### France: duty-free growth

By <u>Bruno Ducoudré</u>, <u>Éric Heyer</u>, Hervé Péléraux, <u>Mathieu Plane</u>

### This post summarizes the <u>2014-2015</u> outlook for the <u>French</u> economy

In early 2011, France was one of the few developed countries to have regained its pre-crisis level of GDP. Economic growth exceeded 2%, even reaching 3% yoy in the first quarter of 2011. Since then the situation has changed: the recovery was interrupted, and while the economy is experiencing positive growth, the rate is close to zero (Figure 1). Four types of shock explain why the post-recession recovery in 2011 died out. Growth was already being battered by austerity and by deteriorating credit conditions, and was then also hit by fluctuations in oil prices and by the impact of price competitiveness in 2012 as a result first of wage deflation in France's competitors and then in 2013 of the rise of the euro (Table 1).

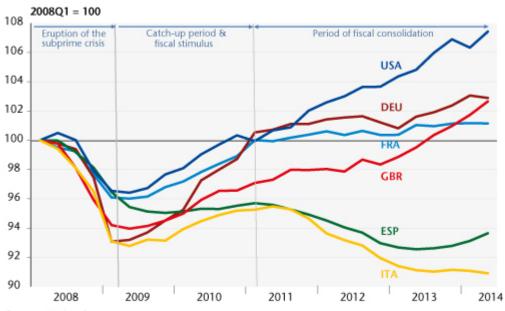


Figure 1. Comparative development of GDP in France and in its main partners

Sources: National accounts.

In 2014, the improvement expected on the economic front did not occur: the stimulus due to the gradual easing of austerity is being offset by the powerful brake exerted by the significant appreciation of the euro that has taken place since mid-year as well as by the collapse in consumer investment in housing. As in the previous two years, growth is expected to come to 0.4%, which is not enough to reverse the rise in unemployment or to reduce the public deficit significantly. Worse, while the public deficit has been cut by over 3 GDP points since 2009, it is now expected to rise slightly once again, reaching 4.5% of GDP (Tables 1 and 2).

Table 1. The brakes on French growth (2013 - 2015)

| In p | oints | of g | rowth |
|------|-------|------|-------|
|------|-------|------|-------|

| in points or growth                            |   | 2013 | 2014 | 2015 |
|--|---|------|------|------|
| GDP growth                                     |   | 0,4  | 0,4  | 1,1  |
| Impact on GDP of                               |   |      |      |      |
| changes in oil price                           | es  | -0.1 | 0.0  | 0.0  |
|  | Direct impact on the French economy               | -0.1 | 0.0  | 0.0  |
|  | Impact via addressed demand                       | 0.0  | 0.0  | 0.0  |
| price competitiven                             | ness  | -0.1 | -0.4 | 0.2  |
|  | Impact of change in euro exchange rate            | -0.1 | -0.2 | 0.1  |
|  | Effect of Intra-euro zone competitiveness         | 0.0  | -0.2 | 0.1  |
| credit conditions                              |   | -0.1 | -0.2 | -0,1 |
|  | Direct impact on the French economy               | -0.1 | -0.1 | -0.1 |
|  | Impact via addressed demand                       | 0.0  | -0.1 | 0.0  |
| austerity measures                             |   | -1.5 | -1.2 | -1.0 |
|  | Direct impact on the French economy               | -0.9 | -0.8 | -0.6 |
|  | Impact via addressed demand                       | -0.6 | -0.4 | -0.4 |
| Achievement                                    |   | -0.1 | 0.3  | 0.1  |
| Cumulative effect of                           | shocks  | -1.9 | -1.6 | -0.8 |
| Other factors (housin<br>accounts, declining p | ng investment, underestimation of otential, etc.) | -0.1 | -0.4 | -0.5 |
| Spontaneous growth                             | rate (excluding shocks)                           | 2.4  | 2.4  | 2.4  |

Sources: INSEE, quarterly accounts; OFCE emod.fr forecast 2014-2015, made in October 2014.

In 2015, growth will pick up some, to +1.1%, due to the weakening of the negative factors that have stifled it since 2010, in particular credit conditions and austerity. Furthermore, the effect of price competitiveness, a factor that has played a very negative role in 2014, will be

reversed, due first to the depreciation of the euro, and second to the rising impact of the CICE tax credit, whose primary goal is to ensure lower export prices. But with GDP growth of 1.1% next year, the path towards expansion is still a long way from what can usually be seen during a post-crisis recovery (i.e. 2.4%). As the output gap is not closing, the anticipated growth cannot be deemed a recovery. Companies will benefit from this renewed pick-up to gradually restore their financial situation. This strategy is based primarily on increasing productivity, which will help to reduce surplus capacity and restore profit margins. The unemployment rate in metropolitan France will rise slightly to 9.9% in late 2015, and to 10.3% for France as a whole. The counterpart to loosening the austerity reins is a public deficit that is higher than what was originally programmed. It is expected to be 4.3% of GDP in 2015, departing significantly from its path back towards 3%.

Table 2. Summary of forecast for 2014 and 2015

%. annual average

| %, annual average                |      |      |      |      |       |       |
|----------------------------------|------|------|------|------|-------|-------|
|                                  | 2010 | 2011 | 2012 | 2013 | 2014* | 2015* |
| GDP growth rate                  | 2.0  | 2.1  | 0.4  | 0.4  | 0.4   | 1.1   |
| Imports                          | 8.5  | 6.5  | -1.2 | 1.9  | 2.4   | 1.2   |
| Household consumption            | 1.7  | 0.3  | -0.5 | 0.3  | 0.2   | 1.3   |
| Government consumption           | 1.2  | 1.0  | 1.7  | 2.0  | 1.8   | 1.1   |
| Total investment                 | 1.9  | 2.1  | 0.3  | -0.8 | -2.2  | -1.6  |
| Exports                          | 8.6  | 7.1  | 1.2  | 2.4  | 2.5   | 2.6   |
| Contribution to growth           |      | 1111 |      |      |       |       |
| Domestic demand excl. inventory  | 1.8  | 1.0  | 0.3  | 0.4  | 0.0   | 0.6   |
| Change in inventory              | 0.3  | 1.1  | -0.6 | -0.2 | 0.4   | 0.1   |
| Trade balance                    | -0.1 | 0.0  | 0.7  | 0.1  | 0.0   | 0.4   |
| Growth rate of euro zone GDP     | 1.9  | 1.6  | -0.6 | -0.4 | 0.9   | 1.4   |
| Other indicators                 |      |      |      |      |       |       |
| Inflation (consumption deflator) | 1.2  | 1.8  | 1.4  | 0.6  | 0.6   | 0.7   |
| Savings rate (% of GDI)          | 15.8 | 15.7 | 15.3 | 15.1 | 15.5  | 15.2  |
| Unemployment rate                | 8.9  | 8.8  | 9.4  | 9.9  | 9.7   | 9.8   |
| Public deficit (GDP points)      | -6.8 | -5.1 | -4.9 | -4.1 | -4.5  | -4.3  |
| Public debt (GDP points)         | 81.5 | 85.0 | 89.2 | 92.2 | 95.4  | 97.4  |
| GDP growth rate (year-on-year)   | 2.2  | 1.5  | 0.0  | 0.8  | 0.4   | 1.4   |

\*OFCE e-mod.fr forecast for 2014 and 2015 Sources: INSEE, quarterly accounts; OFCE.

In order to meet its commitments on structural efforts and

nominal deficits, the government could decide to vote to make an additional effort of 8 billion euros. This would correspond to a 1.2 point hike in the standard rate of VAT. If that happens, GDP would grow no more than 0.8% next year, and the deficit would be reduced by only 0.2 GDP point, compared to our baseline scenario (Table 3).

Table 3. Impact on the French economy of an 8 billion euro hike in VAT

In %, difference from central accounts

| Impact on                                     | 2015 |
|---|------|
| GDP   | -0.3 |
| General government financing capacity (% GDP) | 0.2  |
| Market sector employment (%)                  | -0.1 |
| Unemployment rate (percentage points)         | 0.1  |

Source: OFCE emod.fr forecast 2014-2015, made in October 2014.

# Reforming unemployment insurance in France today: not a good idea according to OECD indicators

#### By **Eric Heyer**

Six months following the signing of a national industry-wide agreement on unemployment benefits between the social partners, with new rules that normally are to apply until 2016, the French government, which wants to go further in reforming the labour market, is evoking the possibility of once again reforming the unemployment insurance system by reducing the level of benefits and the period they are paid.

It is far from clear that reforming the unemployment insurance

system is in keeping with the idea that any reform must improve the "quality of life" of our citizens. This is, in any case, what is indicated by the latest publication of the OECD.

In Chapter 3 of the 2014 edition of the OECD's <u>Employment Outlook</u>, the international organization has implemented the recommendations of the 2009 <u>Stiglitz-Sen-Fitoussi report</u> by evaluating the quality of employment in the OECD countries. This new indicator supplements conventional measures of the quantity of work and should eventually lead to transforming the content of public policy by imposing new assessment criteria on the public authorities.

The OECD constructs an indicator on the quality of employment on the basis of three factors: the quality of wages, the security of the job market, and the quality of the working environment. According to the OECD, this last dimension is relatively mediocre in France: the high level of professional requirements and insufficient resources to accomplish tasks leads to a high level of on-the-job stress for French employees. As for wages, a review of both their level and distribution places France close to the average of the OECD countries. Finally, while the quality of work in the country is close to average in the developed countries, this is, according to the OECD, due mainly to a high level of job security in France, due to both the extent of social security ... and the generosity of unemployment insurance.

The proposals for reforming unemployment insurance would therefore tend to deteriorate rather than improve the "quality of life" for the French, and would thus miss their target from that perspective. But would they lead to improving the quantity of work?

There is some food for thought on this subject in Chapter 1 of the Report, in which the OECD indicates that the structural unemployment rate -i.e. the unemployment rate depending on the impact of rigidities that prevent the labour market from

functioning properly — has not increased since the onset of the crisis in France, just as is the case in many other developed countries: for the OECD, the sharp increase in unemployment seen since 2008 has a mainly cyclical component that cannot be combated by reforming unemployment insurance.

As a consequence, given the current situation of the French economy, reforming unemployment insurance along the lines suggested by the government will, if the OECD analysis is to be believed, undermine the quality of employment — and in particular the quality of life of the unemployed — without reducing the level of unemployment!

## The "Ricardian effect": to be taken with caution!

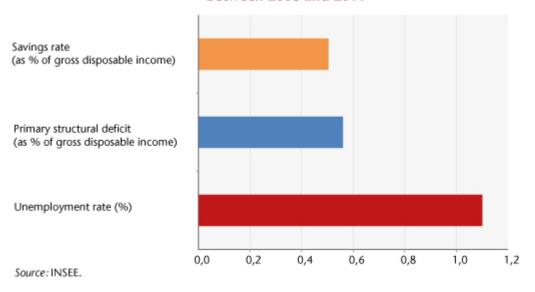
By David Ben Dahan and <u>Eric Heyer</u>

Is the deterioration in the public finances influencing households' consumption behaviour? A recent INSEE study tries to answer this with an econometric estimate of the determinants of the savings rates using yearly data from 1971 to 2011. Based on the results of the study, the authors attribute recent changes in the French households' rate of consumption to fiscal policy and the state of the public finances. Their model thus concludes that there is a significant "Ricardian" effect: having noted the worsening state of the public finances during the crisis, households are anticipating future tax hikes, leading them to up their savings during the recent period. Note that this effect is only temporary: the results of the INSEE's econometrics

indicate that while this has reined in consumer spending in the short term, the effect will fade quickly and disappear in the long term. Households are therefore "Ricardian" ... but only in the short term!

This oxymoron may be due to the fact that the standard determinants of consumption, i.e. inflation, interest rates and the unemployment rate, do not have any effect over the period studied by the INSEE. Hence for the INSEE, French households are forming rational short-term expectations, but without building up any "precautionary savings" against the risks associated with a deterioration in the labour market. However, in a recession, since a deterioration in the public finances goes hand in hand with a consequent rise in the "Ricardian effect" and "precautionary unemployment, savings" are in competition, making it difficult to distinguish them (Figure 1).

Figure 1. Change in the savings rate, the public deficit and the unemployment rate between 2008 and 2011



It should be noted in this regard that the stability of the parameters estimated by the INSEE is not guaranteed over the period 1970-2011: the non-significance of the unemployment rate is resolved once the estimation period begins later, after 1975, and this variable becomes highly significant from 1978. This is why we have reproduced the INSEE's analysis by starting the estimate in 1978. The results from modelling the

rate of household consumption using an error correction model (ECM), based on three different specifications presented in Table 1, can be summarized as follows:

- 1. As with the INSEE's results, there is no significant "Ricardian effect" in the long term over the period 1978-2011. In the short term, this effect is marginally significant (at 10% in equation 1);
- 2. When we integrate the unemployment rate into the analysis, the effect is significant in the short and long term (equations 2 and 3);
- 3. When placed in parallel with precautionary savings, the "Ricardian effect" loses its short-term explanatory power (equation 2).

Table 1. Summary of the results of estimates of the determinants of the household consumption rate

#### Périod:1978-011

|  | Equation 1           | Equation 2           | Equation 3           |
|--|----------------------|----------------------|----------------------|
|  | Long-term effect     |                      |                      |
| Adjustment coefficient                       | -0,003***<br>(-5,18) | -0,004***<br>(-5,37) | -0,004***<br>(-6,66) |
| Precautionary savings                        |                      | Yes                  | Yes                  |
| Unemployment rate (%)                        |                      | -0,98***<br>(-3,32)  | -0,78***<br>(-3,67)  |
| Ricardian effect                             |                      | Non                  |                      |
| Structural primary public balance<br>(% GDI) |                      | 0,16<br>(0,91)       |                      |
|  | Short-term dynam     | ic                   |                      |
| Precautionary savings                        |                      | Yes                  | Yes                  |
| Unemployment rate (%)                        |                      | -0,04**<br>(-2,04)   | -0,05***<br>(-3,37)  |
| Ricardian effect                             | Oui                  | No                   |                      |
| Structural primary public balance<br>(% GDI) | 0,12*<br>(1,94)      | -0,02**<br>(-2,47)   |                      |
|  | Statistical diagnos  | is                   |                      |
| R <sup>2</sup>                               | 0,98                 | 0,98                 | 0,99                 |
| SSR  | 0,0005               | 0,0004               | 0,0003               |
| SSE  | 0,005                | 0,0045               | 0,0038               |
| LM   | 0,018<br>(p>0,98)    | 0,32<br>(p>0,73)     | 0,55<br>(p>0,58)     |
| Jarque-Berra                                 | 0,70<br>(p>0,70)     | 1,06<br>(p>0,59)     | 1,19<br>(p>0,55)     |
| Arch   | 0,14<br>(p>0,71)     | 0,66<br>(p>0,42)     | 0,11<br>(p>0,73)     |

Notes:

The household consumption rate is the ratio between household consumption and the household's gross disposable income (GDI)

Student's t is given in parenthesis.

The short-term dynamic is not reproduced in full in the table. Only the "Ricardian effects" and the "precautionary savings" are reproduced here.

The three specifications have satisfactory statistical properties. The LM tests lead to the rejection of the hypothesis of autocorrelation of the residues of the equation. These residues are homoscedastic with respect to the White test and the ARCH test. The functional form of the equation is validated by the Reset test. Finally, according to the Jarque-Bera test, the residues of the equation follow a normal law

Our estimates show that the increase in the deficits is not leading to a reduction in consumption and that the increase in the savings rate observed between 2008 and 2011 can be explained by "precautionary savings" due to the dramatic worsening in the job market.

This result also confirms the analysis made in other OFCE studies concerning the importance of the multipliers during economic downturns.

<sup>\*\*\*, \*\*, \*</sup> signify that the coefficients are significant at respectively 1%, 5% and 10%.

# What is a weaker euro likely to mean for the French economy?

By <u>Bruno Ducoudré</u> and <u>Eric Heyer</u>

Faced with the rising risk of deflation in the euro zone, which has been reinforced since mid-2012 by the continued appreciation of the euro against other currencies, the heads of the European Central Bank have begun to change their tone in their communications with the financial markets: they are now evoking the possibility of conducting a new round of quantitative easing. These measures are likely to lower the exchange rate of the euro. This would provide valuable support for the euro zone economies by shoring up their price competitiveness vis-à-vis competitors outside the zone, in a context where fiscal consolidation policies will continue to dampen the growth expected in the zone in 2014 and 2015. What are the likely consequences for the French economy from reducing the euro's value against other currencies? We briefly review past episodes of exchange rate changes, and then present the impact expected from a 10% depreciation of the euro against other currencies using the emod.fr model. These effects are more moderate than those projected by the government.

Quantitative easing measures have been used extensively by the US Federal Reserve, the Bank of England and the Bank of Japan. Since mid-2012, the balance sheets of these three banks has continually increased, by respectively 6.5 percentage points of GDP, 1.3 GDP points and 15.3 GDP points. <u>During this same period</u>, the ECB balance has on the contrary declined by 8.4

GDP points. This difference in strategy has led to a continued rise in the strength of the euro: now at 1.38 dollars, the euro has seen its value against the dollar increase by 12% since June 2012. During the same period, the single currency has appreciated 49% against the yen and about 3% against the pound sterling (Figure 1).

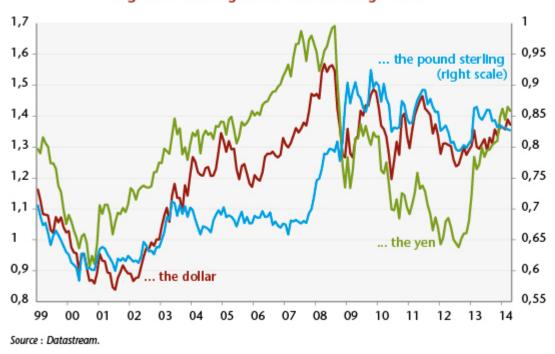


Figure 1. Exchange rate of the euro against...

The nominal effective exchange rate of the euro, which weights the different exchange rates depending on the structure of trade in the euro zone, has thus appreciated by 9.5% since the third quarter of 2012 (Figure 2). This appreciation, combined with austerity policies and the competitive disinflation carried out within the euro zone, has held down GDP growth in the zone, which was negative in 2012 and 2013, as well as inflation. The absence of inflationary pressures and the past appreciation of the euro have now given the ECB leeway to try to influence the course of the euro against other currencies.

115 110 105 100 95 90 85 80 75 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

Figure 2. Nominal effective exchange rate of the euro

Source: OECD.

### What would be the impact of a devaluation of the euro against all currencies?

The depreciation of the euro would have a dual effect:

- An income effect: a weak euro would increase the prices of imports. This would result in higher energy costs, a rise in companies' prices of production and a loss of household purchasing power;
- A substitution effect: a weak euro would decrease the prices of exports and increase their volume. Depreciation would also decrease the competitiveness of rival manufacturers, causing a decline in imports in favour of domestic production.

These opposite effects would apply only to trade outside the euro zone. Trade with our European partners would not be directly impacted, as the prices of imports and exports to and from this area would remain unchanged. On the other hand, intra euro zone trade would be impacted by a weaker euro. But this involves the channel of addressed demand.

Table 1. Impact on the French economy of a 10% depreciation in the exchange rate of the euro against all currencies combined

| (Difference with the reference scenario in %) | n   | n+1 | n+2 | n+8 |
|---|-----|-----|-----|-----|
| GDP   | 0,3 | 0,4 | 0,5 | 0,0 |
| Total waged employment (1000s)                | 22  | 53  | 74  | 34  |
| Household consumer prices                     | 0,9 | 1,4 | 1,9 | 3,9 |
| Public financing capacity (% of GDP)          | 0,0 | 0,2 | 0,3 | 0,2 |

Note: The euro's depreciation would be favourable to short-term activity due to an improvement in France's price competitiveness relative to countries outside the euro zone. The positive impact of the euro's depreciation on the activity of our euro zone partners and the negative impact on our partners outside the zone are taken into account.

Source: emod.fr

As is summarized in Table 1, a 10% depreciation of the euro all currencies leads against to a gain in competitiveness for French exports vis-à-vis the rest of the world. Other countries in the euro zone would benefit from the same gain in competitiveness across all export markets. In this case, the impact on activity would amount to 0.3% in the first year, 0.5% after three years, and none after nine years. The increase in demand due to this improvement in the activity of our European partners would be broadly offset by a reduction in demand addressed to France from the rest of the world. As for the labour market, this depreciation would create 22,000 jobs in the first year and 74,000 jobs after 3 years. The public deficit would in turn improve by 0.3 GDP point within 3 years.

These results, while more moderate than those <u>published by the DG Treasury[1]</u>, are nonetheless significant and are welcome in an economic situation like today's that is marked by sluggish growth and the risk of deflation. A depreciation of the single currency would also undercut the process of competitive deflation engaged in by countries in the euro zone.

[1] The publication of the DG Treasury argues that a 10% decrease in the effective exchange rate of the euro (against all currencies) would do the following: increase our GDP by

0.6 percentage point of GDP in the first year and 1.2 GDP points after three years; create 30,000 jobs in the first year and 150,000 jobs within three years; and reduce the government deficit by 0.2 GDP point in the first year and 0.6 GDP point after three years.

# Should we be celebrating the fall in unemployment at end 2013?

By Bruno Ducoudré and Eric Heyer

Every quarter, the INSEE publishes the unemployment rate as defined by the International Labour Office (ILO): for the fourth quarter of 2013, it **fell** 0.1 point in France, meaning 41,000 fewer unemployed. Likewise, every month the number of jobseekers registered with the Pôle Emploi job centre is reported: during the fourth quarter of 2013, this source indicated that the number of registered jobseekers in category A **rose** by 23,000. In one case unemployment is down, in the other it is up — this does not lead to a clear diagnosis about where unemployment is heading at year end.

### What explains the difference in diagnosis between the INSEE and Pôle emploi?

Besides differences related to methodology (an employment survey for the ILO, an administrative source for Pôle emploi), it should not be forgotten that, according to the ILO, a person must meet three conditions to be counted as unemployed:

being unemployed, being available for work and performing an active job search. Simply being registered at Pôle emploi is not sufficient to fulfil this last condition. So people registered as category A at Pôle emploi who are not actively seeking work are not counted as unemployed according to the ILO. The ILO criteria are thus more restrictive. Historically, for those aged 25 and over, the number of unemployed registered at Pôle emploi is greater than the number according to the ILO criteria. For those under age 25, registering with Pôle emploi [1] is in general not as worthwhile, except during a period of active social treatment of unemployment, as was the case during the last quarter of 2013: people who wanted to benefit from a subsidized job had to be registered at the job centre.

Table 1. Change in the number of unemployed from Q3 to Q4 2013

1000s

| Age                              | 15-24 | 25-49 | 50 + | Total |
|----------------------------------|-------|-------|------|-------|
| Unemployed (ILO criteria)        | -33   | 3     | -11  | -41   |
| Registered at Pôle emploi Cat. A | -7    | 10    | 20   | 23    |
| Difference                       | 26    | 7     | 31   | 64    |

Sources: INSEE, Emploi survey, Pôle emploi DARES.

As shown in Table 1, regardless of the age group, the situation seems less favourable using the Pôle emploi figures than according to the ILO criteria: when confronted with more than 2 years of unemployment, a certain number of discouraged jobseekers stop their active job search and are thus no longer recognized as such within the meaning of the ILO, yet continue to update their status at the job centre, and therefore remain listed in Category A.

### Is the reduction in the unemployment rate calculated by ILO criteria good news?

The unemployment rate can fall for two reasons: the first one, virtuous in nature, is as a result of escaping unemployment due to improvements in the labour market; the second, less encouraging, is due to jobless people becoming discouraged and

drifting into inactivity. The latest statistics from the ILO emphasize that the 0.1 point fall in the unemployment rate can be explained in full by the fall in the participation rate — which measures the percentage of the work force in the population aged 15 to 64 — and not by a resumption of employment that has remained stable. The decline in the unemployment rate is thus not due to a recovery in employment, but to discouraged jobless people who quit actively seeking employment (Table 2).

Table 2. Breakdown of the change in the labour force participation rate (ILO criteria) Q4 2013

In points

| Age          | 15-24 | 25-49 | >49 ans | Total * | Labour force Q4 2013<br>(1000s) |
|--------------|-------|-------|---------|---------|---------------------------------|
| Employed     | 0,3   | -0,2  | 0,2     | 0       | 25 547                          |
| Unemployed   | -0,5  | 0     | -0,1    | -0,1    | 2 784                           |
| Labour force | -0,1  | -0,1  | 0,2     | -0,1    | 28 331                          |

<sup>\*</sup>The employment rate, the unemployment rate and the labour force participation rate are average rates weighted for the number of individuals in each age group. The 25-49 age group is the largest, representing about 60% of the total. Source: INSEE, Emploi survey.

Looking more closely, the employment policy pursued by the government — "jobs for the future", CUI "unique integration contracts" — has had a positive impact on youth employment; the employment rate rose by 0.3 percentage point during the last quarter of 2013. Among seniors, the employment rate is still continuing to rise (+0.2 percentage point) due to the decline in the actual age of retirement. ILO-defined unemployment is of course falling among seniors, but the sharp rise in enrolment at the job centre in this age group (Table 1) undoubtedly reflects a change in their job search behaviour: more and more seniors are no longer looking for work. They are now included in the "halo" of unemployment, which is continuing to rise.

Ultimately, the fall in the ILO-defined unemployment rate, which is characterized by the absence of a recovery in employment and the discouragement of jobseekers, is not such good news.

[1] To have the right to unemployment compensation and receive assistance for a return to work, it is necessary to prove a 122 day contribution period or 610 hours of work during the 28 months preceding the end of the job contract.

# Has the 35-hour work week really "weighed down" the French economy?

By Eric Heyer

Did the Aubry laws introducing the 35-hour work week in France between 1998 and 2002 really make French business less competitive and lead to job losses, as is suggested in the latest report from the OECD? Has France seen its economic performance decline post-reform relative to its European partners? Have the public finances been "weighed down" by these laws?

A review of our recent macroeconomic history, coupled with international comparisons, provides some answers to these questions.

Record macroeconomic performances in the private sector between 1998 and 2002...

Leaving aside an analysis of the recent Great Recession, over the past 30 years private sector activity in France grew by an annual average of 2.1%. Since the establishment of the 35-hour work week, far from collapsing, economic growth in this sector instead accelerated sharply, from 1.8% before 1997 to 2.6% afterwards, and even hit a peak during the period in which the 35-hour week was being established (an annual average of 2.9%, Table 1). Furthermore, it is noteworthy that of the five best years recorded by the French market sector over the past 30 years, three were in the period 1998-2002 based on the criterion of GDP growth, and four if the criterion used is job creation.

The global economic environment accounts for some of this good performance, but only in part: foreign demand for French output was certainly more dynamic after 1997 than before, but this acceleration continued after 2002, and cannot therefore explain the better performances recorded between 1998 and 2002 (Table 1).

Table 1. Macroeconomic impact of the 35-hour week in the market sector

Growth rate, in % (unless specified otherwise), annual average

|       |  | 1980-<br>2007 |               |               |               |               |
|-------|--|---------------|---------------|---------------|---------------|---------------|
|       |  |               | 1980-<br>1997 | 1998-<br>2007 |               |               |
|       |  |               |               |               | 1997-<br>2002 | 2003-<br>2007 |
| A     | Added value  | 2,1           | 1,8           | 2,6           | 2,9           | 2,2           |
| В     | Hourly productivity  | 1,8           | 1,8           | 1,8           | 2,1           | 1,5           |
| C     | Productivity per worker  | 1,1           | 1,1           | 1,2           | 0,8           | 1,6           |
| A-C   | Employment   | 0,9           | 0,7           | 1,4           | 2,0           | 0,7           |
| B-C   | linked to the duration of work In thousands over the period analyzed | 0,6           | 0,6           | 0,6           | 1,2           | 0,0           |
|       | Jobs created   | 5 374         | 2 335         | 3 040         | 2 247         | 793           |
| D     | Gross wages*   | 4,3           | 5,1           | 2,9           | 2,7           | 3,0           |
| E     | Consumer prices  | 3,7           | 4,7           | 2,0           | 2,1           | 2,1           |
| D-E   | Real gross wages*  | 0,6           | 0,4           | 0,8           | 0,6           | 1,0           |
| D-E-C | Unit labour cost*  | -0,6          | -0,7          | -0,4          | -0,2          | -0,6          |
|       | Global demand for French output                                      | 5,7           | 5,0           | 6,9           | 6,2           | 7,6           |

<sup>\*</sup> Per capita. Source : INSEE.

Since the establishment of the 35-hour work week, France's performance has been superior to that of the rest of the euro zone, especially in comparison with our two main partners, Germany and Italy. For instance, over the decade 1998-2007 France's average annual growth was 1 point higher than for Italy and 0.8 point than for Germany (Table 2).

During this period, French companies and households spent more than their German and Italian counterparts. Business investment, which rose at an annual average of 0.8%, was more dynamic in France than in Germany (0.3%) or Italy (0.5%). As for households, consumption grew by an annual average of 1.4% in France against, respectively, 0.4% in Germany and 0.9% in Italy. Furthermore, it should be noted that the continued higher consumption in France does not reflect the behaviour of household savings. The savings rate was not only higher than elsewhere in Europe, but it has also risen since 1998. The solid performance of French consumption is the consequence of greater dynamism in job creation in France during this period, especially when compared to what was taking place in Germany (Table 2).

Table 2. Main macroeconomic indicators: a comparison with our principal partners

In %, annual average

|                                 |      | 1998-2007 |           |           |
|---------------------------------|------|-----------|-----------|-----------|
|                                 |      |           | 1998-2002 | 2003-2007 |
|                                 | Fra. | 2,4       | 2,7       | 2,0       |
| GDP                             | All. | 1,6       | 1,7       | 1,6       |
|                                 | Ita. | 1,4       | 1,8       | 1,1       |
|                                 | Fra. | 1,7       | 2,0       | 1,2       |
| GDP per capita                  | All. | 1,4       | 1,5       | 1,2       |
|                                 | Ita. | 1,1       | 1,7       | 0,4       |
|                                 | Fra. | 1,2       | 1,6       | 0,7       |
| Total employment                | All. | 0,5       | 0,6       | 0,3       |
|                                 | Ita. | 1,2       | 1,4       | 0,9       |
|                                 | Fra. | 1,1       | 2,1       | -0,1      |
| Current balance (in GDP points) | All. | 2,1       | -0,4      | 5,0       |
|                                 | Ita. | -4,6      | -2,6      | -7,0      |
|                                 | Fra. | -2,7      | -2,3      | -3,2      |
| Public deficit (in GDP points)  | All. | -2,2      | -1,9      | -2,5      |
|                                 | Ita. | -2,8      | -2,4      | -3,3      |

Source : OECD.

#### Unit labour costs [1] under control

Considering the large countries, France has cut hourly unit labour costs in the manufacturing sector the most during the period 1997-2002 (Figure 1). With respect to labour costs for the economy as a whole, only Germany has done better than France over this period.

100=1997t3 140 Aubry I Aubry II Hartz Reforms 1 to 4 in Germany 130 Italy 120 110 100 France 90 Germany 80 1994 1999 2001 2002 2003 2004 1995 2006

Figure 1. Change in hourly unit labour costs in manufacturing

Source: European Commission.

The implementation of the Aubry laws has not therefore led to reducing the competitiveness of the French economy. The reasons why are now well known: the way the increase in hourly wages linked to the 35-hour week was offset by wage moderation; the more flexible organization of working time, which helped to boost the hourly productivity of labour (Table 1); the suppression of overtime pay; and finally State aid in the form of lower social contributions.

Between 1997 and 2002, by better controlling wage costs than most European and Anglo-American countries, France improved its price competitiveness and thereby its market share of world trade (Figure 2). The share of French exports in world trade, which was helped by the weakness of the euro and by wage moderation, reached a peak in 2001.

Since 2002, France's market share has declined considerably, for two basic reasons: first, the loss of price competitiveness of French exports subsequent to the appreciation of the nominal effective exchange rate in France, comparable to that observed in the early 1990s, and second, Germany's commitment to a policy of drastically reducing

production costs. Since 2002, Germany has engaged in a process of improving its supply by restricting income and social transfers (Hartz reforms, social VAT), which led to lower unit labour costs in absolute terms but also relative to its other European partners, including France. It is this policy that accounts for the 30% loss in market share experienced by France in the period 2002-2007.

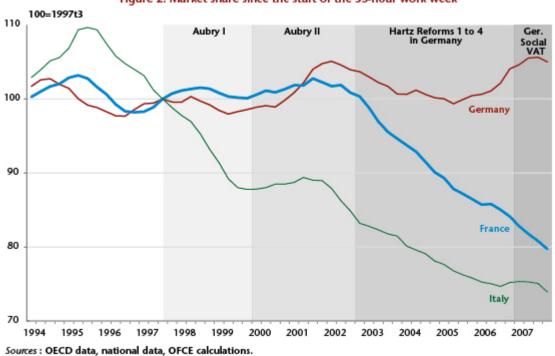


Figure 2. Market share since the start of the 35-hour work week

The loss in market share is thus not peculiar to France. The policy being implemented in Germany has enabled it to gain market share in countries that are geographically and structurally close to it, *i.e.* the large European countries. In this respect, France is not the only country to have suffered from this strategy, as Italy too has lost market share during this period[2].

In total, since the introduction of the 35-hour week, Italy has lost even more market share than the French economy (-27% for Italy against -20% for France).

#### A limited cost for the public purse

Since the implementation of the Aubry laws, the relief on

charges on low wages has cost general government an annual average of nearly 22 billion euros. But this amount is not attributable solely to the Aubry laws, since even before that such measures had been established by the Balladur and Juppé governments in the early and mid 1990s. The additional relief generated by the Aubry laws, which was made more long term by the "Fillon" measures, comes to nearly 12.5 billion euros per year. But this amount does not represent the cost actually incurred by general government. Indeed, as the Aubry laws have created jobs (350,000 over the period 1997-2002 according to official figures ∏∏by the DARES and used by the INSEE), the cost for the public purse has been smaller: this job creation generates four billion euros in additional payroll taxes; this has reduced the number of unemployed, and thus unemployment benefits by 1.8 billion euros; and finally this has boosted household income, and the consequent consumption is generating additional tax revenues (VAT, income tax, etc.) in the amount of 3.7 billion euros. In sum, once the macroeconomic feedback is taken into account, the additional cost of these reductions comes to 3 billion euros annually, or 0.15 percentage point of GDP.

A review of our macroeconomic history does not therefore corroborate the thesis that the 35-hour week has "weighed down" the French economy: business growth and job creation were higher during the period from 1997 to 2007 than in the rest of the euro zone, and the competitiveness of the French economy, as measured by unit labour costs, fell by less than in the rest of the euro zone, with the exception of Germany. In this regard, it appears that the strategy conducted in Germany from 2002 (Hartz reform and social VAT) better explains the losses in market share by both the French economy and our other European partners. It is rather in the public sector, including hospitals, that the 35-hour work week has proven ineffective.

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#### The different measures relaxing the 35-hour week

#### I -The Fillon law of 2003

The Law of 17 January 2003 has two main provisions:

#### (1) Regulation of overtime

By increasing the overtime quota from 130 to 180 hours, this law permits companies to use overtime structurally. Allowing for an additional 4 hours per week throughout the year enables companies to stay on a 39-hour week if they so wish. Specific industries also have the right to negotiate a higher amount. The Decree of 9 December 2004 brought the regulatory overtime quota to 220 hours per year.

The Law also reduces the cost of overtime. For companies with 20 employees or fewer, overtime begins only with the 37th hour, and the rate of extra pay is only 10%. For other firms, this may be negotiated between 10% and 25% by an industry agreement.

#### (2) Measure easing social contributions

The provisions for the reduction of employer social contributions introduced by the Aubry laws were henceforth disconnected from the length of the work week. All companies, whether or not they had shifted to the 35-hour week, now benefited. Structural aid beyond 1.6 times the minimum wage (SMIC) was eliminated.

#### II — The tax exemption of overtime hours in 2007

This measure had several provisions:

#### (1) Lump-sum reduction in payroll taxes

This measure introduced a lump-sum reduction in payroll taxes of 1.5 euros per hour of overtime worked by companies with

fewer than 20 employees and 0.50 euros in enterprises with more than 20 employees.

#### (2) Alignment of extra pay for overtime

This measure provided that extra pay for overtime be aligned at the minimum rate of 25% for all companies.

#### (3) Exemption from income tax

This measure allowed employees to exempt their pay for overtime hours from income tax, up to a limit of 25% extra.

#### (4) Exemption from social contributions

This measure also included a reduction of payroll taxes equal to the amount of the CSG / CRDS tax as well as all legal and contractual contributions.

#### For more information:

Philippe Askenazy, Catherine Bloch-London and Muriel Roger, 2004, "La réduction du temps de travail 1997-2003: dynamique de construction des lois 'Aubry' et premières evaluations" [The reduction of the work week 1997-2003: dynamics of the development of the Aubry laws and initial evaluations], Economie et Statistiques, no. 376-377.

Chen R., GM. Milesi-Ferreti and T. Tressel, 2013, "Eurozone external imbalances", *Economic Policy*, 28 (73), pp. 102-142.

DARES, 2003, *Les politiques de l'emploi et du marché du travail*, Collection Repères, Editions La Découverte.

Guillaume Duval, 2008, Sommes-nous des paresseux ? et 30 autres questions sur la France et les Français, Editions du Seuil.

Alain Gubian, Stéphane Jugnot, Frédéric Lerais and Vladimir Passeron, 2004, "Les effets de la RTT sur l'emploi: des simulations ex-ante aux évaluations ex-post" [Impact of the shorter work week on employment: from ex-ante simulations to ex-post evaluations], *Economie et Statistiques*, n° 376-377.

Éric Heyer and Xavier Timbeau, 2000, "35 heures : réduction réduite" [35 hours: the reduction reduced], *Revue de l'OFCE*, no. 74, July.

[1] The unit labour cost is the ratio of the hourly cost of labour to the hourly productivity of the work.

[2] Other factors may of course explain Germany's better performance, such as the emergence of China. For a recent version of this idea, see Chen R., G.M. Milesi-Ferreti and T. Tressel (2013).

## France: less austerity, more growth

By <u>Eric Heyer</u>

This text summarizes the <u>OFCE's 2013-2014 forecast for the French economy</u>.

In 2013, the French economy should experience annual average growth of 0.2%, which means that by the end of the year its

level of production should return to the level of six years earlier, at the end of 2007. This mediocre performance is very far from the trajectory that an economy recovering from a crisis should be on.

The French economy did however have great potential for recovery: average spontaneous growth of about 2.6% per annum over the period 2010-2013 was possible and would have allowed France to make up the output gap accumulated in 2008-2009. But this "recovery" has been hampered mainly by the introduction of budget savings plans in France and across Europe. For the single year 2013, this fiscal strategy will cut economic activity in France by 2.4 GDP points.

The understanding that the fiscal multipliers were high came late, and occurred only after the austerity plans had already had a negative impact on growth. At the end of May 2013, this awareness pushed the European authorities to give additional time to six EU countries, including France, to correct their excessive deficits. The easing of the Commission's requirements provided a breath of fresh air that enabled the government to relax the austerity measures set for 2014. According to the budget presented in autumn 2013, the domestic impact of the austerity measures will be reduced by 0.5 GDP points between 2013 and 2014; since our partners are also relaxing their policies, a boost to external demand is also anticipated. Overall, the easing of austerity will mean the addition of almost one point of growth in 2014 compared to 2013, despite the still high fiscal multipliers.

In these conditions, growth should come to 1.3% in 2014 on an annual average. By running at a rate still below its potential, the forecast growth will add to the output gap accumulated since 2008 and will continue to hurt the labour market. The unemployment rate in metropolitan France will rise slightly, reaching 10.9% by end 2014.

As a result of the easing of austerity, the public deficit

will be higher than what was initially planned. It is expected to come to 3.5% of GDP in 2014, after reaching 4.1% in 2013, with gross government debt near 95% of GDP next year.

# A fiscal policy to promote structural reform — lessons from the German case

By <u>Eric Heyer</u>

"France should copy Germany's reforms to thrive", Gerhard Schröder entitled an opinion piece in the Financial Times on 5 June 2013. As for the European Commission (EC), its latest annual recommendations to the Member states, released on 29 May, seem to take a step back from its strategy of a rapid and synchronized return to balancing the public finances, which has been in place since 2010. The EU executive's priority now seems to be implementation of structural reforms of the labour and services markets in the euro zone countries. These countries will of course continue to consolidate their public finances, but the EC has given them an extra year or two to do this. While, for example, France will further consolidate its accounts over the coming two years (the fiscal effort demanded of the French government by the EC comes to 0.8 percent of GDP, or 16 billion euros per year), it has been given another two years to bring its deficit below 3% of GDP (2015 instead

Tableau. New fiscal targets after postponement

|             |                               | 2013 | 2014 | 2015 | 2016 |
|-------------|-------------------------------|------|------|------|------|
| F           | Government deficit (% of GDP) | 3,9  | 3,6  | 2,8  |      |
| France      | Fiscal impulse (GDP points)   | -1,3 | -0,8 | -0,8 |      |
| Enale       | Government deficit (% of GDP) | 6,5  | 5,8  | 4,2  | 2,8  |
| Spain       | Fiscal impulse (GDP points)   | -1,1 | -0,8 | -0,8 | -1,2 |
| Netherlands | Government deficit (% of GDP) | 3,6  | 2,8  |      |      |
| neutenanus  | Fiscal impulse (GDP points)   | -0,6 | -0,7 |      |      |

of 2013). Source: Europ

Source: European Commission.

This change in course — or at least in tone — by the EC, which had emphasized the enactment of extreme austerity reforms, should be welcomed. However, it is important to consider whether the new environment, in particular the fiscal situation, will be favourable enough to ensure that the structural reforms are effective. An examination of the economic context in which Germany introduced its reforms in the early 2000s, which became a benchmark for the countries of southern Europe, provides some important lessons. While the purpose here is not to go into these reforms in depth, it is nevertheless useful to remember that they were enacted while the German economy had a substantial trade deficit (-1.8 percent of GDP in 2000 against a surplus of 1.4 percent for France at that same time) and was considered a "low achiever" in Europe. These reforms led to a significant reduction in the share of wages in value added, boosting the margins of German business, and helped to quickly restore the competitiveness of the German economy: by 2005, Germany was once again generating a large trade surplus while France ran a deficit for the first time since 1991. The non-cooperative character of the the euro zone (OFCE, 2006) and the steep increases in Germany in poverty - (Heyer, 2012) and Figure 1 and in wealth inequality (de Grauwe et Yi, 2013) were the hidden fruit of this strategy. Europe's "low achievers" today are the southern European countries, and the pressure to take steps to boost competitiveness has shifted from Germany to France, Italy and Spain. Despite this parallel, the question remains: is the economic environment similar today? Figures 1 and 2 summarize the economic situation in Germany at the time

the structural reforms were implemented. Two main points stand out:

- 1. These reforms were carried out in a context of strong global growth: the world experienced average growth of over 4.7% per year in 2003-2006 (Figure 1). Βv comparison, the figure for growth is likely to be less than 3% over the next two years;
- 2. In addition, the fiscal situation of the German economy in the early 2000s was not good: in 2001, the general government deficit for Germany exceeded 3%, and came close to 4% in 2002, the year before the enactment of the first Hartz reform. Government debt then exceeded the threshold of 60% of GDP allowed by the Maastricht Treaty for the first time. Despite this poor fiscal performance — with public debt approaching 70% in 2005 it is interesting to note that the German government continued to maintain a highly expansionary fiscal policy for as long as the reforms had not been completed: in the period 2003-2006, the fiscal impulse was positive at on average 0.7 GDP point each year (Figure 2). Thus, during this period the German government supported its structural reforms with a highly accommodative fiscal policy.

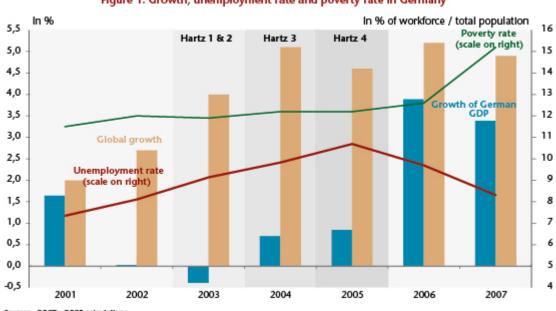


Figure 1. Growth, unemployment rate and poverty rate in Germany

Sources: OECD, OFCE calculations.

In GDP points 2 70 Hartz 1 & 2 Hartz 3 Hartz 4 Gross German debt (scale on right) 1 68 Fiscal impulse 0 66 64 -1 -2 62 -3 60 Maastricht criteria -4 58 Government deficit 56 -5 2003 2004 2005 2001 2002 2006 2007

Figure 2. State of deficit and fiscal policy in Germany

Sources: OECD, OFCE calculations.

Thus not only was the structural reform of the labour market conducted under Schröder implemented in a very favourable economic environment (strong global growth and a strategy that differed from the other European countries), but it was also accompanied by a particularly accommodative fiscal policy, given in particular the poor state of Germany's public finances. This situation differs greatly from contemporary conditions:

- 1. Global growth is likely to be under 3% over the coming two years;
- 2. The EC is asking a large number of European countries to implement the same structural reforms simultaneously, which in a highly integrated euro zone limits their effectiveness; and
- 3. Despite the extra time being granted for deficit reduction, fiscal policy will remain very tight: as is indicated in Table 1, the fiscal impulses for France and Spain will still be very negative (-0.8 GDP point per year) as the structural reforms in these countries are being implemented.

So while the pressure to boost the competitiveness of the countries of southern Europe is similar to that facing Germany in the early 2000s, the external environment is less favourable and there is greater pressure to reduce the public debt. On this last point, the German example teaches us that it is difficult to juggle structural reforms to boost business competitiveness with efforts to reduce the public debt.

## What factors have put the brakes on growth since 2010?

By **Eric Heyer** and Hervé Péléraux

At the end of 2012, five years after the start of the crisis, France's GDP has still not returned to its earlier level (Figure 1). At the same time, the labour force in France has grown steadily and technical progress has constantly raised workers' productivity. We are therefore more numerous and more productive than 5 years ago when output was lower: the explosion in unemployment is a symptom of this mismatch. Why had the shoots of recovery seen in 2009 been choked off by mid-2010?



The main factor stifling the recovery has been the austerity measures that were enacted in France and Europe in 2010 and then intensified in 2011 and 2012 (Table 1). The impact of austerity has been all the more marked as it has been generalized throughout the euro zone. The effects of domestic cutbacks have combined with the effects of undercutting demand from other European partners. Given that 60% of France's exports are to the European Union, any external stimulus had virtually vanished by mid-2012, less due to the slowdown in global growth, which is still almost 3%, than to the

consequence of the poor performance of the euro zone, which is on the brink of recession.

It is austerity that is at the root of the lack of growth: after shaving -0.7 GDP point off growth in 2010, its effects increased in 2011 and 2012 (respectively -1.5 and -2.1 points) because of the stepped-up measures and the existence of high fiscal multipliers. Indeed, in a period of low economic activity simultaneously tightening fiscal policy in all the European countries while there is very little manoeuvring room for monetary policy (real interest rates close to zero) has led to raising the value of the multiplier. There is now a broad consensus that the short-term fiscal multipliers are high, especially as full employment is still out of reach (see Heyer (2012) for a review of the literature on multipliers). The theoretical debate about the value of the multiplier and the role of agents' expectations must give way to empirical observation: the multipliers are positive and greater than 1.

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In addition to the fiscal drag, there is the effect of tight monetary conditions: the easing of monetary policy — seen in particular in the lower key interest rates — is far from enough to offset the negative effect on the economy of tighter borrowing conditions and the widening of the spread between private investment and risk-free public investment.

All things considered, including taking into account the impact of the resurgence in oil prices after the onset of the recession, the spontaneous growth of the French economy would have averaged 2.6% over the past three years. The realization of this potential would have led to a further reduction in excess production capacity and would ultimately have cut short the downturn in the economy that actually took place.

## France's Stability Programme: the missing line

By **Eric Heyer** 

On April 17, the government presented its Stability Programme for 2013-2017 for the French economy. For the next two years (2013-2014), the government has relied on the projections of the European Commission in forecasting growth of 0.1% in 2013 and 1.2% in 2014. Our purpose here is not to revisit these forecasts, though they do seem overly optimistic, but rather to discuss the analysis and outlook for France for the period 2015-2017 that is explicit and sometimes implicit in this document.

According to the document provided to Brussels, the government is committed to maintaining its fiscal consolidation strategy throughout the five-year period. The structural effort will lessen over the years, representing only 0.2 percent of GDP in 2017, i.e. nine times less than the effort required of citizens and business in 2013. Under this assumption, the government expects a return to 2% annual growth during the period 2015-2017. The deficit will continue to reaching 0.7 percent of GDP in 2017. This effort would even lead for the first time in over 30 years to a structural fiscal surplus in 2016, rising to 0.5 percent of GDP in 2017. For its part, public debt would peak in 2014 (at 94.3 GDP points) then begin to decline from 2015 to a level of 88.2 GDP points by the end of the five-year period, which is lower than the level when the Socialists came to power (Table 1). It should be noted, however, that in this official document nothing is said about the changes in unemployment that the government expects will result from its policies by the end of

the five-year period. This is the reason for our introduction of a missing line in Table 1.

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Based on assumptions similar to those of the government for fiscal policy as well as for the potential for growth, and starting from the same short-term situation, we have attempted to verify the analysis provided by the government and to supplement it by integrating the changes in unemployment related to its Programme.

Table 2 summarizes this work: it indicates that growth would accelerate gradually over the period 2015 to 2017, to over 2% in 2017. Growth over the period would average 1.8%, a rate close to but slightly lower than the 2% expected in the Stability Programme [1].

At end 2017, the deficit would be close to the government target, without however reaching it (1 GDP point instead of 0.7 GDP point). The public debt would also fall to a level comparable to that in 2012.

In this scenario, which is similar to that of the government, the trend in unemployment will not reverse until 2016; by the end of the five-year period, the unemployment rate is expected to be 10.4% of the working population, *i.e.* a level higher than that prevailing at the time François Hollande assumed office.

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The scenario proposed by the government in the Stability Programme seems optimistic in the short term and misses the goal in the medium term. On this last point, it seems surprising to want to stick to a policy of austerity after the economy has seen the public finances balanced in structural terms and while the unemployment rate is rising above its historical peak.

A more balanced approach could be considered: assume that from 2014 the euro zone adopts a "reasonable" austerity plan aimed at both restoring the structural balance of the public finances and reducing the unemployment rate. This alternative strategy would involve rolling back the planned fiscal stimulus in all the euro zone countries and limiting it to 0.5 GDP point [2]. This would constitute a fiscal effort that could be sustained over time and allow France, for example, to eliminate its structural deficit by 2017. Compared to the current plans, this would provide a greater margin for maneuver that would spread the burden of the adjustment more fairly.

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Table 3 summarizes the results of simulating this new strategy. Less austerity leads to more growth in all the countries. However, our simulation also takes into account the impact of economic activity in one country on other countries via international trade. In 2017, in the "less austerity" scenario, the public finances would be in the same state as in the baseline scenario, with the additional growth offsetting the reduced effort. However, in this scenario, unemployment would decline in 2014, and by 2017 would have fallen to a level comparable to the 2012 level.

[1] The difference in growth can arise either because of not taking into account the impact of foreign trade due to the austerity plans being implemented in other partner countries, or because the fiscal multiplier used in the Stability Programme is lower than in our simulation, where it is around 1. Indeed, we believe that in a period of low economic activity, adopting policies of fiscal restraint that are applied simultaneously in all the European countries and when there is little maneuvering room for monetary policy (real interest rates are close to zero) leads to pushing up the

value of the multiplier. There is also now <u>a broad consensus</u> on the fact that the <u>short-term multipliers are high</u>, especially given that full employment is still out of reach (see <u>Heyer (2012)</u> for a review of the literature on multipliers).

[2] This strategy has already been simulated in previous OFCE work, such as that by <u>Heyer and Timbeau in May 2012</u>, by <u>Heyer</u>, <u>Plane and Timbeau in July 2012</u> and by the <u>iAGS report in November 2012</u>.