

## New labour force projections and the effects of economic downturns

In each *Conjoncture in France*, labour force forecasts are indispensable to anticipate changes in unemployment. For this purpose, changes in the labour force, both past and future, are broken down according to different factors, in particular its trend component and the estimated effects of public policy (internships, training, etc.).

For the June 2017 *Conjoncture in France*, several changes have been implemented. First of all, the trend labour force has been revised – it is now derived from the new projections published by INSEE in May 2017. Secondly, an estimation of the “effects of economic downturns”, corresponding to the behaviour whereby people enter and leave the labour force as a result of the economic conditions, completes the components in the “reconciliation table” usually presented.

### The new labour force projections have led to a slight reduction in the trend variation over the recent period

INSEE revises its long-term labour force projections approximately every 5 years. The new projection exercise published in May 2017 is based on a method similar to that used for the previous exercise which was published in 2011: projections of the activity rate for each sex and age group taken from the Labour Force Survey are applied to the new demographic projections (Blanpain et Buisson, 2016).

For people aged 15 to 54, a trend activity rate is estimated for each sex and five-year age group, then projected. The estimation is done in two steps. Firstly, the observed activity rate is smoothed by a moving average. Then, for most of the age groups, the trend activity rate ( $TA_t$ ) is estimated econometrically from this smoothed rate on the assumption that it follows a logistic trend:

$$TA_t = \frac{T_0 + T_1 \cdot \exp(v \cdot (t - d))}{1 + \exp(v \cdot (t - d))} + \epsilon_t$$

This function is indeed well suited to forecasting transition phenomena between an initial level  $T_0$  and a final level  $T_1$  occurring at a speed  $v$  around a downturn point  $d$ . Now, such transition phenomena are observed for the activity rates of most age groups. Nevertheless, this function has the disadvantage of being highly

sensitive to the last points observed. Thus, if in the last year or years of the sample the activity rates are affected by cyclical phenomena, these rates will be under or over-estimated in the forecasts for a lasting period. It is to reduce this kind of bias that a prior smoothing is applied to the observations before the estimation.

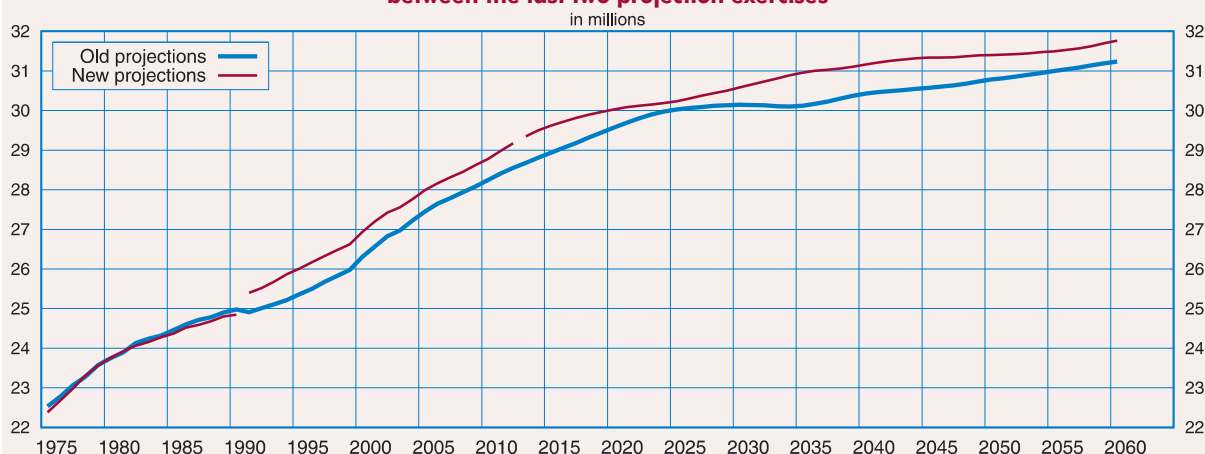
Furthermore, certain age groups are affected by specific phenomena that make it necessary to enrich the model. Supplementary variables,  $x_i$ , such as for example the apprenticeship rate for young people, or the activity cessation rate in the steel industry for men aged 50 to 54, can then be added to the logistic function. The model to be estimated is then written:

$$TA_t = \frac{T_0 + T_1 \cdot \exp(v \cdot (t - d))}{1 + \exp(v \cdot (t - d))} + x_i \cdot \beta + \epsilon_t$$

Finally, for people aged 55 to 69, the projected activity rates are drawn from the Destinie microsimulation model. This approach allows for greater inclusion of the diversity of individual situations and the impact of the different measures affecting retirement behaviour.

The geographical scope of the new demographic projections covers France (all of Metropolitan France plus the five overseas Departments (DOM)), whereas before it concerned only Metropolitan France. This aspect leads to a substantial revision of the levels between the two last projection exercises (*Graph 1*).

**1 - Comparison of the active populations of people aged 15 and over between the last two projection exercises**



Scope: people aged 15 and over in ordinary households

Geographical scope of the old projections: Metropolitan France

Geographical scope of the new projections: Metropolitan France until 1990, France excluding Mayotte from 1991 to 2013, France from 2014 onwards.

Source : INSEE, labour force projections

## French developments

Accordingly, over the period 2015-2060, the labour force is a little less dynamic in the new projections: its growth is slightly above 7%, whereas it was close to 8% in the previous exercise. This difference is explained by several factors (Graph 2). First of all, the migratory balance hypothesis has been reduced in the new demographic projections, to +70,000 people a year compared to +100,000 previously. This revision lowers the forecast for the number of men aged 25 to 54, and as a consequence the number of people in employment in that age group.

Over the decade 2015-2025, the revisions between the last two labour force projections are also due to a different impact of the 2010-2011 pension reform (which raised the age of pension eligibility from 60 to 62 years and at the same increased the age at which the reduced rate is cancelled). In the 2011 projections, the model used led to the estimation of an effect on retirement behaviour that was relatively spread out over time, whereas it has quite a marked effect before 2015. In the new exercise, the effect of this reform, which has already made itself felt, is therefore less pronounced over the projection period.

Furthermore, between 2025 and 2035, the inclusion of the 2014 pension reform (lengthening of the contribution period) in the new projections induces an increase in the activity rate of 55-69-year-olds, and therefore the number of people in employment. Over this period, the effect of this reform partly offsets the fall in the population of men aged 24 to 59.

For the years 2015 to 2017, the inclusion of the new projections has only moderately affected the diagnostic of the trend variation in the labour force. The effect of the 2010-2011 and 2012 pension reforms (easing of the conditions for entitlement to the "long careers" scheme), which is today indirectly included in the trend variation, was not previously

included but rather counted under "estimated effects of public policy" Accordingly, by adding in the effect of these reforms, the trend labour force increased in the previous exercise by 117,000 in 2015, 104,000 in 2016 and 113,000 in 2017. This growth is now +121,000 in 2015, +103,000 in 2016 and +91,000 in 2017 (Table 1).

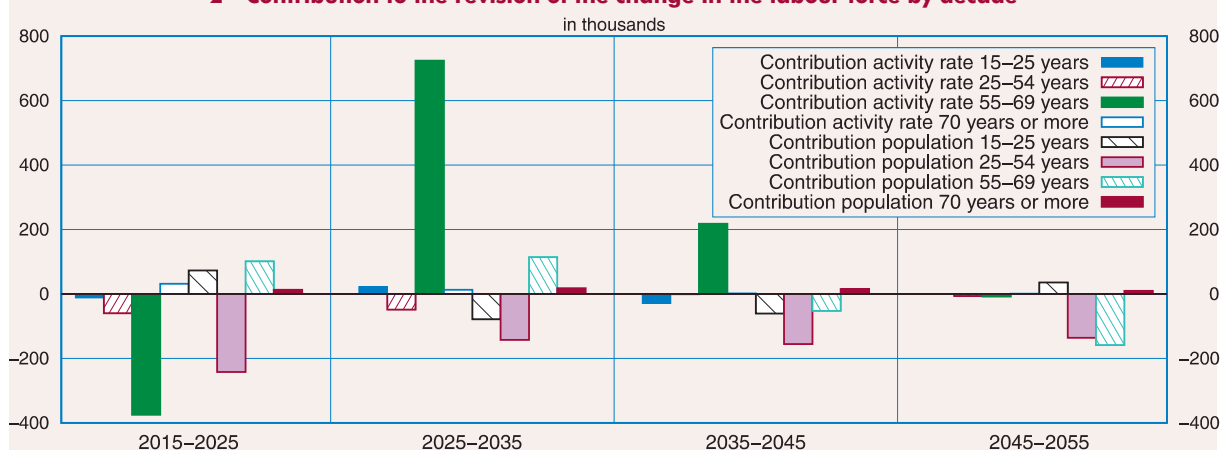
### In 2017, the improvement in the economic outlook is expected to contribute to the return of 15,000 people to the labour market

The new labour force projection exercise has also provided an opportunity to estimate the scale of the "effects of economic downturns" on the past and to use them for forecasts in the labour force reconciliation table. The term "effects of economic downturns" is used to refer to all the phenomena by which the economic situation can affect the labour force, with two opposing types of behaviour:

- The "discouraged worker effect": in a phase where the economic outlook is poor, the number of "active" people can fall because some of them, in particular those most remote from employment, give up looking for work out of discouragement or choose not to enter the labour market. For example, this type of effect is observed in the younger age groups, who are liable to choose to remain in education in an unfavourable economic situation.

- The "added worker effect": in a phase where economic conditions are unfavourable, the labour force can increase if certain inactive people start looking for work, for example if another member of the household has lost his job. This effect is observed mainly among certain female intermediate age groups.

2 - Contribution to the revision of the change in the labour force by decade



Scope: people aged 15 and over in ordinary households

Geographical scope of the old projections: Metropolitan France

Geographical scope of the new projections: Metropolitan France until 1990, France excluding Mayotte from 1991 to 2013, France from 2014 onwards.

Source : INSEE, active population projections

Table 1 - Comparison of labour force trends, old and new version

	2015	2016	2017
<b>New trend, including post-2010 retirement reforms</b>	<b>121</b>	<b>103</b>	<b>91</b>
<b>Old trend, including post-2010 retirement reforms</b>	<b>117</b>	<b>104</b>	<b>113</b>
(a) Contribution of population and trend activity rate	128	123	119
(b) Estimated effects of post-2010 retirement reforms	-11	-19	-6

Source : INSEE, active population projections

The effects of economic downturns are estimated by linear regression, by modelling the effect of an economic outlook variable on the difference between the observed activity rate ( $TAO_t$ ) and the trend activity rate ( $TAT_t$ ). The economic outlook variable chosen is the difference between the unemployment rate observed in Metropolitan France and a reference rate (8.5%, i.e. its average between 1980 and 2016):

$$TAO_t - TAT_t = \alpha + \eta \cdot (U_t - 8,5) + \varepsilon_t$$

This coefficient  $\eta$  is used to capture the effects of economic downturns: for a given age group, a negative value reflects a discouraged worker effect (high unemployment tends to reduce the activity rate) and a positive value corresponds to an added work effect (a poor economic situation leads to an increase in the activity rate). In practice, only certain age groups are affected by significant downturn effects (Table 2): although some of them experience an added worker effect, discouraged worker behaviour predominates. Accordingly, on average over the period in question, for all the categories, an increase of 10,000 unemployed leads to a fall of about 1,500 in the labour force (Graph 3). This is a scale comparable to that estimated by Lhermitte (2003).

Altogether, based on these estimations, the poor economic conditions – mainly the high level of unemployment – can be expected to have discouraged

about 50,000 people from entering or remaining in the labour market. The improvement in the situation in 2016 is thought to have led almost 10,000 people to enter or return to the labour market. In 2017, the unemployment rate is expected to continue to fall, leading to the entry or return of an extra 15,000 people to the labour force. Taking this effect into account helps to reduce the unexplained part of the changes in the labour force (“other short-term fluctuations (residual)” line in the labour force reconciliation table), even if in certain quarters the extent of this part still seems to be considerably greater. ■

### Bibliography

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**Lhermitte S.** (2003), “Quel ralentissement de la population active attendre en 2004?”, *Conjoncture in France*, December, p. 37-51.

**Table 2 - Result of modelling by category and effects on the labour force**

	$\eta$	Type of effect	Effect on the labour force			
			2014	2015	2016	2017
Women aged 15 to 19 years	-0.75	discouraged worker	-20	-22	-18	-11
Women aged 20 to 24 years	-0.41	discouraged worker	-11	-11	-9	-5
Women aged 40 to 44 years	0.25	added worker	8	8	7	4
Women aged 45 to 49 years	0.33	added worker	10	11	9	5
Women aged 50 to 54 years	0.29	added worker	9	10	8	5
Men aged 15 to 19 years	-1.07	discouraged worker	-29	-32	-26	-16
Men aged 20 to 24 years	-0.42	discouraged worker	-11	-11	-9	-5
Men aged 25 to 29 years	-0.20	discouraged worker	-5	-6	-5	-3
Men aged 50 to 54 years	0.16	added worker	5	5	4	3
<b>Total effect on the labour force</b>			<b>-44</b>	<b>-48</b>	<b>-39</b>	<b>-24</b>
<b>Contribution to the variation in the labour force</b>				<b>-4</b>	<b>8</b>	<b>15</b>

### 3 - Unemployment rate and effect on the labour force

