

Should we still use the concept of potential growth?

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The concepts of potential output and growth potential survived the crisis. They have been set in stone in the European Fiscal Compact (i.e. the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union), which refers to structural public balances and structural efforts, as evaluated by the European Commission services. These estimates are derived almost directly from potential output estimates, in order to assess and to sanction national fiscal policies, in a rather strange combination of theoretical concept, empirical evaluation, and technocratic validation of economic policy strategies. Thus, the potential growth estimate for France (1 or 1.6 %?) enables to validate (or not) the 2015 budget. Thus, euro area member states (MS) are obliged to reduce their structural deficit by at least 0.5 percent of GDP per year and to bring their structural deficits to balance in the medium term (or at least to bring their structural deficit below 0.5% of GDP, the structural deficit being based on the European Commission evaluation).

The potential growth concept is also present in current economic policy debates: is the euro area condemned to low growth in the years to come due to a low potential growth? If so the priority should not be to support effective growth, but instead to strengthen potential growth? Is potential output really an effective constraint on the economy today?

However, the European Commission, the OECD and the IMF have been unable to assess the potential production level in real time, as can be seen from their successive releases: for example, the Commission revised its estimate of the French output gap for 2007, from -0.2% in 2008 to + 3.1% in 2014; of the Spanish output gap from -0,4 to +3.0%. The method used does not explain the output loss due to the crisis (except in a tautological way), and does not allow to say whether the loss is permanent or can be reversed. There is no clear definition and measure of potential output, if one considers that the working age population, its participation rate, skills, capital stock and labour productivity are not independent of the effective growth path. The examples of Spain and Greece show that there is no potential output path independently of the observed output path, of macroeconomic policy, of EU and EMU membership, of the financial crisis. There are statistical methods that allow to exhibit so-called potential growth trajectories but there is no explanatory model which would justify a break in potential growth in 2008-09, unless one recognizes that this break comes from the break in growth itself, which on the one hand raises the issue of its reversibility, and on the other hand, does not explain the inability of economic policy to maintain output close its pre-crisis so-called potential level. There are several definitions of potential output, depending on the constraints and time lags taken into account. Thus, potential output cannot be assessed without a comprehensive and complex macroeconomic

analysis. *A priori*, no endogenous and automatic forces can bring production back to a potential level defined in a a-historical way.

This paper has three parts. Section 1 discusses from a theoretical viewpoint the concepts of potential growth and output as well as their use for short, medium or long-term economic policy. We analyse the constraints that the notion of potential production should aim to assess and measure (demand or supply constraints, permanent or temporary). Section 2 presents and discusses empirical works evaluating potential growth (EC, OECD, IMF, ECB, INSEE, Banque de France, ...). It examines how these works deal with the 2008 crisis, and how they explain the slowdown in potential growth on this occasion. We show the limits and dangers of the methods used, which often lead to justify counter-cyclical policies. Section 3 deals with the debate on future potential growth (in France and in Europe). We show that the problem is not so much the risk that potential growth is slower, than the inability of MS in general, and in France in particular, to implement an economic strategy allowing to reach a full-employment growth, accounting for constraints in terms of profitability and competitiveness that the current European strategy does not allow to overcome.

1: Potential growth: what is the theoretical basis¹ ?

By definition, potential output is the maximum level of output that may be reached at a given time and maintained in the long term, without excessive tensions in the economy, in particular with no acceleration of inflation. The potential growth rate is the rate of growth of potential output. The output gap is the difference between actual output and potential output.

When the output gap is strongly negative at the beginning of the period, growth may be significantly higher than potential growth for a long time period, and this leads the potential growth notion to be ambiguous, incorporating or not a possible catching up of the economy. It is not obvious to say which imbalances which should be taken into consideration: should the external deficit be taken take account?

These concepts have a double theoretical background. For Keynesians, they refer to a growth path close to full-employment. Potential growth is stable. The output gap can be large. It shows that a vigorous economic policy may be required. For neo-classical economists, potential growth is a path compatible with supply constraints, taking into account the equilibrium unemployment rate (which may be high) and the effective capital stock. The output gap is usually low.

Also, these concepts have a triple purpose. They can refer to a hypothetical growth allowing the economy to be close to full employment. They may refer, from a normative point of view, to the objective of stabilisation macro-economic policy. They may also refer to a

¹ We refer here to the analyses presented in: Hervé Le Bihan, Henri Sterdyniak and Philippine Cour (1997): « La notion de croissance potentielle a-t-elle un sens ? », *Economie internationale*.

regular trend, around which effective production fluctuates and which serves as a basis for assessing the fiscal impulse and public finances sustainability. It is not obvious that the same measure may be used for all three purposes. For instance, a country with deteriorated competitiveness may be obliged to accept, for a while, a high unemployment, and therefore production below its potential level

Besides, two questions arise: is the return to the reference trajectory automatic (but through which mechanism?), is it the result of economic policy or is it an artefact (potential production is calculated *ex post* as an average of actual production)? Is there a single potential growth or is it the result of social choices, for instance in terms of working time, female activity or retirement age?

Potential output is not an observable variable. Its assessment is based on many statistical assumptions and theoretical definitions. There is no *a priori* potential growth that one could measure. The concept is a subjective and questionable construction: maximum growth without (judged) excessive imbalances, resulting only from supply constraints as opposed to a demand-driven effective growth. This has only a meaning in a specific conceptual framework: the Keynesian model with a more or less amended Phillips curve. But what are acceptable imbalances? The meaning of potential growth becomes unclear if the economy suffers from a capital constraint, strong inflation (at least, above the objective), deteriorated competitiveness, excessive government deficits (at least, here also, as compared to the objective), from inadequate income distribution. Maximum growth can then be set only as part of a certain economic model, with some imbalances, and a given economic policy strategy. This ambiguity implies that the assumption of an automatic return to potential output cannot be made.

The potential output estimate may be done *ex-post*, for a past time period; but should the estimate account for what happened after this time period? The estimate may be done for the current period, but *what* if potential output depends on actual production? It may be done for the future, but how to take into account economic policy choices?

At time t , when production is Y_t the potential output level, $Y_t^* = f(t, X_t, Z_t, Y_{t-i})$ is to be evaluated, such as: $\pi_t = \pi_{t-1} + \beta(Y_t - Y_{t-1}^*) + \varepsilon_t$. X represents exogenous variables (like working age population, but the latter depends on immigration, hence on production); Z represents regulation or structural economic policies parameters that may possibly change (such as the retirement age). This raises several issues:

- One cannot estimate potential output alone, without estimating its determinants. It is necessary to examine to what extent they are exogenous, to what extent they are affected by cyclical developments, to what extent they may or may not be changed. Let us consider a country where the older workers' employment rate is particularly low. It is not relevant to make huge efforts to increase this rate in a situation of mass unemployment. But if the

country comes close to full employment, it may decide to introduce measures to increase this rate. How should this be taken into account in the potential output estimate?

- There is no evidence that β in the equation is stable. On the contrary, the curved supply curve theory tells us that β is strong when the output gap is positive or close to zero, but becomes nil when the output gap is large. In such conditions, the naive econometrician will find that the output gap does not vary and therefore that potential production follows actual production.
- One needs to explain why economic policy is unable to maintain output at its potential level: either the difference between the potential and actual levels is a white noise, or there are obstacles to a full-employment economic policy and, in this case, one must choose to account or not for these obstacles when estimating potential output.

Let us consider, for example, the case of a country where at $t=0$, inflation is high, competitiveness is deteriorated, profit share in value added is low. The country will have to accept slower growth for a relatively long time period in order to reduce its inflation and its wages level. Should this period be incorporated in its potential growth?

-If potential growth determinants depend on actual growth, then potential growth may be evaluated by: $Y_t^* = f(t, X_t, Z_t, Y_{t-i})$ or by $Y_t^* = f(t, X_t, Z_t, Y_{t-i}^*)$. In the first case, potential output depends on actual production.

The link between potential growth and actual growth is problematic. From a basic perspective, potential growth is exogenous and relatively regular: it is the sum of exogenous technical progress, trend growth of activity rates and working age population. In fact, most of the empirical studies lead to strong fluctuations of potential growth, correlated to actual growth. Either one admits that growth is hit effectively by exogenous productivity shocks, such that actual growth is potential growth. Either it is an artifact: the so-called potential growth fluctuations are the reversible outcome of actual growth fluctuations. A stronger demand induces stronger growth which induces larger capital accumulation, increases activity rates, attracts migrant workers, increases apparent labour productivity. An imperfect smoothing of these effects induces fluctuations of measured potential growth. The case becomes delicate after a strong shock, such as the output fall in the years 2008-09. How to distinguish a permanent and irreversible effect from a temporary one? The diagnosis of a permanent effect may be self-fulfilling since it leads to the thesis according to which one should accept the output loss and therefore implement restrictive economic policy in a depression period.

The standard method for estimating potential growth is the production function method. The maximum production which may be produced is determined by using the available production factors, i.e.: $Y^* = A * K^{1-\alpha} (U_N T_N H_N L_D)^\alpha$

K represents the effective capital stock. A fall in the latter induced by a fall in investment, itself caused by a fall in demand, will lead unfortunately to a fall in measured potential output. This is questionable as productive investment will recover when demand increases. The cases where investment is constrained (for example by financial constraints) should be distinguished from the cases where investment can follow demand. The 2009 crisis has caused in some cases a specific obsolescence of capital (for example in the construction sector in Spain or in the financial sector in the UK), but this is difficult to take into account. The effect of the crisis on the capital cost is a problem: interest rates decreased significantly, but this was probably not true for interest rates adjusted for risk, growth and inflation; the required rate of profit declined, but it was formerly obtained via fictitious financial gains.

L_D is the working-age population; in many EU countries (Spain, Ireland, United Kingdom), there were large immigration flows in the pre-crisis period, which reversed with the crisis. The concept of available population becomes vague.

H_D represents the working time trend. It depends partly on economic policy decisions.

T_N represents the activity rate trend; it is sensitive to the labour market situation. In a long-term perspective, the activity rate depends both on effective growth and social choices (such as the retirement age or female employment). How take this into account? Will the future European economy choose to allow non-activity for dependant people, women with children, older workers) or will it be a full-activity society seeking to offset the deceleration of working-age population growth by immigration, retirement age postponement, dependant people working, shorter holidays, longer working time, etc.

U_N represents the equilibrium (or structural) unemployment rate, which is of course difficult to estimate. Usually, an equation of the type: $\Delta r_{ulc}_t = -\beta(U_t - U_t^*)$ is estimated. The unemployment rate is above the equilibrium rate if real wages grow faster than labour productivity. But this is a descriptive method, which does not explain the structural unemployment rate evolutions. But labour productivity strongly decelerates in times of crisis. When the unemployment rate is high, its fluctuations have little impact on real wage evolutions, and so according to this method an increase in the unemployment rate is an increase in structural unemployment. According to the hysteresis theory, the long-term unemployed become progressively unemployable, so this effect would have theoretical justifications. The fact is that there is hardly any link between the theoretical justification and the estimation method. Conversely, however, the persistence of unemployment leads to a decrease in the reservation wage of unemployed workers, which should be favourable to employment. The irreversibility of this effect is problematic as in job recoveries insofar as the so-called equilibrium unemployment decreases. Employability may be a problem for part of the workers, and this may increase following a depression period, but it is difficult to believe that these problems may be highlighted by a single wage equation.

A* stands for the total factors productivity (TFP) trend adjusted for the capacity utilisation rate. There is a strong correlation between the capacity utilisation rate and TFP developments, and so it is not easy to define the trend. On the one hand A* decreases sharply in times of economic recession because firms are reluctant to lay-off workers; the permanent share of this decline is difficult to assess; on the other hand, this suggests that A* depends on the rate of growth (the Kaldor-Verdoorn effect). Moreover, in the medium term the TFP trend depends on companies' R&D efforts, in the long term of countries' efforts in education and research, so that its exogenous nature is problematic.

The alternative method consists in recognising implicitly that the capital stock is endogenous and to focus on the labour market:

$$Y^* = PT^*(U_N T_N H_N L_D)$$

Assessing PT* raises the same issues as for A*, in the short like in the long term. In times of mass unemployment, governments encourage firms to maintain employment, in particular by specific cuts in employers' social contributions, and so the apparent labour productivity growth trend is hindered. A company with strong output growth can more easily introduce innovations reducing the need for labour than a firm with stagnant demand, where these innovations would lead net employment to fall, and so to layoffs. A country in a situation of full employment should limit the use of labour: this is not the case for a country in a mass unemployment situation.

After the 2008-09 depression, the potential growth approach raises four questions:

- A choice needs to be made between two theses: 1) potential production fell in the crisis because production capacity and some jobs are now outdated. But is it valid for the MS which, unlike Spain, did not suffer from sector imbalances? 2) The fall in demand induced a fall in production and in production capacity, which will be reversed when demand recovers. The current depression is the result of inappropriate demand policies.

-A choice needs to be made between two theses: 1) factor productivity growth has undergone a new downward break in 2009 (but there is no evidence from this, as long as the economy is far from a normal level of capacity utilisation) and 2) This break is due first to labour hoarding, then to weak growth itself.

- A choice needs to be made between two theses: 1) France has currently an output gap of the order of 10% below its pre-crisis trend. France may decide in the future, if this is the social choice, to postpone the retirement age, reduce part-time work, discourage long-term parental leave. There is no labour supply constraint. The challenge is that everyone willing to work has a job. And 2) French growth will hit a labour supply constraint, in quantity and even more in quality.

Obviously, supply constraints (quantity and adequacy of the labour force, industrial strategy, firms' competitiveness) and demand constraints cannot be usefully analysed in the context of potential growth methodology.

2. What potential output?

Potential growth and the European Commission

While the first version of the Stability Pact was essentially based on the 3% of GDP limit for the nominal public deficit, the successive reforms which were introduced increased the role of the structural deficit notion (and thus of potential output). Thus, Member States should now have a medium-term target of 0.5% for their structural public deficit; as long as this objective is not achieved, they should improve their structural balance by at least 0.5% per year. However, the 3% limit remains for nominal deficits; breaching this arbitrary limit initiates the Excessive Deficit Procedure.

These rules have no economic basis, as was already many times written². These rules are much more rigid than the *golden rule of public finances* (which allows a structural deficit, corrected for the public debt depreciation induced by inflation, equal to net public investment), and more rigid than the debt stability constraint. They prevent any discretionary stabilisation fiscal policy, although it is necessary for perfect stabilisation (see box 1).

They have no economic rationale; they can only be understood for political reasons; their objective is to deprive Member States of any autonomy as concerns fiscal policy; to impose them an automatic fiscal regime, to concentrate all macro-economic policies at the EC level. But the EC is unable to implement the differentiated and reactive fiscal policies that would be necessary in each country's economic situation. According to the prevailing 'austerity/structural reforms' ideology at the EC, MS should reduce public spending and seek growth through deregulation of goods and services markets and downsizing of labour laws ; therefore, the EC does not have the objective of implementing effective fiscal policies. It should be noted that the January 2015 Communication³ recognises that the requested reduction in the structural deficit should depend on the MS economic situation. But the EC persists in refusing the implementation of any discretionary fiscal policies; the fiscal impulse should always be negative; in some extreme cases it could be zero, but never positive. The EC refuses the simple principle according to which: "each country should and must run the fiscal policy required to maintain its production at the potential level or to bring it back to it".

² For instance, Catherine Mathieu et Henri Sterdyniak, 2006: "A European Fiscal Framework designed for stability or growth?", in: *European Economic Policies -- Alternatives to Orthodox Analysis and Policy Concepts*, Metropolis-Verlag.

³ European Commission, 2015: *Making the best use of the flexibility within the existing rules of the stability and growth pact*, January 13th.

Box 1: About fiscal rules

In order to obtain a satisfactory demand level, the government must accept a public deficit. Let us note y , production, d , private demand, g , public demand, r is the interest rate and h the public debt/GDP ratio. All variables are measured in difference with a reference path where production is at its potential level.

If $y = g + d + cy - \sigma r + kh$, then the stabilisation fiscal policy is, in the short-run: $g = -d + \sigma r$

If this policy is implemented, then stabilisation is perfect, there is no link *ex post* between the deficit and the output gap. Let us note also that, g , government borrowing, is considered as structural according to the OECD or the EC methods, which makes no sense.

In the long run, $g=0$ and $h = -(d - \sigma r) / k$

The long-term public debt level is not arbitrary, but depends on private agents' wishes: debt must equal desired debt at the optimal interest rate, i.e. the rate equal to the growth rate.

This simple model shows that a fiscal rule like: $g = g_0 - \lambda y - \mu(h - \bar{h})$ cannot be proposed, since it would not allow for full stabilisation and since the government cannot set a debt target regardless of private agents' saving behaviour. The public debt level desired by private agents has probably increased during the crisis as households wish to hold less risky financial assets and businesses want to be less leveraged. Structurally, the ageing of populations implies that safe public assets are increasingly desired.

Can a Keynesian fiscal rule be designed? Net public investment (NPI) should be financed through borrowing; public deficit should be corrected of debt depreciation induced by inflation (at least for a 1.75% inflation target and a 60% debt target); fiscal policy should be countercyclical: a 1% output gap justifies a 0.75% of GDP public deficit, i.e. the automatic effect and slightly more; fiscal policy should be restrictive when monetary policy is restrictive too (a fiscal surplus is needed when the interest rate set by the ECB exceeds 3.5%, the 'golden rule' growth rate, according to Phelps, for inflation equal to 1.75% and a growth rate of 1.75%). It follows that:

$$S = -NPI - 1.75 * 60\% + 0.75 \text{ output gap} + 0.5 (i - 3.5)$$

According to this reasonable fiscal rule, which ensures that public debt does not exceed public capital stock in the long-term, and using the OECD output gap, the French public balance should have been in 2014: $d = -1.2 - 1.05 - 0.75 * 2.2 - 1.5 = -5.4\%$ of GDP. In fact, the French public deficit was 4.4% of GDP. But this rule does not allow for full stabilisation and does not take in consideration the fact that the output gap depends on fiscal policy.

But the devil is in the details: a main issue is the way of evaluating potential production. The Commission uses the production function method which leads to a fragile evaluation, which may be revised and is always close to the current production level. Let us look at the French case. In spring 2008, the output gap for 2007 was estimated to be slightly negative (-0.2 %). After the 2001-02 Internet crises, France experienced a weak growth period (an average annual growth of 1.6% from 2000 to 2005). It had recovered a satisfactory growth in 2006-07; the unemployment rate had fallen down to 8% in 2007. After the 2008-09 crisis, the Commission entirely revises his assessment: the output gap is now estimated to have been strongly positive in 2007 (+3.1%); the French economy would have been overheating from 1999 to 2008; the output fall in 2009 is almost entirely a return to normal. The output gap is

estimated at -2.2% for 2009. This is very awkward: over the 1999-2007 period, inflation remained close to 2%; the share of wages in value added remained stable (55.8% in 1999; 55.3% in 2007). There was no sign of overheating. Nevertheless, the revision done by the Commission reduces by 3.3% the potential output level in 2007 and increases by 1.7 percentage point the structural public deficit (-2.4% in the estimate from 2008; -4.1% now). According to the Commission's current estimates, French potential growth was already relatively low before the crisis: 1.7% in 2006-2007 (against 2% for estimates made before the crisis); it fell sharply in 2009 and has been since then of 1% only.

Table 1. French potential growth rate and output gap according to the EC.

	GDP*	Spring 2008		Spring 2010		Spring 2012		Autumn 2014	
		potGDP*	OG	potGDP*	OG	potGDP*	OG	potGDP*	OG
2000	3.9	2.4	2.2	2.1	1.9	2.0	2.9	2.1	2.5
2001	2.0	2.3	1.8	2.0	1.8	1.9	2.9	1.9	2.6
2002	1.1	2.1	0.7	1.8	1.0	1.7	2.0	1.7	2.0
2003	0.8	2.0	-0.2	1.8	0.3	1.8	1.1	1.7	1.1
2004	2.8	2.0	0.3	1.8	0.9	1.9	1.6	1.8	2.1
2005	1.6	2.0	0.0	1.9	1.0	1.9	1.7	1.8	1.8
2006	2.4	1.9	0.1	1.8	1.4	1.9	2.3	1.7	2.5
2007	2.4	2.1	-0.2	1.8	1.9	1.8	2.7	1.7	3.1
2008	0.2	1.9	-0.5	1.6	0.8	1.6	1.1	1.6	1.7
2009	-2.9			1.2	-2.7	1.2	-2.8	0.9	-2.2
2010	2.0			1.3	-2.7	1.2	-2.5	1.1	-1.3
2011	2.1				-2.3	1.3	-2.1	1.1	-0.4
2012	0.3					1.2	-2.8	1.0	-1.0
2013	0.3					1.2	-2.7	1.0	-1.7
2014	0.3							0.9	-2.3

*Growth rate.

The situation is worse for other countries, such as Greece, Spain and Portugal, where potential growth is now estimated to be negative (table 2). These evaluations have dramatic consequences in terms of the structural effort the countries are expected to make.

Table 2. Potential growth rate and output gap according to the EC

	Output gap 2007 (2008 estimation)	Output gap 2007 (2014 estimation)	Potential growth 2007 (2008 estimation)	Potential growth 2007 (2014 estimation)	Potential growth 2013 (2014 estimation)	Output gap 2014 (2014 estimation)
Belgium	0.3	2.7	2.5	1.8	0.7	-1.1
Germany	0.7	1.9	1.4	1.3	1.3	-0.8
Ireland	0.2	4.7	5.2	3.1	0.9	-0.2
Greece	1.5	4.7	3.8	1.9	-3.1	-10.9
Spain	-0.4	3.0	3.7	3.7	-0.7	-6.0
France	-0.2	3.1	2.1	1.7	1.0	-2.3
Italy	-0.3	2.4	1.5	0.8	-0.4	-4.5
Netherlands	0.3	2.5	2.1	1.9	0.2	-3.0
Austria	0.9	2.0	2.2	1.9	0.9	-1.1
Portugal	-1.1	0.9	1.3	1.2	-1.0	-6.0
Slovenia	1.4	7.1	4.9	3.6	-0.2	-2.7
Finland	0.8	4.6	3.4	1.6	-0.1	-3.1
UK	0.4	2.1	2.7	1.9	1.0	-0.8

Four conclusions can be drawn from these considerations. The potential growth concept used by the Commission cannot take into account supply constraints faced by a MS. This is obvious from the estimates made for Greece, Spain, and Ireland before the crisis. If growth was unbalanced in these countries, these imbalances did not reflect in terms of deviation from potential growth.

The Commission has no explicit theories explaining why potential growth slowed down in 2008-09 and why it is so low now. It does not disentangle cyclical and structural developments. It is the doctor Pangloss' macroeconomics. For instance, the UK potential growth estimate had fallen to an annual 0.9% in 2010, and has risen in the following years back to 2%. The potential output constraint shifts away as observed GDP comes close to it.

These drawbacks are one more argument against the notion of potential growth and its use for economic policy: Either potential growth is independent from effective growth, and if so it is difficult to understand why the Commission lowered it so much after the crisis; or potential growth depends on effective growth: a recession leads investment to fall, and hence to lower production capacity; potential labour force decreases (since some workers are discouraged to find a job, particularly among older-people, young people, women with children; since immigrant workers flows are reversed); labour productivity growth decelerates due to labour hoarding. But should this lead to the conclusion that potential output is permanently lower and that any strong increase in demand should be avoided in the future, or, in the contrary, that strong growth is needed to increase production capacity, to bring discouraged workers back to the labour market and to avoid a deterioration in their working skills?

The EC-DG ECFIN estimates cannot be used to set targets or limit public deficits as they are volatile and unreliable. A more robust method resulting in a more stable potential growth would be necessary. It would either lead to the conclusion that fiscal policies should have been significantly more expansionary in the euro area or would need to specify the reasons why this would have been irrelevant (such as current account imbalances)

It makes no sense to oblige a country to run a restrictive policy in order to meet an arbitrary public finance target if this is a country with high unemployment and weak and decelerating inflation. The output gap could serve as a guide for economic policy with a rule such as: a country is allowed to run an expansionary policy if its output gap is negative. But this is not written in the Fiscal Compact. The issue of the output gap evaluation remains.

The Commission's method as it is applied today is presented in: "The Production Function Methodology for Calculating Potential Growth Rates and Output Gaps", *European Economy, Economic Papers* 535, November 2014. The paper acknowledges the ambiguity of the concept: should capital stock be considered as fixed, knowing that it would increase in line with production? How to take into account capital stock medium-term developments, which may follow production, but may also hit a profitability or a financial constraint? The

paper recognizes that the EC method has institutional goals, and therefore should be simple. The paper considers potential growth should be equal on average to actual production, but this is questionable for an area which has experienced a prolonged depression and clear disinflation. Potential production is estimated according to the production function method, with the already reported drawbacks.

$$Y = A(U_K K)^{1-\alpha} (U_N T_N H_D L_D)^\alpha \text{ with } \alpha = 0,65 ;$$

Immigration is not taken into account. U_N is the structural unemployment rate, estimated by an equation such as: $\Delta ruc_t = -\beta(U_t - U_{Nt})$. The unemployment rate is higher than its structural level if unit wage costs growth is positive. Thus the estimated structural unemployment rate follows roughly the effective unemployment rate fluctuations. It is not explained by structural factors. For Spain, the structural unemployment rate would have declined from 17% in 1992 to 12% in 2005, before rising to 26% in 2015. In some countries, β is not significant. At Year N, potential output must be extrapolated for years N + 1, N + 2, which is done using the Commission projections figures, which necessarily fluctuate largely and are uncertain. Filtering trends in productivity is particularly fragile for the end of the period. Thus, the more uncertain potential production and structural balance evaluations are those which are central for the assessment given by the European Institutions on national fiscal policies.

For medium-term forecasts, the method becomes more pragmatic, ideological and political: the evolution of the structural unemployment rate accounts for structural indicators (such as the unemployment benefit replacement rate, the weight of labour taxation, the unionization rate...), without any empirical evidence. The evolution of participation rates partly reflects changes in pensions' legislation. Interestingly, the EC paper gives no explanation on the revisions induced by the crisis and on the unrealistic results for the 2000-07 period.

As shown in table 3, the strong slowdown in potential growth, according to the Commission, is induced by the decline in capital accumulation (induced in fact by the output fall itself) and of the role of labour, which comes partly from the reversal of migratory flows, in part from an alleged increase in the NAWRU (8.8% in 2008, 10.2 in 2015), despite labour market reforms. The slowdown in TFP growth is a long-term phenomenon: it decreases from 1.5% in 1985-1992 to 0.9% in 1997-2002, and 0.65 per cent in 2003-2007 and would be 0.5% in 2015-18, despite the labour market structural reforms.

Table 3. Potential growth and contributions according to the Commission.

EA 18	Potential growth	TFP	Capital contribution	Labour contribution
2003-2007	1.8	0.65	0.8	0.35
2009-2014	0.6	0.4	0.3	-0.1
2015-2018	0.95	0.5	0.4	0.05
2019-2023	1.3	0.6	0.45	0.25

Potential growth: the OECD view

The OECD results and methods are similar to those of the Commission. In the spring of 2008, the OECD estimates that the French output gap was almost nil (+ 0.3%) in 2007: French potential growth is 1.9% for 2007 and 2008. Currently, the output gap estimate for 2007 is +3%; potential growth in 2007 would have been 1.5% only. The OECD does not hesitate to claim that the French economy was above its potential from 1999 to 2008, although there is no evidence of overheating. In 2014, the French output gap would be - 2.3% with a potential growth of 1.2% in 2013 rising to 1.5% in 2016.

From 2009 to 2014, average annual potential growth would have been, according to the OECD, 1.3% for Germany, 1% for France, 0.75% for the euro area, 0.4% for Spain, 0% for Portugal, -0.1% for Italy and -1.4% for Greece. These low figures do not result from an *ex ante* analysis which would have made explicit weaknesses in supply inducing low growth; It is an *ex post* tautological analysis.

Potential growth: the IMF view

The IMF estimates are very much in line with the OECD ones. In 2008, the IMF estimated that the French output gap was -0.5% in 2007. In 2014, the figure had been revised to +2.5%. According to the IMF, the French output gap was - 2.8% in 2013; French potential growth is 1% in 2013-2015, and should gradually increase to 1.5% in 2019.

In 2011, the IMF had made a study on the French economy potential growth during the crisis⁴. The study noted that no sector of the French economy was dramatically hit during the crisis. With the production function method, potential growth would be 2% per year from 1991 to 2000, 1.7% from 2001 to 2007, 0.9% from 2008 to 2010. The slowdown would be due to a rise in the equilibrium unemployment rate, a fall in the capital utilization rate, a decline in the rate of capital accumulation and in total factors productivity growth. In the future, potential growth would be 1.5% per year (2011-20), and then 1.7% (2021-40), the IMF considering that the pensions' reform would increase the participation rate, that the equilibrium unemployment rate would remain stable; that capital would increase more rapidly than potential GDP; TFP would recover its before-crisis growth (thanks to the already implemented reforms). In 2013, the IMF confronted four methods, leading to annual potential growth estimates for France, between 2008-12, ranking from 0.4% (statistical filtering) to 1,1% (the production function method), and the output gap in 2013 varying between -0.5% and -3.5%.

Strangely, the IMF persists in saying that a high level of public debt leads the interest rate to rise and therefore has an impact on potential growth (see Carlo Cottarelli, 2012, *Fiscal policy*

⁴ Cheng, K., 2011, "France's Potential Output during the Crisis and Recovery, *IMF Country Report* n°11/212.

in advanced economies: fiscal adjustment, efficiency and growth) even though the crisis has shown that there was is no link between public debt and interest rates.

In April 2015, the IMF published a detailed study: *Where are we headed? Perspectives on Potential Output*. It distinguishes the notion of potential output from the notion of sustainable output (which would take into account all imbalances). Potential output is measured by a model with two equations, which has the weakness to be based on the linearity of the Phillips curve:

$$\pi = a + \pi^e - c(U - U^*) + e_\pi$$

$$U - U^* = \tau(Y - Y^*) + e_y$$

In developed countries, TFP growth declined before the 2008 crisis due to the waning of the ICT effects and to the growth of low productivity sectors (personal services, construction, non-market services). The IMF considers that the crisis has been accompanied by a sharp slowdown of potential growth (especially in the euro area, from 1.5% by year to 0.7% in 2008-2014). On the whole, the crisis would have reduced potential output in the euro area by 7.75% in 2014. The study distinguishes permanent effects (the slowdown in potential labour force growth) from temporary effects (slowdowns of capital accumulation and TFP growth, the increase in the rate of structural unemployment, the decline in the participation rate, which should theoretically be reversible, but seems empirically to have lasting effects on levels as on growth rates). However, a large part of these effects comes from a strong pessimism about the pace of future growth. It is the anticipation of low growth which caused a decrease in the rate of capital accumulation and of potential labour force. It follows that potential growth should be increased by supporting productive investment, investments in infrastructure, increasing the use of ICT and by reforming the tax and social systems to encourage female and older workers' employment.

Potential growth: INSEE's view

On a medium-term horizon, the paper by Pierre-Yves Cabannes, Alexis Montaut, Pierre-Alain Pionnier (March 2013): "*Évaluer la productivité globale des facteurs : l'apport d'une mesure de la qualité du capital et du travail*" provides an evaluation of French potential growth from 2015 to 2025. Potential growth would stand between 1.2 and 1.9% by year, 1.5% for the central scenario, decomposed as: 0.5% for labour contribution, 0.5% for capital contribution and 0.5% of pure TFP. However, the paper does not take a position on the output gap level in 2013. Similarly, it does not explain the link between actual and potential growth. Stronger demand entails a faster accumulation of capital, encourages some people to enter (or to remain) on the labour market, authorizes larger immigration flows, allow to possibly increase working time and to postpone the retirement age. The two key issues are not addressed: what are the actual barriers to growth? Do we want higher growth at any cost?

The paper by Matthieu Lequien and Alexis Montant (2014): « *Croissance potentielle en France et en zone euro: un tour d'horizon des méthodes d'estimation* » defines potential GDP as the "GDP level which would be obtained if production factors (labour and capital) were used to a maximal extent without any tensions on prices", thus introducing questionable symmetry between labour and capital. Four methods are confronted. The paper concludes that potential growth ranges between 0.7% and 1.3% in 2014 (compared with 2% before the crisis), the output gap in 2014 ranging between -2.3 and -3.5 points, 70% of the output loss due to the crisis would be permanent.

The first method uses the production function. The capital stock is exogenous. The structural unemployment rate is spotted by an equation: $\pi = a + b\pi_{-1} - c(U - U^*) + e$. It rises from 8.6% in 2007 to 9.5% in 2013, ie is only one percentage point below the effective rate. The TFP falls from 1% before the crisis to 0 afterwards. This induces a sharp slowdown of potential growth from 2.1% to 0.6% per year. This method signals but does not explain the slowdown in potential growth.

The second method analyses the labour market. It avoids to incorporate the capital accumulation slowdown in the evaluation of potential growth. Potential growth depends on labour productivity trend, estimated to grow by 1.1% by year in normal times. Unfortunately, a questionable method leads to labour productivity structural growth of -0.5% in 2009-10. Should the gap (of around 3%) and labour hoarding during the strong depression, be deducted from potential growth (as done by the authors) or will it disappear? Potential labour force grows by 0.2% only per year because of the rise in the equilibrium unemployment rate. Finally, the potential growth rate would come back to around 1.3% in 2014.

The semi-structural approach uses information on the capacity utilisation rate, on inflation, on the business climate, to evaluate the output gap, potential GDP being the sum of the output gap and of the actual GDP. This method is questionable: the capacity utilisation rate may return to normal levels after a prolonged period of recession, as firms do not have any reason to maintain excessive production capacity. This does not mean that production is at its potential level from the labour market perspective; unemployment fluctuations have no impact on inflation when unemployment is high and inflation already low. So, there is a risk that the method underestimates the output gap. Here also, the method is purely descriptive.

The so-called direct approach uses a large number of short-term indicators to build a synthetic indicator representing the economic cycle. The output gap evaluation method consists in standardizing the synthetic indicator using the mean and the standard deviation of the output gap assessed under the first method, which has no justification: the method is not autonomous. Since 2008, the economic situation has deviated from usual cyclical fluctuations. This method leads to unstable potential growth estimates, since it adds

effective growth to the output gap evaluated by the method (2.3% in 2002, 1.5% in 2003, and 2.6% in 2004, for example).

Table 4. French potential growth and output gaps according to Lequien and Montant

Method	PG 2000-06	PG 2008-13	OG 2007	OG 2013
Production function	2.1	0.6	0.9	-2.3
Labour market	2.0	0.75	0.8	-3.2
Semi-Structural	2.0	0.95	1.5	-3.5
Direct	1.85	0.7	0.7	-2.9
EC	1.8	1.15	3.4	-2.7
OECD	1.8	1.2	3.6	-2.9
IMF	2.0	0.9	2.5	-2.4

Potential growth: the Banque de France view

The paper by Mabrouk Chetouane, Matthieu Lemoine and Marie-Elizabeth de la Serve (2011): « Impact de la crise sur la croissance potentielle, une approche par les modèles à composantes inobservables » described a decrease in French potential growth from 1.7% in 2007 to 0.7% in 2012, due to the decline in the TFP growth (from 0.3% to 0.2%), the lowering of capital accumulation (from 0.9% to 0.6%) and even more the decline in labour contribution (from 0.4% to -0.1%), due to an increase in the structural unemployment rate and a decline in the participation rate. But the method provides no explanatory factors. With regard to the labour market, the rise in the structural unemployment rate is due to the fact that the rise in unemployment has not induced a sufficient significant slowdown in inflation, but this can also be explained by non-linearity in the Phillips curve.

The paper by Valérie Chouard, Daniel Fuentes Castro, Delphine Irac and Matthieu Lemoine (2014): “Assessing the losses in euro area potential productivity due to the financial crisis”, *Applied Economics*, estimates an equation explaining TFP growth. In addition to trends and indicator variables, the only explanatory variables are the capital average age and the capacity utilization rate. The paper concludes that the crisis has induced permanent (but gradual) losses in the factors productivity level by 6.2% (3.3% being a direct effect, 2.9% the effect induced by the increase of the age of capital). The crisis has no effect on the TFP growth (which remains at 1%). The increase in the age of capital is not obvious if firms, during low demand periods, use only the more recent equipment. In this vision, potential production was hit by a negative shock in the crisis, which contradicts the idea of a long-term trend which may be obtained by smoothing.

Potential growth: OFCE points of view

OFCE has never really estimated potential output. Insofar as it is difficult to estimate an equilibrium unemployment rate, insofar as there is no reason to include capital stock fluctuations in the potential output estimates, some economists have kept an empirical

practice which consists in estimating that the equilibrium unemployment rate was achieved in the years 2006-07; then to prolong potential production according to trends of the labour force, activity rates, apparent labour productivity rates. The growth of the working age population (15-65) would decelerate from 0.8% per year in 2006 to 0.4 per cent in 2015, but the activity rate would increase by 0.2% per year due to women and older people; labour productivity growth would remain at 1% per year. In these conditions, the output gap would have been in the order of 6% in 2010; 10% in 2014.

Table 5. French potential growth estimates

	GDP	Trend		Compromise		Break	
		potGDP	OG	PIB Pot	OG	potGDP	OG
2006	2.4	2.0	0	2.0	0	2.0	0.0
2007	2.4	1.9	0.5	1.9	0.5	1.9	0.5
2008	0.2	1.9	-1.2	1.9	-1.2	1.4	-0.7
2009	-2.9	1.9	-6.0	1.4-3.0	-2.5	1.4-3.0	-2.0
2010	2.0	1.8	-5.8	1.4	-2.1	1.0	-1.0
2011	2.1	1.8	-5.5	1.4	-1.7	1.0	0.1
2012	0.3	1.7	-6.9	1.4	-2.8	1.0	-0.6
2013	0.3	1.7	-8.3	1.4	-3.9	1.0	-1.3
2014	0.3	1.6	-9.6	1.4	-4.4	1.0	-2.0
2015	1.2	1.6	-10.0	1.4	-5.4	1.0	-2.0

In December 2011, OFCE's forecast is based on an output gap of -5% for 2011. It assumes that this gap will be closed in 2 years, so that spontaneous growth for the next two years would be about 4%. In December 2012, the forecast is based on an output gap of - 6% for 2012. The assumption now is that the output gap will close by 1.5% per year at maximum, so that spontaneous growth would be 3.2% per year, during 4 years. In spring 2013, the forecast opts for an intermediate scenario, with a break in potential production of around 3% at the beginning of the crisis and a potential growth of 1.4% since then. The output gap would be of the order of -4% in 2013. A spontaneous growth of 2.6% would close the gap in 3 years. At the same time, a study shows that the output gap widened 6.5 point from 2007 to 2012 by examining the gaps in unemployment rate, activity rate and labour productivity with their trends. In late 2014, the forecast comes closer to conventional estimates. It accepts the idea of a positive output gap from 1999 to 2008. The output gap is about- 2% in 2012, - 3% in 2013. But the authors suggest a potential for spontaneous growth of 2.4% from 2010 to 2014. This raises four issues. Should we accept a positive output gap from 1999 to 2007? Should potential growth be slowed down when actual growth is low? This is probably for the sake of credibility, but this undermines the usefulness of the potential growth concep. Was there a break in potential production in 2009? This implies to consider that the fall in demand translates into irreparable and irreversible losses in terms of equilibrium unemployment rates and labour productivity.

The analysis is often based on the unproven implicit assumption that production automatically returns to its potential level, or at a rate of x percentage points per year, or in n years, so that forecasts may rely on the notion of spontaneous growth. If n = 3, an output

gap of -4% and a potential growth of 1.4% imply a spontaneous growth of 2.7%. If $x = 1.5\%$, spontaneous growth is 2.9%. But this assumes that the output gap and potential growth can be defined and measured without ambiguity, which is wrong. It also implies that there are spontaneous forces to return to the equilibrium. These mechanisms should be clarified: in the euro area, this can hardly be through a decline in real interest rates adjusted for growth, or through competitiveness gains. Deflation is slow and its effects can be both positive (increases in households incomes, real wealth effect) and negative (increases in debt ratio). Unemployment certainly leads real wages to decrease, but here also the effects are ambiguous. Finally, fiscal policy may be forced to become pro-cyclical.

Chart. Spring 2014 evaluations



Potential growth and the French government.

The French government must include in the documents sent to European Institutions an assessment of potential production and potential growth, a strange operation which combines economic science and political compromises.

At the end of 2013, the Government estimates that output gap for 2012 is -2% and that potential growth for the next 5 years is 1.5%. This -2% is amazing since France has lost 7% of growth compared to the pre-crisis trend. As compared to 2007, the loss is 2.5% in terms of unemployment rate, 3.5% in terms of labour productivity, 1% in terms of participation rates. With an output gap negative by 7%, France could say that there is no more fiscal effort to be made (especially as a structural deficit of 2% of GDP stabilizes the debt-to-GDP ratio at 60%

or to meet the true "golden rule of public finances"), but France did not wish to get into conflict with the Commission

At the end of 2014, the Government accepts the Commission's figures. The output gap was only -2.7% in 2013. Potential growth is 1% in 2013-15, 1.2% in 2016-18. Compared with a potential growth of 1.6 per cent, this requires an additional fiscal effort of 0.3% per year in 2013-2015.

To conclude, the review of these different studies leads to negative conclusions. It is not credible to find that the output gap was positive in France as in the Euro area from 1999 to 2007; it is strange that potential growth evaluations have been revised so substantially *ex post* after the 2008-09 crisis. Studies generally show a decrease in potential output in 2009, a break in potential growth, but do not explain them. One should clearly choose between three points of view: 1) potential production is a short-term concept, it reflects the actual developments of production; 2) It is a long-term concept which reflects pure supply constraints, it does not vary with the demand-driven fluctuations in production. 3) The potential production concept accounts for all constraints that weigh on the economy (factors availability, firms' profitability, solvency of public finances, competitiveness), which makes the calculation method much more demanding. In the latter case, instead of trying to describe a permanent evolution, one should clearly recognize that there was a break in potential output in 2009.

3. What potential growth in the future?

At mid-2015, two views can be opposed. For the European Commission, the IMF, the OECD, the issue of potential growth is already crucial today because of the aging of populations (which reduce labour force growth), the slowdown in capital accumulation and the slowdown in TFP growth.

The future TFP growth problematic: it will slow because of environmental constraints, rising raw materials and energy prices; ICT innovations should speed it up, but as demonstrated by Robert Gordon⁵, their effects are hardly visible on total productivity growth. If the annual potential growth in the euro area spontaneously no more than 1% in the coming years, if the objective of reduction to 60% debt-to-GDP ratio is maintained, the area would be sentenced to strong reductions in public spending, while the social spending trend (health, pensions) increases. So, the priority should be to increase potential growth by structural reforms, education and research efforts, innovation, labour participation of women and older workers, while it should maintain fiscal consolidation efforts.

However, recent experience has shown that fiscal consolidation strategy was very costly in terms of growth and not effective in terms of debt-to-GDP ratios. More fundamentally, with

⁵ See: « Is US economic growth over? Faltering innovation confronts the six headwinds » (August 2012), « The demise of US economic growth: restatement, rebuttal, and reflections » (January 2014).

this strategy, our economy would be sentenced to a perpetual search of growth and innovation, with no reflection on the growth content. No social control of innovation would be desirable or even possible. Also this search for growth would end day in a ecological catastrophe.

Several studies claim to evaluate the gain that could bring a set of structural reforms. Their point of view is often to deny all positive aspects of regulation, as well as public and social expenditure and to consider that any move towards a hypothetical pure market economy liberalism would increase growth. Thus, the OECD (*France: structural reforms: impact on the growth and options for the future*, October 2014) evaluates the potential gain for France to 3.7% after 10 years. This figure may seem high; it should, however, be compared with the 10% that the crisis cost France. The study is considering no reform of the banking and financial system, responsible for the crisis; the issue of a poor euro zone governance, the break-up of the French industrial model, or ecological transition are not discussed. The reforms are essentially limited to increase competition in the energy sector (but is the lowering of the energy price compatible with energy transition?) and in regulated professions (but does France develop the judiciary professions?); to reform of the unemployment insurance (but the French problem is the lack of jobs, not the reluctance of workers to occupy them).

According to the study by the European Commission (János Varga and Jan in't Veld, 2014, *The potential growth impact of structural reforms in the EU*, Economic Papers 541, December), structural reforms could increase GDP in the euro area (France) by 6.3% (7.7%) in 10 years. But some proposals are difficult to apply in high unemployment periods (such as the rise in the participation rate of women, low-skilled workers, elderly, which would increase GDP by 2.3% in the French case; such as the reform of unemployment benefits: +0.8%); others need very long time (increase in the share of high-skilled workers; decrease in the share of low-skilled workers: +0,9%). Some are socially questionable (raising taxes on consumption at the expense of those on labour, which would adversely affect pensions: + 1.7%). The only remaining proposal is to lower the mark-up in services sectors (+ 1.8% of GDP in 10 years).

For us, the European economy is far from its potential output. The demand deficiency induced by the financial crisis, by the public debt crisis in Southern countries, by austerity fiscal policies resulting in a surge of unemployment, stagnation (and sometimes decrease) in activity rates (especially for youth and women), a decrease in labour productivity growth due to labour hoarding, to the Kaldor-Verdoorn effect, to the low-skilled employment incentive policy. At the firms' level, labour-saving innovations are difficult to introduce in a period of stagnation.

Europe suffers from four related problems:

- Trade globalization (which opens the possibility to produce in emerging countries) like financial globalization (which allows to choose between productive and financial investment)

increased the profitability required by firms. At the same time firms invest less in Europe because of the growth slowdown and of investment in emerging countries.

- A significant part of the population saw its industrial jobs disappear as result of mechanization and competition from emerging countries. Conversely, a very small part of the population benefits from globalization. Large companies and wealthy people can increasingly be exempt from the burden of public expenditure. Their share in national wealth increases.

- The resulting demand deficit has been filled in by financial bubbles and households indebtedness (the Anglo-Saxon solution), by competitiveness gains (the German strategy), or by public debt. After the burst of the financial bubble, after the public debt crisis in Southern countries, after the Fiscal Compact, Europe suffers from a lack of demand and excessive competitiveness in Northern countries, in particular in Germany.

- The lack of demand requires an expansionary monetary policy. Short-term interest rates have been brought down to zero, but this remains insufficient in light of the weakness of demand and of low-inflation prospects. There is a risk in developed countries of a fragile recovery relying on financial bubbles or over-indebtedness.

A significant difference exists between the income distribution resulting from current power relations between capital and labour, and competition between countries and the one which would be required to allow a balanced growth.

According to this point of view, the current issue is not the potential growth level but the capacity to have a rate of growth sufficient to use all available labour taking into account the constraints imposed by globalization and financial capitalism. The required policy should include a revival of demand in Europe, which requires a decrease in the profitability requested by firms and financial markets, the increase in wage share in enterprises value added, and in particular the increase in wage costs in Northern Europe countries; the end of tax competition to attract richest people and large firms; supporting ecological investment, via public spending, but even more by the banking and financial sector, an industrial policy aiming at redefining the place of Europe in future labour international division, the development of the European social model. Today, this policy is a utopia, in view of the political situation in Europe.

The issue of trend in productivity gains, the measure of which is largely a statistical convention, has little importance after all. Europe may in the years to come, if it wishes to do so, raise women and older workers participation rates, reduce involuntary part-time jobs, increase the number of immigrant workers. However, the question is whether, accounting for the already achieved development level and ecological constraints, EU countries should aim at reaching the highest growth and market-sector employment or whether the objective should not be to account for the needed limitation of material production growth and to see how our societies may adapt to it.