State for Defence, this body enjoys broad autonomy in managing an annual budget of some one billion pounds. While its primary responsibility is to serve the Ministry of Defence, the Agency is encouraged to diversify its activities from a commercial perspective, offering its services to other government entities and to industry. It administers five dual technology centres as showcases and proving grounds for the commercial potential of technologies initially developed for defence-related purposes.

Even so, in both the United States and the United Kingdom, dual research policy continues to face difficulties stemming primarily from military secrecy requirements and differences in the respective time frames of civilian and defence investment policies.

reform to remove barriers to the streamlining of defence research policy and its co-ordination with civil research support policies.

In this area, France hardly has any mechanism on a comparable scale. The only similar programme, SYRECIDE (*Synergie recherche civile et défense*), has an endowment of only FF 26 million. A clearer interface with civilian research would likely reduce the cost of military research without impairing its quality.

Increasing the incentive value of government financing

Government financing to encourage businesses to engage in research is allocated either on the basis of projects or topics selected by various administrations (incentive appropriations), or in a non-discriminatory manner (research tax credits). In 1994, incentive appropriations and research tax credits both accounted for less than a third of aggregate government financing of civilian GPTs.

Appropriations for the General Directorate of Industrial Strategies (DGSI) of the Ministry of the Economy, Finance and Industry fell from FF 3.4 billion in 1994 to FF 2.2 billion in 1996, 72 per cent of which being earmarked for electronics. The "Key Technologies" programme launched in 1996, which awards subsidies to businesses conducting research in certain fields selected by the government, attracts a growing proportion of the funding. The Ministry of National Education, Research and Technology (MENRT) is the primary administrator of the Fonds de recherche technologique (FRT).[102] This fund encompasses EUREKA (with European co-ordination), CIFRE (for the employment of doctoral candidates by business firms) and regional initiatives.[103] Its overall appropriations have dropped significantly, from FF 850 million in 1993 to FF 659 million in 1998 (on unchanged definitions), in particular because programme authorisations at the beginning of the decade far exceeded payment appropriations, leaving the State with a large debt which it had to start paying off in 1995. Appropriations for the FRT are expected to rise in 1999, with programme authorisations increasing by FF 218 million, focusing on the promotion of partnerships between the public and private sectors. A third source of funding is the National Agency for the Promotion of Research (ANVAR), which essentially provides SMEs with preferential loans (interest-free, repayable only if a venture is successful) to finance their innovative activities. ANVAR authorisations have dropped from FF 1 140 million in 1992 to FF 840 million in 1997 and 1998 and FF 800 million in 1999.[104] The repayment rate is around 50 per cent (ANVAR, 1998).

One problem with incentive appropriations is the selection of eligible projects. The underlying principle should be to help finance research that is of use to society and the business community, but that would not be undertaken spontaneously because imperfections in the mechanisms for financing innovation make for insufficient returns on private investment. This is especially true of

projects that address public objectives (such as the environment or safety). In practice, however, incentive appropriations may in some cases serve to finance research that companies would have carried out anyway (thus entailing dead-weight losses), or to fund projects of little use to society. Such concerns have not always been taken into account in the French government's project selection procedures, since the above criteria would have caused a substantial share to go to small enterprises (which in many cases cannot find funding) and co-operative projects (with a number of participating firms). Actually, however, the bulk of financial incentives has until recently gone to single-firm projects, with large corporations' share of such appropriations equalling their share of total research expenditure. Moreover, the absence of third-party assessments precluded any evaluation of the worth to society of the projects selected. Lastly, incentive programmes targeting particular sectors, such as the "Key Technologies" programme, raise the usual problems associated with targeting: the risk that aid be diluted or on the contrary that targets be too narrowly identified.[105] As explained below, the government has initiated a reorientation of its incentive appropriations' policy in 1998.[106]

There are two types of contractual arrangements: advances repayable in the event of success (ARCS) and subsidies. Subsidies should theoretically go to projects that generate spillover benefits but not enough private returns for firms to invest their own capital. Conversely, ARCS should be earmarked for projects that, if successful, would generate sufficient economic returns but that involve too much uncertainty for SMEs to obtain the private funding needed to make a commitment. Subsidies should therefore be used for upstream research projects, the private returns of which are in many cases low, despite the potential benefits to society. And yet, this is not always the case, as has been illustrated by the Atout programme: Atout used ARCS to finance the adoption of new technologies far downstream (involving modernisation rather than innovation); in practice, however, the repayment rate was very low, turning the aid provided into *de facto* subsidies.[107] This raises the issue of the optimal financing mechanism (suited to each type of problem and public objective), and, at the same time, that of its administrative management. In this regard, the measures taken over the last two years to reform the Atout programme have led to an increase in the repayment rate to 70 per cent in 1997 while favouring the feasibility stages. This evolution is consistent with the government's intention to concentrate more of the aid to innovation upstream.

With the development of private circuits for financing innovation, it is essential to reassess the role and the forms of incentive appropriations available to SMEs, and particularly those granted by ANVAR. Such aid used to be justified, in part, by the absence of private investors in certain risky areas of investment – a problem that has become less acute. Government funding should not compete with private financing, but rather supplement it, emphasising aspects that the

market fails to cover adequately, such as the evaluation of innovative projects and enterprises, co-operative inter-firm research, public/private co-operation and public objectives. Insurance against risk, which has been one of the justifications for certain government interventions, should be carried out to a greater extent by the private sector. In some cases, repayable advances should give way to regular periodic subsidies.

The system for managing incentive appropriations is also beset by problems in terms of administrative organisation, which is particularly complex, especially at local levels of the central government (*e.g.* juxtaposition of ANVAR and Regional Directorates for Industry, Research and the Environment). This issue will be examined below.

The research tax credit (RTC), which was introduced in 1982, is a horizontal measure, non-discriminatory across sectors of activity and aimed at supporting corporate R&D investment by means of tax incentives. Such measures, or similar tax provisions, have been set up in a variety of ways in ten OECD countries. In France, the tax expenditure entailed by the RTC has hovered around FF 3 billion in recent years, and now exceeds total incentive appropriations. The tax credit is equal to 50 per cent of the increase in research outlays between the year in question and the average of the two preceding years. It is capped at FF 40 million in order to be of special benefit to small businesses (which in practice receive a substantial portion of the credits), and can be paid out in cash to certain small entities that have no tax liability. For 1996, the RTC was claimed by 3 660 firms out of roughly 7 200 filers (including 6 300 SMEs). The RTC would in fact appear to have had a short-term incentive effect (Box 6).

The draft 1999 Budget Law amends the provisions for the RTC, which has been extended for another five years (instead of three). Geographical distortions (owing to provisions favouring the least developed areas of France) are being removed, ending the pursuit of two independent goals. The RTC will become a negotiable claim, which will assist SMEs in their dealings with banks, and it will be immediately refundable for start-ups during their first three years of business. In addition, measures will be taken to reintegrate enterprises that had left the system because they had not been able to keep up their earlier research efforts and had therefore accumulated high negative tax credits. It would probably have been preferable to alter the mechanism itself, by changing its base. The French RTC in its current format favours high growth enterprises and intermittent research efforts, whereas the American system is more neutral *vis-à-vis* the economic cycle, but less favourable to high growth enterprises. By retaining the current system, France is letting itself in for new tax moratoria, with the implied distortions.

Box 6. Research tax credits

Research spending gets special tax treatment in most of the OECD countries (accelerated depreciation of equipment, deductibility of current expenses and, in Australia and Austria, special deductions in excess of actual expenditure). A RTC consists of a reduction in the tax a firm pays, depending on its research activity. Eight OECD countries currently employ such credits: Canada, Italy (for SMEs) and the Netherlands allow tax credits based on spending; France and the United States have tax credits based on growth in spending;* Japan, Korea and Spain apply both formulas simultaneously. In addition, tax treatment often differs between small and large enterprises.

Tax generosity can be measured by a composite index, the "B index", which is defined as the pre-tax income needed to cover one unit of R&D spending, and is calculated as the ratio of the after-tax cost of research to 1 minus the rate of corporate income tax (OECD, 1998*b*). If R&D expenditure is fully deductible but is given no additional incentives, the B index equals 1. If the tax treatment of R&D is more favourable, the B index is lower. While it disregards certain aspects of RTCs (such as the fact that they may be discountable by financial institutions, or the existence of a ceiling), the index nonetheless allows for reasonable international comparisons of a tax system's degree of generosity.

Table 15. **B index in selected OECD Member countries**

1996

France	Germany	United Kingdom	United States	Japan	
				SME	Large enterprises
0.92	1.05	1.00	0.93	0.94	1.02

Source: OECD Secretariat.

An econometric study of a group of 17 OECD countries would suggest that RTCs have a significant positive effect on R&D spending in the short term, but that they have no impact over a long period of time (Guellec and Van Pottelsberghe, 1998). They are most effective when tax provisions are stable over time, and when government provides little direct funding for corporate R&D.

* More precisely, the RTC in the United States is based on the change in the intensity of research efforts, defined as the ratio of research outlays over sales.

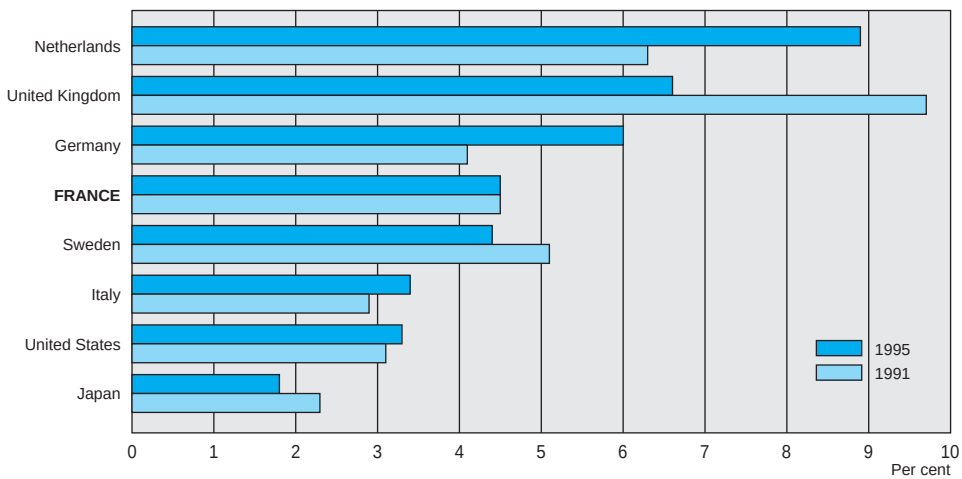
Bringing public and corporate research closer together

The public research sector is a very vast one and has even tended to expand in recent years, since the number of public-sector researchers increased from 76 000 in 1992 to 81 000 in 1995 (versus 67 000 in the corporate sector). While

profitability is not the immediate goal of most public research projects, a number of them do have applications with substantial economic potential. In France, more than in other countries, too little has been done to promote the economic value of discoveries and the accumulated capabilities of the public research sector. Despite measures taken over the years, there is not enough dissemination of the discoveries stemming from public research. The forthcoming creation of a National Science Fund, whose criteria for allocating appropriations for fundamental research will focus to a large extent on potential spin-offs, is intended to meet the need to develop interactions between research institutions and enterprises.

Very few researchers from the public sphere ever gravitate towards industry (only 50 out of a total of 11 400 CNRS researchers worked for industry in some capacity in 1996).[108] Royalties from patents and licences are modest (FF 172 million in 1996, as opposed to nearly triple that amount in the United Kingdom). Government and industry have relatively few joint research laboratories, and the proportion of public research to be financed by industry is significantly lower than in the other European countries (Figure 29). Nevertheless, the trends have been on the upswing in these three areas since the early 1990s. They ought to be further consolidated by the planned reform of the CNRS, with funding procedures

Figure 29. **Corporate share of public research financing**[1]



1. Government and universities.
Source: OECD, MSTI database, 1998.

that will provide affiliated laboratories with greater incentives to supplement their appropriations with outside financing, as is done in other OECD countries.

There are several reasons for the insufficient linkage between the public and private sectors. Public technological research is not extensively developed in France, apart from areas connected with public demand (such as nuclear energy and health care). Public-sector researchers have few incentives to disseminate their results, because to do so entails efforts that are not rewarded in their careers, and the legislative and regulatory provisions as well as the administration practices are complex and discouraging. Moreover, a number of public research institutions, and an even greater number of universities, have suffered from a lack of structured policies in this regard.[109]

International experience shows that technology transfers to industry cannot be carried out effectively unless a number of conditions are all satisfied. First, researchers and public laboratories must be prompted to focus on areas with economic potential. French research is particularly strong in mathematics and chemistry, while it is weak in engineering sciences (Table 16). If researchers are to promote their findings, they must be legally able to do so, and they must be given incentives. Current evaluation criteria, which focus exclusively on publications in academic journals, have a dissuasive effect on researchers wishing to engage in highly applied research leading to technological innovations, patented or not. Decrees issued at the end of 1996 allow public-sector researchers to receive 25 per cent of the royalties from patents on their inventions (Cour des comptes, 1997). To go further, researchers will have to be allowed to create, or to help create, enterprises without having to break all ties with the public sector as a result. The innovation bill goes in this direction. *Inter alia*, it seeks to enable researchers to provide scientific support to enterprises or to participate in the creation of a firm as its head or as a member of the board of directors.

Table 16. **Breakdown of publications by scientific field**

In per cent

	Biology Medecine	Chemistry	Physics	Earth and space science	Engineering science	Mathematics
France	**51.1**	**15.4**	**19.2**	**5.1**	**5.7**	**3.5**
Germany	49.3	17.9	21.2	3.9	5.9	1.8
United States	62.8	9.0	12.5	6.6	7.2	2.0
Japan	61.1	16.9	21.2	2.5	7.6	0.7
United Kingdom	63.9	10.8	12.0	5.6	6.3	1.4

Source: National Science Foundation (1998).

The financing of public research bodies should be more closely contingent on efforts by those bodies to satisfy demand, *e.g. via* co-operative programmes with businesses or other prospective partners. Some organisations are already highly active in this area: examples are the Institut national de recherche en informatique et en automatique (INRIA), which has been involved for a long time despite an administrative context which traditionally was not conducive to such transactions; the CEA (Department of Advanced Technologies, which promotes non-nuclear technologies); and, to a lesser extent, the CNRS (Department of Engineering Sciences). Reform of the FRT in 1999 will move in this direction by promoting public/private networks. In this regard, one might criticise the tendency of certain public bodies whose fields of research no longer have priority to move, on grounds of commercial potential, into fields of technology in which they have no particular advantage, for the sole purpose of preserving their budgets. This creates distortions in the allocation of public resources, and it could possibly be detrimental to the competitive research sector, which does not receive such funding.

Lastly, the French system is characterised by its complexity. Many research, promotion and transfer bodies have roles or perform actions that are insufficiently co-ordinated, and occasionally redundant and competing. The authorities' reaction to such a proliferation of structures has frequently been to create new ones in order to co-ordinate those already in existence. This proliferation makes it difficult for the State to evaluate the system as a whole and to identify deficiencies, and keeps businesses – especially small ones – from having access to know-how and capabilities that exist but remain hidden. Besides, the State has started to conduct an assessment of its transfer mechanisms in order to simplify them, in particular at the regional level.

Developing public/private partnerships

International experience illustrates the potential of public/private partnerships as a tool of innovation support policy (OECD, 1998*e*), but also the need to adjust their mechanisms to the types of institutions and technological fields concerned (Scott-Kemmis, 1998). In this context the French government is setting up networks linking public laboratories and enterprises, including SMEs, in well-defined fields, which will receive a share of public research funding. The first such network, created at the end of 1997, is the National Network in Telecommunications Research (RNRT). Other networks are planned, notably in nanotechnologies, medicines and medical instrumentation. Projects are selected by a committee comprising members of the network and the government departments concerned. This kind of set-up has the advantage of flexibility, with a light and reactive system of guidance. It makes the partners, public and private, accountable and exerts considerable financial leverage (the enterprises' contribution is equal to at

least 50 or 75 per cent of the funding, as the case may be). At the same time, by putting co-operation between a public laboratory and an enterprise into a broader framework, the network facilitates a measure of continuity in the relationship, this being a potential source of additional gains (joint learning by experience, knowledge and mutual trust). It is important, however, that the networks should remain flexible and not become new administrative superstructures.

This type of structure may be all right for leading-edge research, but it is less suited to the many SMEs whose innovations tend to be incremental. Actions of the type taken by ANVAR and decentralised area-based management, at regional or local authority level, are then probably more effective. Outside the high-tech sectors, universities, university institutes of technology and even the technical lycea are often better able to solve the technical problems of SMEs than big spearhead research laboratories. It would be desirable to establish a regulatory framework that would encourage transfers and promotion of research by educational establishments.

Research commercialisation financed with public funds and public/private collaboration poses problems, however, as shown by the experience of the United States, which has gone further along this path than France (Mowery and Ziedonis, 1998). By giving special treatment to certain private partners, these arrangements may paradoxically limit the dissemination of public research findings. Exclusive licences or research collaborations with a restricted circle of enterprises reduce the access of non-participants to public research findings. This negates the primary justification of research funding by the State, which is that certain items of knowledge are a public good. It is important, therefore, that research commercialisation policy allow for the widest possible diffusion of public research results. This could be arranged by means of non-exclusive licensing agreements or by the right of researchers to publish their findings according to the usual academic rules, with no particular restriction.

In general, effectiveness of research partnerships may be compromised by opportunistic behaviour with partners minimising their real contribution so as to maximise their net gain. This risk stems from the fact that the partners' contributions cannot be exactly stipulated in a contract because of their qualitative nature (quality of the researchers), or because they are difficult to measure (value of a patent). The State must therefore see to it that public/private partnerships have a certain continuity and include technical arrangements (tendering procedures, intellectual property rights) which limit this risk (OECD, 1998*k*).

Wider opening-up to SMEs

The distortions favouring large firms show up at several levels. In 1994, ten industrial groups received nearly 98 per cent of defence research contracts, 86 per cent of civilian research contacts and 25 per cent of incentive credits,

whereas they accounted for only 27 per cent of enterprise-funded research (Guillaume, 1998). A similar polarisation can be observed for public technology transfers to enterprises. In 1996, SMEs (fewer than 500 employees) accounted for 50 per cent of the partners, 25 per cent of the contracts, but only 15 per cent of the financial resources in the research contracts of the Engineering Sciences Department of the CNRS. Finally, the concentration of public funding in the big corporations is heavier in France than elsewhere. The State's share in the financing of enterprise R&D (support rate) is 2.5 times higher for firms with more than 1 000 employees than for firms with fewer than 500 employees, compared with 1.6 times in the United States and 1.25 times in the United Kingdom, other countries where defence absorbs a large share of R&D resources (Table 17). The high weight of defence in French research therefore does not fully explain this distortion.

In European programmes, big corporations dominate as well. They received 37 per cent of the funding allocated to France under the 4th RTD framework programme, compared with a European average of 27 per cent (European Community, 1997). French SMEs' share was 13 per cent, against a European average of 16 per cent.

The concentration of public funds and technology transfers on a few giants hampers the spread of advances in technology and the development of firms' innovation capabilities. It also creates entry barriers to certain markets by reducing the capacity of small firms to innovate. For example, the electronics GPT may have inhibited the blossoming of SMEs in this sector. Admittedly, a proportion of the funding allocated to the big corporations is then redistributed to small firms through sub-contracting of research, but this may also perversely enhance the big corporations' control over potential new competitors.

To compensate for these distortions, various measures were taken in the past. ANVAR concentrated on the financing of SMEs. As noted, the RTC, being capped, benefits small firms more than large ones. A large number of regional

Table 17. **Share of government in the funding of business enterprise research, by size of firm**

1995, in per cent

	< 100 employees	100-499	500-999	1 000-4 999	≥ 5 000	Total
France	← **6.7** →		**11.3**	**13.7**	**18.7**	**14.1**
Germany	8.5	3.7	4.7	7.1	4.7	5.3
United States	← 11.9 →		4.8	4.7	21.8	17.8
United Kingdom	10.5	10.6	10.8	← 13.2 →		12.2

Source: OECD, MSTI Database, 1998.

Box 7. Expanding SME access to the public research system: the American approach

The Small Business Innovation Research programme, launched in 1982 and modified in 1992, is co-ordinated by the Small Business Administration. Under this programme, the ten federal agencies with R&D budgets exceeding $100 million per year are required to assign a fixed percentage of their budgets to fund R&D projects of small businesses (fewer than 500 employees). In 1998, more than $1 billion, about half of which from the defence budget, will have been allocated to small business according to a two-step procedure: support for technical feasibility studies, followed by support for the initial development of the selected projects. The rate of support is capped at 50 per cent. This programme has undergone various assessments, by and large positive (Berger *et al.*, 1992, Government Accounting Office, 1996).

The Small Business Technology Transfer programme, introduced in 1992, aims to facilitate the integration of small business concerns in co-operative research networks involving public actors. Its 1998 budget, funded by five federal departments, amounts to some $60 million (of which over half from the Department of Defence). Subsidies are awarded according to the same two-step arrangement and go to projects conducted in collaboration with a research body (university, federal-funded research centre or non-profit research agency).

bodies and programmes were set up targeting SMEs. Even so, these corrective measures have been insufficient to reverse the trend. The bias needs to be tackled at the source, by reducing the share of support given to the big firms. The objective announced by the Ministry of Economy, Finance and Industry, namely to allocate to SMEs a 25 per cent share of all the projects it finances (following US practice – see Box 7), is a step in the right direction. So is the MENRT decision to finance a smaller share of RNRT projects presented by leading corporations than the share of those presented by small firms (25 per cent and 50 per cent respectively). Still, the ultimate causes of the structural bias towards big firms need to be dealt with. Thus, administrative complexity makes it difficult for small businesses to know about the different aid and transfer arrangements. Systematic evaluation of support would make for greater transparency so as to enable firms to compete for public contracts on a more level footing. A wider opening of public contracts would be desirable, notably in the defence sector. Increased and controlled decentralisation of support allocation would also benefit SMEs.

Rationalising and evaluating public support schemes

The genuine complexity of the area targeted by technology and innovation policy only partly justifies that of administrative arrangements, to judge by

the greater simplicity observed in other countries. This applies equally to the management of GPTs, each of which is split among several government departments and agencies, and to the incentive credits and arrangements for technology transfer. Similar and competing schemes are sometimes conducted in parallel by several bodies, and some programmes are managed simultaneously by numerous agencies with little co-ordination. The result is often a dilution of responsibilities and a lack of transparency lessening the State's ability to control the scheme, with big corporate groups getting funds from several sources and SMEs applying to different agencies simultaneously for research funding. Firms without the resources or the desire to embark on a subsidy hunt made very costly by the system's opaqueness are discouraged. By comparison with those sectors that have a specialised government department to deal with (manufacturing industry, armaments), the others (notably the service industries) receive little aid.

Research spending by the different government departments needs to be better co-ordinated. Clarifying the different administrative boundaries and simplifying the procedures involved would make the whole scheme more effective. One particularly important question is the distribution of responsibilities and co-ordination between the Ministry of the Economy, Finance and Industry's DGSI and the Technology Directorate of the MENRT. The government's intention to reserve technology transfer and public/private co-operation for the latter, and downstream policies for business innovation support for the former, is sensible. Action at the regional and local levels also encounters a certain degree of administrative confusion, given the large number of regional authority schemes that exist in addition to the national ones. The introduction of a mechanism for co-ordinating regional programmes and establishing closer working ties between the State and the regions would clarify and simplify the overall scheme and make it more accessible to SMEs.

Although the system's complexity makes it impossible to set up a ''one-stop agency'' for SMEs, they could be guided more effectively through the system. It would be helpful to open an Internet site enabling SMEs to know whom to contact in any administrative department according to their particular problem. The DGSI has already done this for its own activities, and the same should be done for all the other schemes, following Canadian practice.

Evaluation of support for research, technological development and innovation is still lacking in France. Too many programmes have not been evaluated at all, in particular from an economic standpoint. Where an appraisal of aid has been undertaken, it has sometimes been conducted jointly by the giver and the recipient. The evaluation provision of 5 per cent of the amount of aid awarded is generally not used. Administrative complexity is a major reason for the insufficiency of evaluation, but not the only one. Some evaluations carried out by government departments have not been as widely circulated as might have been

expected (pertaining to the RTC and ANVAR for example). The opinions delivered by the National Committee for Research Evaluation were given little follow-up. A special effort is therefore called for in this area. For instance, it would be possible to set up an authority independent of the spending agencies to collect relevant information and evaluate individual programmes. This body could also consolidate information on aid received by the big corporate groups, which is not readily available at present. Foreign experience in evaluation, notably in the Anglo-Saxon and Nordic countries, could also be tapped (Canadian Department of Finance, 1997, and OECD, 1997*c*).

Finally, it should be stressed that evaluation needs to be underpinned by a statistical system suited to the needs of political and economic decision-makers. In addition to the, admittedly important, traditional statistics on financial and human resources assigned to R&D and technology, the system must be able to produce indicators that will better measure the effectiveness of public support, and more generally, innovation performance. In France, considerable efforts have been made in recent years by the Industrial Statistics Service of the State Secretariat for Industry (SESSI) as regards innovation measurement. The official system for research statistics nonetheless needs to be strengthened and brought closer to the operational agencies. The recent attachment of the research statistics service to the national education statistics service is not a helpful move, being ultimately liable to reduce the quality of the statistical system and its ability to guide research policies. Like what is being done in other French ministries, the service concerned should be given sufficient study capacities to be able to enlighten policy choices. American, Canadian and German experience in this area could serve as useful examples.

Strengthening the linkage with European policies

The presence of the EU in government support for research is increasing as the European policy for research and innovation matures (European Commission, 1995). In 1997 the RTD Framework Programme allocation to France exceeded the amount of incentive credit from all ministries and agencies combined (FF 3 380 million as against FF 3 350 million). However, the French government's programmes are insufficiently co-ordinated with the RTD Framework Programme (Boyer and Didier, 1998), which worsens the lack of administrative coherence discussed above. Two points are in order here. First, in many areas French research does not have the critical mass that permits sufficient levels of performance (in certain dual use technologies, for example). Second, the new opportunities for international collaboration are stimulating exchanges between researchers, hence their creativity, and in some areas bringing a welcome intensification of competition.

The patents system is now essentially European, leaving little scope for France other than to make proposals and try to persuade its partners in the European Patent Office (EPO). The Lombard Report (1998) proposes the creation of a Community patent which would cost firms less than the current European procedure. Discussions on the subject are now in progress at EU level. National government departments in charge of research and innovation policy have only limited influence with the EPO, however, since they are represented on its Administrative Council by their intellectual property agencies (INPI in France's case), whose interests are sometimes divergent.

Policies for the creation of innovative enterprises

The French government has made promotion of young innovative enterprises one of its priorities. There are a number of reasons for this. First, these enterprises play a decisive part in the development of new technological sectors and fields in which France fears to lag too far behind and, more generally, they contribute to the overall vigour of the innovation system. Next, their promotion necessitates measures that clearly symbolise the advocated shift from a subsidy to an incentive-based approach. Finally, developing technology entrepreneurship is at the intersection of the three main directions of reform of the French innovation system: technological research that is more market-driven, wider opening of public research to the needs of the economy, and cultural rapprochement of the academic and business worlds.

The stakes and obstacles

Numerous studies confirm that there is a subset of SMEs whose direct and indirect contribution to development and technology diffusion, productivity growth, and job and wealth creation, is particularly important and increasing with the emergence of a knowledge-based economy (OECD, 1998*b*). Innovative SMEs are better performers (François and Favre, 1998), the more so as they are young and operate at the interface of the market and the primary sources of new scientific and technical knowledge (Mustar, 1997). The biotechnologies sector provides a good example of the role of innovative SMEs at this interface (Box 8).

The innovation potential of young enterprises is very unevenly exploited in the OECD area. The United States constitutes an enviable exception: the three sources of technology entrepreneurship (the rare *ex nihilo* creation, creation by spin-off from a big corporation, and creation by persons from universities and public research agencies) are particularly fertile there. France is not far from being at the other extreme, at least as regards hive-off from its vast public research sector, with a meagre average of 30 enterprise creations per year during the 1990s

Box 8. Biotechnologies

Biotechnologies are one of the growth activities relying most on the translation of scientific advances into economic progress through enterprise creation. The gap separating Europe in general, and France in particular, from the United States seems to be similar in biotechnologies and in ICT, to judge by the statistics on applications to the EPO. In the case of patents for 1995 biotechnology inventions, France's share was 5.5 per cent, against 5.9 per cent in ICT, and compared with shares of 9.6, 6.4, and 45.2 per cent for Germany, the United Kingdom and the United States respectively. This represents a doubling of France's biotechnology share since the beginning of the 1990s. Partial data also indicate an increase in the number of enterprise creations in this sector since the mid-1990s in France as in other European countries.

The quality of French academic research in such fields as mathematics and software design has caused the emergence of a pole of excellence in genomics (gene sequencing and operation of resultant databases).* In France, however, the new biotechnology companies are encountering more obstacles, especially financial, to their growth than in other countries. Firms in this sector pose a particular funding problem owing to the required time for their research investment to mature: it takes on average about ten years for an active substance to reach the market in the form of a medicine and start producing returns. Compared with their American competitors, the big French pharmaceutical and agro-food groups still invest relatively little in small biotechnology firms; when they do, they tend to favour the United States. As regards the agro-food chain, despite its front-rank position in European production and exports and its scientific strengths, the French industry is having difficulty in holding its own in the market segments revolutionised by biotechnologies, notably because of the public's aversion *vis-à-vis* the marketing of seeds containing genetically altered organisms.

The public sector of biotechnology research is powerful (with, for example, the Pasteur Institute, INSERM and INRA). Fairly extensive public programmes have provided support for research companies: the government-industry Bioavenir partnership functioned for five years up to 1996, and a biotechnologies programme was launched in 1996 with a budget of FF 750 million over five years. The government is now working on the establishment of a start-up fund to help provide seed capital for biotechnology companies and for a network of public laboratories and private firms in this sector.

* An important example is Genset, a company with a world-wide network, founded in 1989 and augmented in 1996 by teams from the Centre d'étude du polymorphisme humain. In 1997, the Genset group recorded a net loss of about FF 94 million for a turnover of FF 99 million.

(Guillaume, 1998), compared with 200 university- and agency-initiated enterprise projects incubated annually in Germany over the same period (OECD, 1997*a*).

In France the creation of innovative enterprises and their subsequent growth have long been hampered by general economic and education policies having little regard for entrepreneurship, a technology policy treating SMEs as the

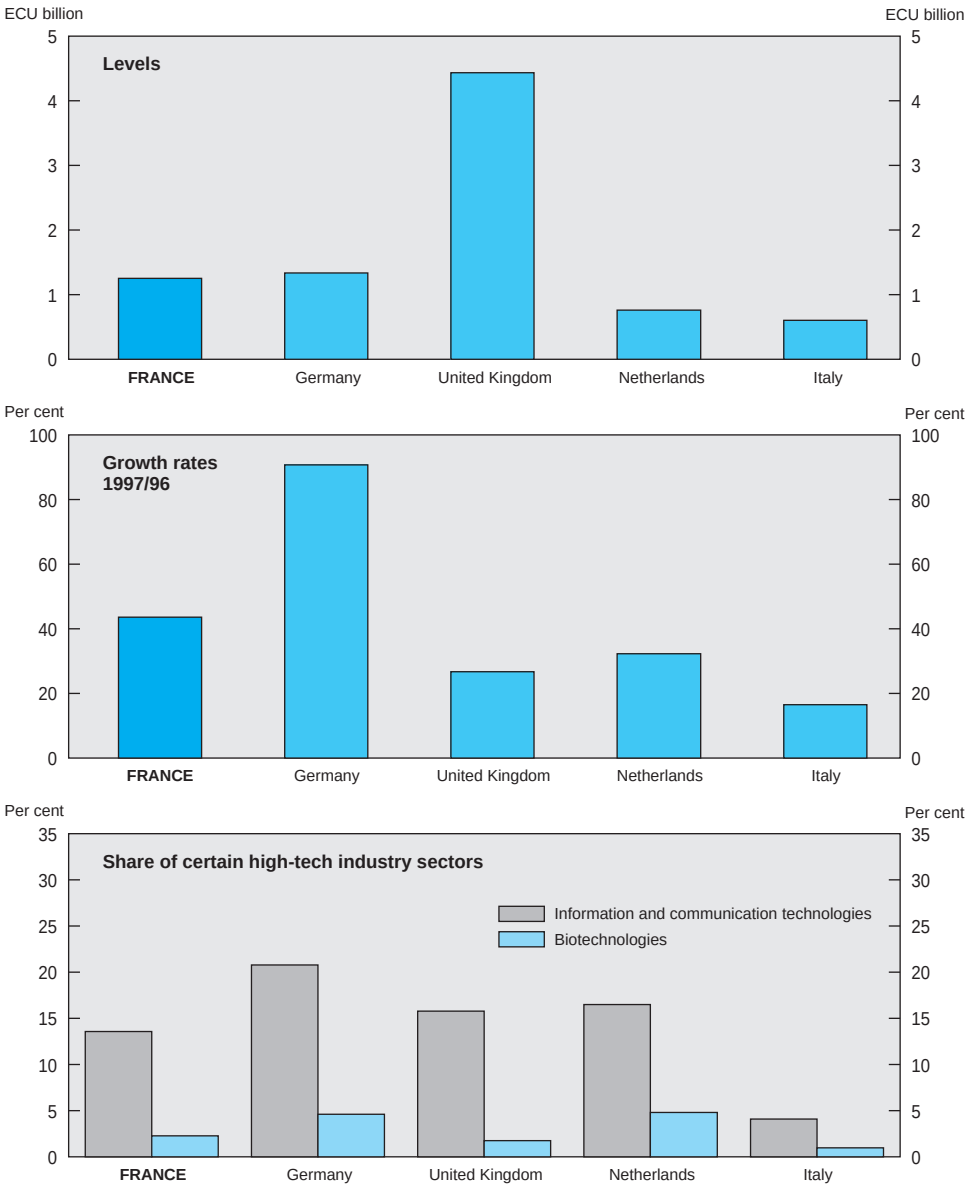
end-point in the diffusion process (with the notable exception of ANVAR), and a policy for SMEs taking insufficient account of the heterogeneity of this category of enterprises. Against this background the initiatives taken were disparate and not always well oriented. One notes a concentration of financial aids to innovation on the later stages of the process, to the detriment of the critical phases involving feasibility studies, incubation and start-up. The need to encourage the development of new arrangements for market financing of venture capital investment was overlooked. Access to SME support was made difficult by the system's complexity, and the government itself put many regulatory and fiscal obstacles in the path of entrepreneurs and their financiers (some of these obstacles having been mentioned in Chapter II). Finally, the steps taken to bring the public and private research sectors closer together and to promote entrepreneurship as a classroom subject lacked boldness. On each of these counts the past year has revealed considerable progress, even though improvements are more apparent in some areas, such as financing, than in others, like the additional reforms planned for education, the public research system and certain framework conditions, which call for longer-term action or are encountering more resistance.

Channelling savings towards innovation

Private financing of young innovative enterprises in France traditionally tended to make investment decisions more dependent on the level and nature of the guarantees provided than on the expected profit. By putting the bulk of the risk on the entrepreneur or the State, this system led to discouragement of entrepreneurship, poor selection of projects, and capital deprivation at crucial stages in the life of the enterprise (birth and growth leaps). It has been estimated that in the mid-1990s the self-financing ratio for young technology companies was about 75 per cent in France, compared with less than 50 per cent in the United States, and that three-quarters of their meagre external resources came from public aid, as opposed to less than 10 per cent in the United States (Chabbal, 1997).

The development of venture capital was necessary in order to establish a virtuous system in which financial institutions and individual investors, or business angels, play a greater part in innovation risk taking and management, in return for a large profit share. For this, capital supply needed to be opened up notably by offering an attractive tax treatment for related assets. Thus, at the end of 1997, the taxation of life-insurance savings plans was made more favourable for so-called DSK contracts, invested at least up to 50 per cent in shares, of which at least 5 per cent in venture capital (risk capital investment funds, venture companies, innovation investment funds, innovation finance companies, unlisted securities). A tax deferral on capital gains from the sale of shareholdings in enterprises less than seven years old was introduced for business angels. It is too early to

Figure 30. **Venture capital investment**
1997



Source: ECVA, *A Survey of Private Equity and Venture Capital in Europe* (1988 Yearbook).

gauge the impact of these measures, and the surge in venture capital since 1996 (Figure 30) is only partly due to them. They should nevertheless help to consolidate this expansion, though ultimately they will not make up for the absence of other national sources of long-term savings, notably pension funds.

It was also necessary to remove an institutional stumbling block by offering risk-capital some exit options, and firms with high growth potential some additional external financing sources, *via* the development of specialised securities markets. This need was met by the launch, in 1996, of the pan-European EASDAQ and of the *Nouveau marché* (NM) in Paris, destined to be part of a European network of interconnected exchanges (Euro.NM). The NM has taken off successfully (Box 9 and Figure 31). Its expansion, the closer ties developing within the Euro.NM network and the likely arrival of new partners – such as the Milan,

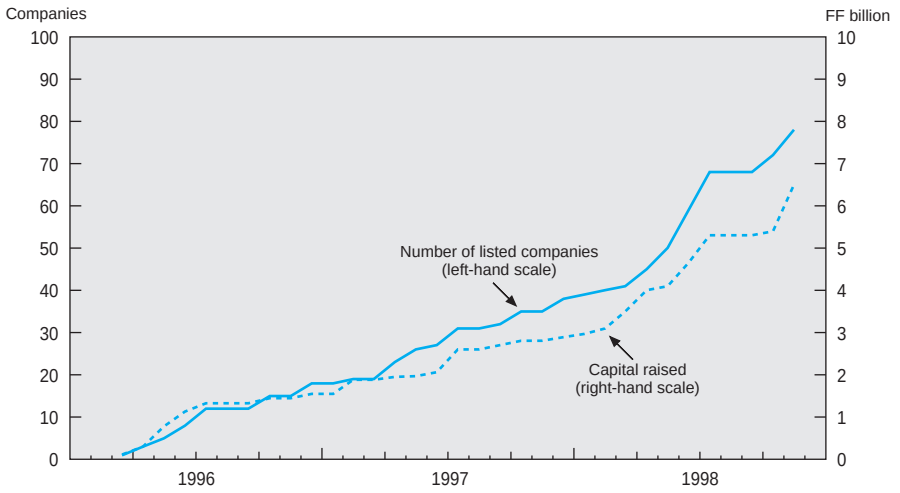
Box 9. The *Nouveau marché*

The NM gives access to the stock market to young innovative companies with high growth potential and in need of capital to finance their development (Copin, 1998). Launched in March 1996, the NM is a private limited liability company governed by the Société du Nouveau marché. The criteria for admission are less demanding than for the official listing and the *Second marché*, both as regards the issuance of securities and the required accounting track record.* The three minimum requirements to be admitted are: equity of FF 8 million, 100 000 shares made available to the public, and a float of FF 10 million. An admissions committee chaired by the Chairman of the Société des bourses françaises decides which companies are admitted and which are removed from the list. An advisory committee representing the scientific and industrial world examines the scientific, technical and industrial viability of the proposed listings. At the end of November 1998, 78 companies (including 5 foreign ones) were listed on the NM, representing a total stock market capitalisation of FF 27 billion. Two-thirds of them were high-tech companies. No company failure had been recorded by that date.

The French NM was launched as part of the Euro.NM network, a European economic interest group which for the moment comprises Amsterdam, Brussels, Frankfurt and Paris, and enables simultaneous listings in markets whose conditions of admission and rules have been harmonised. By the end of September 1998, Euro.NM had attracted 138 innovative companies with a market capitalisation of $26 billion, *i.e.* more than twice that of its pan-European competitor, EASDAQ, though it is still modest compared with the Small Cap market of the US NASDAQ (Table 18).

* Regarding the volume of shares that has to be made available to the public, 25 per cent of the capital is required for the official listing and 10 per cent for the *Second marché*. As for the accounts, three years' audited accounts are required for the official listing and the last two years of certified accounts for the *Second marché*.

Figure 31. **The take-off of the *Nouveau marché*[1]**



1. First introduction in March 1996.
Source: Société du Nouveau marché.

Table 18. **The *Nouveau marché* in the international context**

End-September 1998

	Starting date	Number of listed companies	Total capitalisation (NM = 100)
Euro.NM			
Nouveau marché (Paris)	**March 1996**	**68**	**3.5**
Neuer Markt (Frankfurt)	February 1997	51	21.2
Nieuwe Markt (Amsterdam)	February 1997	12	1.2
Euro.NM Belgium (Brussels)	April 1997	7	0.2
EASDAQ	November 1996	37 (including 5 French)	13.0
NASDAQ	1971		
National market		4 043	1 985.1
Small Cap market		1 212	22.9
Total		5 255	2 008.0
of which: foreign companies		454	86.9
of which: European companies		120	24.5
of which: French companies		10	1.5

Source: http://www.nouveau-marche.fr/bourse/nm/homenm-gb.html; http://www.nasdaq.com; http://www.easdaq.be.

Copenhagen, Stockholm and Zürich exchanges – bode well even though some uncertainties remain regarding the outcome of the competition between Euro.NM and EASDAQ.

The government has also allocated FF 600 million of the proceeds from the opening-up of the capital of France Télécom to a "fund of funds" which will finance minority stakes in private venture capital companies. This measure is similar in its principle to initiatives in many other countries, broadly modelled on the US example of small business investment companies.[110] It seeks to achieve maximum leverage for public investment, much higher than that of the German BTU programme for example.[111] Its objective is primarily quantitative (to increase the supply of capital), though its timeliness may be questioned at a time when private venture capital funds are finding it more difficult to find viable projects than to raise capital. Actually, it mainly aims to ensure that a sufficient proportion of the funds in the emerging venture capital market are channelled to young technology-based companies and to encourage an increase in the number of specialised operators in these areas who might raise fresh money.

The public guarantee mechanisms (SOFARIS) undoubtedly helped the private venture capital sector to weather a very difficult period at the start of the decade. The question that now arises is their role in accompanying its expansion. The government has requested the assistance of the European Investment Bank under the resolution of the Amsterdam European Council on growth and employment, in order to increase the technology development fund of the SOFARIS, but it must now consider whether the growth of the fund should be capped, and the manner of doing so, if necessary by reviewing the eligibility criteria.

The continuing expansion of venture capital and its ability to promote technology-based entrepreneurship now depends on the stock market situation, which until recently has been extremely favourable, and especially on the removal of certain bottlenecks on the capital demand side (see below). It will also depend on the degree to which supply and demand are efficiently matched by competent intermediaries, backed up by specialised financial and technological information and evaluation services, of which there are still too few in France as elsewhere in Europe. The number of potential business angels will rise naturally in line with the number of entrepreneurial successes only once a certain critical mass of participants in local networks has been achieved; these networks should be fostered. The experience of the countries that are the most advanced in this area (the United States, Canada and the United Kingdom) suggests that the role of central government is not confined to supporting local initiatives but also consists in linking them up.[112]

While the expansion of venture capital will give a favourable boost to innovative SMEs as a whole, it will provide solutions directly only at certain stages of the development of a limited number of companies which have a well-

above average growth potential. The ANVAR will continue to play an essential role in supporting the innovative projects of many other SMEs; from this standpoint, the recent extension of tax incentives to individuals who invest in new SMEs is warranted. But the major challenges now lie upstream of the main area of intervention of venture capital funds – in the incubation and seed-capital stages – since it is there that the problems of funding innovation overlap with those of the organisation and behaviour of the public research sector.

Mobilise public research and technology diffusion infrastructure

France must make a cleaner break with an outdated view of the commercial exploitation of research, in which the production of knowledge is disconnected from its diffusion and exploitation, and move towards a more interactive model based on consortia or networks where universities and other public bodies are to make a greater contribution to the creation and development of innovative firms. Most public research bodies still give too little importance to the exploitation of research findings, regarding it as a by-product rather than as an integral part of their activity and, consequently, devoting inadequate resources to it, both quantitatively and qualitatively. The government can address this situation in two ways: it can strengthen the interfaces between public research and the business world, and remove regulatory impediments to the flow of knowledge and people between the two sectors.

Such interfaces, particularly incubator structures[113] and seed-capital funds, are underdeveloped at the national level and poorly co-ordinated at the regional level. The policy of giving each body a virtually free hand in this area has shown its limitations. A few successful initiatives like those of the INRIA, CEA (EPICEA fund) and France Télécom are exceptions and have not acted as pacemakers for the rest of the system, for want of an incentive framework that exploits the synergies between disciplines and bodies, and of sufficient private involvement in the funding and management of such interfaces.

The rapid development of private venture capital creates an opportunity that should be grasped. In this respect, the government's seed capital projects are based on sound principles. Among other things, three seed capital funds will be created for three major areas of technology (biotechnology, new materials and information technology) rather than being attached to specific bodies.[114] The State will provide FF 200 million to these funds in the form of reimbursable, non interest bearing, grants. Public research institutions will participate in these funds, but the majority of investors will be private, and the managers too. It would be desirable to extend this approach to other sectors but this will depend to a large extent on the effectiveness of the regional agencies of central government, which are numerous and poorly co-ordinated. One possibility would be to give ANVAR's regional delegates the role of co-ordinating regional efforts to exploit

public research findings, at least as regards the management of seed capital funds.

Mobilise human capital and develop entrepreneurship

It is perhaps even more essential to remove the legal and regulatory impediments to the participation of public sector researchers in the exploitation of their findings, including those that stand in the way of them setting up firms. As mentioned earlier, a bill soon to be brought before Parliament represents an important step forward in this area. It includes an amendment to the conditions of service of public sector researchers which will allow them to participate in the creation, management and profits of commercial companies. But this easing of the legal framework will only bear full fruit when reforms have been implemented to encourage researchers to take advantage of the new opportunities. As noted earlier, these reforms should address in particular the criteria on which researchers are evaluated.

In France as elsewhere, few people with a stable job in public research or the private sector would be willing to quit it for a young innovative company if the expected gains were not commensurate to the risk. Stock options are a way of remunerating highly-qualified employees – researchers and managers – for the risks they run, and of making young innovative companies competitive in the labour market. They are common in the United States and have been adopted by many other countries. They have had a troubled history in France; there has been a reluctance to accept them, both on grounds of equity and because of abuses in the application of the general regime for share subscription options. Pending a reform of the latter, the 1998 Finance Law has introduced share subscription certificates for new entrepreneurs, which the government has proposed to extend in 1999 to firms which are under 15 years old (instead of 7 as at present).

While the French education system produces large cohorts of science graduates,[115] it does not encourage enough young talent to become entrepreneurs, reflecting a scale of values shaped by history, in which the State-entrepreneur has played an exceptionally large role, especially this century.[116] This weakness has long been recognised, and efforts have been made over the years to encourage entrepreneurship right from school, but with only modest results. Certain recent initiatives concerning the *Grandes écoles d'ingénieurs* and to speed up the introduction of computers in educational establishments attest a resolve to move forward, and it is to be hoped that they will be accompanied by initiatives in other sectors of education.

Budding entrepreneurs should not be discouraged by excessive bureaucracy, hence the importance of the simplification of administrative procedures for

SMEs described in Chapter II. Likewise, care should be taken to ensure that anti-competitive practices or regulatory impediments do not bar entry to certain markets. Lastly, a reform of bankruptcy legislation and its application is under consideration. It will be important to take full account of the impact of bankruptcies on the dynamics of innovation, and to recognise the importance in this area of learning through failures.

Assessment

In freeing and channelling more effectively the forces of innovation, the government's ambition is to raise the potential growth rate of the French economy. There is a realisation that, in this area, existing human and physical capital remains largely under-exploited, as attested by the gap between the amount of resources allocated to R&D and the relatively weak performance in terms of actual innovation, especially that by SMEs. The analysis in this chapter suggests that the measures taken by the government since the last *Survey* and those currently being prepared mark a significant turning point in the right direction. Alone, however, they will not suffice to achieve the government's objective. They are part and parcel of a general pattern of reform designed to secure the necessary changes in the innovation system, and which needs to be taken further in certain areas.

Despite some positive developments since the beginning of the 1990s, the system still suffers from certain traditional handicaps, including the polarisation of research around a few sectors and a few major enterprises, and the weight and dominant role of the State. Notwithstanding notable breakthroughs in areas such as aerospace and nuclear power, the system seems ill-adapted in more competitive sectors, in which state orders are much less important and new firms are one of the main vehicles of development of new technologies. One effect of it has been to limit the diffusion of new technologies throughout the economic fabric, and particularly to SMEs, many of which remain outside the R&D effort, and to curb the creation of new, innovative firms. While there is a wide and varied range of schemes for promoting R&D, they are often poorly co-ordinated and they have not always proved effective. Innovation has also suffered from the shortage of venture capital, especially in the pre-start-up stages of business creation. Lastly, it has suffered from the compartmentalisation between public research bodies, and between those bodies and the business world.

Several rafts of measures which draw heavily on the experience of other OECD countries have already been introduced or are about to be. Tax incentives have been introduced for share subscription certificates for new entrepreneurs, for life insurance contracts which are partially invested in venture capital companies, and for capital gains reinvested in young companies. A public venture capital fund has been launched. The first "thematic" research network has been

set up in the telecommunications sector to improve the interface between public laboratories, private companies and operators. The regulations for mutual funds investing in innovative companies are to be eased, and the tax regime for venture capital companies is to be simplified. A bill is soon to come before Parliament which will remove several barriers to the commercial exploitation of public research findings. It will allow universities and public research bodies to engage in industrial and commercial activities, enabling them to group their services, exploit patents and licences and market their products. It will allow them to set up business incubators. It will authorise researchers and academics to sit on company boards or to create their enterprise while on leave from the civil service. Lastly, it will lead to more contract research within the public sphere.

While it will only be possible to evaluate the impact of these measures in the medium-term, it is clear that they will give a boost to research and innovation. However, they do not go far enough. It is still necessary to streamline the administration of support for research and innovation, to reform the policy for government research contracts, and to put in place effective evaluation procedures.

The reform of the administration of support must simplify and clarify the roles of the various bodies, ensuring that the financial tools used for each type of support are appropriate. Regional mechanisms need to be overhauled so as to eliminate those that are superfluous or lack proper focus. Greater account should be taken of the ability of firms to set their own research objectives within the framework of more open and competitive markets and the increased availability of private risk capital. However, care should be taken to ensure that existing distortions (lack of co-ordination between administrative bodies, SMEs' insufficient access to public programmes) are not compounded by new distortions (creation of new bodies to co-ordinate existing ones, supplementary measures for SMEs without doing anything about the bias towards major enterprises).

The reform of the policy for government research contracts should aim to ensure a better allocation of public and private resources. A certain institutional inertia which rigidifies the distribution of public funding across particular technology areas needs to be overcome. A more active policy with regard to dual technologies should be pursued so as to exploit more effectively the synergies between civil and military research. The cut-back in public R&D financing in recent years has hit orders to industry, but not research in the public sector. While recognising the need to maintain a basic research capability, the continuation of this trend would clearly be at odds with the general thrust of government policy.

Without qualified and independent evaluations, it is difficult for the government to assess the effectiveness of the reforms carried out. The efforts to evaluate public research programmes and support for research should be

stepped up. The government recognises this and is studying some important measures, but no major reform has yet been implemented.

Support for innovation takes place within a more general context. However, the framework for innovation is still far from optimal. Firms' access to patient investors could be facilitated by the creation of pension funds. The success of measures to promote the mobility of researchers and, more broadly, of all the skilled personnel engaged in innovation, will depend on changes being made in the training system and the labour market. To overcome the reluctance to take risks, a friendly tax environment is needed, and bankruptcy in the event of failure should become less penalising. More generally, the opening up to competition of a number of traditionally sheltered sectors can give a substantial boost to innovation and growth.

Notes

1. Growth rates of GDP components are given at 1980 prices. In some cases they differ significantly from the changes given at previous year prices. Furthermore, the forthcoming changeover to a new accounting base will considerably affect certain series (see Box 1, p. 32).
2. Depending on the source, the annual growth gap averaged between 0.2 and 1.5 per cent over the period 1991-95 (Cette and Delessy, 1997), the OECD Secretariat's estimate lying in the middle of that range. The output gap in 1997 was estimated at 3.3 per cent by the Forecasting Directorate of the Economy, Finance and Industry Ministry, at 1.7 per cent by the Bank of France (Ricart, 1998) and at 2.2 per cent by the OECD Secretariat.
3. Philippines, Indonesia, Thailand, Malaysia, Singapore, Hong Kong SAR and Taiwan Province of China.
4. In 1997 French auto makers benefited from the Italian and Spanish government subsidies to car purchasers.
5. In 1996, France ranked third in the world among the countries of outward investment behind the United States and the United Kingdom and fourth among countries of inward direct investment, behind those two countries and China.
6. For a more detailed analysis of the impact of such subsidies, and notably the induced intertemporal substitution effects, see Adda and Cooper (1997).
7. If the saving ratio is viewed over a longer period, however, its average level since 1990 does not appear all that high, in particular in comparison with the 1960s.
8. The surge in the SBF 250 since 1995, in stark contrast to the relative stagnation of property prices, largely explains the fact that in 1997 the financial assets of households (and single proprietorships) for the first time represented more than half of their total assets.
9. Average running time lengthened fairly steadily from 46 hours per week in manufacturing in the early 1980s to 51 hours in 1997, gradually drawing closer to the peak of 53 hours reached in 1963.
10. Note that the investment/GDP ratio also depends on the relative price of investment. Measured at current prices, the ratio is more depressed than at constant prices: in 1997, the GFCF/GDP ratio was 17.1 per cent at current prices but 19.5 per cent at 1980 prices.
11. Restocking is more tardy and less pronounced than in previous recoveries, reflecting expectations of very low inflation and possibly, too, because of businesses' increasing propensity, facilitated by computerisation, to manage inventories on a just-in-time basis.

12. The anemia reflected in the national accounts contrasts with certain sectoral indicators (*e.g.* sales of dwellings and offices) which suggest an earlier upturn.
13. However, since the labour force has grown very considerably since 1990, the employment rate is still lower than it was then.
14. In this breakdown, temporary employees working in industrial firms are classified under services. If they were reclassified under industry, the latter would have been a net job creator from 1997. If the same adjustment were made for building/public works, employment in that sector would have fallen hardly at all in 1997.
15. The French authorities estimate that these measures have lowered the GDP growth threshold, above which employment increases, by 0.3 to 0.5 point (CAE, 1998).
16. The standard deviation for total unemployment (estimated by sample survey) is about 0.15 point. Care should therefore be taken not to overinterpret small changes.
17. In seasonally adjusted terms. Partial unemployment, which is subject to authorisation from the labour inspectorate, enables businesses going through a period of reduced activity to lay off all or part of their workforce without termination of contract, and with compensation of each employee equivalent to half of his/her gross pay (with a guaranteed minimum).
18. In the 1970s long-term unemployment was generally defined as being in excess of six months. In the 1980s it came to be defined as lasting more than one year.
19. Given potential price index biases, one may wonder whether inflation was not even lower. It would seem that the composition of the French CPI and relative price movements in France have been such that, in contrast to some other countries, the bias is very limited (Lequiller, 1997).
20. At the beginning of 1998 the French authorities announced a provisional result of 3.02 per cent for 1997. Given the scale of the revisions made in the past, undue significance should not be attached to this figure.
21. In return for a cash input of FF 37.5 billion to the budget, the State took over payment of the pensions due to staff of France Télécom (which must now pay employers' pension contributions, however). This operation facilitated the partial privatisation of France Télécom in late 1997 (see Chapter II). Concerning the national accounts treatment of this one-off operation, and of other atypical operations elsewhere in the European Community, see Dupuis (1998).
22. The additional expenditure commitments decreed earlier in July by the government, which included income support for the poorest households, were made possible by expenditure cancellations and redeployment.
23. Excluding dividends and property income, this brings the rate of fiscal/social taxation of most savings incomes to 26 per cent at most.
24. *Ex post*, the volume of spending will have increased more rapidly, with inflation lower than projected.
25. In interpreting cross-country comparisons of levels it should be remembered that certain social insurance functions (pensions, sickness benefits) are more extensively public in France than elsewhere. However, this point is less relevant regarding evolutions over time.
26. On this question, see also the Choussat note (1997). Employment in central mainland administrations, however, increased by close to 5 per cent between 1990 and 1997 (in full-time-equivalent terms, excluding the PTT).

27. Those provisions were censored, however, by the Constitutional Council in mid-December 1998.
28. This measure stems from the observation that doctors' propensity to prescribe too much and too expensively has hardly been dented so far (Fleurette, 1998).
29. The total number of personnel rose from 700 000 to 840 000 between 1980 and 1997.
30. For a critical analysis of the economic shortcomings of the health system, see Johanet (1998).
31. Although various funded top-up pension plans and similar schemes exist in France, pension funds are very underdeveloped there (Charpentier, 1997).
32. A number of reports stressing the gravity of the problem have already been published in recent years, including the 1991 White Paper and the Briet Report (1995).
33. Pension purchasing power should nevertheless receive a boost of about 0.5 per cent because of over-indexation in 1998 (inflation being that much less than anticipated).
34. The new challenges associated with the implementation of Monetary Union are discussed elsewhere (OECD, 1998*j*).
35. This translates into a 1.3 per cent increase in real terms, given the Secretariat's inflation projection for 1999.
36. The sum total of provisions made by the BNP, the Société Générale and Paribas on their loans in the five major emerging Asian countries in crisis represented more than half of their net profits.
37. The guidelines of the government's labour market policy were set out in the National Action Plan for Employment presented to France's European partners at the Cardiff Summit in June 1998.
38. See Annex II of the previous *Survey* for the equation used. Cotis *et al.* (1998) conclude that around end-1995 the equilibrium rate of unemployment was of the order of 10 to 11 per cent, depending on the horizon selected. An update of those estimates to mid-1998 shows a decline of about 1 percentage point in this rate. It should also be noted that the impact on that rate of the technological changes discussed in Chapter III seems very difficult to establish (Stock, 1998).
39. Public expenditure on employment as defined by the French authorities excludes such schemes as the RMI (Roguet, 1998). For an overview of the schemes covered under this heading, see DARES (1996) and Seibel (1998). Public spending on employment as defined by the OECD for international comparison purposes totalled 3.1 per cent of GDP in 1996 excluding general social contribution rebates on low wages and income support.
40. See Gaudu (1998), Marchand and Minni (1998), and Gelot and Holcblat (1998).
41. A number of recent changes are not reflected in this figure, notably the introduction of social contribution exemptions for the first 50 hirings by firms operating in priority zones (rural revitalisation zones, urban regeneration zones, *zones franches*) and abolition, at the same time, of the exemption granted to the self-employed.
42. See also the estimates presented by Le Bihan (1998). For a theoretical justification of low-wage social contribution relief, see Van Rijckeghem (1997).
43. This is one of the proposals of the Malinvaud report (1998) on the reform of the base for employers' social contributions, instead of a broadening of the base to value-added. The report also proposes to study the merits of a "no claims bonus/

surcharge'' system for unemployment insurance contributions along the lines of practice in the United States (so as to discourage separations).

44. It would be more relevant, however, to compare net earnings, taking into account the complex impacts of taxes and social security payments.

45. Wages represented on average over one-third of the aggregate base of this tax in 1997, alongside firms' capital stock.

46. The revenue loss is limited by a steep rise in the minimum *taxe professionnelle* contribution paid directly to the State by businesses with more than FF 50 million turnover, a rise in the *cotisation de péréquation* (equalisation tax) payable by businesses located in municipalities with a low *taxe professionnelle* rate, and by the abolition of the allowance for hiring and investment.

47. It is difficult to gauge the impact of such a measure, one of the reasons being that multi-year commitments other than the planning laws have not always materialised, which weakens their credibility.

48. Although few observers deny that these traps can exist in the case of part-time jobs, opinions differ as to their importance in the case of full-time work (see CSERC, 1997, David *et al.*, 1997, and Bourguignon, 1998).

49. The training/retraining allowance (*allocation formation reclassement)*, which since 1993 has guaranteed non-decreasing compensation for unemployed persons undergoing training, is part of the same scheme of re-employment assistance.

50. Analogous incentive schemes have been extended to the single parent allowance and the specific solidarity allowance.

51. The law also introduces a tax on dwellings vacant for more than two years, to take effect in 1999.

52. At the end of 1997 the conditions of eligibility for the ARPE were tightened, employees born in 1940 not being entitled to the ARPE until after their 58th birthday.

53. A similar scheme was set up in 1997 for civil servants (the *congé de fin d'activité*), which has been prolonged since and extended for 1999 to staff aged 56 or more with 40 years of contribution. Some 12 500 civil servants benefited from this arrangement in 1997.

54. The ANPE has 860 local branches employing about 16 600 staff and plans, in addition to the aforementioned post creations, to accommodate 500 youth-jobs. ANPE staffing per unemployed is relatively low in France.

55. Instruction of the Employment and Solidarity Minister, 11 July 1997.

56. This is the so-called Delalande contribution, created in 1987 and increased in 1992, which increases with age, reaching 6 months of salary for a laid-off employee aged 56. It brought in FF 1.7 billion in 1997.

57. Rulings of 5 April 1995, 13 February 1997 and 25 November 1997. If the employer goes ahead with dismissals, these may be overruled, with consequent rehiring and payment of wages. The obligation, however, is to provide the means, not to deliver a given result.

58. Rulings of 30 April 1997 and 7 January 1998.

59. Also for unemployed young persons aged 26 to 30 who have not worked long enough to be entitled to unemployment benefits, and for the handicapped under 30 years of age.

60. Two-thirds of the CIE contracts are open-ended.

61. Since October 1997 the holder of a CES can sign a part-time work contract with another employer.

62. This is also reflected in the steady increase over the same period in the weighted coefficient of variation of average annual effective working time per employee calculated for the 40 branches of the Product and Activity Classification (CSERC, 1998).

63. This level is below the one observed in some other European countries (United Kingdom, Netherlands, Sweden) but close to the one in Germany.

64. In particular by the 1993 five-year Employment Law and, in the case of banks, by a decree of 31 March 1997. A very comprehensive overview is provided in the CSERC's report (1998).

65. Namely, by 2.5 per cent owing to the reduction of the working week from 40 to 39 hours, and by 2 per cent owing to the fifth week of paid leave.

66. Detailed cross-country comparisons can be found in OECD (1998*a*), Passet (1998) and CSERC (1998), where it is stressed that on other criteria such as the average full-time working week and the number of days' leave and public holidays, France is also in a midway position. The secular trend of working time reduction in France is described by Thélot and Marchand (1997).

67. The agreement concluded in the metals industry is inconsistent with the spirit of the law, however. It provides for a steep increase in the overtime quota together with increased use of lump-sum payments to management executives, engineers and certain supervisory staff; it is also designed to maintain an effective working time of more than 35 hours and does not provide for any job creations. The Employment and Solidarity Minister has indicated that this agreement would not be extended administratively.

68. The agreements concluded for building trades and dairy co-operatives had been administratively extended.

69. A significant portion of the agreements do not apply to all enterprise staff (an autonomous commercial division, for instance, may be left out) or exclude managerial staff.

70. A survey conducted by UFB Locabail in July 1998 showed that only 21 per cent of SMEs with more than 20 employees were intending to move to the 35-hour week before 2000.

71. See Cette and Taddei (1997), Cornilleau *et al.* (1998), DARES (1998), and the Ministry of Economy, Finance and Industry (1998*a*). The simulations presented in these documents contrast with those published a few years earlier, which showed much larger job gains (see, for example, Cette and Taddei, 1994, Confais *et al.*, 1993, and Fitoussi, 1993). It should also be noted that most of the simulations aim to determine in what conditions the changeover to the 35-hour week could generate many jobs rather than to predict the impact of the legislation.

72. Even *ex post* evaluation of the effects of such a measure is uncertain, witness the reduction of working time in 1982 (a wide range of estimates appears in the studies by Marchand *et al.*, 1983, Frank and Trégoat, 1983, Colin *et al.*, 1984, and Cette, 1992). As for the theoretical models, they give fairly ambivalent results, notably because the impact depends on the nature – Keynesian or classical – of unemployment (d'Autume and Cahuc, 1997, Cahuc and Granier, 1997, Crettez *et al.*, 1997, and OECD, 1998*a*).

73. The statutory working week applies to all employees except sales representatives, salaried managers and management executives.

74. At the same time as in Germany, Italy, Austria and Belgium, but after the United States, Japan, the United Kingdom, Sweden and Finland.

75. The Ministry of Economy, Finance and Industry monitors the retail prices charged by France Télécom and issues most authorisations after prior examination of the applications by the ART.

76. In 1997 the Paris Court of Appeal upheld the conviction of the ODA corporation, a subsidiary of France Télécom, on a charge of misuse of its position in the directories market and classified the behaviour of France Télécom as abuse of a dominant position. Examining the case of mobile telephones and paging systems the Competition Council – responsible for *ex post* monitoring – censured France Télécom for not keeping separate accounts for its competitive activities and its non-competitive operations, which might serve to conceal cross-subsidisation (Conseil de la concurrence, 1998). In 1998, the ART ruled unfavourably on a bid by France Télécom to provide access to the Internet for schools, on the grounds that by combining telephone connection (for which the original operator held a dominant position), data transmission on the Transpac network and access to the Internet proper, this offer raised an entry barrier for data transmission operators and Internet access suppliers, and also that the flat charge proposed was lower than the cost of the service (ART, 1998). Reservations were also expressed by the Competition Council. As a result, France Télécom had to revise the terms of its bid.

77. The power sector's present organisation is that specified by the 1946 law nationalising the electricity and gas industries.

78. See the White Paper on the question, published in early 1998.

79. At present only some 6 500 municipalities out of 36 000 are served, and GDF's service extension plan concerns a relatively small number of municipalities.

80. The creation of a High Rail Council has also been announced. This would be a consultative rather than a regulatory body.

81. The definition of this corridor may seem odd: it would become inoperative if short rates were to fall below inflation plus 1½ points, a possibility which cannot be ruled out. Moreover, the market rate has not been explicitly defined.

82. In the cases of the Postal Service and the Public Treasury, the Competition Council considers that only a legal separation of competitive from monopoly or public service activities will allow to ascertain whether competition rules are abided by.

83. More than 2.2 million businesses have fewer than 10 employees.

84. France follows the example set in other OECD countries in this respect, as noted by Oudet (1998).

85. The privatisation costs incurred by the State amounted to FF 1.8 billion in 1997, *i.e.* 3.3 per cent of receipts (against 3 per cent in 1996).

86. Under this scheme, local transport organisation is delegated to the regions, which receive from the State a lump-sum subsidy calculated so as to provide the extra financing needed to ensure a permanent service according to 1994 standards. Each region signs an agreement with the SNCF and pays it an operating subsidy equal to the anticipated operating deficit adjusted upwards or downwards according to quality of service.

87. The proceeds from the privatisation of Crédit Lyonnais will go directly to reduce the indebtedness of the defeasance body. It is difficult to quantify total State aid in this case: the European Commission has estimated it at FF 102 to 147 billion (*EU Focus*, 19 November 1998). This amount of aid in favour of a single company is unique in the history of the EU.
88. See the one-before-last *Survey* (OECD, 1995).
89. The financing of those contracts will have to be compatible with European rules.
90. This problem has been further aggravated by the last two indexation-plus *"coups de pouce"* (especially that of 1997).
91. Some of this spending is not classified as fixed capital formation, even if it is for investment rather than consumption purposes.
92. While this definition facilitates international comparisons, it suffers from a high level of aggregation. Advanced technologies are of course developed or used in many other sectors as well.
93. This sector spans both industry and services, but is increasingly (90 per cent in 1996) a service sector. IT does not appear in the usual classifications and has to be estimated by cross-matching various sources (Lerenard and Tanay, 1998).
94. The demand for skills is also influenced by international competition. The respective roles of advances in technology and international trade in wage, employment and skills trends are examined in detail in OECD (1994) and special issues of *Économie et Statistique* (No. 301-2, 1997) and the *Revue Économique* (No. 5, 1997).
95. After increasing steadily from the end of the 1970s, the GERD/GDP ratio reached 2.45 per cent in 1993. It has fallen continuously since, to an estimated 2.26 per cent in 1997.
96. The fact that English is the *lingua franca* of the international scientific community makes for a bias in favour of countries whose national language is English, but this affects cross-country comparisons more than the evolution over time in the indicator for one country.
97. The same applies to patents issued in Europe.
98. Its R&D spending halved since the beginning of the 1990s. See also Brulé (1998).
99. Data confidentiality rules forbid naming individual firms.
100. The electronics-communications programme differs from the others by the greater variety of products, operating procedures and funding.
101. FF 41 billion if other government commissions for defence are included.
102. Formerly *Fonds de la recherche et de la technologie.*
103. Since 1997, the FRT excludes the CIFRE programme and other human resource programmes.
104. Subsequent to the amended Budget Law, the appropriation for 1997 was reduced to FF 725 million.
105. Based on a study that identified 136 "key technologies", the programme has concentrated State aid on 50 of those.
106. The multi-year financing contracts with Bull and Thomson have also been ended. The only remaining one is the contract with ST-Microelectronics (ex-SGS Thomson), which has been extended for four years.
107. This situation has been decried repeatedly by the auditors of the *Cour des comptes.*

108. Guillaume (1998). The high (and rising) average age of the population of public-sector researchers is both a cause (amongst others) and a consequence of this low degree of mobility.

109. It should be noted that the innovation bill foresees the creation within universities of commercial service activities and incubators.

110. *Innovation Investment Fund* in Australia, *Beteiligungskapital für kleine Technologieunternehmen* (BTU) in Germany, *Participatie-maatschappij voor techno-starter* in the Netherlands (OECD, 1997*f* and BMBf and BMWi, 1998).

111. In the co-financing mechanism of the Technologiebeteiligungsgesellschaft, the State's contribution equals that of private venture capital.

112. See for example the Angel Capital Electronic Network on the Internet in the United States.

113. Incubators are institutions that supply plant and a range of services to fledgling entrepreneurs so as to increase their chances of success. Some of them specialise in giving assistance to high-tech firms.

114. Two of them are starting up, one around the I-Source nucleus (in ICT), the other around the Emertech nucleus (new materials and semi-conductors). Another fund is being set up in the biotechnology sector.

115. In the mid-1990s, the stock of holders of higher diplomas in science represented 2 per cent of the labour force for men, and 0.8 per cent for women, *i.e.* a much larger proportion than in the United States, Japan and most other European countries. The flows since then confirm this pattern.

116. A recent survey indicated that the majority of 18-30 year-olds endorse this point of view (see *Les notes bleues de Bercy*, No. 144, 1998).

Abbreviations

ADEME	Agence de l'environnement et de la maîtrise de l'énergie
AFPA	Association nationale pour la formation professionnelle des adultes
AFTEL	Association française de la télématique multimédia
ANPE	Agence nationale pour l'emploi
ANVAR	Agence nationale de valorisation de la recherche
ARCS	Advances repayable in case of success
ARPE	Allocation de remplacement pour l'emploi
ART	Autorité de régulation des télécommunications
ASS	Allocation de solidarité spécifique
ASSEDIC	Association pour l'emploi dans l'industrie et le commerce
BMBf	German federal Ministry of Education, Science, Research and Technology
BEP	Brevet d'enseignement professionnel
BMWi	German federal Economics Ministry
BSPCE	Bons de souscription de parts de créateurs d'entreprise
BTS	Brevet de technicien supérieur
BTU	Beteiligungskapital für kleine Technologieunternehmen
CADES	Caisse d'amortissement de la dette sociale
CAP	Certificat d'aptitude professionnelle
CDC	Caisse des dépôts et consignations
CEA	Commissariat à l'énergie atomique
CES	Contrat emploi-solidarité
CIE	Contrat initiative-emploi
CIFRE	Convention industrielle de formation par la recherche
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CNES	Centre national d'études spatiales
CNET	Centre national d'études des télécommunications
CNRS	Centre national de la recherche scientifique
COB	Commission des opérations de bourse
CPI	Consumer Price Index
CSERC	Conseil supérieur de l'emploi, des revenus et des coûts
CSG	Contribution sociale généralisée
DARES	Direction de l'animation, de la recherche, des études et des statistiques (Ministry of Employment and Solidarity)
DEUG	Diplôme d'études universitaires générales
DGA	Délégation générale pour l'armement (Ministry of Defense)
DGAC	Direction générale de l'aviation civile (Ministry of Transportation)

DGSI	Direction générale des stratégies industrielles
DOM	Départements d'outre-mer
DIRDE	Dépense intérieure de recherche et développement des entreprises
DUT	Diplôme universitaire de technologie
EASDAQ	European Association of Securities Dealers and Automated Quotation
ECB	European Central Bank
ESCB	European system of central banks
EDF	Électricité de France
EMU	Economic and Monetary Union
EPO	European Patent Office
EU	European Union
FRT	Fonds de la recherche technologique (ex-Fonds de la recherche et de la technologie)
GAN	Groupe des assurances nationales
GERD	Gross domestic expenditure on R&D
GDF	Gaz de France
GDP	Gross domestic product
GFCF	Gross fixed capital formation
GPT	Grand programme technologique
ICT	Information and communication technologies
IFREMER	Institut français pour l'exploitation de la mer
INPI	Institut national de la propriété industrielle
INRA	Institut national de la recherche agronomique
INRIA	Institut national de recherche en informatique et en automatique
INSEE	Institut national de la statistique et des études économiques
INSERM	Institut national de la santé et de la recherche médicale
IRD	Institut de recherche pour le développement (ex-ORSTOM)
ITU	International telecommunications union
MEFI	Ministère de l'Économie, des Finances et de l'Industrie
MENRT	Ministère de l'Éducation nationale, de la Recherche et de la Technologie
NM	Nouveau marché
OFCE	Observatoire français des conjonctures économiques
ONERA	Office national d'études et de recherches aérospatiales
ORSTOM	Institut français de recherche scientifique pour le développement en coopération
OST	Observatoire des sciences et des techniques
PC	Personal computer
R&D	Research and development
RFF	Réseau ferré de France
RMI	Revenu minimum d'insertion
RNRT	Réseau national de la recherche en télécommunications
RTC	Research tax credit
RTD	Research and technology development
SESSI	Service des statistiques industrielles (Ministry of Industry)
SME	Small and medium-sized enterprise
SMIC	Salaire minimum interprofessionnel de croissance
SNCF	Société nationale des chemins de fer

SOFARIS	Société française de garantie des financements des PME
SYRECIDE	Synergie recherche civile et défense
TARGET	Trans-European automated real-time gross settlement express transfer
TGV	Train à grande vitesse
TRACE	Trajet d'accès à l'emploi
UIMM	Union des industries métallurgiques et minières
UNEDIC	Union nationale interprofessionnelle pour l'emploi dans l'industrie et le commerce
VAT	Value-added tax

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Annex I

The reduction in working time

Historical background

The government has presented the move to a 35-hour week as a major step in an evolution that goes back to the introduction of two weeks' paid leave and a 40-hour week in 1936, the third and fourth weeks of paid leave introduced in 1956 and the 1960s respectively, and the fifth week of paid leave and the 39-hour week introduced in 1982.[1] The Law on the 35-hour week also incorporates, with modifications, a number of the provisions in a 1996 Law, which aimed to encourage social partners to agree a reduction in working hours.

The Robien Law of 11 June 1996, now superseded by the Aubry Law, provided a reduction in employer social security contributions for any firm that cuts the working time of all or part of its personnel by 10 or 15 per cent and increases its workforce by the same amount for at least two years (the "offensive" option of the Law), or that undertakes not to carry out planned redundancies (the "defensive" option). Aid eligibility requires a convention between the State (represented by the departmental labour and employment directorate) and the firm or establishment, ratifying an agreement concluded between the social partners at firm, establishment or branch level. If working time is reduced by 10 per cent (or 15 per cent), the exemption from social security contributions amounts to 40 (or 50) per cent in the first year, and then 30 (or 40) per cent for six years (the "offensive" provision) or two years (the "defensive" provision).[2] The reduction applies to all the workforce.

All told, 2 953 agreements have been signed under the Robien Law, nearly 4 out of 5 of which are of the "offensive" type (Doisneau, 1998). They concern 279 727 employees, slightly under two-thirds of which in firms that have signed "offensive" agreements. In the vast majority of cases, the undertaking is to cut working time by 10 per cent and the agreement provides for a reorganisation of working schedules. Over half of them provide for more flexible working hours to enable the work load to be spread in line with fluctuations in demand. In a fifth of them, the agreement provides for a lengthening of the range of working hours, and in one out of six for an increase in plant utilisation time. A large proportion of the agreements stipulate that employees' monthly remuneration will be maintained in full in the immediate term (either by increasing the hourly rate or bonuses or profit-sharing), often coupled, however, with subsequent wage moderation or even a wage freeze. For the employees concerned by the agreements in 1997, the average annual subsidy per head was about FF 13 000. The Robien Law has helped to intensify collective bargaining at firm level, with the number of company agreements on a reduction and reorganisation of working time up from 3 600 in 1995 to 4 000 in 1996 (when for the first time they exceeded the number of wage agreements) and over 6 000 in 1997. However, the impact of the Robien Law remains limited – with at most some 34 000 jobs created or saved (on the basis of declared intentions and excluding windfall effects).[3]

The Aubry Law of 13 June 1998

A framework law reducing the statutory working week to 35 hours was announced by the Prime Minister in October 1997 at a national conference on employment, wages and the reduction in working time. The draft law was presented to the Council of Ministers in December and submitted to Parliament the following month, the final text being promulgated on 13 June 1998.

The Aubry Law is designed to encourage a reduction in working time; it lowers the statutory working week to 35 hours as from 1 January 2000 for firms with more than 20 employees, and two years later for those with up to 20 employees or those that will exceed the 20-employee threshold in 2000-01.[4] It replaces the Robien Law. It does not modify the provisions of the five-year law of 20 December 1993 on the annualisation of working hours, leaving social partners free to negotiate the distribution of hours and compensation. It does, however, specify that the reduction in working time can take the form of leave or can be used, partially, to credit a "leave" account.[5]

The "offensive" part of the Aubry Law provides assistance to firms which, under a firm or branch agreement,[6] reduce working time by at least 10 per cent and undertake to hire the equivalent of at least 6 per cent of the number of workers concerned by the reduction.[7] Those that cut working time by 15 per cent and undertake to hire the equivalent of at least 9 per cent of the number of employees concerned by the reduction get extra assistance. Among the strings attached to the assistance are the obligation to hire new workers within a period of one year and to maintain the existing workforce plus the new hirings in the firm or establishment(s) concerned by the agreement for a specified period, and for at least two years. Like the Robien Law, the Aubry Law also features a "defensive" option. An implementing decree specifies the scale of assistance for firms that reduce their working time by 1 January 2000 (Table A1).[8] A degressive, lump-sum amount is allotted for each employee whose working time is reduced, and for each new hiring. It takes the form of a monthly reduction on employers' social security contributions. Additional reductions are given for firms that hire youth, long-term unemployed or handicapped persons, for those that exceed the minimum requirements for job creation, and for low-wage firms employing mainly manual workers.[9] The reductions are not granted for senior managers, temporary staff, or for workers such as home workers or travelling salesmen. They cannot be combined for the same employee with the 30 per cent reduction in contributions for part-time workers nor with the exemptions granted for sandwich training, but it can be coupled with the degressive exemption on wages up to 1.30 times the SMIC and with the abatement for workers hired under *contrats initiative-emploi*. Given the monopolistic nature of some of their activities and the amount of State funding they receive, a circular has listed 40 public enterprises as excluded from this assistance.[10] Firms with less than 500 employees are entitled to financial assistance with audits carried out by outside consultants for the purpose of reorganising work.[11]

Long-term aid will be provided at the end of the first five years of the scheme, which might amount to about FF 5 000 per year per employee.[12] This "structural" aid might also be given to firms that signed agreements under the Robien Law as well as to firms that adopt the 35-hour week after 1999 (it has not been decided, however, whether for the latter aid would be subject to hiring new workers).

The legislation promulgated in June 1998 also lowers as from January 1999 the threshold above which compensatory leave for overtime is given at the rate of one time-and-a-half, from the 42nd to the 41st hour in a week.[13] The annual quota of overtime not subject to administrative authorisation remains at 130 hours.[14] The overtime rate for hours between the 35th and 39th hour is to be at most one time-and-a-quarter. The rules

Table A1. **Scale of assistance for firms that reduce working time before the legal deadline**

Annual reduction in social contributions per employee, in FF

	Agreements signed before mid-1999[1]					Agreements signed during the second half of 1999[1]				
	1st year	2nd year	3rd year	4th year	5th year	1st year	2nd year	3rd year	4th year	5th year
Working time reduced by at least 10 per cent Workforce increased or preserved by 6 per cent	9 000	8 000	7 000	6 000	5 000	7 000	6 000	5 000	5 000	5 000
Working time reduced by at least 15 per cent Workforce increased or preserved by 9 per cent	13 000	12 000	11 000	10 000	9 000	11 000	10 000	9 000	9 000	9 000
Additional reductions[2]	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Assistance to firms with at least 60 per cent manual workers and at least 70 per cent of the employees paid at most 1.5 times the SMIC										
Agreements signed in 1998	4 000	2 000	1 000	0	0					
Agreements signed in 1999	3 000	2 000	1 000	0	0	2 000	1 000	0	0	0

1. Or date of coming into force of the reduction in working time if it is more than three months after the signature.
2. For hiring young persons, long-term unemployed or handicapped persons.

Source: Decree 98-494, *Journal Officiel,* 23 June 1998.

applicable to part-time work have been made slightly more restrictive, notably in order to limit the splitting of working hours during the same day (there may not be more than one break or a break longer than two hours – non-compliance will give rise to prosecution), and the social-tax incentives are slightly less generous (the weekly number of hours above which the reduction in contributions for part-time work applies is raised from 16 to 18, and contracts stipulating "compulsory" annualised part-time work are not eligible for aid).

Among the questions which were not decided in 1998 is the regime applicable to workers earning the minimum wage (SMIC): if they are to keep their nominal monthly wage when their working hours are cut from 39 to 35 hours, as the government has announced, the hourly SMIC would be raised, other things being equal, by 11.4 per cent. The problem of the coexistence of an hourly SMIC and a monthly minimum wage benchmark is thus posed. This question will be the subject of discussions between the social partners so as to minimise the frictions that could arise from the disparity in the treatment of workers working less, and workers working more, than the new statutory working week, or between employees in new companies and those in others.[15] Two other important questions still to be decided are the quota and rate of overtime: on unchanged legislation and hourly wage, a firm in which workers currently do a 39-hour week, and which would not reduce working time, would have to shoulder an increase in wage costs of 2.6 per cent at the beginning of 2000 or 2002, abstracting from compensatory leave.[16]

By 30 September 1999 at the latest, and after consulting the social partners, the government will report to Parliament on the implementation of the Law of 13 June 1998. A second Law detailing the provisions regarding overtime, the application of the new framework to part-time work and training, and the modalities applicable for managerial staff, is scheduled for end-1999. Furthermore, the government must submit a report to Parliament by June 1999 on the situation and prospects regarding the reduction of working time in the civil service.

Simulations

Macroeconometric models are not really suitable for evaluating the impact of a measure like the Aubry Law. Firstly, the embodied coefficients reflect behaviour under a different system. Secondly, the quantification of the effects of a reduction in working time necessarily involves some inevitably problematic assumptions, for example, regarding the speed at which the 35-hour week will be implemented or the costs of the work reorganisation it requires. Simulations can thus only illustrate, within a consistent macroeconomic framework, the likely impact of the Law under certain conditions.

The simulations run by the OECD Secretariat with the Interlink model are founded on a range of assumptions that are deemed to be plausible together with the following common postulates:

- the reduction in actual working time will be a gradual process;
- the negotiations that lead to an agreement will bring about an increase in the hourly wage but a reduction in the monthly wage; they will not, however, increase the amount of overtime worked;
- hourly productivity gains will be achieved only progressively, depending in particular on the acceptance by workers of more flexible working hours, the reduction in fatigue, efforts to eliminate idle time, and a lower absenteeism rate;
- hirings resulting from the reduction in working time will be permanent;

- the costs of work reorganisation will be one-off and represent 2 per cent of the annual wage bill;[17]
- the long-term aid to firms that have reduced their working time will amount to FF 5 000 per year and per worker;
- every avoided unemployed person will reduce monthly social transfers by FF 5 000;
- one-third of the induced job creations will draw in theretofore inactive population;
- there will be no windfall effects;
- the reduction in working time will apply to managerial and supervisory staff as well as to workers;
- wages in the public sector evolve in line with those in the private sector;
- interest and exchange rates will be determined at euro area level. The nominal exchange rate will remain unchanged.

The simulations differ, however, regarding:

- The rate at which the 35-hour week will be introduced: in the most rapid scenario, a sixth of employees in firms with more than 20 employees and 5 per cent of employees in small firms will be on a 35-hour week by the end of 1999, rising respectively to 60 and 25 per cent by the end of 2001 and to 80 and 75 per cent by the end of 2003; in the slowest scenario, the corresponding figures are 10 and 4 per cent by the end of 1999, 40 and 12 per cent by the end of 2001, and 50 and 33 per cent by the end of 2003.
- The degree of wage restraint: it is assumed that employees in firms that cut their working hours will be unwilling to accept a decrease in their monthly wage of more than 4 per cent, but that when there will be no wage concessions in the immediate term, a certain degree of wage moderation will be accepted later on.
- The propensity to hire of firms that reduce working hours: it is assumed that the increase in the workforce of these firms varies between 5 and 7½ per cent.
- Overtime premia: employees in firms that postpone the adoption of the 35-hour week will be paid in overtime for hours worked in excess of it, with the overtime rate varying between 0 and 25 per cent.

On these assumptions, and over a five-year horizon,[18] the results of the simulations are the following (see Figure 22 in the main text). Employment would increase by 0.3 to 2.2 percentage points in relation to a baseline scenario in which working time remains unchanged, while unemployment would fall by 0.2 to 1.3 percentage point. GDP could fall slightly, as the tapping of latent sources of productivity and new hirings would not completely offset the reduction in hours worked per capita. Apparent labour productivity would thus decline by 0.2 to 2.3 per cent. Shorter working time coupled with partial wage compensation would also have an impact on unit labour costs. It would thus lead to an acceleration of inflation and an erosion of the price-competitiveness of French firms, thereby reducing the external surplus (which would still remain very large, however). Lastly, while the general government balance would improve slightly, it would tend to worsen somewhat in structural terms.

It is, however, necessary to describe the channels *via* which the simulations produce the short, medium and long-term effects of the reduction in working hours.[19] In the short-term, the effect of job creation on overall household income exceeds that of wage restraint, thereby having a positive effect on demand. Furthermore, in the absence of a risk premium on French interest rates relative to those of the euro area, the effect on costs and prices of the introduction of the 35-hour week results in only a modest rise in nominal interest rates,

and in a significant fall in real rates in France, with an expansionary effect on activity and employment. However, this effect is increasingly counterbalanced by a reduction in net exports caused by the decline in competitiveness. In the longer term, however, the reduction in working time modifies supply conditions: it pushes up unit labour costs and reduces the total number of hours worked, leading to a contraction in both potential and actual output.

The simulations illustrate the margin of uncertainty surrounding the assumptions pertaining to four of the key variables involved. However, the actual margin is much larger, reflecting both the uncertainties surrounding the assumptions that are common to the simulations and the uncertainties inherent in the macroeconometric model used. It can be concluded from this exercise that, while the reduction in statutory working time can help to a modest extent to reduce unemployment, it is also liable to entail costs in markets other than the labour market, which mainly depend on the degree of wage moderation.

Notes

1. See DARES, DP, INSEE (1997) and the 27 January 1998 speech in the National Assembly by the Minister of Employment and Solidarity on the bill setting out the general framework and incentives for a reduction in working time.
2. A "defensive" agreement can extend aid up to a maximum of seven years if the firm makes further undertakings to preserve jobs. For more details on the Robien Law and its implementation, see Boisard and Dalle (1997).
3. The net impact has been estimated at about 15 000 jobs (Ballet, 1998).
4. The law covers some 13 million employees in the non-agricultural traded sector, nearly one-third of whom are in firms with more than 20 employees.
5. The "leave" account was created by a Law of 25 July 1994 to allow employees wishing so to accumulate rights to paid leave. Little use has been made of it up to now.
6. The agreement can be concluded with trade unions, the delegate of the personnel designated as union delegate, or by employees representing trade unions from outside the company. It must include a joint monitoring mechanism and be embodied in a convention between the firm and the State.
7. The hirings are calculated in full-time equivalents. Part-time hirings may represent only a minority of the new hirings.
8. The decree also specifies the assistance for firms with not more than 20 employees which reduce working hours in 2000-01.
9. The latter provision in particular concerns many enterprises in the textile, clothing, leather, shoes sector, which until 1997 benefitted from a specific subsidy which was in breach of European competition law.
10. Including EDF, GDF, the SNCF, the Post, the Aéroports de Paris, the CEA and the Potasses d'Alsace. In some of these enterprises, a significant proportion of the employees already work less than 35 hours a week. However, oddly enough, it has recently been announced that EDF might benefit from the State's financial support to reduce working time.
11. The audit costs the company nothing during the first week, but is jointly financed by the company and the State thereafter (up to a maximum of 18 days).
12. On some estimates, this amount would ensure that the scheme was fiscally neutral, taking into account the corresponding reduction in unemployment benefits and the increase in social security contributions.
13. This provision applies to firms with more than 10 employees. The leave must be taken within the following two months.
14. Above that number, administrative authorisation is required and the hours are paid double. Above the legal annual overtime quota, compensatory leave equals 50 per

cent (respectively 100 per cent) of the hours worked beyond the 39th hour in enterprises with no more than 10 employees (respectively more than 10 employees).

15. The problem is further complicated by the fact that the scope of application of the SMIC does not coincide exactly with that of the Aubry Law.

16. Compensatory leave for overtime pushes up wage costs considerably (by 4.2 per cent in the metallurgical sector according to the UIMM, 1998).

17. These costs comprise the costs of negotiations, including those which do not lead to an agreement.

18. As the effects of the Law of 13 June 1998 will not have worn off by 2003, it would make sense to do a longer-term simulation. On the other hand, the more distant the horizon, the more speculative the exercise becomes.

19. The OECD Interlink model is rather neo-classical as regards its structural specifications and equilibrium properties, and rather neo-Keynesian as regards its short-term dynamics (see Giorno *et al.*, 1995, and Turner *et al.*, 1996).

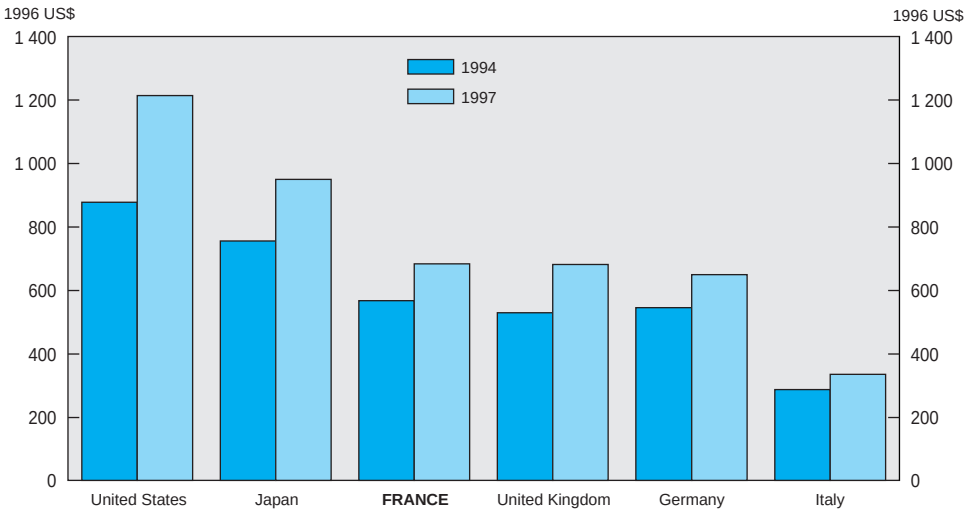
Annex II

The diffusion and use of information and communication technologies

Often mentioned but less often substantiated because the statistics are not always comparable across countries, France's relative backwardness in the diffusion and use of information and communication technologies (ICT) is gradually being overcome, as suggested by a number of facts. This annex presents a few relevant indicators allowing to better assess France's relative position with regard to ICT diffusion and use.

The most aggregated ICT indicators point to a European rather than a French specificity. Thus, annual per capita spending on computer hardware, software and services in France is below that in the United States and, to a lesser degree, Japan, but compares favourably with that in other European countries (Figure A1).

Figure A1. **Computer expenditure per capita**



Source: European Information Technology Observatory, 1998.

Penetration of ICT in businesses

The share of ICT investment in the total investment of French firms has risen sharply since the beginning of the decade. On the Secretariat's estimates, it was, however, only on the order of 13 per cent in 1996 as compared with 20 per cent in the United States. In manufacturing, it was about 10 per cent, of which 3 per cent in software and 7 per cent in hardware. A recent comparative study showed that, with the exception of computers, the penetration of ICT in French businesses is slightly below that in other countries (Table A2). The situation is evolving rapidly, however, and the ground can be made up fairly easily, as shown by the fact that the percentage of firms with a micro-computer network doubled in three years (from 32 per cent in 1994 to 64 per cent in 1997).[1] Furthermore, the experience that some 10 000 French firms have acquired with telematics servers, even though it is not directly transposable to the Internet – in particular due to the absence of hyperlinks – is an advantage (Lorenz, 1998, and OECD, 1998*m*). The speed with which Minitel services are transposed on Internet is illustrated by the fact that 90 per cent of the firms accounting for 90 per cent of Minitel turnover are on Internet (AFTEL, 1997).

Small firms are also making efforts to catch up, though their diversity makes comparisons difficult. They have completed the first phase of computerisation, and virtually all of them of now have a basic computer system (Figure A2). The number of firms connected to the Internet was set to double between 1997 and 1998, to close to 50 per cent.

Table A2. **Penetration of ICT in businesses in selected countries**

Per cent of total number of businesses, 1998[1]

	France	Germany	Japan	United Kingdom	United States
Infrastructure and equipment					
Computers	**94**	95	98	91	92
PCs with CD-ROMs	**64**	84	82	73	80
PCs with modems	**63**	71	76	78	78
Mobiles	**67**	87	69	84	71
Network					
Local area network	**46**	74	48	68	63
Internet access	**24**	44	73	49	57
Applications					
In-house e-mail	**28**	39	61	50	55
External e-mail	**34**	41	60	58	62
EDI	**19**	33	33	30	22
Web site	**14**	30	45	37	41
Web site and on-line sales	**1**	5	6	5	12

1. 800 businesses were surveyed, of which 500 in the United Kingdom.

Source: Spectrum ICT *Survey of Businesses 1998,* in NOP Research Group, *International Benchmarking Study,* Spectrum, 1998.

Box A1. The millennium bug

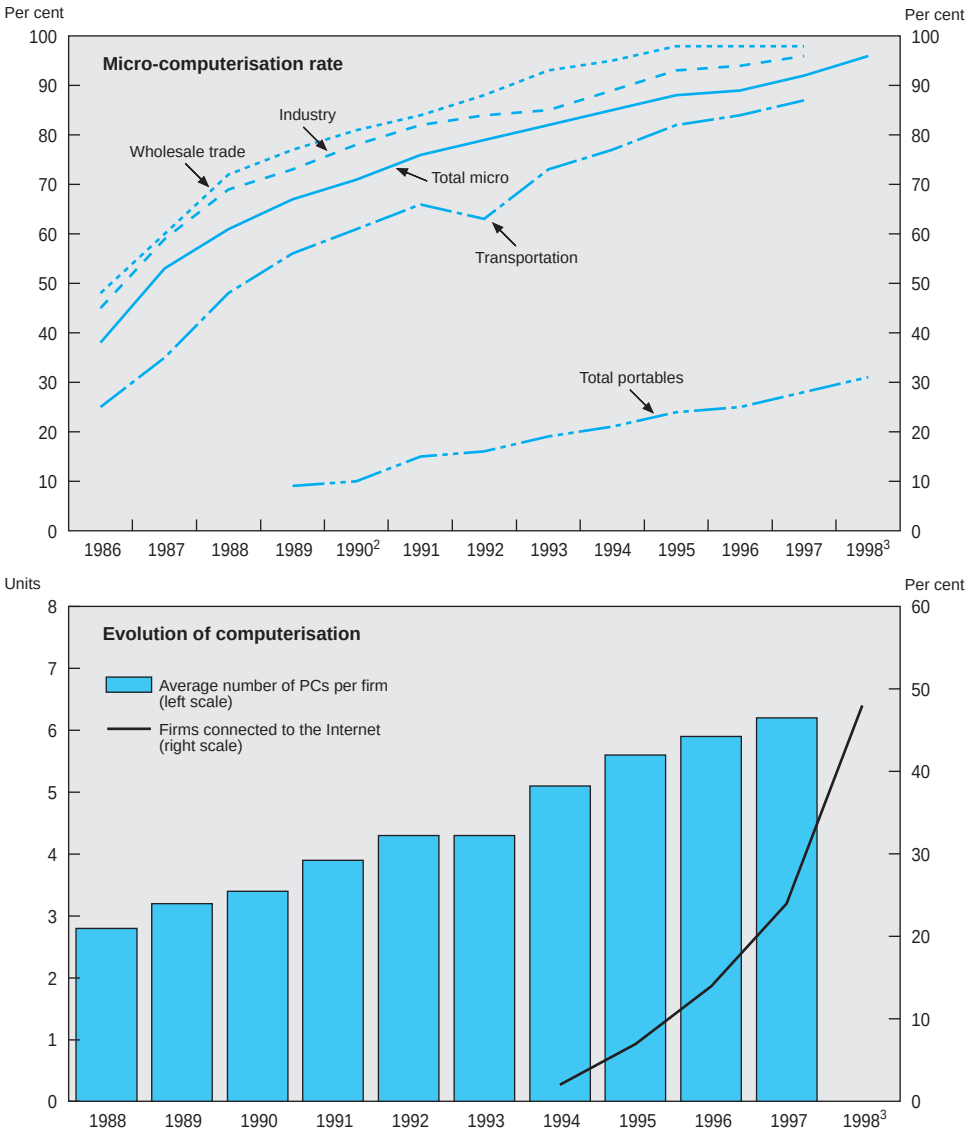
The millennium bug threatens information networks and electronic systems worldwide. The year 2000 problem, also referred to as "Y2K", stems from early programmers' need to save memory when they were writing software or designing chips. If they are not upgraded, many existing systems will not recognise "00" as "2000" but as "1900" (or as an invalid date). This bug is likely to affect not only computer systems but also communication networks and chips integrated into industrial control systems, consumer electronic devices and safety systems. Certain key sectors, which rely heavily on massive data exchanges through large-scale information networks are particularly concerned (including telecommunications, financial services, transport, nuclear energy generation, defence and health services).[1] Some systems which perform post-2000 forecasting or transactions have already begun to experience failures. The degree of non-compliance of IT systems seems particularly high in the health care sector, some sectors of government, and SMEs.

Studies of the economic consequences of the millennium bug have concentrated on the direct costs of fixing the problem, which partly comprise IT investment brought forward (rather than being strictly additional). Estimates of the world-wide costs range between $300 and 600 billion (Gartner Group, 1998); in the case of France, they could amount to FF 70 billion.[2] The macroeconomic impact is difficult to gauge. The short-run negative impacts, which could exceed 1 per cent of GDP according to some studies,[3] could be offset in the medium-term by the positive effects on the productivity of the capital stock stemming from the acceleration of its renewal. Uncertainties remain, however, since it is not possible to rule out the risk of very damaging chain reactions in the event of serious interruptions in service in key sectors.

Governments have a major responsibility for preventing such risks, both by raising the awareness of the private sector to their existence and by addressing the problem directly in the public sphere in order to ensure that data are not lost or damaged, and that serious disruptions do not occur. It is estimated that France is between 6 and 12 months behind the United States and Australia, which are the most advanced in this area (Gartner Group, 1998). In France as elsewhere in Europe, the problem is compounded by the development or conversion of software for the transition to the euro. The French government has set up a Y2K commission with broad responsibilities for raising awareness of the problem and providing advice and help with efforts to upgrade computer systems throughout the economy. In the public sector, these efforts will be co-ordinated and monitored by a commission which was initially set up to orchestrate the changes required by the transition to the euro but whose terms of reference were broadened to include Y2K.

1. On the banking sector, see Commission bancaire (1998).
2. Cap Gemini, Press release 1053, April 1998.
3. See the studies described in OECD (1998*h*).

Figure A2. **Computerisation of SMEs**[1]



1. The data come from the survey of some 100 000 enterprises from 6 to 200 employees conducted by UFB Locabail. Since the response rate is only 6 per cent, biases cannot be ruled out.
2. Estimate.
3. Projection.

Source: OECD, based on UFB Locabail data.

Household computer equipment

While the number of personal computers has risen considerably in the past ten years, France was still lagging far behind until recently, since in 1997 only one out of five households had a personal computer compared with nearly one out of two in the United States, one out of three in Canada, and one out of four in Germany.[2]

Table A3. **Cellular mobile phone subscribers**

Per 100 inhabitants

	1987	1990	1992	1996	1997	1998[1]
Germany	0.1	0.3	1.0	6.7	9.9	15[2]
Canada	0.5	2.1	3.6	11.5	..	..
United States	0.5	2.1	4.3	16.3	20.4	..
France	**0.1**	**0.5**	**0.8**	**4.2**	**9.9**	**15.4**
Italy	0.0	0.5	1.4	11.2	20.5	..
Japan	0.1	0.7	1.4	21.5	28.4	34.1
United Kingdom	0.5	1.9	2.6	12.2	15.5	18[2]

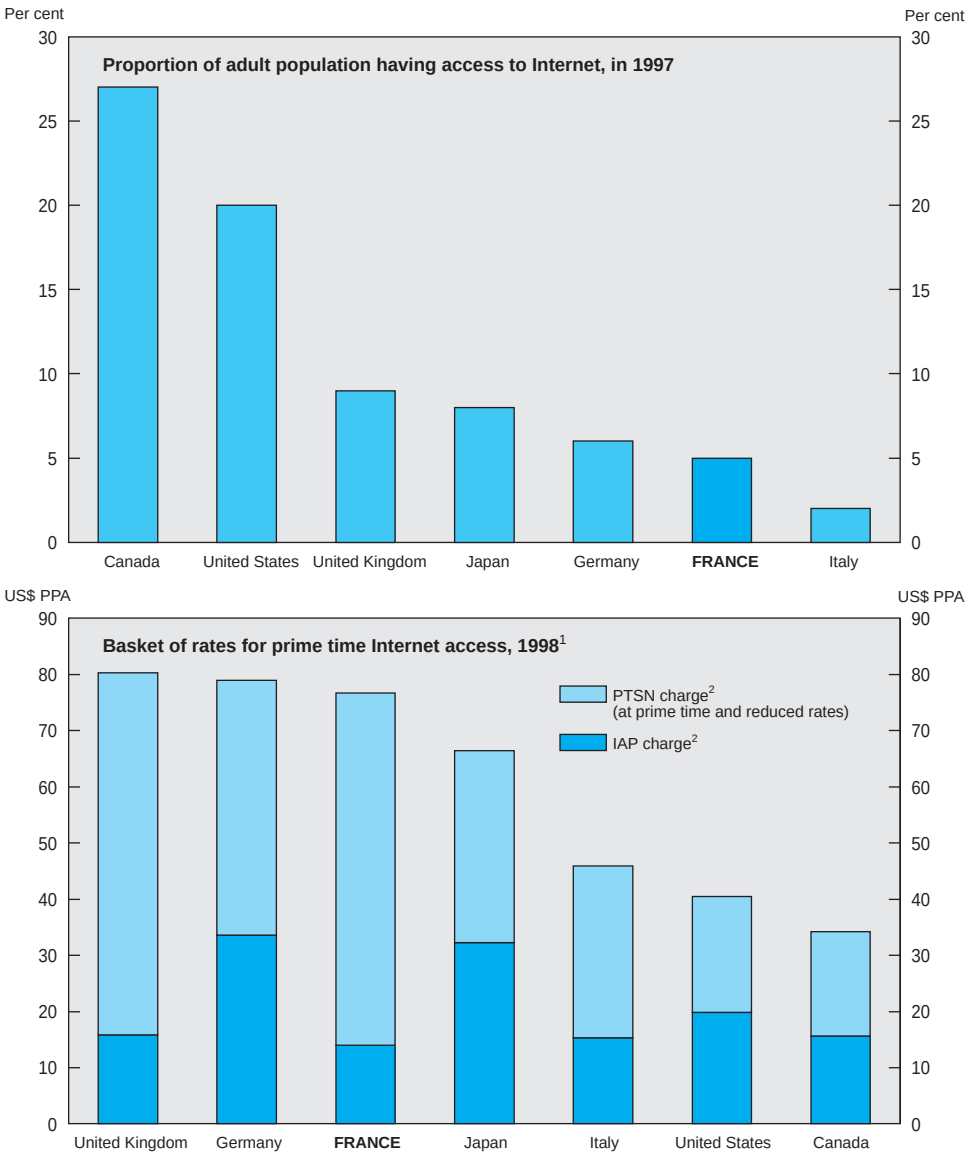
1. At the end of September.
2. Secretariat estimates.
Source: OECD, ITU.

Regarding its telephone system, France is well equipped with main lines, with nearly 60 lines per 100 inhabitants in 1997, slightly more than in Germany and the United Kingdom but less than in the United States and Canada (OECD, forthcoming). In contrast, it has been slower than Italy, the United Kingdom and Germany to adopt new technologies such as the mobile phone. The steep increase in the number of mobile phone subscriptions since the beginning of 1998 should however enable it to make up some of the ground, though it will still be well behind the United States, Italy and Japan (Table A3). The telecommunications regulatory authority anticipates a sharp rise in the rate of penetration of mobile phones in France. By 2002, it would be between 35 and 50 per cent, with 20 to 30 million subscribers.

Internet use

Internet use in France still concerns only a minority (Figure A3). The proportion of Internet host computers has not risen as rapidly as in other countries. Between 1994 and 1997, the ratio of the number of Internet hosts to the number of PCs doubled in France, whereas it tripled in Germany and the United Kingdom and more than quadrupled in Italy, Japan and the United States. The Minitel, which a quarter of French households have, with about 15 million users, and the fact that a connection to the network is relatively expensive, have in the past contributed to hold back the growth of the Internet in France. However, households' familiarity with a keyboard associated with the use of Minitel as well as the significant decline in global network access costs, which has begun and should continue, help explain the rapid take-off of Internet use since 1997.[3] Between mid-1997 and mid-1998, the number of regular Internet users nearly tripled, reaching 2.9 million.

Figure A3. **Internet access**



1. For monthly connection of 20 hours.
2. IAP = Internet access provider. PTSN = public telephone service network.

Source: OECD, based on data from Headcount.com site and *Communication Outlook 1999*, forthcoming.

Electronic commerce

Electronic commerce over the Internet is growing though the volume of transactions is still modest, amounting to about FF 6 billion for Europe in 1997. The conditions of its development at the national and international levels raise important questions concerning the taxation and security of transactions, market access and intellectual property (OECD, 1997*g*; OECD, 1998*i*). In France, this new form of commerce is still dominated to a large extent by inter-firm transactions and is still marginal compared with traditional distance selling (*via* telephone and Minitel). To strengthen consumers' trust in electronic transactions and to promote the development of electronic commerce, the French legal framework needs to be clarified with regard to the nature of electronic transactions and advertising. It is also important that an electronic signature be recognised in civil law as proof of a transaction in the same way as a written signature. As for cryptology, which plays a role in securing the confidentiality of transactions, moderate cryption (below 40 bites) is now allowed and the government has announced a consultation concerning in particular the system of "trusted third parties", bodies which are authorised to keep the cryptographic keys for encrypted messages. Lastly, tax provisions need to be adapted (legal definition of "intangible" goods, harmonisation of the rules of territoriality for VAT, and tax collection methods).[4]

The diffusion of ICT in the education system

The first programme to introduce computers into schools goes back to the mid-1980s, with the "Computing for Everybody" Plan. Since then, the political resolve to equip education institutions with modern learning and communication tools has been regularly reaffirmed but has only partially borne fruit. However, over the past two years, investments have been focused on modernising the population of computers rather than on putting more of them into schools; one-third of them are now recent models (two years old at most). Schools are being rapidly connected to the Internet, though access is still well below that in the United States. The proportion of high schools and lycea connected to Internet has increased considerably, with 60 and 83 per cent of them respectively now online. In higher education, notwithstanding an increase in the equipment ratio, efforts remain needed to improve students' access to computers, whether to navigate on the Internet or for e-mail or word processing. Computer laboratories have been installed and classes have been equipped but IT training is still not a central part of the curriculum. By the year 2000, the Ministry of Education, Research and Technology aims to reduce the average number of pupils per microcomputer to 30 in primary schools, 20 in junior secondary schools, 15 in senior secondary schools and 5 to 10 in higher education institutions. The government has also announced that it intends to introduce IT and Internet courses for all students in teacher training colleges for the next school year.

Computerisation of health systems

By mid-1999, 35 million insured households should have received the Sesam-Vitale chip card, which is meant to replace the paper social security card and to enable the electronic transmittal of social security forms,[5] thus accelerating reimbursements.[6] Hospitals, private doctors, laboratories, radiologists and pharmacies are offered another chip

card, called CPS (health professionals card). The latter will serve as identification for the transmittal of confidential information *via* the Social Health Network, which is an Intranet to be put in place to link the social security funds to the odd 300 000 health professionals. Besides, it is envisaged that at a later stage information pertaining to the medical history of the bearer would be put on the Sesam-Vitale card. Implementation, however, will probably take some time. At the end of September 1998, only some 5 000 reimbursement forms had been transmitted electronically.

Notes

1. Indeed, because of the millennium bug, lagging a bit may turn out to be beneficial (Box A1).
2. Source: US Consumer Electronic Manufacturers Association, International Data Corp and Dataquest, Statistics Canada and Gfk.
3. The development by several producers of Minitel-Internet machines offering easy access to both and carrying a low price tag might also work in the same direction.
4. On all these points, see the in-depth study by the Conseil d'État (1998).
5. The Sesam-Vitale card has already been handed out to 3.7 million households in Brittany and Champagne-Ardenne last spring.
6. The health funds process over one billion reimbursement forms per year.

Annex III

Public support for industrial research: an international comparison

The modalities of public direct and indirect support to industrial R&D and its applications (areas of intervention and financing tools) are very diverse. The available international statistics and their typology, which are mainly based on budgetary R&D funding and on the share of enterprise R&D that is financed by governments, convey a highly imperfect picture of those modalities and of the importance of public funding. As they *inter alia* exclude tax incentives and various types of support to technology diffusion, they are ill-adapted to highlight national idiosyncrasies in the area of industrial R&D support and, *a fortiori*, differences across countries. To improve international comparisons of government support for industrial research, the OECD has drawn up a new common analytical framework (Young, 1998) aiming at ameliorating the shortcomings of the traditional indicators. Table A4 gives a comparison based on the new analytical framework, which will be developed further by the OECD in the future.

Government support for industrial technology can be divided into three main categories: financial incentives; mission-oriented R&D contracts and procurement; science and technology infrastructure and diffusion. The first category covers programmes whose aim is to encourage industrial firms to carry out R&D (or other innovative activities) by reducing the cost of doing so through subsidies, loans, tax incentives, etc. The second category comprises government payments to firms for the purpose of carrying out R&D which meets public needs, notably in the defence and space fields. The third category comprises the various government schemes for helping firms without actually transferring funds to them, *i.e.* by funding R&D in universities and institutes whose primary objective is to support industrial development, by encouraging technological research in universities and similar establishments, and by funding other programmes which support the post-R&D stages of the innovation process, and diffusion programmes.

As in the United Kingdom and the United States, in France government contracts to firms largely outweigh the other two categories of support. A large proportion of these contracts are with the defence industry or, in the case of France, the space industry. In Germany, the order of magnitude of the three categories of support is roughly similar, while in Japan support for infrastructure predominates. In France as in the United States, financial incentives, notably in the form of research tax credits, outweigh infrastructure support. Particularly large use is made of reimbursable grants whereas other countries tend to use subsidies.

Table A4. **Public support for industrial technology**

In per cent, 1995

	France	Germany[1]	Japan	United Kingdom	United States
Financial incentives					
Tax incentives	**8.8**	0.0	1.8	0.0	6.2
Subsidies	**1.1**	22.5	0.6	4.2	15.2
Reimbursable grants	**13.5**	5.5	0.6	0.7	0.3
Other	**0.0**	0.0	1.3	0.0	0.0
Total	**23.4**	28.0	4.3	4.9	21.6
Government contracts					
Defence	**35.6**	19.5	8.3	61.2	58.8
Space	**19.4**	11.2	7.5	4.5	8.7
Other	**4.3**	1.8	10.9	7.3	9.4
Total	**59.4**	32.5	26.6	73.1	76.9
Science and technology infrastructure					
Technology and similar institutions	**0.9**	13.7	21.6	2.6	0.5
University technological research	**16.4**	24.3	47.5	13.2	0.9[2]
Other	**0.0**	1.6	0.0	6.3	0.0
Total	**17.2**	39.5	69.1	22.1	1.4
Total	**100.0**	100.0	100.0	100.0	100.0
Public support for industrial technology in per cent of commercial GDP	**0.52**	0.43	0.38	0.47	0.60

1. 1993.
2. Research carried out by universities for industrial application purposes and funded by public monies is only partially taken into account.

Source: OECD calculations based on the R&D database, the database on public support to manufacturing industry (PSI) and information supplied by Member countries, March 1998.

Annex IV

Calendar of main economic events

1996

November

The Bank of France lowers tender rates from 3.25 to 3.20 per cent.

Parliament adopts the law on the financing of the social security system for 1997 which projects a deficit of FF 30 billion.*

December

The government suspends the privatisation of Thomson-CSF.

Parliament adopts the 1997 draft budget which projects a deficit of 3.0 per cent of GDP, and the amended budget for 1996, which projects a deficit of 3.65 per cent of GDP.

The Bank of France lowers the 5-10 day repurchase rate from 4.75 to 4.60 per cent, and the tender rate to 3.15 per cent.

The Monetary Policy Council announces that the 2 per cent inflation target is maintained for 1997.

1997

January

The rate of employee health insurance contributions is cut by 1.3 percentage point and that of the CSG is raised by 1.0 percentage point to 3.4 per cent.

The Bank of France lowers the tender rate to 3.10 per cent.

The rate of interest on *plans d'épargne-logement* is reduced from 5.25 to 4.25 per cent.

February

Parliament adopts legislation reforming the SNCF, which transfers infrastructure management to a new entity, the Réseau Ferré de France.

The government announces that it will sell off its stake in Thomson-CSF by private placement, and that it will inject FF 20 billion into the insurance company GAN (recapitalisation: FF 11 billion; property risk guarantee: FF 9 billion).

Parliament adopts a bill creating retirement savings plans in the private sector.

* Henceforth, "the law" refers to the final version of the law.

"Mission Year 2000" is created to alert companies to the risks posed to computer systems by the millennium bug.

March

Civil servants' pay is raised by 0.5 per cent.

The Ministry of Economy and Finance freezes FF 10 billion of budget appropriations.

April

The President of the Republic dissolves the National Assembly. Legislative elections are announced for 25 May and 1 June.

An electronic network linking up doctors, hospitals, the insured, health funds and commercial services is inaugurated.

The Prime Minister announces that defence equipment spending will be stabilised at FF 85 billion a year between 1999 and 2002, but that the major defence programmes will be maintained.

June

Mr. Jospin forms a new government.

The letters sent out to ministries setting out spending guidelines for 1998 stress the priority given to employment but set no explicit objective for the budget shortfall. They indicate that the number of civil servants is to be maintained at its 1997 level.

The closure of the Superphénix breeder reactor is announced.

At the Amsterdam Summit, the Heads of state and government of the European Union adopt the Stability and Growth Pact.

July

The SMIC is raised by 4 per cent (including a discretionary push of 2.3 per cent) and unemployment benefits by 2.2 per cent.

The government halts the privatisation of Thomson-CSF.

The audit of public finances requested by the new government estimates that the fiscal deficit on the Maastricht definition is running at 3.5 to 3.7 per cent of GDP for 1997 (based on the advance decree made public on 9 July, and the macroeconomic forecasts in the conjonctural note published in June by INSEE).

The government announces a recovery plan aimed at cutting the deficit to 3.1-3.3 per cent of GDP in 1997, which includes a temporary rise in corporation tax, an increase in the tax on long-term capital gains, and savings on various budgets.

The European Commission authorises FF 23.76 billion of French State aid to the GAN on condition that the CIC, its banking subsidiary, is privatised by mid-1998 at the latest.

The Prime Minister sets up an Economic Analysis Council to give input to the government's economic and social policy-making.

September

The "start-of-the-schoolyear" allowance is increased from FF 420 to FF 1 600.

The National Assembly adopts the bill on urgent fiscal and financial measures, which ratifies in particular the increase in corporation tax decided in July.

The Council of Ministers adopts the 1998 draft budget. It projects a general government deficit on the Maastricht definition of 3.1 per cent for 1997, and aims to reduce it to 3.0 per cent in 1998. State spending is up by 1.36 per cent, and revenue by 4.2 per cent on the initial budget for 1997. The ratio of overall taxes and social security contributions is projected at 45.9 per cent. The underlying macroeconomic framework forecasts an acceleration of growth in 1998, to 3.0 per cent.

The Ministry of Finance announces that the contribution for the repayment of the social debt will be levied for a further 5 years, *i.e.* until January 2014, in order to eliminate the deficit accumulated in 1996-98 by the Social Security system.

October

Civil servants' pay is raised by 0.5 per cent.

The draft law on the financing of the social security system for 1998 is adopted by the Council of Ministers. It projects a deficit on the general social security scheme equal to 0.15 per cent of GDP. The CSG is raised by 4.1 percentage points to 7.5 per cent, and the employee health insurance contribution is cut by 4.75 percentage points to 0.75 per cent. New taxes on savings are introduced, and family allowances are to be means-tested.

The Bank of France raises the tender rate to 3.30 per cent.

The Prime Minister announces a framework law on the transition to a 35-hour working week at the national conference on employment, wages and reduction of working time.

Nearly 20 per cent of the capital of France Télécom is placed on the Paris and New York stock markets.

The Act on Youth Employment in the public and voluntary sector is promulgated. The aim is to create 350 000 jobs for youth under 30 years old.

November

The government presents a national plan launching the transition to the euro, marking the start of a national information campaign.

The *Cour des comptes* publishes its annual report in which for the first time it examines the follow-up given to its criticisms in previous reports.

A national telecommunications research network is set up.

December

Parliament adopts the draft budget for 1998, which projects a deficit of 3.05 per cent of GDP, the law on the financing of the social security system for 1998, which projects a deficit on the general scheme of 0.15 per cent of GDP, and the end-of-year amendments to the 1997 budget, which bring the budget deficit down from FF 284.8 billion to FF 270.1 billion, or 3.1 per cent of GDP. The draft budget provides for the creation of share subscription warrants for creators of new companies, deferred taxation of capital gains which are ploughed back into new companies, and the introduction of a favourable regime for life insurance contracts with more than 50 per cent of their investments in equities, of which 5 per cent in venture companies.

The Monetary Policy Council announces that the 2 per cent inflation target is maintained for 1998.

The government announces 37 measures designed to ease the burden of red tape on small and medium-sized enterprises.

1998

January

The Prime Minister presents an action plan aimed at speeding up the development of the Internet in France.

February

The Prime Minister announces a series of solidarity measures, including a 6 per cent rise in the specific solidarity allowance and the possibility of receiving the RMI at the same time as a wage for one year subject to certain conditions.

A wage agreement for 1998-99 is concluded in the civil service, costing FF 15 billion.

The Ministry of Economy and Finance announces that the general government deficit amounted to 3.02 per cent of GDP in 1997.

The Minister of Finance authorises the sale of the AGF group to the German insurer Allianz and the Italian insurer Generali.

FF 4.3 billion is allocated to the public defence group GIAT Industries for the third time in three years.

The government announces a reduction in the State's holding in Air France from 87 to about 60 per cent.

March

The Bank of France's tender procedure is modified to bring it into line with the procedure to be used in the European System of Central Banks.

April

The State sells 67 per cent of the banking group CIC to the Crédit Mutuel for FF 13.38 billion.

A public venture capital fund amounting to FF 600 million and managed by the Caisse des dépôts et consignations is set up.

Parliament adopts the bill amending the statutes of the Bank of France to make them compatible with its membership in the European System of Central Banks.

May

The Heads of state and government of the fifteen EU members draw up the list of eleven countries that fulfil the conditions for joining the European Monetary Union. It is announced in advance that the bilateral conversion rates of the participating currencies in the Union will be identical to the bilateral central rates of the European exchange mechanism prevailing at the beginning of May 1998. Mr. Duisenberg becomes the first president of the European Central Bank.

At the Innovation Congress, the Prime Minister announces a package of additional measures to promote innovation, including the creation of a national technological research network, a reform of the status of researchers, and an overhaul of the rules applying to stock options.

The government and the European Commission agree that the State's holding in the Crédit Lyonnais will be reduced from 82 per cent to less than 10 per cent by the end of October 1999, while the Bank has to speed up the sale of its assets and close down a number of branches.

The Prime Minister instructs the Plan's Commissar to carry out a study of the changes that need to be made to pension schemes.

June

The interest rate on the *livret A* and *livret bleu*, as well as on the *Codevi*, is cut by ½ point to 3 per cent. The interest rate on *plans d'épargne-logement* is lowered to 4 per cent. The creation of an advisory committee on regulated rates is announced. The rate on the *livret B* is deregulated.

A strike by Air France pilots results in massive disruption of air traffic for ten days.

Parliament passes an Act authorising the issue of inflation-linked bonds and allowing listed companies to buy back their own shares.

The law on the reduction of working time is promulgated.

The Prime Minister announces that the means-testing of family allowances will be replaced by a lower ceiling on family-related tax rebates.

The State's holding in Thomson-CSF falls from 58 to 43 per cent following the acquisition by Alcatel, Dassault Industries and Aérospatiale of stakes in the company.

The State Council annuls the agreement signed in 1997 by the three main health insurance schemes and specialist physicians.

July

The SMIC is raised by 2 per cent (including a discretionary push of 0.5 per cent).

The Minister of Employment and Solidarity announces a package to contain the overshooting on the health insurance accounts.

Parliament adopts legislation to combat exclusion, which, *inter alia*, improves the treatment of over-indebted households, creates new youth employment schemes and a tax on vacant dwellings, and allows certain subsistence benefits to be received concurrently with income from work.

The Union of Metallurgical and Mining Industries signs an agreement with three trade unions on the reduction of working time, which provides for an increase in the quota of overtime, annualised working hours and the extension of flat-rate remuneration to all workers, enabling enterprises to maintain an effective working time of more than 35 hours.

87.1 per cent of the capital of the insurer GAN is sold to the mutual insurer Groupama.

The government announces the merger of Aérospatiale and Matra.

The partial privatisation of Thomson Multimédia is announced.

September

The Council of Ministers adopts the 1999 draft budget projecting a general government deficit on the Maastricht definition of 2.3 per cent of GDP, comprising a state deficit of 2.7 per cent. State spending is up by 2.3 per cent in nominal terms. The main measures concerning revenue in 1999 include a start of the gradual overhaul of the *taxe professionnelle*, the *taxe d'habitation* and fuel taxes, an increase in the yield from the wealth tax, the creation of a general tax on polluting activities, a reduction in certain transfer duties, and a few targeted reductions in VAT.

The government suspends the privatisation of the Crédit foncier.

The State issues the first bond indexed on the consumer price index.

The procedure to open up the capital of the Caisse nationale de prévoyance is started.

The government presents a draft bill ending EDF's monopoly.

October

The Council of Ministers adopts the draft law on the financing of the social security system in 1999, which aims to balance the accounts of the general scheme, provides for the creation of a reserve fund to cushion the impact of demographic changes on pensions, and amends the mechanism obliging doctors to return fees above a certain limit, which had been introduced in 1995.

The modalities of the privatisation of the Crédit Lyonnais are announced.

The Governing Council of the ECB announces a primary monetary policy objective defined as an annual rate of increase of the harmonised consumer price index of below 2 per cent for the euro area as a whole and over the medium run. A reference value for the growth of a broad monetary aggregate is to be announced in December 1998, but a wide range of other economic and financial variables will also be monitored as indicators for future price developments.

November

A second tranche of France Télécom shares is put up for sale.

The lower house of Parliament passes the first reading of a Framework law on agriculture which *inter alia* introduces territorial management contracts.

France withdraws from the negotiations on the Multilateral Investment Agreement.

The ministers of Justice and Economy, Finance and Industry outline a reform of the commercial justice system.

A White Book on the Y2K problem is published by the Ministry of Economy, Finance and Industry, the Commission bancaire, the Commission des opérations de bourse and the Commission de contrôle des assurances.

December

In the context of a co-ordinated interest rate cut in the countries of the euro area, the Bank of France lowers its tender rate to 3 per cent.

The Prime Minister announces a 3 per cent increase in the RMI and ASS with retroactive effect as from 1 January 1998.

BASIC STATISTICS:

INTERNATIONAL COMPARISONS

BASIC STATISTICS: INTERNATIONAL COMPARISONS

	Units	Reference period [1]	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece
Population												
Total	Thousands	1996	18 289	8 060	10 157	29 964	10 316	5 262	5 125	58 380	81 877	10 465
Inhabitants per sq. km	Number	1996	2	96	333	3	131	122	15	106	229	79
Net average annual increase over previous 10 years	%	1996	1.3	0.6	0.3	1.3	0	0.3	0.4	0.5	3	0.5
Employment												
Total civilian employment (TCE)[2]	Thousands	1996	8 344	3 737 (94)	3 675 (95)	13 676	4 918	2 593	2 087	21 951	35 360	3 824 (95)
of which: Agriculture	% of TCE	1996	5.1	7.2 (94)	2.5 (95)	4.1	6.3	4	7.1	4.6	3.3	20.4 (95)
Industry	% of TCE	1996	22.5	33.2 (94)	26.7 (95)	22.8	42	27	27.6	25.9	37.5	23.2 (95)
Services	% of TCE	1996	72.4	59.6 (94)	71.4 (95)	73.1	51.7	69	65.3	69.5	59.1	56.4 (95)
Gross domestic product (GDP)												
At current prices and current exchange rates	Bill. US$	1996	398.9	228.7	268.2	579.2	56.2	174.9	125.1	1 536.6	2 353.5	91.2 (95)
Per capita	US$	1996	21 812	28 384	26 409	19 330	5 445	33 230	24 420	26 323	28 738	8 722 (95)
At current prices using current PPPs[3]	Bill. US$	1996	372.7	172.4	222	645.1	..	118	96.7	1 198.6	1 736.1	133.5
Per capita	US$	1996	20 376	21 395	21 856	21 529	..	22 418	18 871	20 533	21 200	12 743
Average annual volume growth over previous 5 years	%	1996	3.9	1.6	1.2	2.2	2	2.2	1.6	1.2	1.4	1.3 (95)
Gross fixed capital formation (GFCF)	% of GDP	1996	20.3	23.8	17.3	17.7	33	16.7	16.1	17.4	20.6	17 (95)
of which: Machinery and equipment	% of GDP	1996	10.2 (95)	8.8 (95)	7.5 (95)	6.6	..	7.9 (95)	6.4 (95)	7.8	7.6	7.7 (95)
Residential construction	% of GDP	1996	4.6 (95)	5.9 (95)	4.6 (95)	5.4	..	3.2 (95)	3.5 (95)	4.4	7.3	3.3 (95)
Average annual volume growth over previous 5 years	%	1996	5.6	2.1	0.3	2.2	9.4	2	–4.1	–1.5	0.2	0.5 (95)
Gross saving ratio[4]	% of GDP	1996	18	21.9	22.2	17.8	..	17.6	19.6	18.7	20	16 (95)
General government												
Current expenditure on goods and services	% of GDP	1996	17	19.8	14.5	18.7	21.5	25.2	21.9	19.4	19.8	20.8 (95)
Current disbursements[5]	% of GDP	1995	35.6	48.6	52.2	45.8	..	59.6	55.9	50.9	46.6	52.1
Current receipts	% of GDP	1995	34.9	47.4	49.9	42.7	..	58.1	52.8	46.9	45.9	45
Net official development assistance	% of GNP	1995	0.36	0.33	0.38	0.38	..	0.96	0.32	0.55	0.31	0.13
Indicators of living standards												
Private consumption per capita using current PPPs[3]	US$	1996	12 596	12 152	13 793	12 959	..	12 027	10 282	12 506	12 244	9 473
Passenger cars, per 1 000 inhabitants	Number	1994	460	433	416	466	282	312	368	430	488	199
Telephones, per 1 000 inhabitants	Number	1994	496	466	449	576	209	604	551	547	483[8]	478
Television sets, per 1 000 inhabitants	Number	1993	489	479	453	618	476	538	504	412	559	202
Doctors, per 1 000 inhabitants	Number	1995	2.2 (91)	2.7	3.7 (94)	2.2	2.9	2.9 (94)	2.8	2.9	3.4	3.9 (94)
Infant mortality per 1 000 live births	Number	1995	5.7	5.4	7.6 (94)	6.3 (94)	7.7	5.5	4	5.8 (94)	5.3	8.1
Wages and prices (average annual increase over previous 5 years)												
Wages (earnings or rates according to availability)	%	1996	1.7	5.2	2.7	2.4	..	3.2	3.8	2.6	4.2	11.8
Consumer prices	%	1996	2.4	2.9	2.2	1.4	11.9	1.9	1.5	2	3.1	11.6
Foreign trade												
Exports of goods, fob*	Mill. US$	1996	60 288	57 870	170 223[7]	202 320	21 910	51 030	40 576	288 450	521 263	11 501
As % of GDP	%	1996	15.1	25.3	63.5	34.9	39	29.2	32.4	18.8	22.1	12.9 (95)
Average annual increase over previous 5 years	%	1996	7.5	7.1	7.6	9.7	..	6.2	12.1	6.3	5.4	5.8
Imports of goods, cif*	Mill. US$	1996	61 374	67 376	160 917[7]	170 931	27 721	44 987	30 911	271 348	455 741	27 402
As % of GDP	%	1996	15.4	29.5	60	29.5	49.3	25.7	24.7	17.7	19.4	30.4 (95)
Average annual increase over previous 5 years	%	1996	9.7	5.9	5.9	7.7	..	5.6	7.3	3.9	3.3	6.6
Total official reserves[6]	Mill. SDRs	1996	10 107	15 901	11 789[7]	14 202	8 590	9 834	4 810	18 635	57 844	12 171
As ratio of average monthly imports of goods	Ratio	1996	2	2.8	0.9	1	..	2.6	1.9	0.8	1.5	5.3

* At current prices and exchange rates.
1. Unless otherwise stated.
2. According to the definitions used in OECD *Labour Force Statistics*.
3. PPPs = Purchasing Power Parities.
4. Gross saving = Gross national disposable income minus private and government consumption.
5. Current disbursements = Current expenditure on goods and services plus current transfers and payments of property income.
6. End of year.
7. Data refer to the Belgo-Luxembourg Economic Union.
8. Data refer to western Germany.
9. Including non-residential construction.
10. Refers to the public sector including public enterprises.

Sources: Population and Employment: OECD, *Labour Force Statistics.* GDP, GFCF and General Government: OECD, *National Accounts*, Vol. I and *OECD Economic Outlook*, Historical Statistics. Indicators of living standards: Miscellaneous national publications. Wages and Prices: OECD, *Main Economic Indicators.* Foreign trade: OECD, *Monthly Foreign Trade Statistics*, Series A. Total official reserves: IMF, *International Financial Statistics.*

BASIC STATISTICS: INTERNATIONAL COMPARISONS *(cont'd)*

	Units	Reference period [1]	Hungary	Iceland	Ireland	Italy	Japan	Korea	Luxembourg	Mexico	Netherlands	New Zealand
Population												
Total	Thousands	1996	10 193	270	3 621	57 473	125 864	45 545	418	96 582	15 494	3 640
Inhabitants per sq. km	Number	1996	77	3	52	191	333	458	161	48	380	14
Net average annual increase over previous 10 years	%	1996	–0.3	1.1	0.2	0	0.4	1	1.3	2	0.6	1.1
Employment												
Total civilian employment (TCE)[2]	Thousands	1996	3 605	142	1 307	20 036	64 860	20 764	212 (95)	32 385 (95)	6 983	1 688
of which: Agriculture	% of TCE	1996	8.4	9.2	10.7	7	5.5	11.6	2.8 (95)	23.5 (95)	3.9	9.5
Industry	% of TCE	1996	33	23.9	27.2	32.1	33.3	32.5	30.7 (90)	21.7 (95)	22.4	24.6
Services	% of TCE	1996	58.6	66.2	62.3	60.9	61.2	55.9	66.1 (90)	54.8 (95)	73.8	65.9
Gross domestic product (GDP)												
At current prices and current exchange rates	Bill. US$	1996	43.7 (95)	7.3	70.7	1 214.2	4 595.2	484.8	17	329.4	396	65.9
Per capita	US$	1996	4 273 (95)	27 076	19 525	21 127	36 509	10 644	40 791	3 411	25 511	18 093
At current prices using current PPPs[3]	Bill. US$	1996	..	6.3	68.8	1 148	2 924.5	618.5	13.5	751.1	324.5	63.6
Per capita	US$	1996	..	23 242	18 988	19 974	23 235	13 580	32 416	7 776	20 905	17 473
Average annual volume growth over previous 5 years	%	1996	–2.4 (95)	1.5	7.1	1	1.5	7.1	4.8	1.7	2.3	3.7
Gross fixed capital formation (GFCF)	% of GDP	1996	19.3 (95)	17.5	17.2	17	29.7	36.8	20.8	18	19.7	20.9
of which: Machinery and equipment	% of GDP	1996	..	6.7	5.5 (95)	8.8	10.1 (95)	13	..	8.8	9.4	10
Residential construction	% of GDP	1996	. .	3.9	4.9 (95)	4.5	5.3 (95)	7.6	..	4.7	5	5.6
Average annual volume growth over previous 5 years	%	1996	–0.9 (95)	–1.4	6	–1.4	1.3	6.9	0.2	–0.7	2.2	9.6
Gross saving ratio[4]	% of GDP	1996	..	15.6	21.7	20.5	31.4	34.2	37.5	22.7	25.7	16
General government												
Current expenditure on goods and services	% of GDP	1996	24.9 (95)	20.8	14.1	16.4	9.7	10.6	13.6	9.7[10]	14	14.4
Current disbursements[5]	% of GDP	1995	..	35.1	39.2 (94)	49.5	28.5	15.1	..	..	51.8	..
Current receipts	% of GDP	1995	..	36	39.3 (94)	44.5	32	25.1	..	..	50	..
Net official development assistance	% of GNP	1995	..	..	0.29	0.15	0.28	0.03	0.36	..	0.81	0.23
Indicators of living standards												
Private consumption per capita using current PPPs[3]	US$	1996	..	14 244	10 020	12 224	13 912	7 354	17 811	5 045	12 477	10 895
Passenger cars, per 1 000 inhabitants	Number	1994	212	434	264	517	342	115	544	91	383	457
Telephones, per 1 000 inhabitants	Number	1994	170	557	350	429	480	397	564	93	509	470
Television sets, per 1 000 inhabitants	Number	1993	427	335	301	429	618	215	261	150	491	
Doctors, per 1 000 inhabitants	Number	1995	3.4	3.9 (94)	3.4	3.0 (94)	1.7	1.6 (92)	1.8 (94)	1.1	2.2 (93)	1.6
Infant mortality per 1 000 live births	Number	1995	11	6.1	6.3	6.6 (94)	4.3	9	5.3 (94)	17 (94)	5.5	7.2 (94)
Wages and prices (average annual increase over previous 5 years)												
Wages (earnings or rates according to availability)	%	1996	..	..	3.7	3.5	1.8	..	..	–1.6	2.4	1.5
Consumer prices	%	1996	23.2	2.6	2.2	4.5	0.7	5.3	2.4	19.7	2.5	2
Foreign trade												
Exports of goods, fob*	Mill. US$	1996	15 674	1 891	48 416	250 842	411 067	129 715	..	96 000	203 953	14 316
As % of GDP	%	1996	35.9	26	68.5	20.7	8.9	26.8	..	29.1	51.5	21.7
Average annual increase over previous 5 years	%	1996	8.9	4	14.8	8.2	5.5	12.5	..	17.6	8.9	8.2
Imports of goods, cif*	Mill. US$	1996	18 105	2 032	35 763	206 904	349 149	150 340	..	89 469	184 389	14 682
As % of GDP	%	1996	41.4	27.9	50.6	17	7.6	31	..	27.2	46.6	22.3
Average annual increase over previous 5 years	%	1996	9.6	3.4	11.5	2.5	8	13.9	..	12.4	7.8	11.8
Total official reserves[6]	Mill. SDRs	1996	6 812	316	5 706	31 954	150 663	23 670	..	13 514	18 615	4 140
As ratio of average monthly imports of goods	Ratio	1996	..	1.9	1.9	1.9	5.2	..	..	1.8	1.2	3.4

* At current prices and exchange rates.
1. Unless otherwise stated.
2. According to the definitions used in OECD *Labour Force Statistics*.
3. PPPs = Purchasing Power Parities.
4. Gross saving = Gross national disposable income minus private and government consumption.
5. Current disbursements = Current expenditure on goods and services plus current transfers and payments of property income.
6. End of year.
7. Data refer to the Belgo-Luxembourg Economic Union.
8. Data refer to western Germany.
9. Including non-residential construction.
10. Refers to the public sector including public enterprises.

Sources: Population and Employment: OECD, *Labour Force Statistics.* GDP, GFCF and General Government: OECD, *National Accounts,* Vol. I and *OECD Economic Outlook,* Historical Statistics. Indicators of living standards: Miscellaneous national publications. Wages and Prices: OECD, *Main Economic Indicators.* Foreign trade: OECD, *Monthly Foreign Trade Statistics,* Series A. Total official reserves: IMF, *International Financial Statistics.*

BASIC STATISTICS: INTERNATIONAL COMPARISONS *(cont'd)*

	Units	Reference period[1]	Norway	Poland	Portugal	Spain	Sweden	Switzerland	Turkey	United Kingdom	United States
Population											
Total	Thousands	1996	4 370	38 618	9 935	39 270	8 901	7 085	62 695	58 782	265 557
Inhabitants per sq. km	Number	1996	13	123	108	78	20	172	80	240	28
Net average annual increase over previous 10 years	%	1996	0.5	0.3	–0.1	0.2	0.6	0.8	2	0.3	1
Employment											
Total civilian employment (TCE)[2]	Thousands	1996	2 110	14 977	4 475	12 394	3 963	3 803	20 895	26 088	126 708
of which: Agriculture	% of TCE	1996	5.2	22.1	12.2	8.7	2.9	4.5	44.9	2	2.8
Industry	% of TCE	1996	23.4 (95)	31.7	31.4	29.7	26.1	27.7	22	27.4	23.8
Services	% of TCE	1996	71.5 (95)	46.2	56.4	61.6	71	67.4	33.1	71	73.3
Gross domestic product (GDP)											
At current prices and current exchange rates	Bill. US$	1996	157.8	117.9 (95)	103.6	584.9	251.7	294.3	181.5	1 153.4	7 388.1
Per capita	US$	1996	36 020	3 057 (95)	10 425	14 894	28 283	41 411	2 894	19 621	27 821
At current prices using current PPPs[3]	Bill. US$	1996	106.7	..	130.1	587.2	171.4	180.6	383.3	1 095.5	7 388.1
Per capita	US$	1996	24 364	..	13 100	14 954	19 258	25 402	6 114	18 636	27 821
Average annual volume growth over previous 5 years	%	1996	4.1	2.2 (95)	1.5	1.3	1	0.1	4.4	2.2	2.8
Gross fixed capital formation (GFCF)	% of GDP	1996	20.5	17.1 (95)	24.1	20.1	14.8	20.2	25	15.5	17.6
of which: Machinery and equipment	% of GDP	1996	8.4	..	11.7 (93)	6.1 (95)	7.9	9.3	11.9	7.6	8.3 (95)
Residential construction	% of GDP	1996	2.6 (94)	..	5.2 (93)	4.3 (95)	1.9	11[9]	8.4 (95)	3	4.1 (95)
Average annual volume growth over previous 5 years	%	1996	2.8	5.4 (95)	2.2	–1	–2.6	–0.8	6.9	1.3	6.9
Gross saving ratio[4]	% of GDP	1996	29.9	..	21.6	20.7	16	27.1	22.3	14.6	16.6
General government											
Current expenditure on goods and services	% of GDP	1996	20.5	16.9 (95)	18.5	16.3	26.2	14.3	11.6	21.1	15.6
Current disbursements[5]	% of GDP	1995	45.8	..	42.5 (93)	41.2	63.8	47.7	..	42.3 (94)	34.3
Current receipts	% of GDP	1995	50.9	..	39.8 (93)	37.9	57.5	53.8	..	37.2 (94)	32.1
Net official development assistance	% of GNP	1995	0.87	..	0.27	0.24	0.77	0.34	0.07	0.28	0.1
Indicators of living standards											
Private consumption per capita using current PPPs[3]	US$	1996	11 593	..	8 522	9 339	10 096	15 632	4 130	11 865	18 908
Passenger cars, per 1 000 inhabitants	Number	1994	381	186	357	351	406 (93)	451	47	372	565
Telephones, per 1 000 inhabitants	Number	1994	554	131	350	371	683	597	201	489	602
Television sets, per 1 000 inhabitants	Number	1993	427	298	190	400	470	400	176	435	816
Doctors, per 1 000 inhabitants	Number	1995	2.8	2.3	3	4.1 (93)	3.1	3.1 (94)	1.2	1.6 (94)	2.6 (94)
Infant mortality per 1 000 live births	Number	1995	4	13.6	7.4	6 (94)	4	5	46.8 (94)	6.2 (94)	8 (94)
Wages and prices (average annual increase over previous 5 years)											
Wages (earnings or rates according to availability)	%	1996	3.2	..	..	5.8	4.8	..	..	4.9	2.7
Consumer prices	%	1996	1.9	..	5.6	4.7	2.7	2.2	81.6	2.7	2.9
Foreign trade											
Exports of goods, fob*	Mill. US$	1996	49 576	24 417	24 614	102 067	84 836	79 581	23 301	259 941	625 075
As % of GDP	%	1996	31.4	20.7	23.8	17.5	33.7	27	12.8	22.5	8.5
Average annual increase over previous 5 years	%	1996	7.8	..	8.6	11.2	9	5.3	11.1	7	8.2
Imports of goods, cif*	Mill. US$	1996	35 575	37 185	35 192	121 838	66 825	78 052	43 094	287 033	795 289
As % of GDP	%	1996	22.5	31.5	34	20.8	26.5	26.5	23.7	24.9	10.8
Average annual increase over previous 5 years	%	1996	6.9	..	6.1	5.5	6	3.2	15.1	6.5	10.3
Total official reserves[6]	Mill. SDRs	1996	18 441	12 409	11 070	40 284	13 288	26 727	11 430	27 745	44 536
As ratio of average monthly imports of goods	Ratio	1996	6.2	..	3.8	4	2.4	4.1	3.2	1.2	0.7

* At current prices and exchange rates.
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OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(10 1999 14 1 P) ISBN 92-64-16978-4 – No. 50503 1999
ISSN 0376-6438