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Measuring excess credit using the "Basel gap": relevance for setting the countercyclical capital buffer and limitations

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In 2012, the Basel Committee on Banking Supervision (BCBS) introduced a new prudential tool: the "countercyclical capital buffer" (CCyB). The buffer represents an additional capital requirement for banks, whose rate varies according to the credit cycle (from 0% to 2.5% of risk-weighted assets). The Basel Committee justified this new buffer due to the "losses incurred in the banking sector [that] can be extremely large when a downturn is preceded by a period of excess credit growth". In order to set the buffer rate, the macroprudential authorities must identify, with as much robustness as possible, an excessive growth in credit. In this regard, the deviation of the ratio of total credit-to-GDP (gross domestic product) from its long-term trend (the "credit-to-GDP gap" or "Basel gap") was regarded as a good early warning indicator of banking crises worldwide (Drehmann et al., 2011). The European Systemic Risk Board (ESRB) notably recommends that it should be published systematically to provide support for decisions on the setting of the CCyB rate.

However, this benchmark indicator is not necessarily as relevant today as it would have been before 2008. In particular, the lack of international consistency between certain credit statistics and certain methodological choices in its calculation mean that it has to be supplemented with expert judgements and country-specific analyses.

Key figures

1.8 percentage points
estimated excess private-sector credit compared with its long-term trend – the "Basel gap" – in France at end-2016

2 percentage points
critical "Basel gap" threshold at which the European Systemic Risk Board recommends the activation of the countercyclical capital buffer

0%
countercyclical capital buffer rate for second-quarter 2017 decided by the High Council for Financial Stability acting on the proposal of the Governor of the Banque de France

Credit-to-GDP ratio, trend and gap for the French private non-financial sector
(left-hand scale in %, right-hand scale in percentage points)

- ■ "Basel gap" or excess of private debt compared to its long-term trend (right-hand scale)
- — Ratio [Credit-to-GDP]
- — Long-term trend
- — European Systemic Risk Board (ESRB) benchmark threshold (right-hand scale)
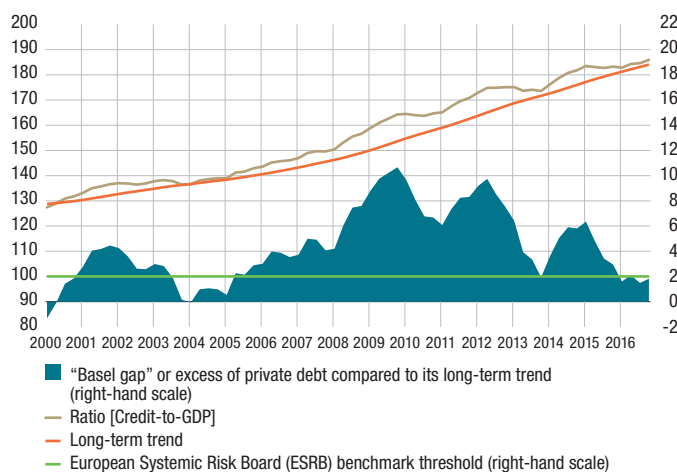
Sources: BIS, Banque de France calculations.

1. Why are countercyclical bank capital requirements needed?

An inadequate regulatory framework prior to the 2008 crisis

The procyclical nature of capital requirements defined by the Basel Committee for banks has often been singled out as one of the main weaknesses of the regulatory framework in force prior to the 2008 financial crisis (Repullo and Suarez, 2008). It is a fact that banks can meet their capital requirements more easily in periods of growth because the cost of capital is lower. During periods of crisis, the opposite is true: the risk inherent in the financial system feeds through to the banking sector's cost of capital and can make it difficult for banks to comply with regulatory capital ratios. If the capital accumulated during a boom period is insufficient to withstand this crisis, banks may have to restrict their credit supply in order to respect the regulatory requirements. This worsens the crisis as it jeopardises financing to the real economy. It therefore appeared essential to incorporate a regulatory buffer in the new Basel III framework, whereby the capital requirement for banks could be varied countercyclically to encourage them to build up capital during economically favourable periods. This approach is central to the macroprudential policy framework ("Macroprudential policies, implementation and interactions", *Financial Stability Review*, Banque de France, 2014).

The European Union therefore incorporated Articles 135 *et seq.* into the Capital Requirement Directive (CRD IV), which define the countercyclical capital buffer (CCyB). The buffer is a Core Equity Tier 1 (CET1) requirement (whose rate varies over the cycle within a range from 0% to 2.5%).[1] According to the ESRB's 2014/1 recommendation on guidance for implementing CCyB rates, it should "protect the banking system against potential losses associated with a build-up of cyclical systemic risk, thereby supporting the

D1 The procyclical nature of capital requirements

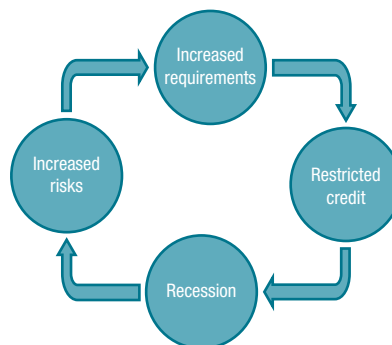sustainable provision of credit to the real economy throughout the financial cycle". The objective is therefore two-fold: (i) strengthening the resilience of the financial system in periods of recession while (ii) smoothing the financial cycle, and the credit cycle in particular (see Box).

In France, Articles 1 to 9 of the executive order *(arrêté)* of 3 November 2014 on the capital buffers of banking services providers and investment firms other than portfolio management companies[2] defined the decision-making procedures for the countercyclical buffer: the High Council for Financial Stability (HCFS) is responsible for setting the CCyB rate quarterly, acting on the proposal of the Governor of the Banque de France, and for publishing it on the HCFS website.

The difficulty of identifying the position in the credit cycle

The quarterly revision of the CCyB is intended to ensure that it reflects the state of the credit cycle. However, this continuous monitoring comes up against two major difficulties: (i) it is difficult to assess with certainty and in real time the position in the credit cycle; and (ii) it is even more complicated to know whether the amplitude

1 This rate may be exceeded in exceptional circumstances.

2 See the executive order *(arrêté)* of 3 November 2014.

Box

CRD IV – Article 136

"Each designated authority shall calculate for every quarter a **buffer guide as a reference to guide its exercise of judgement** in setting the countercyclical buffer rate […]. **The buffer guide shall reflect, in a meaningful way, the credit cycle and the risks due to excess credit growth** in the Member State and shall duly take into account specificities of the national economy. **It shall be based on the deviation of the ratio of credit-to-GDP from its long-term trend**, taking into account, inter alia:

a) an indicator of growth of levels of credit within that jurisdiction and, in particular, an indicator reflective of the changes in the ratio of credit granted in that Member State to GDP;

b) any current guidance maintained by the ESRB […];

Each designated authority shall assess and set the appropriate countercyclical buffer rate for its Member State **on a quarterly basis, and in so doing shall take into account:**

a) the buffer guide […];

b) any current guidance […] and any recommendations issued by the ESRB [...];

c) **other variables that the designated authority considers relevant for addressing cyclical systemic risk."**

of the credit cycle corresponds to the financial and economic fundamentals or is the result of a credit bubble (excessive amplification).

Economic research focused mainly on measuring the excess credit that acts as an early warning indicator for financial crises. A consensus emerged around the "credit-to-GDP gap" or "Basel gap", i.e. the deviation of the ratio of credit-to-GDP from its long-term trend. Several studies, especially from within the Basel Committee, demonstrated ex post that this indicator could have correctly predicted numerous financial crises since the 1980s, and particularly the 2008 crisis. Its generally applied formula is as follows:

$$Basel\ gap = \frac{Credit}{GDP} - long\text{-}term\ trend$$

However, the formula does not define the credit series to be used or the calculation method for the trend.

Recommended definition of the scope of credit to be included

The Basel Committee recommends the use of a "broad" credit series that covers all sources of borrowing for the private non-financial sector (Dembiermont et al., 2013). In particular, it "should include all credit extended to households and other non-financial private entities in an economy independent of its form and/or the identity of the supplier of funds. This means that it should include credit extended by domestic and international banks as well as non-bank financial institutions either domestically or directly from

abroad, and should also include all debt securities issued domestically or internationally to fund households and other non-financial private entities (including securitisations, regardless of who holds the securities)". Diagram 2 presents a detailed breakdown of the series and the stock of credit that make up the "broad" credit

aggregate, calculated by the Bank for International Settlements (BSI) and currently used in France. This broad definition notably means that all credit risks within the private non-financial sector are captured. Consequently, the credit series is more akin to a private non-financial sector debt series.

D2 "Broad" credit data according to the BIS in France in fourth-quarter 2016
BIS broad debt – total (EUR 4,132 billion)

	BIS broad debt – households*** (1,275)	BIS broad debt – NFCs (2,857)			
			Bank credit (990)	Debt securities** (643)	Other debt (1,224) Intra-group > 95%
BIS bank debt – total (2,108)	Domestic bank credit* (1,160)	BIS bank debt – NFCs (948)	Domestic bank credit* (908)	Debt securities held by domestic banks** (18)	
				Debt securities held by domestic** CISs**** (22)	
	Domestic bank securitised credit (99)		Domestic bank securitised credit (5)	Debt securities held by other financial institutions (603)	
	Cross-border bank credit (8)		Cross-border bank credit (77)		
	Other credits (8)				

— Financial accounts
— Monetary statistics
— Calculated by subtraction
  * Non-securitised credit; the Stat Info use series that reintegrate securitised credit
     (households: EUR 1,259 billion and NFCs: EUR 913 billion in December 2016)
 ** At market value; the Stat Info use series at nominal value (EUR 593 billion in December 2016)
*** And NPISH (non-profit institutions serving households)
**** CIS (collective investment scheme)

Sources: Banque de France, BIS.

Calculation methods for long-term credit trends

The second important element of this indicator is the so-called "long-term trend". It is calculated using a Hodrick-Prescott filter, which defines the trend as follows:

$$min_{\tau} \left(\sum_{t=1}^{T} (y_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2 \right)$$

Where T is the last known date, y_t is the original series and τ_t is the estimated trend. The parameter λ therefore sets the balance between the measured trend's two objectives: (i) remaining faithful to the original series (i.e. the distance from this series, the first term of the filter equation) and (ii) smoothing noise (i.e. fluctuations in the growth rate of the trend component, the second term of the equation). A higher value of λ implies a higher degree of smoothing, which takes precedence over fidelity. The trend therefore gets closer to being a straight line and moves further away from the original series. Implicitly, each value of λ thus corresponds to a duration of the estimated gap cycle. The Basel Committee uses a particularly high λ value (400,000), which corresponds to a cycle lasting approximately 30 years. This choice is based on the observed frequency of previous financial crises: past dynamics consequently weigh heavily and long on the estimate of the trend.
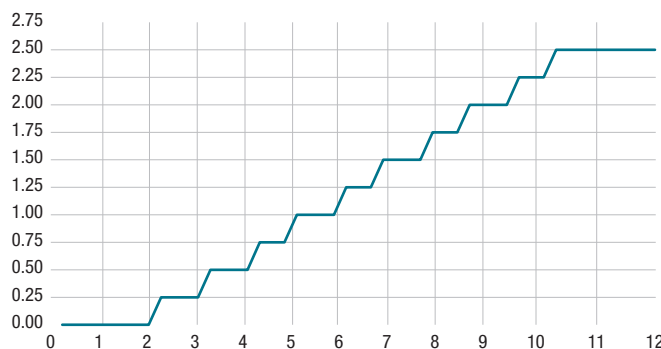
2. Using the Basel credit gap to set the countercyclical buffer in Europe

A standardised indicator of excess credit in Europe

In its 2014/1 recommendation, the ESRB introduced a "buffer guide", which, although non-binding, seeks to put in place a Taylor-type rule for the conduct of macroprudential policy, by using the Basel gap[3] to determine the CCyB rate (see also Detken et al., 2014). This rule is intended

C1   Countercyclical capital buffer guide
(CCyB rate in %, Basel gap in percentage points)

Sources: Banque de France, graphic representation of ESRB's 2014/1 recommendation.
Note: If the Basel gap reaches two percentage points, the ESRB recommends that the macroprudential authorities demand a CCyB buffer of 0.25% from banks.

to assist in decision-making in a context where macroprudential experience is still rare (Committee on the Global Financial System (CGFS), 2012 and 2016). The aim may be praiseworthy, but the parallel with monetary policy is unrealistic for one important reason: the difficulty of quantifying the objective. Monetary policy has a clear implementation framework: price stability is associated with a quantifiable objective – inflation – and a tool – the policy rate. Macroprudential policy has a broader aim – financial stability – which is not easily quantifiable as an objective. However, if we reduce financial stability to the absence of excess credit during boom periods and insufficient credit during recessionary periods (i.e. beyond what the fundamentals demand), the Basel gap could be used to quantify and target this objective.

The Basel gap addresses the **need for a standardised indicator of excess credit**, particularly for the euro area and more generally for the European Union. Chart 2 shows that before 2008, the majority of the Basel gaps were indeed generally positive, particularly in those countries which would be most impacted by the financial crisis after 2008.

3   The Taylor rule reflects a direct relationship between the setting of monetary policy interest rates in response to rates of inflation and economic activity, introduced by Taylor in 1993.

Since 1 January 2016, it has been mandatory for the national macroprudential authorities of every member country of the European Union to set a countercyclical buffer on a quarterly basis. In addition, a series of consultations was introduced at the European level to ensure that the treatment of cyclical risks is consistent between countries, and thus facilitate financial integration. In order to guarantee this consistent treatment, the application of the CCyB respects two basic principles:

- **the principle of mandatory reciprocity:** for every European Union member country, each member is required to recognise the CCyB requirements of other members. Banks in one given jurisdiction with exposures in another, must apply to those exposures the CCyB rate set by the macroprudential authority where the foreign exposure is held;[4]

- **the European Central Bank (ECB) has the right to "top-up" the buffer requirements of member countries of the euro area.** The ECB can increase (but not decrease) the CCyB rates chosen by the national authorities, thereby limiting the scope for national authority inaction bias and ensuring that the risks of contagion to other countries are taken into consideration.
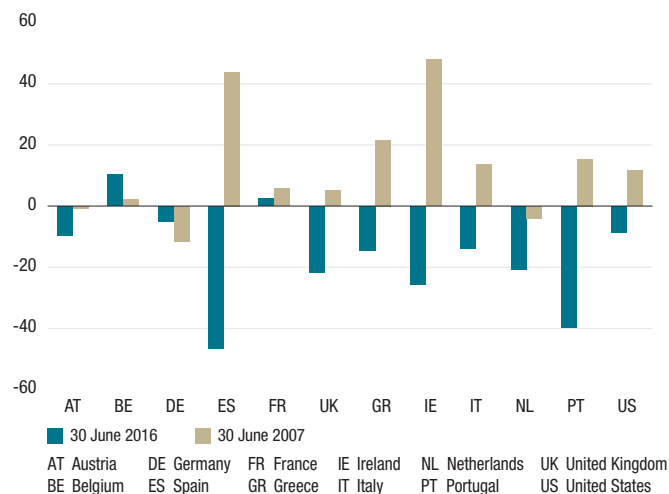
In this context the ESRB's 2014/1 recommendation makes complete sense. Defining a common, comparable indicator gives the ECB and the ESRB a benchmark that can be applied across all countries to monitor the appropriateness of the countercyclical buffer level for the given cyclical risk.

Chart 3 shows the situation in France in fourth-quarter 2016 with a Basel gap slightly below the two percentage point threshold, consequently leading to a zero countercyclical capital buffer benchmark rate.

However, the ERSB has also warned against mechanically applying this indicator. In particular,

C2   International comparison of Basel credit gaps
(in percentage points)

	30 June 2016	30 June 2007
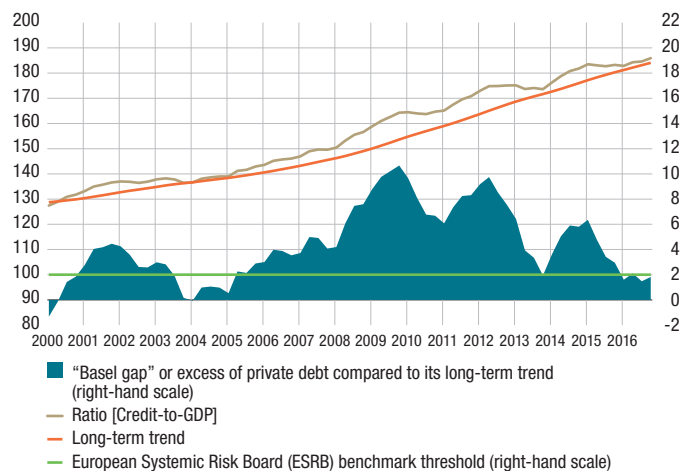
AT Austria	DE Germany	FR France	IE Ireland	NL Netherlands	UK United Kingdom
BE Belgium	ES Spain	GR Greece	IT Italy	PT Portugal	US United States

Source: BIS.

**C3   Credit-to-GDP ratio, trend and gap
for the French private non-financial sector**
(left-hand scale in %, right-hand scale in percentage points)

- ■ "Basel gap" or excess of private debt compared to its long-term trend (right-hand scale)
- — Ratio [Credit-to-GDP]
- — Long-term trend
- — European Systemic Risk Board (ESRB) benchmark threshold (right-hand scale)

Sources: BIS, Banque de France calculations.

4   More precisely, each bank calculates a specific CCyB rate, which is the weighted average of national CCyB rates, weighted by the "relevant credit exposure" of the bank in each of these countries. This specific rate is then applied to all the risk weighted assets of the bank in question. This reciprocity is mandatory for rates up to 2.5%; above that (in exceptional circumstances), the decision lies with the national authority. See Articles 136 to 140 of CRD IV for further details.

it states that "analysis by the BCBS shows that the credit-to-GDP gap and other indicators may sometimes convey misleading information. Designated authorities should be aware of this when exercising their judgement as to the sustainable level of credit in the economy and the appropriate countercyclical buffer rate. Designated authorities should thus periodically reassess the performance of the indicators on which they place most weight." In practice, since the introduction of the CCyB, the use of the Basel gap has brought to light several difficulties and even assessment inconsistencies, to the extent that its relevance for setting the CCyB rate now appears debatable.

3. Limitations of the Basel credit gap

A statistical limitation:
a vaguely defined credit scope

The ESRB's 2014/1 recommendation sets out the methods to be used to calculate the Basel credit gap. It requires the use of a "broad measure of the stock of credit to the private non-financial sector" but does not impose a precise scope. In particular, there is some debate as to the inclusion or exclusion of three categories of credit: (i) non-financial corporation (NFC) intra-group loans; (ii) trade credits and advances; and (iii) pension entitlements.

Including intra-group loans:
various approaches among countries

In its published credit series for households and NFCs, the BIS uses the sum of the stock of debt securities and credits, issued by bank or non-bank entities, regardless of the nationality and nature of the lender. In particular, this includes NFC intra-group loans, i.e. loans between companies belonging to the same economic group, such as a subsidiary and its parent company. Transactions such as these are common as part of an active cash management policy, as cash-rich entities provide liquidity to entities with significant
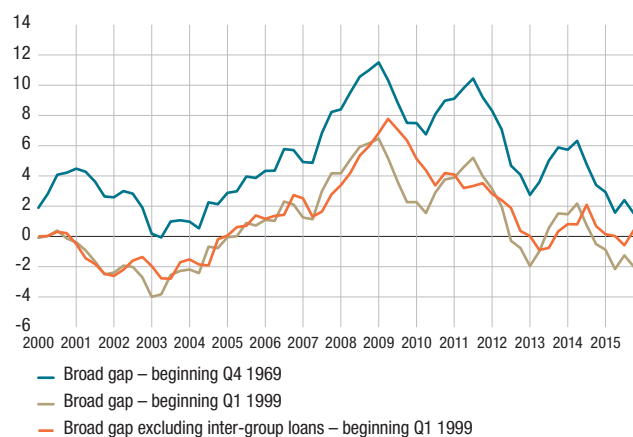
cash requirements, for instance a subsidiary in its early stages. A credit is created between the cash-rich and cash-short entities, which appears in the national accounts. The impact of these loans in terms of macroprudential risks is however uncertain, at least in regard to domestic loans,[5] as they are similar to simple cash management exercises. In addition, intra-group credit series are subject to significant ex-post revisions, up to three years after the first publication, rendering them relatively useless for policy decision-making, which requires reliable real-time data (see the appendix for a discussion of the treatment and revision of intra-group loans).

For France, a credit series stripped of intra-group loans can be calculated but only as from 1999, whereas the BIS series began in 1969. In order to study the impact of intra-group loans on the Basel credit gap series, the "scope" effect has to be isolated from the effect of reduced temporal sampling, which adjusts the credit-to-GDP ratio trend.

5   In this respect, international loans seem more relevant due to the foreign exchange risk or the capital control measures that may be associated with them.

C4   Credit gap estimates according to the underlying credit series, France
(in percentage points)

- Broad gap – beginning Q4 1969
- Broad gap – beginning Q1 1999
- Broad gap excluding inter-group loans – beginning Q1 1999

Source: Banque de France calculations.

Here we compare three series: (i) the standardised Basel gap based on the trend beginning in 1969, (ii) the standardised Basel gap based on the trend beginning in 1999 and (iii) the standardised Basel gap excluding intra-group loans based on the trend (*a fortiori*) beginning in 1999. The results clearly show that the gap is mainly attributable to the change in the timespan of the data (see Chart 4). Nevertheless, the impact of the change of scope on the gap is by no means insignificant, sometimes amounting to 1.5 percentage points. We calculated the theoretical benchmark CCyB buffer rates based on these three described gaps (see Chart 5). By observing the two series beginning in 1999, we found that stripping out the NFC intra-group loans results in a higher benchmark rate in 2009-2010 and a significantly lower rate in 2011-2012, with a maximum difference of more than half a percentage point in terms of capital requirements.
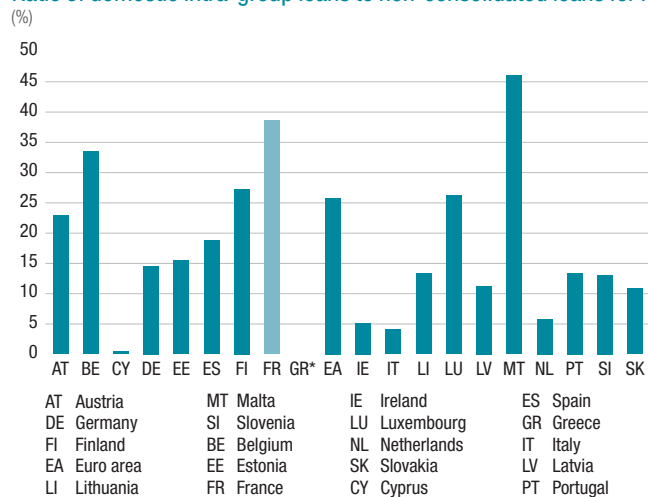
In addition, the measurement of intra-group loans is not consistent between countries: in national accounts, the definition of a statistical entity varies from one country to another. In France, it is the legal entity, i.e. the most detailed level possible. However with greater aggregation, for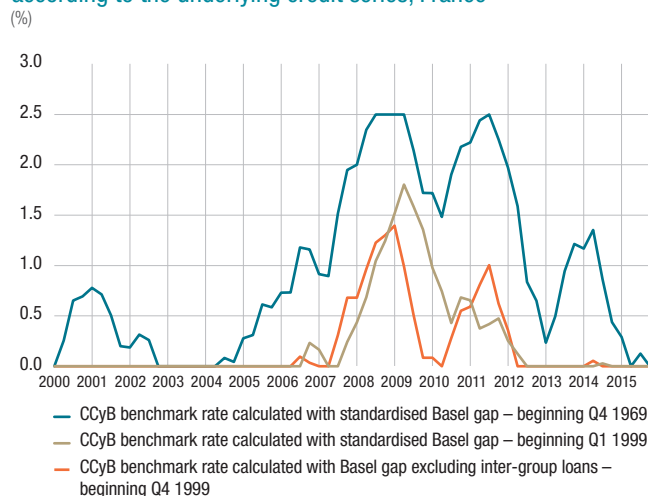 example by consolidating at group level, the intra-group loans between entities in the same group are increasingly stripped out. And yet it appears that the interpretation of the definition of a statistical entity varies considerably between the European institutions that generate statistics.[6] Thus, ECB calculations bring out very clear international differences in terms of intra-group loan consolidation, without it being possible to determine whether this is solely down to different statistical choices or a result of real economic fundamentals[7] (see Chart 6): domestic intra group loans represent almost 40% of total NFC credit in France, compared with the euro area average of 26%.

C5 Countercyclical capital buffer benchmark rate, according to the underlying credit series, France
(%)

— CCyB benchmark rate calculated with standardised Basel gap – beginning Q4 1969
— CCyB benchmark rate calculated with standardised Basel gap – beginning Q1 1999
— CCyB benchmark rate calculated with Basel gap excluding inter-group loans – beginning Q4 1999

Source: Banque de France calculations.

C6 Ratio of domestic intra-group loans to non-consolidated loans for NFCs
(%)

AT	Austria	MT	Malta	IE	Ireland	ES	Spain
DE	Germany	SI	Slovenia	LU	Luxembourg	GR	Greece
FI	Finland	BE	Belgium	NL	Netherlands	IT	Italy
EA	Euro area	EE	Estonia	SK	Slovakia	LV	Latvia
LI	Lithuania	FR	France	CY	Cyprus	PT	Portugal

* Data unavailable.
Sources: ECB, Banque de France calculations.

6 For further details, see for example (i) "Commission Staff Working document refining the MIP scoreboard", November 2013, *http://ec.europa.eu/europe2020/pdf/2014/mipsb2014_swd_en.pdf*, and (ii) "Debt of non financial corporations : consolidated or non-consolidated measures", *ECB Monthly bulletin*, March 2014, *https://www.ecb.europa.eu/pub/pdf/other/mb201403_focus04.en.pdf*

7 In particular, as the landscape of French NFCs is characterised by the importance of major groups, intra-group loans are far more likely than in an economy based on a network of independent mid-tier firms, such as in Germany, beyond any statistical choice.

Excluding trade credits and pension entitlements from the BIS credit scope: a debatable approach

Although the BIS series include intra-group loans (which are largely incomparable from one country to the next), they exclude trade credits and advances, i.e. amounts owed by customers to suppliers for products delivered but not yet paid.[8] These credits are genuinely important to the economy since suppliers can be critically affected by customer defaults. Nevertheless, strictly speaking they do not qualify as loans given that they are rarely contractually defined. In addition, a large part of these trade credits are granted between entities in the same group and therefore can pose the same statistical problems as intra-group loans.

For countries where companies are largely responsible for the pension system, the inclusion of pension entitlements in company debt is also controversial. It may be a binding financial commitment that can sometimes be extremely onerous and result in company bankruptcies,[9] but the decision is made all the more difficult by the fact that the assessment of pension entitlements differs greatly from country to country and the estimated amounts can vary considerably depending on the complex actuarial calculations applied.

In conclusion, we have found an extremely significant heterogeneity of possible credit scopes: while the Banque de France currently uses the scope chosen by the BIS, the ECB uses a far broader scope that includes trade credits and advances and pension entitlements as well as debt securities and loans. The sums concerned are considerable: NFC intra-group loans in France represent more than half of French annual GDP, while NFC trade credits represent more than a third. As the example of intra-group loans shows, not only do they affect the levels of the credit-to-GDP ratio, but also its trend and therefore the Basel gap.

These differences raise doubts as to the relevance of the Basel gap as an early warning crisis indicator. Given that in reality it offers little comparability internationally, its standardised use is undermined,

C7 Household credit
(left-hand scale in %, right-hand scale in percentage points)

- ■ Household credit gap (right-hand scale)
- — Household credit (left-hand scale)
- — Household credit trend
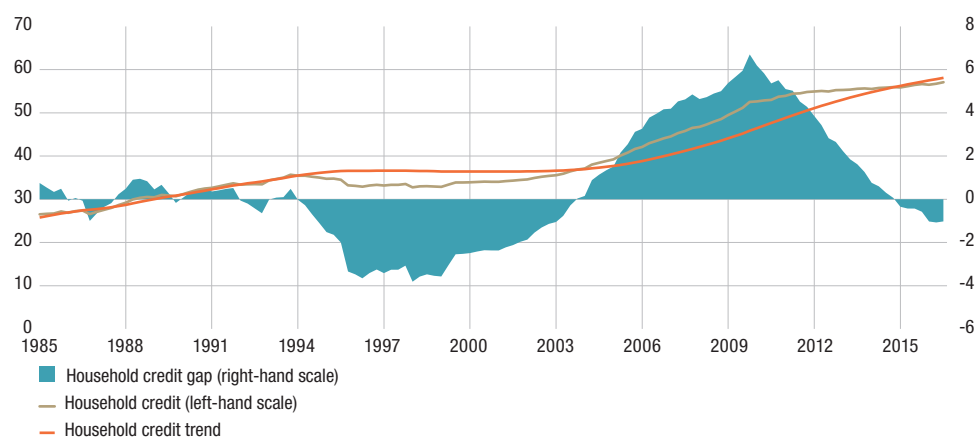
Sources: BIS, Insee, Banque de France calculations.
Note: Credit gap calculated with a statistical filter (Hodrick, Prescott, 1981) and a smoothing parameter equal to 400,000 (BIS, 2010; Drehmann, Juselius, 2013). The trend is estimated in "real time".

8   As a reminder, in France the payment period between professionals cannot exceed sixty days from the billing date, or by derogation, forty-five days following the month end.

9   We should remember that the pension schemes of the major US automotive corporations played a significant role in their near collapse in 2008-2009.

making its mechanical conversion into an appropriate CCyB rate difficult. Consequently, using the formula for the calculation of the countercyclical capital buffer benchmark rate, which suggests a strictly positive CCyB rate as soon as the Basel gap exceeds 2%, can only be justified by its purely indicative nature, with the judgement of an expert required to take into account specific national conditions based in part on supplementary indicators.

A methodological limitation: significant trend inertia

As discussed above, the recommended trend for the calculation of the Basel credit gap displays significant inertia, with sometimes undesirable consequences, particularly during periods that follow excessive credit dynamics. This is what is occurring at the moment: the rapid credit acceleration prior to the 2008 financial crisis still affects the estimated trend dynamic. In contrast, the sharp slowdown in the growth of debt after the crisis across all developed economies still bears little weight. Consequently, the overly elevated trend (as a result of this inertia) produces a gap from the credit to GDP ratio trend that is downward-biased.

This phenomenon is particularly clear in the case of household loans, for which we observe a clear break in growth in 2009 that the estimated

trend still only partially reflects due to its inertia. The capacity of the household credit to GDP gap to predict the emergence of a systemic risk is thus weakened.

More fundamentally, favouring the gap as a crisis indicator at the expense of the trend amounts to considering that the trend itself could not be used to foresee a crisis. However, the persistent upward trend of the GDP-to-credit ratios for French households and NFCs may be a source of concern.

Conclusion

The 2008 financial crisis highlighted the need for close monitoring of the credit cycle and particularly the risks of excess credit and debt. The credit-to-GDP gap (or Basel gap) became an international benchmark for setting the CCyB rate. In certain cases, this indicator can in fact be useful for detecting the rise of excessive cyclical risks. However, it is difficult to use it for international comparison as it suffers from statistical biases. It should therefore be used carefully and in conjunction with other indicators of cyclical risk on the one hand and the judgement of an expert on the other. The Basel gap is a useful starting point for preparing an assessment but applying it in an overly mechanical manner would be dangerous.

References

Banque de France (2014)
"Macroprudential policies, implementation and interactions", *Financial Stability Review*, April.

Basel Committee on Banking Supervision (2010)
"Guidance for national authorities operating the countercyclical capital buffer", *BCBS Paper*, No. 187.

Committee on the Global Financial System (2012)
"Operationalising the selection and application of macroprudential instruments", *CGFS Papers*, No. 48.

Committee on the Global Financial System (2016)
"Experiences with the ex ante appraisal of macroprudential instruments", *CGFS Papers*, No. 56.

Dembiermont (C.), Drehmann (M.) and Muksakunratana (S.) (2013)
"How much does the private sector really borrow – a new database for total credit to the private non-financial sector", *BIS Quarterly Review*, March.

Detken (C.) et al. (2014)
"Operationalising the countercyclical capital buffer: indicator selection, threshold identification and calibration options", *ESRB Occasional Paper*, No. 9.

Drehmann (M.), Borio (C.) and Tsatsaronis (K.) (2011)
"Anchoring countercyclical capital buffers : the role of credit aggregates", *BIS Working Papers*, 355, BIS.

European Systemic Risk Board (2014)
"Recommendation of the European Systemic Risk Board of 18 June 2014 on guidance for setting countercyclical buffer rates", ESRB/2014/1.

Hodrick (R.) and Prescott (E. C.) (1997)
"Postwar U.S. business cycles: an empirical investigation", *Journal of Money, Credit, and Banking*, 29 (1): pp. 1-16.

Repullo (R.) and Suarez (J.) (2008)
"The procyclical effect of Basel 2", IMF, *Working Paper for the 9th Jacques Polak annual research conference.*

Appendix
The treatment of intra-group loans and their revision in national accounts

Three methods exist for restating intra-group debt in the liabilities of NFCs in the financial accounts:

1. Stripping them out of liabilities in their entirety, treating them as irrelevant. This is the Banque de France's approach for French NFC[10]

This method is the most satisfactory. French financial accounts distinguish between loans from financial institutions and other loans, the vast majority of which are intra-group loans. It is therefore possible to obtain a credit series from liabilities that excludes intra-group loans. Unfortunately, it is impossible to identify the intra-group items within the NFC debts that relate to other European economies. Only the domestic component can be isolated.

2. Offsetting debts recognised in liabilities against loans recorded in assets in the national financial accounts. This is the Banque de France's approach for non-French NFCs

This approach gives similar results to the first method as long as the countries are not exposed to significant intra-group loan inflows and outflows. This is the case for France. However, some countries report a negative net credit value (Ireland, Portugal, Slovenia) as they are characterised by significant intra-group loan outflows.

10 See *https://www.banque-france.fr/sites/default/files/media/2016/12/20/methode_si_endettement-anf_maj_2017.pdf*

CA1   Revisions of private non-financial sector credit series
(% of GDP)

a)   including NFC intra-group debt, France

b)   excluding NFC intra-group debt, France

— 2015 Q1   — 2015 Q3   — 2016 Q1   — 2016 Q3
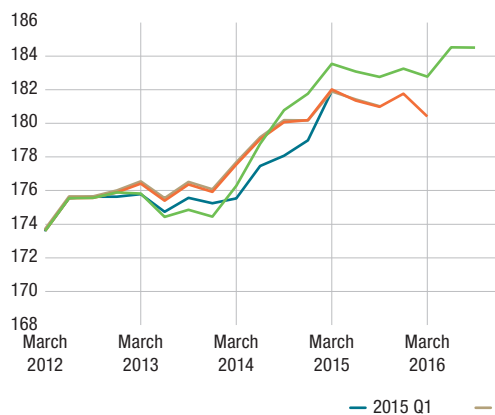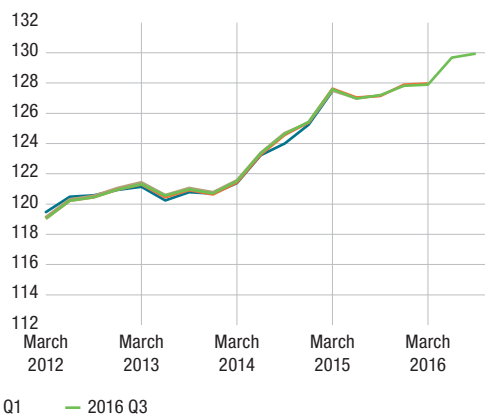
Sources: Banque de France, Insee.

3. Stripping out domestic intra-sector debts only; this is the ECB's approach in its "consolidated" series

This third approach, which only strips out domestic intra-group loans, means that foreign credit inflows (often relevant for financial stability and the financing of the economy) can be accounted for, but at the expense of a more limited consolidation. Furthermore, these series have only been available for the major European countries and the euro area since fourth-quarter 1999.

A second problem is the impact of intra-group loans in the revisions of credit series that facilitate the broad credit calculation.

These series are taken from household and non-financial corporation (NFC) financial

accounts. The financial accounts are revised each quarter:[11]
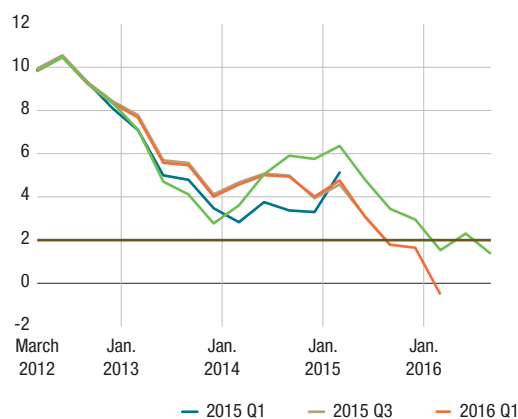
– Q1 (first quarter) of year Y: publication of Q3 of year Y-1 and revision of Q1 and Q2 of Y-1;

– Q2: publication of Q4 of year Y-1 and limited revision of the eleven previous quarters (to Q1 Y-3);

– Q3: publication of Q1 of year Y, no revision;

– Q4: publication of Q2 and (potentially substantial) revision of the thirteen previous months (to Q1 Y-3).

Practically all of these revisions are due to NFC intra-group loans: Charts CA1a and CA2a below illustrate the significant revisions made over time to

11 See *https://www.banque-france.fr/sites/default/files/media/2016/11/22/methode-cf-base2010.pdf*

CA2   Revisions of Basel gaps according to the vintage of the credit series used

a)   including NFC intra-group debt, France

b)   excluding NFC intra-group debt, France
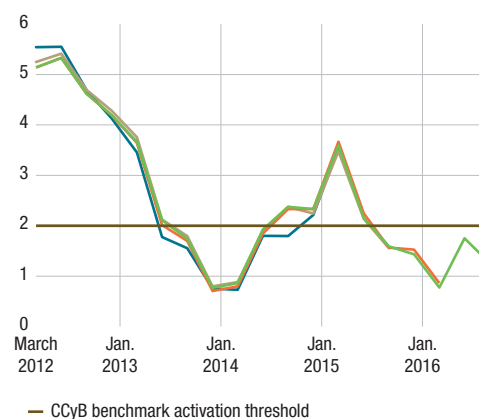
Sources: Banque de France, Insee.

the NFC credit-to-GDP ratio, while Charts CA1b and CA2b illustrate that the significant revisions disappear when intra-group loans are stripped out of the series scope.

These revisions have a strong mechanical impact on the Basel credit gap. Chart CA3a shows the

magnitude of the impact of credit series revisions on the countercyclical capital buffer benchmark rate, which can be measured by applying the ESRB's calibration guide, with differentials that can go up to more than 0.5 percentage point. These significant revisions to the buffer are not seen for series adjusted for intra-group loans (see Chart CA3b).

CA3   Revisions of Basel gaps according to the vintage of the credit series used
(%)

a)   including NFC intra-group debt, France
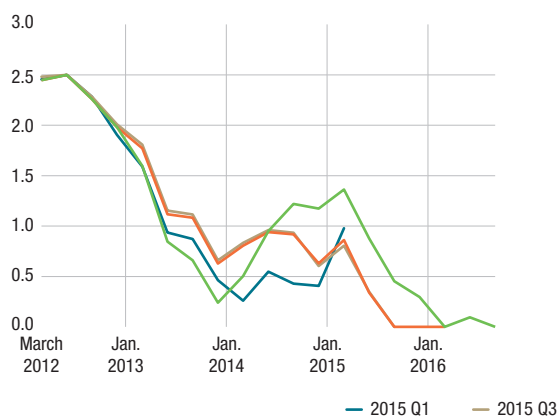
b)   excluding NFC intra-group debt, France
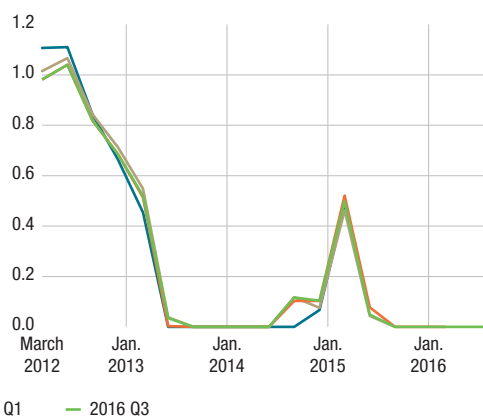
Sources: Banque de France, Insee.

The cost of deficiencies in euro area economic policy coordination

Directorate General
Economics
and International Relations

Between 2011 and 2015, the total growth differential between the United States and the euro area, expressed in GDP per capita, amounted to around five percentage points. Above any differences in potential growth, can this gap be explained – and to what extent – by a lack of coordination in national economic policies in the euro area?

What are we referring to when we talk of "coordination"? It is important to define its scope and modalities in order to find an estimate: in its narrowest sense, it refers to the fiscal stance of the euro area and its distribution by country; a broader interpretation could include the potential gains of a better macroeconomic policy mix, ranging from collective incentives to actively carry out structural reforms favourable to growth, to the implementation of a European investment financing policy and improved crisis management.

A relatively broad range of estimates can be generated when the degree of flexibility of the envisaged policies and the uncertainty surrounding coefficients are taken into account. Focussing on the 2011-2013 period, it is estimated that the potential gains in welfare from policies of fiscal fine-tuning in response to economic changes vary from one to two percentage points of GDP. More significant gains would be derived from the positive effects of coordinated structural reforms in terms of potential growth and crisis prevention (financial stability). Coordinated wage policies responding to the relative situation of each country would further add to these gains.

Key figures

From 0.8 to 1.9 percentage points of GDP
opportunity cost in terms of growth of fiscal policy non-coordination

From 2 to 3 percentage points of GDP
estimated cost of deficiencies in economic policy coordination (fiscal and structural)

Growth in GDP and GDP per capita in the United States and the euro area
(index with 2011 = 100)
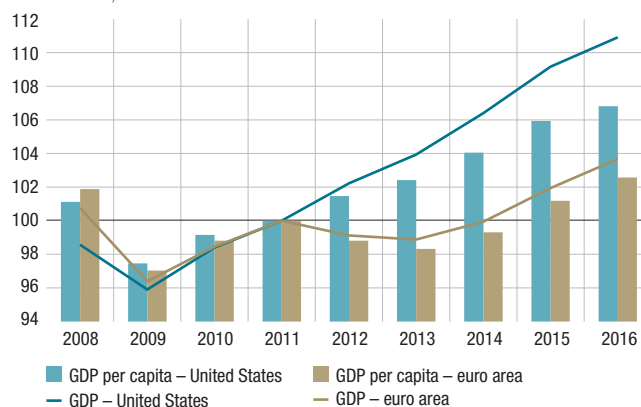
Sources: IMF and Eurostat.

Introduction: economic policy coordination

Between 2011 and 2015, the total growth differential between the United States[1] and the euro area was 7.5 percentage points. Expressed in GDP per capita, this relative under-performance of the euro area economy amounted to around five percentage points. Above any differences in potential growth, can this gap be explained – and to what extent – by a lack of coordination in national economic policies in the euro area?

For the purposes of this article, we will consider that national economic policies refer to fiscal and structural policies rather than monetary policy, which is common to the euro area. The repercussions of these economic policies can be felt beyond national borders. A typical example is stimulating domestic demand, which leads to excess demand in neighbouring countries, largely through the channel of international trade. The objective of coordination is to better calibrate economic policy at European Union level. A policy that is optimal at the national level is rarely optimal at a collective level as individual Member States do not take into consideration the externalities of their decisions on other Member States. When each state acts in isolation, the result may be a sub-optimal situation for all (see Box 1, "The prisoner's dilemma and economic policy coordination").

While national economic policy coordination may be desirable at the international level, it would appear to be indispensable in a monetary union. Building a collective strategy would allow the limits imposed by the existing level of coordination to be pushed back. Growth and employment would be stronger in Europe with a collective economic strategy, which would combine more structural reforms where they are a priority, such as in France, with more fiscal support in countries with fiscal leeway, within the rules of the Stability and Growth Pact, such as in

C1 Growth in GDP and GDP per capita in the United States and the euro area
(index with 2011 = 100)
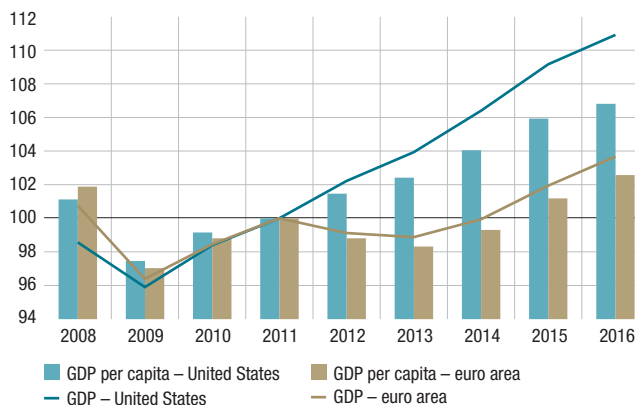
Sources: IMF and Eurostat.

Germany. The calibration and implementation of this optimal strategy requires a credible European institution with the needed legitimacy.

1. Estimate of the effects of deficiencies in euro area fiscal policy coordination

Estimates for the 2011-2013 period

This period was marked by an excessively rapid fiscal consolidation (adjustment) in the euro area, and as a result has been the subject of numerous analyses. The historical cost since 2011 of fiscal non-coordination has been examined from the perspective of the gains that could have been made by "optimising" the size of the fiscal adjustment and its allocation by country. Using the NiGEM model,[2] Holland and Portes (2012) assess the impact of fiscal consolidations on growth between 2011 and 2013. They note that part of the negative impact on growth results from the effects of "spillovers" (cross-border externalities) between countries. They seek to measure the relative weighting of these effects by conducting simulations using (i) the model multipliers and (ii) unilateral multipliers.

1 The gap between the real GDP of the United States and of the euro area, 2011 = 100.

2 Macroeconomic model of the National Institute of Economic and Social Research.

Box 1

The prisoner's dilemma and economic policy coordination

The "prisoner's dilemma" is an example of a static game in which the Nash equilibrium (the best mutual response of each player) is non-cooperative. The players have a choice between two actions (strategies): (i) cooperate (noted C); or (ii) defect (noted D), decided simultaneously without any possibility of communication. The gains made by the two players in each of the different configurations are summarised in the following matrix:

		Player 2	
		C	D
Player 1	C	1, 1	-1, 2
	D	2, -1	0, 0

Strategy D dominates strategy C for each player, i.e. the strategy that "if the other player cooperates, I'll defect; if the other player defects, I'll defect too". Therefore, irrespective of the other player's action, the optimal individual strategy is to defect. Consequently, the outcome of the game is DD, even though the players could have both gained more had they cooperated. At first glance, this unfortunate outcome appears irrational. If the game is repeated over time, cooperation becomes possible under certain conditions. Repetition introduces the possibility that future actions may be conditioned by the actions during the previous phases of the game (an implicit form of coordination). In an infinite horizon game, it can be demonstrated that if the players have a low preference for the present, the following strategies are equilibrium strategies: "Cooperate at first, and continue to cooperate for as long as the other player does not defect; if the other player defects, defect for the remainder of the game". Under these conditions, a possible outcome is that the two players cooperate indefinitely, as the immediate gain of deviating from the strategy (defecting while the other cooperates) is more than offset by the long-term cumulated losses resulting from the penalty of non-cooperation that follows. Within the framework of so-called "cooperative" games, players can communicate and enter into binding agreements – in other words, form coalitions.

The situation described by the prisoner's dilemma – one that is clearly beneficial for society as a whole but that does not occur spontaneously as a result of combined individual choices – can manifest itself when externalities or public goods (for example, the consequences of pollution, or more generally, spillover effects) exist in the economy. Let's take the example of two countries (France and Germany, although the situation can be generalised to two regions or two groups of countries) that have two economic policy tools: fiscal spending and structural reform. Here we will look at the fiscal policy in Germany and the structural policies in France because of the respective leeway existing in each of these policies in each country. As soon as externalities between countries exist, i.e. when fiscal spending in Germany provides gains to France and structural reforms in France provide gains to Germany, it is easy to see that the individual solution is not necessarily optimal collectively. In other words, a "central planner" (or coordinator) will demand more structural reforms in France and more fiscal spending in Germany. However, when a country cooperates (implementing the economic policy effort that is beneficial to the other country) while the other defects, the latter obtains a higher gain and the former receives a lower gain. The payment matrix thus has the same structure as that of the prisoner's dilemma and the optimal policy will not be implemented spontaneously. The situation can be corrected by the implementation of contractually binding agreements between countries (see cooperative games) under the aegis of a "coordinating institution".

Simultaneous fiscal consolidation (all countries at the same time for values identical to those observed between 2011 and 2013) that is perceived to be non-coordinated and sub-optimal worsens the negative impact on GDP by 2% on average.

These spillover effects are also assessed by In 't Veld (2013) using the European Commission's multi-country model, QUEST. The author evaluates the impact of fiscal consolidations conducted in the euro area between 2011 and 2013 taking into account the context of the financial crisis (financial constraints on households and zero lower bound constraint on policy rates). He demonstrates that the impact on GDP varies depending on the consolidation's composition (revenues or expenditure) and the openness of the economies. The spillover effects measured by channels of demand and international flows reinforce the negative impact on growth. Comparing the effects on GDP in the scenario of simultaneous consolidations with the case of a country acting in isolation, he obtains an additional reduction in GDP of between 1.6% and 2.6%.

A variety of recent studies seek to measure, based on macroeconomic model simulations, the impact of a deficit financed stimulus of public investment in countries with a fiscal surplus, both at a domestic level and on the other euro area countries through an analysis of the spillover effects. The majority of the studies conclude that this stimulus has a positive, though fairly limited, impact for the euro area as a whole. The effect is, however, reinforced by certain assumptions, the most important being the one that modifies the normal monetary policy reaction, which is constrained by the zero lower bound on nominal interest rates.

In 't Veld (2016) uses the QUEST model to measure the impact of simultaneously increasing public investment in Germany and the Netherlands by 1% of GDP. When monetary policy is accommodative (there is no increase in policy rates in response

to rises in inflation for two years), the spillover effects (through the trade channel) on the rest of the euro area are significant, amounting to around 0.3% in the short and medium-term. The impact on German and Dutch growth is 0.9% and 0.7%, respectively, in the short-term and 1.3% over a ten-year horizon. The effects can be even more significant when the investment is made in projects with better returns (higher long-term GDP elasticity to the stock of public capital). The spillover effects then increase at 0.5% while the long-term impact on the GDP of Germany and the Netherlands reaches 2.4%. If the assumption of low borrowing costs (as is currently the case) is applied to the simulation, the increase in public debt for countries with a budget surplus would be small, and the spillover effects could lead to a slight improvement in debt ratios in the rest of the euro area.

The Bundesbank presented relatively similar results in its August 2016 Monthly Report. The NiGEM model was used to simulate a deficit-financed expansion of public investment in Germany of 1% of GDP over two years. By constraining monetary policy to the zero lower bound, the GDP in Germany increases by 0.5% and the spillover effects on the rest of the euro area come out at just under 0.2%. Factoring in reduced outflows of government expenditure to imports if the stimulus was implemented through public consumption (mainly public sector wages), GDP in Germany would be pushed up to a greater extent, while the spillover effects would be smaller.

The consolidation observed between 2011 and 2013, based on the overall change in the primary structural balance of general government, is now estimated by the European Commission at almost 2.9% of potential GDP, revised downwards from the estimated 3.3% used in the research of Holland and Portes (2012) and In 't Veld (2013). Above all, the fiscal effort was 1.5 percentage points of GDP in 2012 (in excess of the Commission's recommendations)

and 0.7 percentage points in 2013. The efforts were extremely significant in 2012 and 2013 in Spain and Italy (three percentage points of GDP and two percentage points of GDP, respectively) and noteworthy in Germany (one percentage point) and France (0.8 percentage point). Fiscal consolidation in 2012 probably triggered a downturn in demand at a time when the output gap was significant at -2.2%. Above all, the effect of the consolidation in Germany triggered an opening of the output gap, which went from 0.8% in 2012 to -0.3% in 2013. This shows that everybody pays the price of inadequate coordination. According to Trésor-Éco (2016), exploiting fiscal leeway from 2011 to 2013 would have helped to reduce the structural adjustment by 0.8 percentage point over the period.

C2 Structural adjustments in the euro area, implemented and required
(% of GDP)

■ Structural adjustment required
(flexible application of the Stability and Growth Pact)
■ Structural adjustment implemented
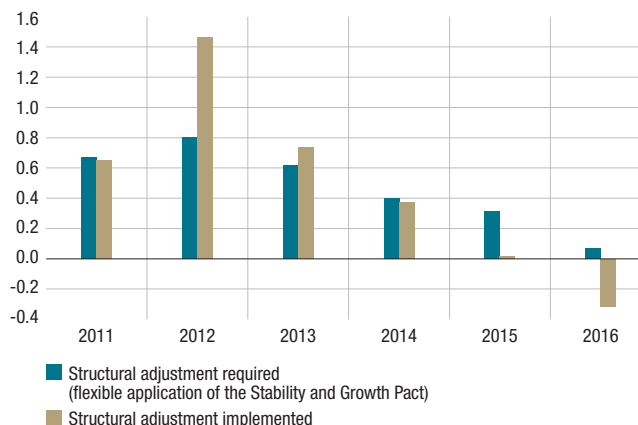
Sources: European Commission, 2016 spring forecasts. Banque de France calculations.

Box 2

The aggregate effects of a fiscal shock depend on the source location

In principle, for a given aggregate size of fiscal shock, and in the absence of financial effects, its impact on the euro area should be of the same order of magnitude depending on whether it occurred simultaneously in several countries, or even all the countries, or it occurred in isolation in a single country. For example, the overall impact on euro area GDP would be the same with a shock of one percentage point of GDP across the whole of the euro area, or with a shock of two percentage points of GDP across half of the euro area; differences would only depend on the national multipliers and the degree of financial openness to third countries. However, this result does not take account of any possible links between the fiscal trajectory and financial variables. In the light of recent examples of fiscal consolidation in the euro area, it is only right to take into consideration how national financing conditions react to fiscal consolidations.

In the event that a consolidation is not credible (perceived by private agents as temporary) and is aggressive (which affects the speed with which agents learn to come to terms with the permanent nature of the shock), the fiscal multiplier would be higher and in the short term the recessionary impact of the consolidation could offset the sought after effects of reducing public debt. The consolidation would then conversely reinforce the stresses on sovereign bond yields, reducing the short-term benefits of a consolidation in the countries experiencing a sovereign debt crisis.

In practice, the stresses on sovereign bond yields have "over-constrained" fiscal policy in countries under pressure from the markets: these countries have had to implement fiscal overshoots, while those countries with fiscal leeway have not introduced stimulus packages to offset the overshoot. In this instance, the geographical location of the fiscal adjustment is significant and coordination becomes all the more necessary.

Our estimate

A plausible alternative scenario, close to the European Commission's "rule of thumb" (a trade-off between the constraints of stability and sustainability), could have consisted of:

• in 2012: consolidation with a change in the structural balance of 0.8 percentage point in France, Italy and Spain as well as a modest fiscal expansion of 0.5 percentage point in Germany. These assumptions lead to a smaller aggregate consolidation in the four largest European countries by 1.1 percentage points of GDP;

• in 2013: the consolidation effort could have been limited to 0.2 percentage point instead of the 0.7 percentage point of GDP of the observed adjustment.

Thus, plausible scenarios for fiscal coordination efforts could have resulted in a smaller consolidation of between 0.8 percentage point and 1.6 percentage points of GDP between 2012 and 2013.

Fiscal multipliers and intra-euro area spillovers

According to the elasticities derived from the Eurosystem projections, the effects of a fiscal stimulus in the euro area of 1% of GDP would prompt a 1.2 to 1.3 percentage point increase in the level of GDP after two years for a fiscal stimulus implemented through consumption or public investment. For the same level of fiscal stimulus implemented through tax cuts (direct or indirect), GDP would increase by 0.6 to 0.8 percentage point after three years. This effect includes trade spillovers between the euro area countries, which account for around 0.1 to 0.3 percentage point (i.e. the aggregate multiplier at the euro area level is greater than the average national multiplier due to outflows to imports).

In addition to the types of public revenues and expenditure, multipliers can vary depending on:

• the monetary policy reaction (assumed to remain constant in the calculation of standard elasticities): a countercyclical reaction would dampen part of the fiscal stimulus and consequently reduce the size of the multipliers. In principle, the zero lower bound helps to strengthen the multiplier, even if the announcement in 2012 of the OMT[3] and the resulting easing of monetary conditions could be conditional on the implementation of fiscal consolidation;

• the credibility (or lack of credibility) of the fiscal consolidation (i.e. permanent or temporary), also with the specific conditions of crisis periods, as political uncertainty is interrelated with the credibility of the fiscal measures;

• the spillover ratio (indirect impact by trade/direct impact): approximately 30% for expenditure and 23% for revenues according to Eurosystem elasticities. In certain simulations such as Trésor-Éco, 2016, it reaches levels comparable to those of the direct impact of fiscal consolidations between 2011 and 2013.

Overall, a multiplier of 1 to 1.2 could be applied to a fiscal policy that targets public investment. Combined with a lesser consolidation effort, of 0.8 to 1.6 percentage points of GDP between 2012 and 2013 resulting from a more flexible coordinated fiscal stance as described above, the opportunity cost in terms of growth of deficiencies in fiscal policy coordination in the 2011-2013 period would amount to 0.8 and 1.9 percentage points of GDP. It is important to note that these estimates come from studies that do not take account of the role of better adapted wage policies in each country, and particularly the role of a wage stimulus package in countries with full employment and a trade surplus.

3 Outright Monetary
Transactions (OMT) programme.

2. Structural reform coordination and incentives

Macroeconomic effects of structural reforms

Despite the economic policy recommendations for the euro area as a whole and the country-specific recommendations issued within the framework of the European Semester, euro area countries remain poorly coordinated in terms of structural policies to promote growth and results fall short of expectations. Full coordination would aim to accelerate the implementation of recommendations, thereby enabling gains in real and potential GDP.

Gains in potential growth might also be expected from the creation of a Financing and Investment Union, which would help to reduce European financial market fragmentation.

Based on the trajectories estimated in Cette et al. (2016), a convergence of competition and employment protection laws towards the national legislation that was considered to be the most flexible in the euro area at the beginning of the 2010s would have raised GDP in the euro area by 1% in 2016 and by almost 2% after ten years.

Varga and In 't Veld (2014) widen the scope of reforms to be taken into consideration and estimate that if Member States adopted the regulations and systems of the three best EU performers for each of the areas studied (market competition and regulation, tax reform, unemployment benefit reform, other labour market reforms, human capital investment and R&D investment), euro area GDP could be up to 6% higher after ten years.

Intra-euro area spillovers from structural reforms

This estimate does not take account of the spillover effect of these reforms on other member countries, which could be negative, in the case of a reduction in labour costs in exposed sectors for example, or positive, if the increased purchasing power resulting from a reform of the goods market is considered. Rivaud (2015) highlighted the heterogeneity across countries and therefore their different reactions to reforms. The NiGEM macroeconomic model, like Varga and In 't Veld (2014), shows that the simultaneous implementation of structural reforms is advantageous. This contrasts with Eggertsson et al. (2016), who find that in the event of global secular stagnation, reforms to improve competitiveness (internal devaluations) lead to gains in growth in one country at the expense of its neighbours, even within a monetary union, particularly when monetary policy is constrained by the zero lower bound.

An ongoing study by the Banque de France demonstrates that on the basis of a two-country model (France and Germany – see appendix), reforms to improve the competitiveness of the French economy have positive effects in the short and long term on French GDP and in the short term on German GDP. The long-term effects on German GDP are negative, but very minor. The reverse is also true of structural reforms in Germany.

Thus, gains from the simultaneous implementation of reforms depend on their nature and the macroeconomic context but are generally positive, even when the main effect arises from an improvement in competitiveness.

Coordination of structural reforms and economic policies

In order to evaluate the impact of these reforms on the output gap, and therefore on the required fiscal adjustment, their effect on real growth must be considered.

• Reforms to the goods and services market generally have short-term positive effects on GDP, through a rapid reduction in markups and prices.

• Labour market reforms can have a negative short-term effect on activity: particularly reforms that reduce employment protection, unlike active labour market policies.

A scenario in which real growth is unaffected by the reforms would see the output gap widen, as potential growth increases, potentially justifying a reaction from other economic policy instruments. According to the Banque de France study referred to above and in the appendix, the combination of a fiscal stimulus in Germany (which would have a significant spillover effect on France) and structural reforms in France would substantially increase GDP in both countries, while improving the overall sustainability of public finances in the area.

Conclusion

The crisis highlighted the deficiencies of the European Economic and Monetary Union. Much has been achieved since: the creation of a crisis management mechanism (the European Stability Mechanism – ESM), the implementation of a Banking Union, and a plan for a Capital Markets Union particularly with the launch of the European investment plan (the Juncker plan). However, the euro area does not have an effective mechanism to define and implement a collective economic strategy. Historically, the absence of such a strategy has been costly in terms of welfare. We estimate that for the 2011-2013 period, characterised by major financial turbulence and an opening of the output gap, the deficiencies in both fiscal and structural economic policy coordination cost between two and three percentage points of GDP in the euro area as a whole, without counting the direct cost of the crisis measured by the rescue programmes. Currently, lively debates on the use of fiscal leeway for those countries that have it and the acceleration of structural reforms in countries that struggle with a problem of competitiveness appear to make the case for better economic coordination in Europe to bring more growth and employment.

References

Aviat (A.), Diot (S.), El Kasmi (S.) and Jégou (N.) (2016)
"*Vers un meilleur pilotage de l'orientation budgétaire de la zone euro ?*", *Trésor-Éco*, No. 163, March.

Cette (G.), Lopez (J.) and Mairesse (J.) (2016)
"Market Regulations, Prices, and Productivity", American Economic Association, *American Economic Review*, Vol. 106, No. 5, pp. 104-108.

Deutsche Bundesbank (2016)
"The international spillover effects of an expansion of public investment in Germany", *Monthly Report*, Vol. 68, No. 8, August.

Eggertsson (G.), Mehrotra (N.), Singh (S.) and Summers (L.) (2016)
"A Contagious Malady? Open Economy Dimensions of Secular Stagnation", NBER, *Working papers*, No. 22299.

Holland (D.) and Portes (J.) (2012)
"Self-defeating austerity?", *National Institute Economic Review*, No. 222, October.

In 't Veld (J.) (2013)
"Fiscal consolidations and spillover in the Euro area periphery and core", European Commission, *Economic Papers*, No. 506, October.

In 't Veld (J.) (2016)
"Public Investment Stimulus in Surplus Countries and their Euro Area Spillover", European Commission, *Economic Briefs*, No. 16, August.

Rivaud (S.) (2015)
"International macroeconomic impacts of structural reforms", Banque de France, *Quarterly Selection of Articles*, No. 200, Summer.

Varga (J.) and In 't Veld (J.) (2014)
"The potential growth impact of structural reforms in the EU. A benchmarking exercise", European Commission, *Economic papers*, No. 541, December.

Appendix
Spillover effects of fiscal and structural policies

This study simulates and analyses the international propagation effects of a fiscal stimulus and of structural reforms on the goods and services markets using a DSGE[1] model calibrated for France and Germany. Preliminary results suggest that structural reforms undertaken in France would have relatively minor spillover effects on Germany but that they would contribute to evening out the balance of trade between the two countries. A temporary fiscal stimulus in Germany would have visible effects on the French economy and would help to ease the deflationary impacts of French structural reforms on the euro area. Because of the relatively minor negative effects on competitiveness between the two countries in comparison with the expected benefits, a situation in which both countries had put in place structural reforms – as Germany did in the 2000s – would have been desirable for the growth of each country.

The model's central assumptions

The model represents an economy of two countries joined in monetary union. The two countries exchange goods and financial securities, and trade goods with the rest of the world. The model incorporates a stylised representation of household heterogeneity in terms of qualifications, wages, and access to financial markets. The productive sector is characterised by the presence of short-term price rigidities and imperfect competition that allow businesses to apply a markup on their production costs.

Transmission channels between the countries

The policies introduced in one country affect the other through trade and financial markets. We identified five main transmission channels:

• substitution/price competitiveness: goods produced in one country compete with the goods produced in the other country;

• income: production costs in one country impact household purchasing power in respect of imported goods in the other country;

• demand for imported goods: the household income in one country determines the demand for goods imported from the other country;

• monetary policy: inflation affects the reaction of the nominal interest rate applied in both countries;

• financial wealth: an increase in value added in one country results in positive wealth effects for the more affluent households in the other country through cross-border financial interests.

Envisaged policies

We considered six scenarios and simulated them independently. Five involve the implementation of structural reforms in France. The sixth scenario involves a fiscal stimulus in Germany. The shocks

envisaged are: (i) an increase in multifactor productivity (economic simplification, training, infrastructures); (ii) a reduction in the markup on the price of goods for sale in the domestic market (greater competition); (iii) an increase in businesses' wage bargaining power; (iv) a reduction in the minimum wage; (v) a reduction in unemployment benefits; and (vi) a temporary increase in German public consumption. We also simulated the effect of the simultaneous implementation of the above-mentioned structural reforms in France and Germany.

Main effects of the simulated policies

The short and long-term effects obtained as part of the preliminary simulations are presented in the following tables for each of the model's main variables (GDP, France's public fiscal balance, the balance of trade between the two countries and

the aggregate inflation of the French-German monetary union).

Based on these simulations, the structural reforms under review give a significant boost to GDP and improve the long-term position of French public finances. Despite contrasting redistributional effects, the reforms also have positive short-term aggregate effects on activity: due to agents' expectations, investment and employment surge immediately. Of course, the reforms impacting the labour market (wage bargaining, minimum wage and unemployment benefits) put pressure on real wages and therefore on the consumption of low-skilled households. By contrast, all the measures improve business profitability and positively impact the more affluent households in both countries. This channel also allows German households to benefit from a positive financial wealth effect, leading to a short-term improvement (although limited) in GDP. In the longer term, the relative deterioration in German

TA1 Unilateral implementation of structural reforms and fiscal stimulus

	GDP – France		GDP – Germany		Public fiscal balance – France		France-Germany balance of trade[a]		Aggregate inflation – monetary union
	Short term	Long term	Short term	Long term	Short term	Long term	Short term	Long term	Short term
Productivity – France	++	+++	+ε	−ε	−	++	++	++	− −
Markup – France	+	++	+ε	−ε	+	++	−	+	+ε
Wage bargaining – France	+	++	+ε	−ε	−	+	+	++	−
Minimum wage – France	+	++	+ε	−ε	−	+	+	++	−
Unemployment benefit – France	+	++	+ε	−ε	+	++	++	++	− −
Public spending – Germany	+	0	++	0	+	0	++	0	++

a) A + (−) sign corresponds to an improvement (deterioration) in the French balance of trade with regard to Germany.
Source: Author's calculations.

TA2 Simultaneous implementation of structural reforms and fiscal stimulus

	GDP – France		GDP – Germany		Public fiscal balance – France		France-Germany balance of trade[a]		Aggregate inflation – monetary union
	Short term	Long term	Short term	Long term	Short term	Long term	Short term	Long term	Short term
Productivity	++	+++	++	++	−	++	−	− −	− −
Markup	+	++	+	++	+	++	−	− −	−ε
Wage bargaining	+	++	+	++	−	+	−	− −	−
Unemployment benefit	+	++	+	++	+	++	−ε	−	− −

a) A + (−) sign corresponds to an improvement (deterioration) in the French balance of trade with regard to Germany.
Source: Author's calculations.

price competitiveness leads to the balance of trade evening out in France's favour. The reduction in German exports to France and the increase in the proportion of French products in final demand in Germany explain the slightly negative effect on German GDP over this time frame. The simulation of the scenario of a temporary fiscal stimulus in Germany showed quite significant spillover effects on France at the moment of the shock. The structural reforms that were considered are deflationary in the short term for the monetary union as a whole, although the deflation was moderate compared with the real effects obtained.[2] In contrast, a fiscal stimulus in Germany would lead to a marked increase in aggregate inflation. These results suggest that a coordinated policy at the monetary union level, combining structural reforms in France with fiscal expansion in Germany, would soften the deflationary effects of the structural reforms.

It could benefit both economies in the short term, at the expense of a very limited reduction in German activity in the longer term. Lastly, the simulation of the simultaneous implementation in France and in Germany of the structural reforms that were considered shows substantial short and long-term gains for both countries. This result is consistent with the modest negative spillover effects found in the case of unilaterally implemented reforms. The situation in which France would implement some of these reforms, while Germany had already done so previously (notably with the Hartz reforms), would thereby be favourable in terms of GDP for both countries as the negative effects on competitiveness are largely offset by the expected benefits. Nevertheless, these simulations demonstrate that these reforms would not be enough to bridge the trade surplus resulting from the German reforms.

2 In all cases, this involves overall aggregate inflation for France and Germany only; the impact on inflation in the euro area of 19 countries would be less significant.

Secular stagnation and growth measurement
Summary of the conference held on 16 January 2017 in Paris, organised by the Banque de France and the Collège de France

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Growth in gross domestic product (GDP) per capita in most advanced countries has slowed markedly since the 1970s. The purpose of the conference was to analyse this phenomenon, which is referred to as secular stagnation. The first session addressed problems in the measurement of GDP: these result in a significant understatement of growth, although without altering the fundamental assessment that productivity growth has slowed over the recent period. Secular stagnation can be interpreted as a weakness in demand, reflected in low interest rates and stemming from factors such as debt deleveraging, population growth or inequality. The second session explored the quantification of these factors, and looked at the link between weak demand and potential growth, and the possible implications for economic policy. The third session examined the supply side, and discussed the contribution of new technologies to productivity growth. Today's disruptive technologies may depress productivity in the short term and only increase it after a certain amount of time. In addition to these observations, the conference suggested that secular stagnation is not inevitable and that public authorities have the tools available to find a solution.

Key figures

0.80% (2015-2040)
after 2.11% (1920-2014)
growth in US output per capita
(projections by Robert Gordon)
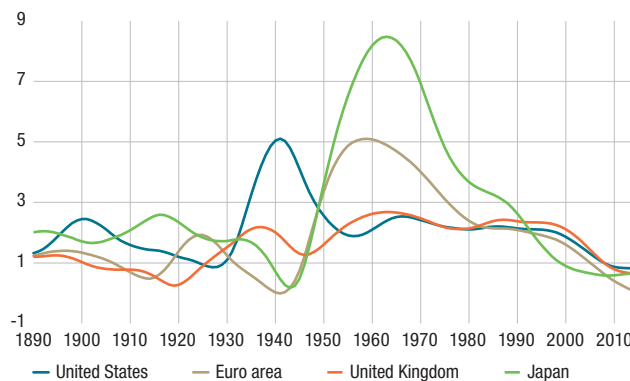
3.5% in 1990 compared with −1.5% today
real US interest rates
(calculations by Hamilton et al. 2016)

Around 1% compared with 1.5-2% before the crisis
euro area potential growth (according to Peter Praet): euro area GDP finally exceeded its pre-crisis level in the third quarter of 2015

Growth in GDP per capita
(annualised growth; Hodrick Prescott filter where λ = 500, in %)

Source: Bergeaud, Cette and Lecat (2016), data available at: *www.longtermproductivity.com*

The Collège de France and Banque de France organised a joint international conference in Paris on the theme of secular stagnation and the measurement of growth. Ten academic contributions were presented over three themed sessions. These were followed by a panel discussion on policies that can be used to address potential stagnation.

François Villeroy de Galhau, Governor of the Banque de France, opened the conference by highlighting the need for central bankers to pay particular attention to the risk of secular stagnation – defined as a prolonged period of anaemic growth. A persistent slowdown in trend output growth can make an economy more vulnerable to shocks that push the natural interest rate below the effective lower bound. Moreover, weak growth and inflation reduce the efficiency of standard monetary policy tools, as well as affecting the sustainability of public and private debt.

The conference focused on three key questions: are we underestimating growth? Is the slowdown linked to demand? And is this persistent phenomenon linked to supply-side factors, such as a slowdown in the pace of innovation?

1. Measurement aspects

The first session aimed to determine the extent to which the recent slowdown in productivity growth reflects an actual trend in advanced economies or, on the contrary, stems from time-varying biases in the way productivity is measured.

Philippe Aghion, professor at the Collège de France, presented a paper (Aghion et al., 2017) investigating the consequences of creative destruction for the measurement of real growth.

His work looks at how to adequately capture the entry and exit of products in the consumer price index (CPI). As the change in prices is

used as a production deflator, overstating CPI inflation essentially equates to an understatement of real growth. In the United States, some 40% of goods exit the CPI sample in a typical year. When calculating rates of inflation, national statistics offices generally assume that new producers charge the same quality-adjusted price as the producers they replace. However, the authors point out that some products disappear precisely because they are displaced by more attractive products. As a result, conventional methods of calculation tend to overstate inflation. Building on this premise, the authors explore the extent to which US growth has been understated. They also examine whether the share of missing growth caused by creative destruction has evolved over time and whether this can explain the recent slowdown in productivity growth. To conduct their analysis, the authors develop a Schumpeterian model which allows them to express missing growth as a function of the market share of incumbent producers and new entrants. Using this method, they estimate that US growth is understated by between 0.5 and 1.0 percentage point per year. However, they also note that this result appears to remain stable over time and thus cannot account for the recent slowdown in productivity growth.

John Fernald, Senior Research Adviser at the Federal Reserve Bank of San Francisco, also explores the issue of how to measure US productivity growth (Byrne et al., 2016), and seeks in particular to determine whether the post-2004 slowdown is real or stems from a worsening problem of mismeasurement. The authors adjust official statistics for various biases and then verify the extent to which this affects growth rates for the periods 1978-1995, 1995-2004, and 2004-2014. They first investigate whether productivity growth has slowed because industries with low measured growth, such as healthcare and other services, have an increasing weight in the economy. Their conclusion is that this has no effect, suggesting that the slowdown in productivity growth is a within-industry rather than a between-industry phenomenon. The authors

then use improved, consistent deflators for a range of information-technology-related products. Although there is indeed considerable evidence of mismeasurement, they find no indication that the problem has increased in recent years. Computer prices, for example, are increasingly poorly measured, but the weight of this sector in total US output is declining. On balance, this source of mismeasurement was more significant in the period 1995-2004 than in the period 2004-2014. In sum, while measurement problems are indeed pervasive, the productivity slowdown since 2004 appears to be real, as shown in Chart 1.

Daniel Sichel, professor at Wellesley College, presented some of his recent work aimed at determining whether mismeasurement in the prices of high-tech products could affect the pattern of multifactor productivity (MFP) growth across industries (Byrne et al., to be published in 2017). His paper stems from the observation that, according to official US data, prices for microprocessor units (MPUs) have barely declined in recent years. This contrasts sharply with the rapid falls observed from the mid-1980s to the early 2000s. The authors build new hedonic indices for quality-adjusted prices using price data published by Intel – a leading MPU manufacturer – for the period 2000-2013. Using these indices rather than the official Producer Price Index (PPI), the authors then gauge the extent to which their "alternative tech prices" (as well as those developed by Byrne and Corrado for a range of high-tech products) change the allocation of MFP growth across industries. The results suggest that adjusting the price of high-tech products implies a much higher rate of MFP growth in recent years for the overall tech sector, and a slower rate outside the tech sector. Given that key innovations in the economy have been driven by the revolution in computer processing capacity, the authors conclude that faster MFP growth in the tech sector might presage faster future growth in the rest of the economy. However, the findings also deepen the productivity paradox, as the stronger pace of

C1 Adjustments to growth in output per hour
(in percentage points)
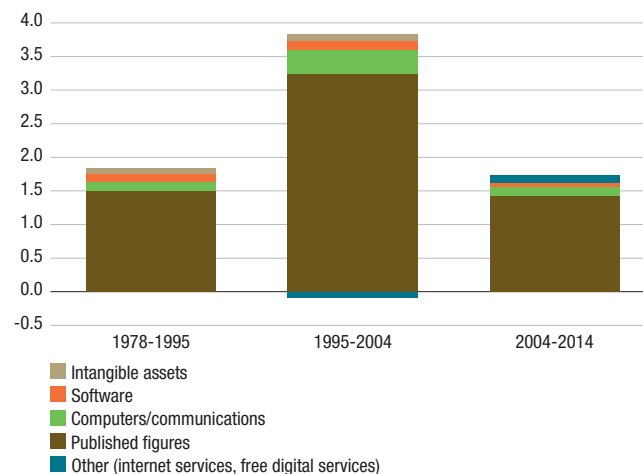
Sources: US Bureau of Labor Statistics, Fernald (2014), authors' calculations.

growth in the tech sector does not show up in conventional statistics on aggregate productivity.

Jean Luc Tavernier, Director-General of the French statistics office Insee and chair of the session, summed up the first session by concluding that mismeasurement, although pervasive, does not account for the recent slowdown in measured productivity. He said that the papers presented in the session implied that standard CPI tends to overstate prices, contrary to the general public's belief that national statistics offices underestimate inflation. Statistics offices do not measure the consumer surplus – the difference between the total amount consumers are willing to pay for a good or service and the total amount they actually do pay – nor do they take into account all non-monetary transactions. Consequently, measures of well-being need to include items that do not show up in conventional GDP figures, including non-monetary activities such as those found in the sharing economy. Lastly, globalisation poses new challenges for statisticians, as it is becoming increasingly difficult to locate sources of output and value added in a global economy.

2. Is the slowdown in growth linked to weak demand?

In his introduction to the second session focusing on demand, Marc-Olivier Strauss-Kahn, Director General Economic and International Relations at the Banque de France, reiterated the factors thought to lie behind a secular stagnation: demographics, productivity, deleveraging, risk aversion and inequality, among others.
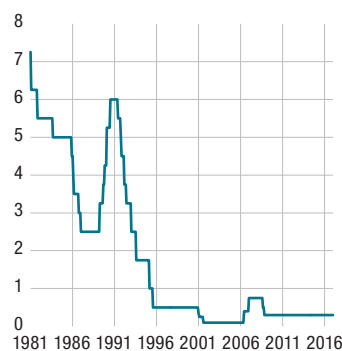
In advanced economies, the Great Recession was followed by a decline in potential growth (or a slow recovery). The first paper of the session (Benigno and Fornaro, 2016), presented by Luca Fornaro, researcher at the *Centre de Recerca en Economia Internacional* or CREI, sought to explain how a prolonged period of weak aggregate demand can lead to a decline in potential growth. The study uses an endogenous growth model with nominal rigidities and a zero lower bound on the nominal interest rate. The model allows for two equilibria: one with full employment and positive growth, and one where pessimistic expectations lead to a permanent state of stagnation with a liquidity trap, as illustrated in Chart 2 for Japan. Intuitively, firms' investment endogenously determines the growth

rate of productivity and depends on expectations of future profits. Pessimistic expectations for future growth lead to a decline in household spending and firms' profits, and low profits in turn lead to weaker corporate investment and productivity growth, thereby validating the pessimistic expectations. In such a set-up, it makes sense for governments to consider subsidising investment in productivity-enhancing activities. The paper adds to the existing literature by demonstrating that these policies act not only through the supply side, but also by stimulating aggregate demand during a liquidity trap. The authors show that sufficiently large subsidies for innovation can help to pull an economy out of stagnation and restore full employment.
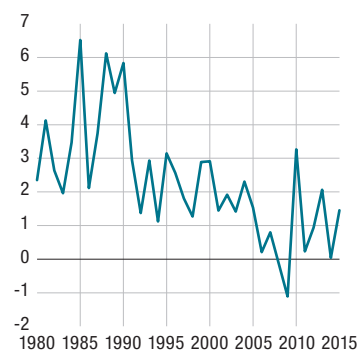
Jordi Gali, Director of Research at the CREI, described the effects of a fiscal stimulus (Gali, 2014). Using a New Keynesian model, his paper looks at the macroeconomic impact of a fiscal stimulus (cut in taxes or increase in public spending) when it is financed first by standard increase in debt, and second by money creation. A stimulus financed by the money creation has a greater impact than one financed solely by debt. If the zero lower bound is not binding (liquidity trap), a money-financed fiscal stimulus lowers real rates,

C2 The case of Japan (1980-2014)

a) Central bank policy rate
(%)

b) Real GDP/hour worked
(annual growth rate in %)

Sources: Benigno (G.) and Fornaro (L.) (2016).

which in turn leads to a rise in consumption. In the case of a debt-financed stimulus, however, real rates remain constant following a tax cut (due to Ricardian equivalence), or rise following an increase in government expenditure (due to monetary tightening). In a liquidity trap, money creation acts as a "forward guidance" policy, and implies a period of monetary accommodation after the end of the trap. This in turn increases inflation expectations and leads to a rise in present consumption. Due to the constraint on nominal rates, monetary policy accommodation is not immediate, and the gain from money-financed stimulus compared to a debt financed stimulus is smaller than when there is no liquidity trap.

The third paper in the session (Marx et al., 2017), presented by Benoit Mojon, Director of Monetary and Financial Analysis at the Banque de France, proposes a quantitative explanation for the contrasting trends in real interest rates and returns on capital. Risk-free rates have declined since the 1980s, whereas the return on capital has not. The paper analyses these trends in a calibrated overlapping generation model, incorporating growth in productivity and in the labour force, a borrowing constraint and a variable risk to productivity growth. Using this method, the authors show that declining labour force and productivity growth imply a limited decline in real interest rates. Moreover, deleveraging cannot account for the joint decline in the risk-free rate and increase in the risk premium. When the authors allow for a change in the perceived risk to productivity, they find that the joint change in the risk-free rate and return on capital requires an increase in risk, and does not rely on a decrease in the borrowing capacity of indebted agents. This finding is consistent with the increase in public and private debt since the crisis, but refutes the role of deleveraging in explaining the observed decline in real rates. The authors also note that, for the data on returns on risky assets, stock returns could be used in place of the return on capital, as both display a similar pattern.

In summing up the session, Marc-Olivier Strauss-Kahn noted the different timing perspectives of the presentations, and then tried to draw some lessons for fiscal policies. According to Luca Fornaro, well-targeted public spending, notably on innovation, can boost productivity and income from labour, and thus help to avert a stagnation trap. For Benoit Mojon, if public debt can be considered a safe asset, then an increase in its supply will push real rates higher; however, if public debt becomes too risky, then it differs significantly from the injection of central bank money in Jordi Gali's model. Marc-Olivier Strauss-Kahn concluded by stressing the extent to which demand and supply are interlinked. In the United States, for instance, can we really talk about a lack of demand when the unemployment rate is so low? And in other countries, if supply factors are the main causes behind an economic slowdown, then policies to support demand can buy time for other policies, such as structural policies aimed at restoring potential growth.

3. On the supply side: a slowdown in the pace of innovation?
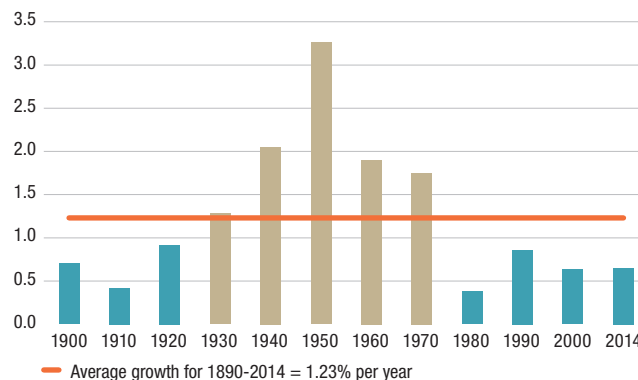
Robert Gordon, professor at Northwestern University, has for many years propounded the theory of a supply-side driven slowdown in productivity. Referring to the origins of the term "secular stagnation", he explained that Hansen worried about slow population growth at the end of the 1930s, but not about anaemic productivity growth as the latter remained dynamic. Today, we are faced with stagnant growth in population levels as well as in productivity. This implies a lower stock of capital and therefore a lower level of investment, which further weakens productivity growth as machinery is replaced less frequently with newer and more efficient models. Gordon showed that the third industrial revolution (since the 1960s with information and communication technologies) only had a limited and short-lived impact on productivity, at the turn

of the 2000s. By contrast, the first and second industrial revolutions (1770-1840 with the steam engine, railways and steel; and 1870-1920 with electricity, the combustion engine, the telephone, running water and chemicals) both had a massive and lasting impact on productivity. He concluded by saying that the most recent innovations, such as driverless cars or artificial intelligence, are evolutionary, not revolutionary, and cannot be expected to bring about any substantial improvement in productivity.

Nicholas Crafts, professor at the University of Warwick, presented a detailed analysis of the Great Depression. Using improved estimates of the quality of labour and capital, he confirmed that growth in total factor productivity was very dynamic in the 1930s, albeit slightly less so than previously estimated because labour quality grew more quickly. While the productivity gains were exceptionally high in those sectors marked by "great inventions", productivity growth remained dynamic in all sectors of the economy. For Crafts, investment was low in the 1930s because of the credit crunch and increased uncertainty.

Barry Eichengreen, professor at UC Berkeley, used insights from the Great Depression to analyse the recent US crisis. He confirmed Crafts' findings on labour quality and productivity, and emphasised the extremely rapid growth in TFP and output after 1937 – which was partly due to fiscal stimuli, especially military spending in the period 1940-1941. By contrast, today's disruptive technologies depress productivity and only increase it after a certain amount of time. With unemployment in the United States currently at 4.7%, there are no spare resources, so a fiscal stimulus would essentially increase imports and drive up the value of the dollar. Finally, the steady decline in US labour force participation is a structural phenomenon and has not been caused by the crisis.

C3 Average annual growth in TFP in the 10 years preceding the year shown
(%)

Average growth for 1890-2014 = 1.23% per year

Source: Presentation by Gordon.

Gilbert Cette, Deputy Director General at the Banque de France and associate professor at the *Université d'Aix-Marseille*, documented the evolution of productivity in the majority of advanced economies over the 20th century (Bergeaud et al., 2016). Productivity growth reached a peak in the United States during the two world wars, and at a later stage in the euro area due to the catch-up process. These waves of long-term productivity growth can partly be explained by improvements in the measurement and quality of production factors (education levels for labour, and the age of equipment for capital stock), and by the diffusion of technology. However, even after taking these elements into account, we still cannot fully explain the waves of productivity growth. As a result, we need to look at other possible causes, such as the allocation of production factors, or changes in production processes and management practices.

Jean-Claude Trichet, former Governor of the Banque de France and former President of the European Central Bank (ECB), asked the panel whether there was a link between the 1973

(negative) oil supply shock and subsequent decade of historically low productivity growth, and between the lax financial regulation/low interest rates from 1995 to 2005 and the rapid growth in productivity. Crafts replied that in Europe, productivity increased in the 1950s and 1960s as a result of reductions in inefficiencies; the subsequent slowdown would therefore have occurred anyway, although the oil shock certainly made it more abrupt. Gordon added that many of the sources of productivity gains in the United States (railways, air conditioning in the south, aeroplanes) had already been exhausted by 1970. Cette concurred and explained that a break in TFP growth appears in the United States in the 1960s. Eichengreen added that in the 1970s, productivity growth decreased less in those countries that spent more on education, had a stable political regime and were less reliant on investment. Asked about the impact on productivity of the creation of the European Single Market in 1992, Crafts replied that most models showed it had had a positive impact on the level of productivity, but not on its growth, and that this is indeed visible in the data. However, the effect is small as Europe is still a long way from completing the Single Market. Eichengreen added that US productivity increased considerably in the 19th century thanks to market integration and railroad expansion.

4. How can we avoid a potential secular stagnation?

Anne Le Lorier, First Deputy Governor of the Banque de France, introduced the panel discussion by highlighting the challenges raised by low growth, particularly for policy-makers. She emphasised that monetary policy should not be the only game in town, and stressed the need for it to be followed up with other policy tools. With regard to demand, the composition of public spending and coordination of fiscal policies are central to the debate. On the supply side, there is a strong need for reforms, but the main difficulty is how to make sure they are understood and accepted.

Claudio Borio, Head of the Monetary and Economic Department at the Bank for International Settlements, focused on the demand aspect of low growth. He said that the world is not suffering from a secular stagnation but rather from the consequences of the financial crisis, and in particular from the misallocation of resources during the pre-crisis financial boom and the long shadow this has cast post-crisis, and from a serious debt overhang. Rather than reflecting a deep seated structural weakness in aggregate demand, low growth is the result of a major financial boom and bust that has left long-lasting scars on the economy. This analysis suggests that macroeconomic policies, and in particular monetary policy, should be adjusted to better respond to phases of expansion and recession.

Catherine Mann, Chief Economist at the Organisation for Economic Co-operation and Development (OECD), said there is a lot that policies can do to fight low growth. One important issue is the lack of innovation diffusion from the most productive firms (those at the technological frontier) to the rest of the economy. Frontier firms can afford to pay their employees higher wages, which in turn increases inequality. Although each country has unique policy needs, policy makers should consider making reforms that i) ensure competition, entry and exit; ii) support labour marker fluidity; and iii) improve the performance of the financial sector. Policies that prevent the exit of firms in order to maintain employment may lower productivity growth by protecting less productive firms. This can also lead to an increase in non-performing loans, thereby posing a threat to financial sector stability. Macroprudential policy should therefore be coordinated with microstructural policies.

Fabrice Lenglart, Deputy Commissioner-General at France Stratégie, underlined the very real risk of a downward spiral. Low growth raises concerns over the long-term sustainability of pension systems, particularly in countries such as France. Preventing a secular stagnation requires a combination of measures to strengthen both

demand and supply. First, public investment must be increased, since well-targeted investments can help to lift potential growth. In Europe, in order to abide by European fiscal rules, any rise in public investment would require a more coordinated approach. A second way forward is to increase aggregate demand and improve the allocation of labour and capital by tackling income and wealth inequality. A third solution is to design mechanisms that would increase predictability for companies, by providing them with a guarantee that technological innovation will be encouraged rather than quashed by regulations.

Peter Praet, Member of the Executive Board and Chief Economist at the ECB, said that, to be effective, the policy response to low growth should be comprehensive, consistent, well sequenced and incentive compatible. Secular stagnation is not inevitable, but is a possible outcome of bad macroeconomic policies. Monetary policy faces three key challenges, related to measurement uncertainty, the instruments it can use and its relationship with other economic policies. First, policy makers should not base their actions solely on intangible variables such as the equilibrium real interest rate or output gap. This is why the ECB has always pursued a comprehensive monetary policy strategy, based on two pillars, and has in practice always looked at a broad range of indicators when determining its policy stance. Second, policy-makers have to remove certain theoretical constraints when this is deemed necessary, as was the case when the ECB used non-standard measures to help the economy recover. Third, Praet said that monetary policy cannot do everything and nor should it. To manage this risk, central banks should always stick firmly to their mandate.

References

Aghion (P.), Bergeaud (A.), Boppart (T.), Klenow (P.) and Li (H.) (2017)
"Missing growth from creative destruction", *Working Paper Series* 2017-4, Federal Reserve Bank of San Francisco.

Andrews (D.), Criscuolo (C.) and Gal (P.) (2015)
"Frontier firms, technology diffusion and public policy: micro evidence from OECD countries", *OECD Productivity Working Papers* 2, OECD Publishing.

Benigno (G.) and Fornaro (L.) (2016)
"Stagnation traps", *CEPR Discussion Papers* 11074, Centre for Economic Policy Research.

Bergeaud (A.), Cette (G.) and Lecat (R.) (2016)
"The role of production factor quality and technology diffusion in 20th century productivity growth", *Working Papers* No. 588, Banque de France (forthcoming).

Borio (C.), Kharroubi (E.), Upper (C.) and Zampolli (F.) (2015)
"Labour reallocation and productivity dynamics: financial causes, real consequences", *Working Papers*, no 534, BIS December.

Borio (C.) (2015)
"Revisiting three intellectual pillars of monetary policy received wisdom", *Cato Journal*.

Byrne (D.), Fernald (J.) and Reinsdorf (M.) (2016)
"Does the United States have a productivity slowdown or a measurement problem?" *Working Paper Series* 2016-3, Federal Reserve Bank of San Francisco.

Byrne (D.), Oliner (S.) and Sichel (D.) (2015)
"How fast are semiconductor prices falling?" *NBER Working Papers* 21074, National Bureau of Economic Research.

Galí (J.) (2014)
"The effects of a money financed fiscal stimulus", *CEPR Discussion Papers* 10165, Centre for Economic Policy Research.

Hamilton (J.D.), Harris (E.S.), Hatzius (J.) and West (K.D.) (2016)
"The equilibrium real funds rate: past, present, and future", *Economic Review* 64: 660, IMF.

Marx (M.), Mojon (B.) and Velde (F.) (2017)
"Why are interest rates so low?", *mimeo*.

A slight rebound in France's national economic wealth in 2015

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At the end of 2015, France's national economic wealth was valued at EUR 13,585 billion, equivalent to 7.6 times the country's net domestic product for the year. After falling by 1.8% in 2014, national wealth rose by 1.3% year-on-year (in current euro), helped largely by the disappearance of the downward pressure from house prices. Household wealth rose by a marked 2.4% compared with the weak 0.4% growth seen the previous year. Households' non-financial assets, which mainly comprise buildings and land, rebounded by 1.2% after last year's modest 1.4% decline. Their financial wealth continued to rise, and at a higher rate than in 2014, buoyed by strong investment inflows and sharp gains in stock market prices. Growth in non-financial corporations' (NFCs') own funds accelerated to 6.7% from 4.2% in 2014, largely driven by increases in the value of their equity holdings. NFCs also stepped up their investment over the year and increased their inventories relative to 2014. Lastly, net general government wealth continued to decline sharply, falling to EUR 267 billion at end-2015.

Key figures

EUR 13,585 billion
national economic wealth in 2015

EUR 10,692 billion
household economic wealth in 2015

1.3%
increase in national economic wealth in 2015

62%
share of real estate in household wealth

Change in total wealth of broad institutional sectors relative to macroeconomic flows
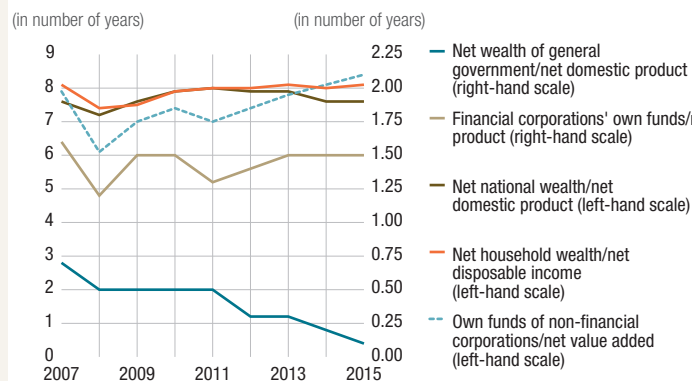
(in number of years)   (in number of years)

- Net wealth of general government/net domestic product (right-hand scale)
- Financial corporations' own funds/product (right-hand scale)
- Net national wealth/net domestic product (left-hand scale)
- Net household wealth/net disposable income (left-hand scale)
- Own funds of non-financial corporations/net value added (left-hand scale)

Key: At the end of 2014, net national wealth was equivalent to 7.5 years of net domestic product.
Sources: Insee and Banque de France, ESA 2010 national accounts.

1. At the end of 2015, national wealth stood at EUR 13,585 billion

At the end of 2015, France's national economic wealth (see definitions in Box 2) amounted to EUR 13,585 billion, representing a rise of 1.3% year-on-year after 2014's fall of 1.8% (see Chart). The figure was equivalent to 7.6 times the country's net domestic product (NDP) for the year (see Box 1 and Chart). The modest rebound in national wealth was driven primarily by a recovery in non-financial assets, which grew by 1.2% year-on-year (after a fall of 1.1% in 2014) largely due to the end of the decline in house prices. Financial assets and liabilities (see definitions in Box 2) both rose by 4.6% in 2015, after growing respectively by 4.6% and 4.9% in 2014. As a result, net financial wealth remained slightly negative at EUR –187 billion (compared with EUR –195 billion in 2014) and made little contribution to the change in total national wealth.

2. Household wealth was lifted by the end of the decline in house prices

At the end of 2015, the net worth of French households (see definitions in Box 2) stood at EUR 10,692 billion,[1] equivalent to nearly eight times their net disposable income (see Chart). The figure was up by 2.4% year-on-year, representing a marked acceleration after the near-stabilisation seen in 2014 (0.4% growth; see Table 2). The rise was essentially buoyed by a recovery in non-financial wealth and further dynamic growth in financial wealth.

French household wealth mainly consists of non-financial assets (68%), the bulk of which is made up of real estate (62%; see definitions in Box 2). In 2015, the value of households' land and building assets rose by 1.1% after three consecutive years of falls (declines of 1.5% in 2014, 0.3% in 2013 and 0.7% in 2012). Housing starts and the cost-of-construction index both stabilised, while household residential investment fell back only

slightly (in current euro). Additionally, prices for existing dwellings remained stable year-on-year, after declining steadily since 2012. Overall, households' non-financial wealth increased at a modest rate of 1.2%, contrasting with 2014's 1.4% decline.

Growth in household financial assets picked up to 4.6%, from 4.0% the previous year, driven by higher investment inflows and stronger valuation gains on security holdings relative to 2014. Outstanding life insurance investments rose by 3.9% (after a 4.5% increase in 2014), due to further strong growth in net inflows. Inflows into banking products increased at a higher rate over the year, driving total currency and deposits up by 3.4% (after 2.1% growth in 2014). The low level of interest rates reduces the opportunity cost of keeping liquid assets and encourages households to increase their currency and sight deposit holdings at the expense of passbook savings and term deposits. Households also tend to favour housing savings accounts, which continue to offer relatively attractive returns, despite a cut of 0.5 percentage point in the interest rate on contracts signed after February 2015 (to 2.0%). Outstanding holdings of equities and investment fund shares rose by

1   This figure is determined on the basis of national accounting standards and therefore differs from the figure in the *Enquête Patrimoine 2014-2015* published by Insee and the Banque de France. The latter survey is France's contribution to the *Household Finance and Consumption Survey* (HFCS), which is the European Central Bank's system for compiling harmonised data on household wealth for all euro area countries.

Change in total wealth of broad institutional sectors relative to macroeconomic flows

(in number of years)   (in number of years)

- Net wealth of general government/net domestic product (right-hand scale)
- Financial corporations' own funds/net domestic product (right-hand scale)
- Net national wealth/net domestic product (left-hand scale)
- Net household wealth/net disposable income (left-hand scale)
- Own funds of non-financial corporations/net value added (left-hand scale)

Key: At the end of 2014, net national wealth was equivalent to 7.5 years of net domestic product.
Sources: Insee and Banque de France, ESA 2010 national accounts.

7.8%, after 5.3% growth in 2014. This was largely attributable to the appreciation of existing equity investments,[2] as the SBF 120 index climbed by 9.0% in 2015, compared with the 0.7% rise seen in 2014. Households also continued to shift away from bond investments, cutting their holdings by a further 14.5%, after a 9.0% drop the previous year. On the liabilities side, borrowing grew by 3.1%, after 1.8% growth in 2014, with the rise primarily linked to the 16% jump in house purchases. Overall, growth in households' net financial wealth accelerated slightly to 5.0%, compared with 4.5% in 2014.

3. Stronger growth in non-financial corporations' own funds

At end-2015, the net worth (see definitions in Box 2) of non-financial corporations (NFCs, see Box 2) amounted to EUR 2,128 billion. Their financial assets rose at a higher rate than their liabilities over the year, while their non-financial wealth increased by 1.9% (after shrinking by 0.2% in 2014). Building and land holdings remained almost stable owing to slightly negative price effects for non-residential buildings and structures. Gross fixed capital formation (GFCF) continued to fall in agriculture and real estate, but picked up in manufacturing, wholesale and retail trade, transport and services. At the same time, inventory levels rose significantly over the year. As a result, non-financial assets excluding real estate grew at a stronger pace in 2015 than in 2014.

NFCs' financial assets continued to grow sharply, rising by 8.1% after 8.3% growth in 2014. Firms made significant additions to currency and deposit holdings (increase of 11.0%, after a 5.1% rise in 2014) and, contrary to 2013 and 2014, stopped selling off shares in investment funds. Total equity and investment fund holdings grew by a marked 11.1% (after 10.7% in 2014), driven by significant valuation gains on existing holdings and strong flows of new acquisitions. The latter mainly consisted of intra-group purchases of shares issued by NFCs; in parallel, therefore, the outstanding amount of issued shares (which make up the majority of NFCs' financial liabilities) also increased at a higher rate over the year.

2   See appendix for further details on stocks, flows and valuations.

T1 Wealth of institutional sectors at end-2015

(amounts in EUR billions, % change)

	National economy total	Households [a]	Non-financial corporations	Financial corporations	General government	Change in national economic wealth 2013-2014	Change in national economic wealth 2014-2015
Non-financial assets (NFA)	**13,772**	**7,288**	**4,295**	**263**	**1,926**	**-1.1**	**1.2**
of which: Buildings and land, o/w:	10,956	6,619	2,480	205	1,652	-1.7	0.7
Dwellings	*4,238*	*3,479*	*659*	*41*	*59*	*1.9*	*1.3*
Other buildings and structures	*1,936*	*168*	*766*	*62*	*940*	*-1.0*	*-2.1*
Land underlying buildings and structures	*4,782*	*2,972*	*1,055*	*102*	*653*	*-5.0*	*1.4*
Machinery and equipment	600	41	511	15	33	1.0	1.7
Inventories	398	13	361	–	24	1.3	2.9
Other produced assets	563	148	281	14	120	1.5	2.0
Other non-produced assets	1,255	467	662	29	97	1.7	4.6
Financial assets (FA) other than derivative products	**25,602**	**4,841**	**6,739**	**12,745**	**1,277**	**4.6**	**4.6**
of which: Currency and deposits	5,290	1,379	529	3,252	130	4.9	3.0
Debt securities	3,557	69	52	3,365	71	8.1	0.6
Loans	4,281	30	1,196	2,936	119	2.4	1.8
Equity and investment fund shares/units	8,197	1,353	3,956	2,348	540	5.2	8.0
Insurance, pension and standardised guarantee schemes, o/w:	1,953	1,776	49	122	6	4.5	3.7
Life insurance	*1,665*	*1,665*	*–*	*–*	*–*	*4.5*	*3.9*
Total assets (A) = (NFA) + (FA)	**39,374**	**12,129**	**11,034**	**13,008**	**3,203**	**2.5**	**3.4**
Financial liabilities (FL) other than derivative products	**25,750**	**1,437**	**8,906**	**12,470**	**2,937**	**4.9**	**4.6**
of which: Currency and deposits	5,626	–	–	5,507	119	4.7	4.6
Debt securities	4,165	–	605	1,492	2,068	9.5	-0.6
Loans	4,125	1,235	2,157	414	319	1.3	1.7
Equity and investment fund shares/units (equity liabilities)	7,666	9	5,342	2,271	44	4.5	8.2
Insurance, pension and standardised guarantee schemes, o/w:	1,977	–	–	1,977	–	4.8	4.2
Life insurance	*1,667*	*–*	*–*	*1,667*	*–*	*4.5*	*3.9*
Net derivative products (N)	**-39**	**0**	**0**	**-40**	**1**	**ns**	**ns**
Net financial wealth [b] = (FA) − (FL) + (N)	**-187**	**3,404**	**-2,167**	**235**	**-1,659**	**[b]**	**[b]**
Wealth (or net worth) = (A) − (FL) + (N)	**13,585**	**10,692**	**2,128**	**498**	**267**	**-1.8**	**1.3**
Own funds = (net worth) + (equity liabilities)			**7,470**	**2,769**			

a) Including sole proprietors and non-profit institutions serving households (NPISH).
b) The net financial wealth of the national economy was EUR −106 billion in 2013, EUR −195 billion in 2014 and EUR −187 billion 2015.
"ns" means "non-significant".
"–" indicates that no assets are held.
Sources: Insee and Banque de France, ESA 2010 national accounts.

The rise in NFC investment was funded by an increase in debt levels, with firms opting primarily to borrow from banks. However, intra-group lending remained stable over the year, with the result that total outstanding loans rose at a lower rate of 2.3%, compared with 4.4% growth in 2014. New debt issues were more limited in 2015 and the outstanding amount of debt securities rose by just 3.5% compared with an 18.2% jump in 2014. Overall, NFCs' net worth expanded by 2.3% after slipping back by 0.4% in 2014, and own funds (see definitions) grew by a more marked 6.7%, compared with 4.2% growth the previous year. In 2015, NFC own funds were equivalent to 8.4 times their net value added.

Box 2

Sources

Data are from the ESA 2010 **national accounts**. The balance sheet (or **statement of national wealth**) can be consulted at *www.insee.fr*, under Statistics/economy – economic outlook – national accounts/Annual national accounts/The national accounts in 2015/Balance sheet.

Definitions

The national balance sheet records economic **assets and liabilities**, i.e. items over which ownership rights may be enforced and which are capable of procuring economic benefits for their owners. They may be financial or non-financial; the latter may arise from production processes or come from natural sources. Assets and liabilities are recorded at their year-end market value, with no consolidation within or between sectors. This value therefore includes any unrealised capital gains or losses in each asset class. Owing to movements in market prices, the value of an asset or liability may vary from one year to the next even if there are no net transaction flows. The value of unlisted shares is estimated on the basis of the value of listed shares.

The value of **real estate assets** is divided into the value of buildings and that of the underlying land. The bulk of real estate capital gains can be attributed to land.

Households include individuals, sole proprietors and non-profit institutions serving households.

Companies are broken down into **financial and non-financial corporations**. Financial corporations include the central bank, credit institutions and other deposit-taking corporations, other financial institutions (mainly investment funds and financial vehicle corporations), insurance corporations, money-market and non-money market investment funds, financial auxiliaries and captive financial institutions.

Wealth (or "**net worth**") is defined as the difference between the value of financial and non-financial assets and that of liabilities (which are by nature financial).

The **own funds** of financial and non-financial corporations are measured at market value, and correspond to the difference between the value of their assets and their non-equity liabilities.

General government debt (as defined in the Maastricht Treaty) differs from general government liabilities in three ways: the scope of financial transactions considered for government debt excludes derivatives and other accounts receivable/payable; government debt is consolidated meaning that it excludes debts between government agencies; and it is measured at nominal value, i.e. at principal repayment value.

4. Financial corporations' own funds improved, buoyed by the rally in stock markets

Financial corporations (FCs, see definitions) mainly carry large stocks of financial assets and liabilities on their balance sheets, and the net balance tends be small (EUR 235 billion in 2015) compared with the size of the amounts carried.

In 2015, FCs' financial assets grew at the same pace as in 2014 (i.e. 3.1%). Outstanding loans increased by a more marked 2.2%, after 0.3% growth in 2014, buoyed by stronger flows of new bank lending to households and NFCs. Financial institutions stepped up their purchases of long-term debt securities, but growth in outstanding holdings eased to 1.3% from 8.7% due to negative valuation effects. Currency and deposit holdings also rose

by a more moderate 1.4%, compared with 6.3% growth in 2014, as the increase in inter-MFI (monetary and financial institutions) deposits was offset to an extent by a fall in deposits held by MFIs with non-resident institutions. FCs' holdings of equities and investment fund shares grew by 5.6% over the year, under the combined effect of valuation gains and strong flows of acquisitions.

Liabilities grew at a higher rate of 3.9% in 2015 compared with 3.3% in 2014. This was due to an increase in the amount of currency and deposits held by NFCs and households with financial corporations, and to a rise in the outstanding amount of issued shares. In contrast, outstanding debt securities declined owing to a high level of net redemptions. Overall, FCs' total net worth dropped by 9.1%, after falling by 5.9% in 2014. Own funds, in contrast, rebounded by 4.0%, recouping the previous year's 0.8% decline.

5. General government liabilities rose more slowly, but net wealth continued to decline

In 2015, general government net worth continued to deteriorate markedly, shrinking by 21.2% after a drop of 41.2% in 2014. At EUR 267 billion, the figure accounted for just 14.9% of NDP for the year, down from 70% in 2007.

General government non-financial wealth, 86% of which consists of land and buildings, declined to a lesser extent than in 2014 (fall of 0.6% after a 2.1% drop the previous year). Holdings of

non-residential buildings and structures declined as a result of negative price effects and a further fall in gross fixed capital formation (GFCF). However, the decrease in the value of buildings was offset to an extent by an appreciation in the price of the underlying land. General government net financial wealth also declined at a lower rate than in 2014, despite the fact that liabilities continued to outstrip assets (growing by 2.6%, after a 9.5% rise in 2014, compared with 1.1% growth for assets, after 4.3% growth in 2014).

On the asset side, the general government opted to sell off debt security holdings (decline of 6.8%, after growth of 13.3% in 2014) and increase its currency and deposit holdings (rise of 12.3% after a 0.7% decline a year earlier). It also acquired shares in unlisted companies and in non-monetary investment funds. Nonetheless, total equities and investment fund shares fell by 2.1%, after rising by 4.1% the previous year, due to valuation losses on existing holdings.

On the liabilities side, net bond issuance, which is the general government's main source of funding, fell slightly to EUR 73.5 billion from EUR 76.8 billion in 2014. The value of outstanding debt securities nonetheless grew at a markedly lower pace of 2.4%, compared with 11.3% in 2014, due primarily to the slight rise in long-term interest rates. The 10-year government bond rate rose from 0.84% at end-2014 to 0.99% at end-2015, after falling sharply over the previous 12 month period. Overall, the market value of public borrowing increased by 2.6% in 2015, compared with a rise of 2.8% in Maastricht terms (see definitions).

T2   Change in the wealth of institutional sectors
(%)

	Households [a]			Non-financial corporations			Financial corporations			General government		
	2003 2013 avg/year	2013 2014	2014 2015	2003 2013 avg/year	2013 2014	2014 2015	2003 2013 avg/year	2013 2014	2014 2015	2003 2013 avg/year	2013 2014	2014 2015
Non-financial assets (NFA)	**5.6**	**-1.4**	**1.2**	**5.3**	**-0.2**	**1.9**	**7.3**	**0.2**	**3.2**	**5.3**	**-2.1**	**-0.6**
of which: Buildings and land, o/w:	5.9	-1.5	1.1	5.4	-2.0	0.4	6.9	-0.6	3.0	5.6	-2.5	-0.9
Dwellings	*5.0*	*1.9*	*1.3*	*4.2*	*2.0*	*1.6*	*4.5*	*2.3*	*2.3*	*4.8*	*0.3*	*0.1*
Other buildings and structures	*2.5*	*-1.5*	*-3.2*	*4.2*	*-1.2*	*-2.3*	*6.4*	*2.2*	*2.2*	*4.3*	*-0.9*	*-2.1*
Land underlying buildings and structures	*7.4*	*-5.2*	*1.3*	*7.2*	*-4.9*	*1.7*	*8.4*	*-3.3*	*3.8*	*7.9*	*-5.0*	*0.9*
Machinery and equipment	0.0	-5.8	-2.5	2.8	1.6	2.1	3.3	4.0	6.2	2.1	0.0	-1.3
Inventories	0.3	8.2	-13.9	3.3	0.6	3.7	–	–	–	5.4	8.3	0.8
Other produced assets	3.3	0.6	1.4	3.7	2.5	3.2	4.5	3.4	4.1	2.3	0.3	-0.1
Other non-produced assets	3.6	-0.8	2.5	10.7	4.3	6.3	18.2	2.2	3.1	5.3	-1.9	3.4
Financial assets (FA) other than derivative products	**4.5**	**4.0**	**4.6**	**4.6**	**8.3**	**8.1**	**6.4**	**3.1**	**3.1**	**5.1**	**4.3**	**1.1**
of which: Currency and deposits	3.6	2.1	3.4	10.0	5.1	11.0	7.5	6.3	1.4	2.8	-0.7	12.3
Debt securities	1.7	-9.0	-14.5	0.9	-4.4	-7.0	5.9	8.7	1.3	8.4	13.3	-6.8
Loans	3.1	3.4	3.2	4.1	8.1	1.4	6.1	0.3	2.2	3.5	0.6	-2.8
Equity and investment fund shares/units	3.6	5.3	7.8	4.6	10.7	11.1	5.1	-2.3	5.6	7.2	4.1	-2.1
Insurance, pension and standardised guarantee schemes, o/w:	6.7	4.7	3.7	1.8	1.6	1.1	60.4	3.6	3.8	2.7	3.0	1.1
Life insurance	*6.8*	*4.5*	*3.9*	*–*	*–*	*–*	*–*	*–*	*–*	*–*	*–*	*–*
Total assets	**5.2**	**0.6**	**2.5**	**4.9**	**4.7**	**5.6**	**6.4**	**3.1**	**3.1**	**5.2**	**0.3**	**0.1**
Financial liabilities (FL) other than derivative products	**5.1**	**2.6**	**3.8**	**4.6**	**6.1**	**6.4**	**6.1**	**3.3**	**3.9**	**6.3**	**9.5**	**2.6**
of which: Currency and deposits	–	–	–	–	–	–	6.1	4.7	4.7	8.3	4.5	2.1
Debt securities	–	–	–	4.8	18.2	3.5	8.4	4.5	-5.9	7.0	11.3	2.4
Loans	6.9	1.8	3.1	4.3	4.4	2.3	6.8	-14.0	-3.6	4.5	4.3	0.5
Equity and investment fund shares/units (equity liabilities)	6.2	4.7	4.5	4.8	6.2	8.6	3.0	0.6	7.4	ns	-0.2	-0.8
Insurance, pension and standardised guarantee schemes, o/w:	–	–	–	–	–		–	7.2	4.8	4.2	–	–	–
Life insurance	*–*	*–*	*–*	*–*	*–*	*–*	*6.8*	*4.5*	*3.9*	*–*	*–*	*–*
Net derivative products (N)	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**
Net financial wealth[b]	**4.3**	**4.5**	**5.0**	**4.8**	**0.0**	**1.6**	**ns**	**-10.5**	**-19.8**	**7.5**	**13.9**	**3.8**
Wealth (or net worth)	**5.2**	**0.4**	**2.4**	**5.9**	**-0.4**	**2.3**	**17.1**	**-5.9**	**-9.1**	**1.4**	**-41.2**	**-21.2**
Corporate own funds				**5.2**	**4.2**	**6.7**	**4.8**	**-0.8**	**4.0**			

a) Including sole proprietors and non-profit institutions serving households (NPISH).
b) The net financial wealth of non-financial corporations and general government is structurally negative. Hence, a "positive" development reflects a decline in net financial wealth, which becomes even more negative. Conversely, a "negative" development reflects an improvement.
"ns" means "non-significant".
"–" indicates that no assets are held.
Sources: Insee and Banque de France, ESA 2010 national accounts.

References

Couleaud (N.) and Delamarre (F.) (2009)
"*Le patrimoine économique national de 1978 à 2007 – 30 années au rythme des plus-values immobilières et boursières*", *Insee Première* No. 1229, Insee and Banque de France, March.

Humbertclaude (S.), Mauro (L.) and Monteil (F.) (2015)
"*Le patrimoine économique national en 2014 – en repli de 1,8 %*", *Insee Première* No. 1578, Insee and Banque de France, December.

Humbertclaude (S.), Mauro (L.) and Monteil (F.) (2014)
"*Le patrimoine économique national en 2013 – Deuxième année de stabilité*", *Insee Première* No. 1529, Insee and Banque de France, December.

Appendix
Additional tables

The national financial accounts distinguish between stocks (see Table A.1) and flows (see Table A.2). Thus, changes in holdings of assets and liabilities between date d and d+1 can be broken down into three components: flows, valuation effects (see Table A.3) and statistical adjustments (or other changes in volume).[1]

1 Other changes in volume correspond to reclassifications, creations or withdrawals of entities.

TA.1   Stocks
(EUR billions)

	Households			Non-financial corporations			Financial corporations			General government		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
Financial assets (FA) other than derivative products	**4,451**	**4,627**	**4,841**	**5,755**	**6,236**	**6,739**	**11,982**	**12,360**	**12,745**	**1,211**	**1,263**	**1,277**
of which: Currency and deposits	1,305	1,333	1,379	454	476	529	3,019	3 208	3,252	117	116	130
Debt securities	88	80	69	58	56	52	3,057	3,323	3,365	67	76	71
Loans, o/w:	28	29	30	1,090	1,179	1,196	2,865	2,873	2,936	122	123	119
Loans to households [a]	–	–	–	–	–	–	*1,170*	*1,192*	*1,229*	–	–	–
Loans to NFCs [a]	–	–	–	–	–	–	*835*	*859*	*897*	–	–	–
Equity and investment fund shares/units	1,191	1,255	1,353	3,215	3,560	3,956	2,277	2,224	2,348	530	552	540
Insurance, pension and standardised guarantee schemes, o/w:	1,636	1,712	1,776	48	49	49	113	117	122	6	6	6
Life insurance	*1,534*	*1,603*	*1,665*	–	–	–	–	–	–	–	–	–
Financial liabilities (FL) other than derivative products	**1,350**	**1,385**	**1,437**	**7,888**	**8,368**	**8,906**	**11,626**	**12,006**	**12,470**	**2,615**	**2,863**	**2,937**
of which: Currency and deposits	–	–	–	–	–	–	5,024	5,261	5,507	112	117	119
Debt securities	–	–	–	495	585	605	1,517	1,585	1,492	1,814	2,020	2,068
Loans, o/w:	1,177	1,198	1,235	2,019	2,109	2,157	499	430	414	304	317	319
Loans from financial institutions [a] [b]	*1,170*	*1,192*	*1,229*	*891*	*911*	*956*	–	–	–	*222*	*229*	*233*
Intra-group loans [a] [c]	–	–	–	*1,081*	*1,151*	*1,154*	–	–	–	*58*	*61*	*58*
Equity and investment fund shares/units (equity liabilities)	–	–	–	4,630	4,919	5,342	2,102	2,115	2,271	45	45	44
Insurance, pension and standardised guarantee schemes, o/w:	–	–	–	–	–	–	1,811	1,898	1,977	0	0	0
Life insurance	–	–	–	–	–	–	*1,535*	*1,605*	*1,667*	–	–	–
Net derivative products (N)	**0**	**0**	**0**	**0**	**0**	**0**	**-28**	**-61**	**-40**	**1**	**1**	**1**
Net financial wealth	**3,101**	**3,242**	**3,404**	**-2,133**	**-2,133**	**-2,167**	**328**	**294**	**235**	**-1,403**	**-1,599**	**-1,659**

a) Excluding interest accrued but not yet due.
b) Including non-resident financial institutions for non-financial corporations (NFCs) and general government.
c) Including non-resident NFCs/general government for both sectors.
Source: Insee and Banque de France, ESA 2010 national accounts.

TA.2   Net flows
(in EUR billions)

	Households			Non-financial corporations			Financial corporations			General government		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
Financial assets (FA) other than derivative products	**76**	**102**	**120**	**69**	**147**	**144**	**-236**	**229**	**265**	**45**	**41**	**38**
of which: Currency and deposits	33	27	43	40	21	49	-181	153	-5	-12	3	14
Debt securities	-12	-18	-7	-10	0	4	-4	80	94	6	6	-4
Loans, o/w:	1	1	1	0	78	10	14	-7	41	6	1	-3
Loans to households	–	–	–	–	–	–	*20*	*20*	*35*	–	–	–
Loans to NFCs	–	–	–	–	–	–	*4*	*21*	*35*	–	–	–
Equity and investment fund shares/units	15	23	20	35	24	51	-15	46	42	19	-4	2
Insurance, pension and standardised guarantee schemes, o/w:	41	54	50	0	0	1	22	5	4	0	0	0
Life insurance	*39*	*50*	*48*	–	–	–	–	–	–	–	–	–
Financial liabilities (FL) other than derivative products	**13**	**33**	**43**	**109**	**196**	**178**	**-252**	**209**	**285**	**127**	**128**	**112**
of which: Currency and deposits	–	–	–	–	–	–	-227	199	191	-4	5	5
Debt securities	–	–	–	19	47	27	-52	-36	-78	77	77	74
Loans, o/w:	20	20	35	3	65	40	3	-63	-21	9	13	2
Loans from financial institutions [a]	*20*	*20*	*35*	*8*	*16*	*41*	–	–	–	*2*	*7*	*3*
Intra-group loans [b]	–	–	–	*-4*	*50*	*0*	–	–	–	*7*	*3*	*-3*
Equity and investment fund shares/units (equity liabilities)	–	–	–	70	74	78	-34	0	50	26	0	0
Insurance, pension and standardised guarantee schemes, o/w:	–	–	–	–	–	–	52	65	65	0	0	0
Life insurance	–	–	–	–	–	–	*39*	*50*	*48*	–	–	–
Net derivative products (N)	**0**	**0**	**0**	**-1**	**-1**	**-1**	**-15**	**-23**	**11**	**-1**	**0**	**1**
Net financial wealth	**63**	**69**	**77**	**-41**	**-50**	**-35**	**1**	**-3**	**-9**	**-83**	**-87**	**-73**

a) Including non-resident financial institutions for non-financial corporations (NFCs) and general government.
b) Including non-resident NFCs/general government for both sectors.
Source: Insee and Banque de France, ESA 2010 national accounts.

TA.3   Valuation effects
(EUR billions)

	Households			Non-financial corporations			Financial corporations			General government		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
Financial assets (FA) other than derivative products	**62**	**72**	**84**	**309**	**216**	**322**	**156**	**286**	**115**	**36**	**24**	**-14**
of which: Currency and deposits	0	0	1	-1	2	3	-14	30	39	0	0	0
Debt securities	7	10	1	0	8	-8	-61	214	-43	-1	3	-1
Loans, o/w:	0	0	0	-5	9	9	-6	12	18	0	0	0
Loans to households	–	–	–	–	–	–	*-1*	*1*	*2*	–	–	–
Loans to NFCs	–	–	–	–	–	–	*0*	*1*	*1*	–	–	–
Equity and investment fund shares/units	34	42	68	316	195	316	268	20	102	36	20	-13
Insurance, pension and standardised guarantee schemes, o/w:	21	19	14	0	0	0	0	0	0	0	0	0
Life insurance	*21*	*19*	*14*	–	–	–	–	–	–	–	–	–
Financial liabilities (FL) other than derivative products	**0**	**2**	**2**	**413**	**272**	**351**	**162**	**182**	**160**	**-59**	**129**	**-26**
of which: Currency and deposits	–	–	–	–	–	–	-18	43	53	0	0	0
Debt securities	–	–	–	-13	43	-7	-12	104	-15	-59	129	-26
Loans, o/w:	-1	1	2	-4	9	9	-1	2	2	0	0	0
Loans from financial institutions [a]	*-1*	*1*	*2*	*-1*	*2*	*2*	–	–	–	*0*	*0*	*0*
Intra-group loans	–	–	–	*-3*	*7*	*6*	–	–	–	*0*	*0*	*0*
Equity and investment fund shares/units (equity liabilities)	0	0	0	432	215	344	173	13	106	0	0	0
Insurance, pension and standardised guarantee schemes, o/w:	–	–	–	–	–	–	21	19	14	–	–	–
Life insurance	–	–	–	–	–	–	*21*	*19*	*14*	–	–	–
Net derivative products (N)	**0**	**0**	**0**	**1**	**1**	**1**	**-2**	**-9**	**10**	**1**	**0**	**-1**
Net financial wealth	**62**	**70**	**82**	**-103**	**-55**	**-28**	**-8**	**95**	**-35**	**96**	**-105**	**11**

a) Including non-resident financial institutions for non-financial corporations (NFCs) and general government.
Source: Insee and Banque de France, ESA 2010 national accounts.

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