



EUROPEAN CENTRAL BANK

EUROSYSTEM

# *Firms' Financing and Sustainable Finance: the Role of Central Banks*

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1. A snapshot of enterprises' financing
2. The role of central banks policies to support sustainable (green) finance: *a critical review*
3. Green bonds and the Eurosystem' s asset purchase programme

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# 1. Relevance of external financing sources for euro area enterprises

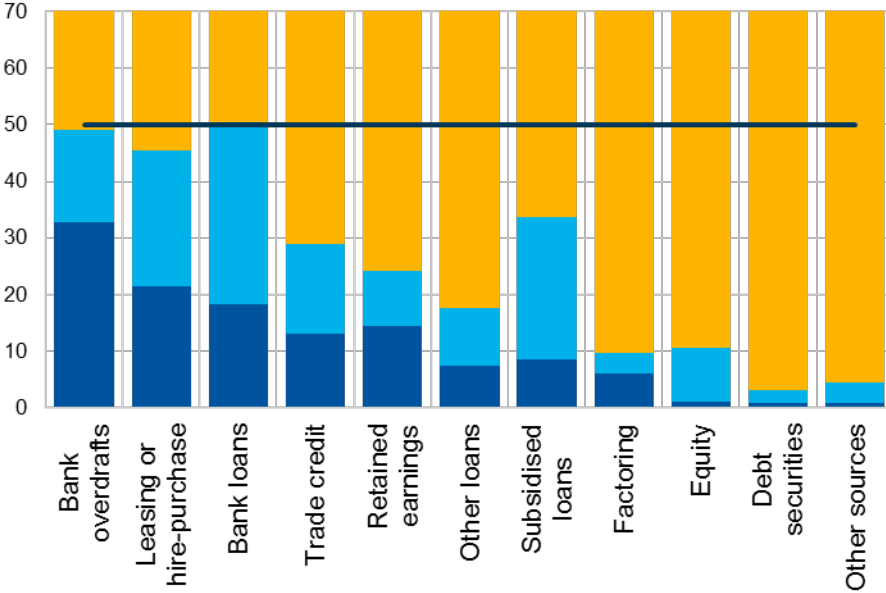
## SMEs

(in percentages)

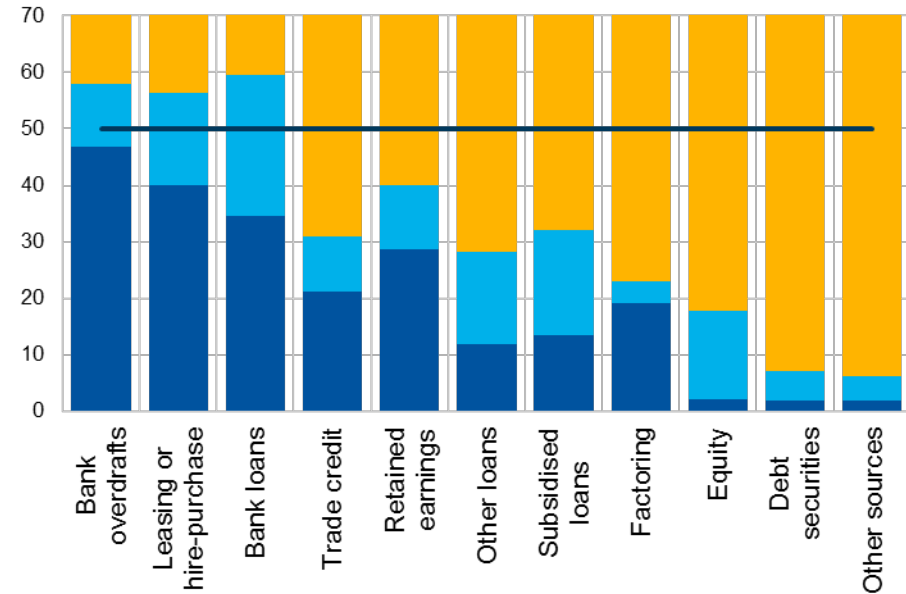
## Large firms

■ used in the past six months ■ did not use but relevant ■ not relevant

■ used in the past six months ■ did not use but relevant ■ not relevant



% of respondents



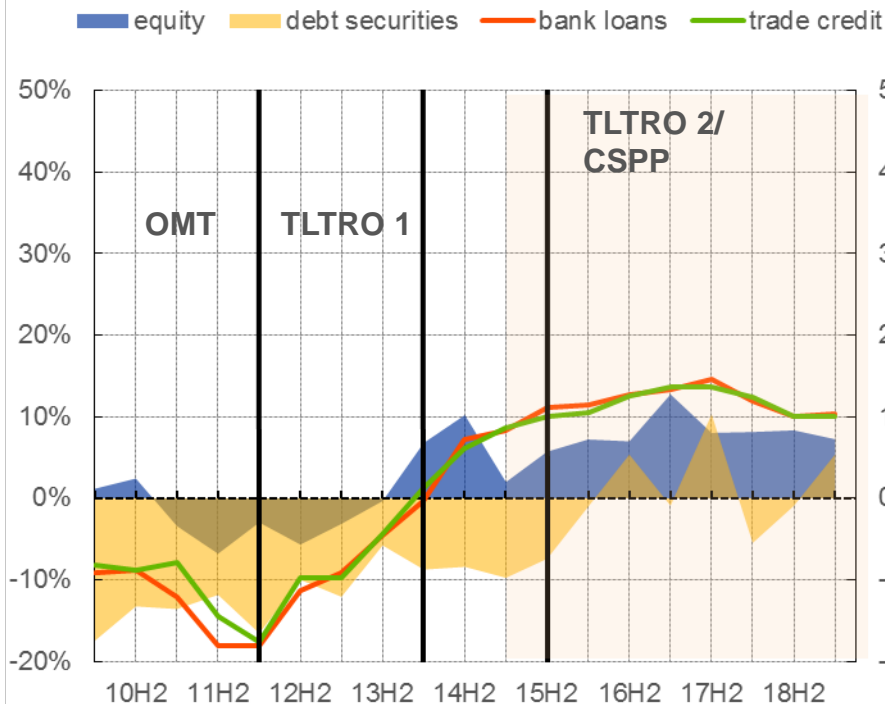
Source: ECB/EC SAFE. Note: April- September 2019.

- Bank-related products remained the most relevant financing source for euro area enterprises vis-à-vis market-based

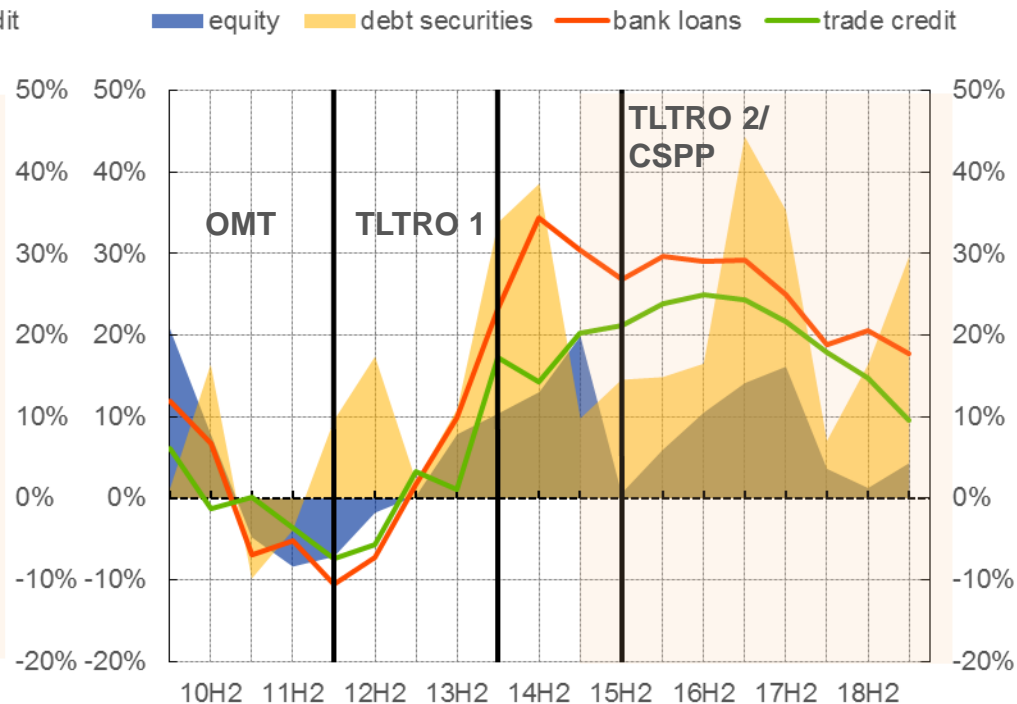
# 1. Availability of external financing improved over time

## Availability of external financing for SMEs (net percentages)

### SMEs



### Large enterprises

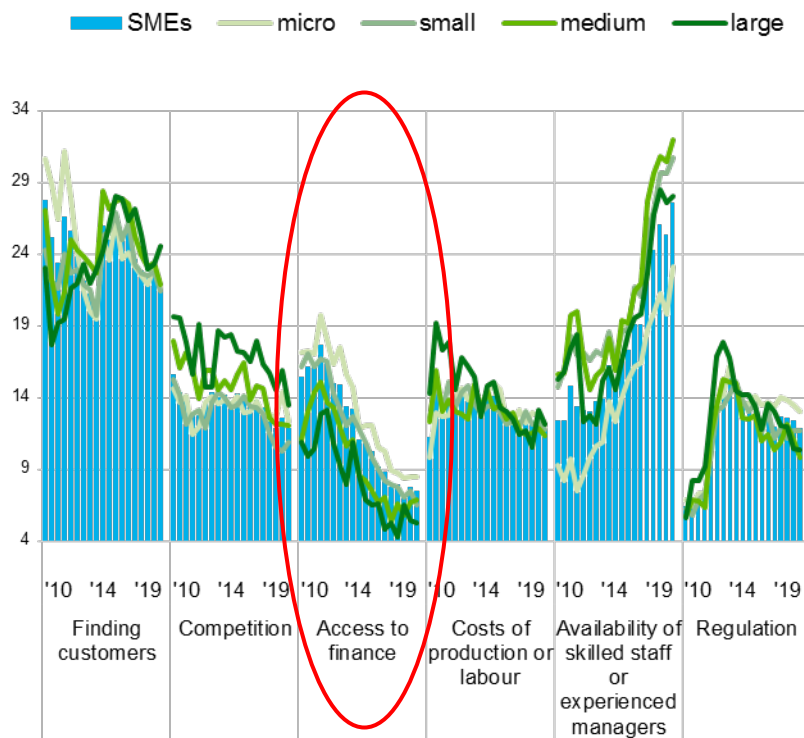


Source: ECB/EC SAFE. Note: firms for which the respective instrument is relevant.

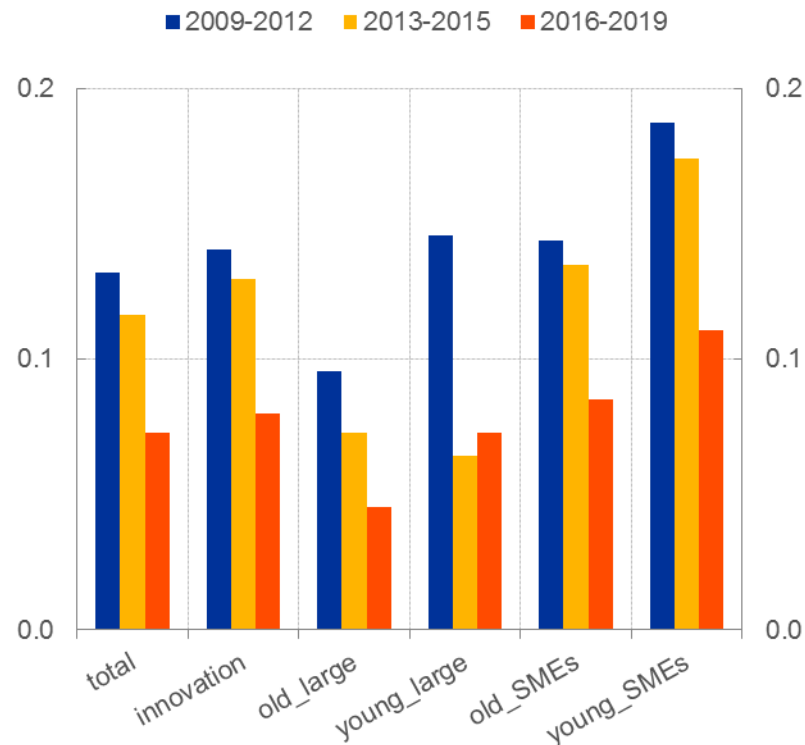
- OMT in summer 2012 as a turning point
- TLTRO 1 in June 2014
- EU adoption of CMU action plan in Sept. 2015
- TLTRO 2 and CSPP in March/ April 2016

# 1. Financing constraints are still binding for specific types of firms

## The most important problems faced by euro area enterprises (percentage of respondents)



## Obstacles to receiving a bank loan (percentage of respondents)

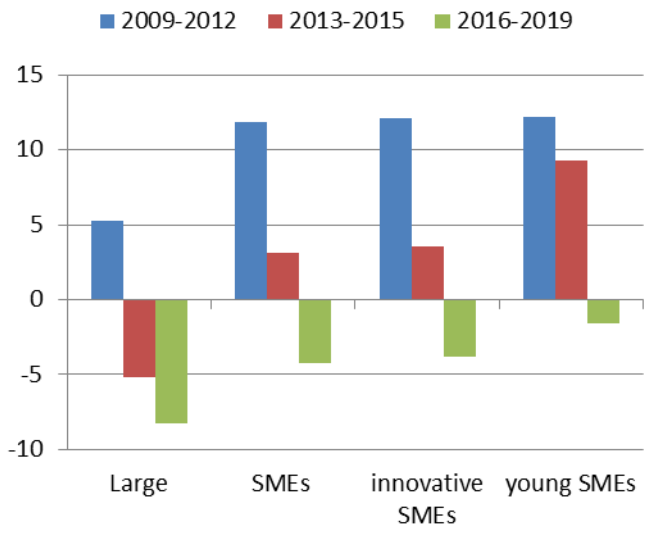


Source: ECB/EC SAFE. Note: Financing obstacles are defined here as the total of the percentages of enterprises reporting loan applications: 1) which were rejected, 2) for which only a limited amount was granted, 3) which resulted in an offer that was declined by the enterprises because the borrowing costs were too high, and enterprises which did not apply for a loan for fear of rejection (discouraged borrowers).

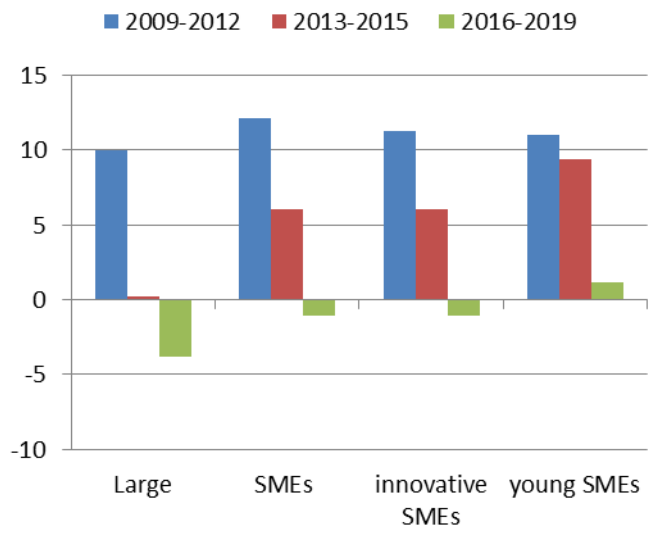
- Finance has become the least pressing problem for euro area SMEs
- Young SMEs & innovators are among the most credit-constrained

# 1. Perceptions of financing gaps more acute for market-based finance

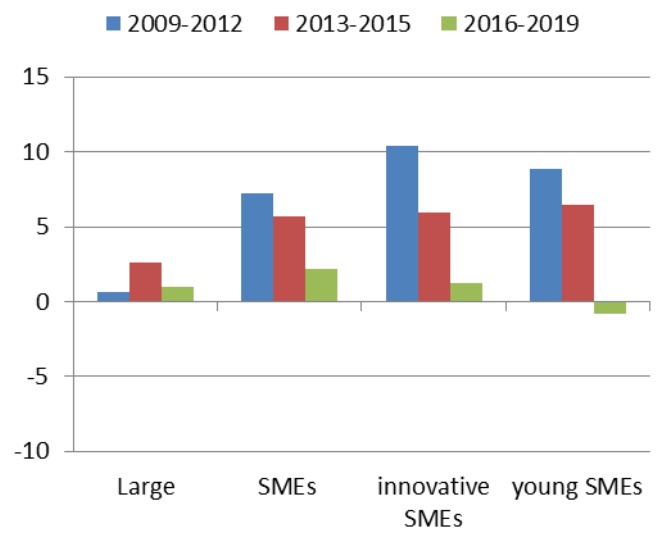
### Bank loans



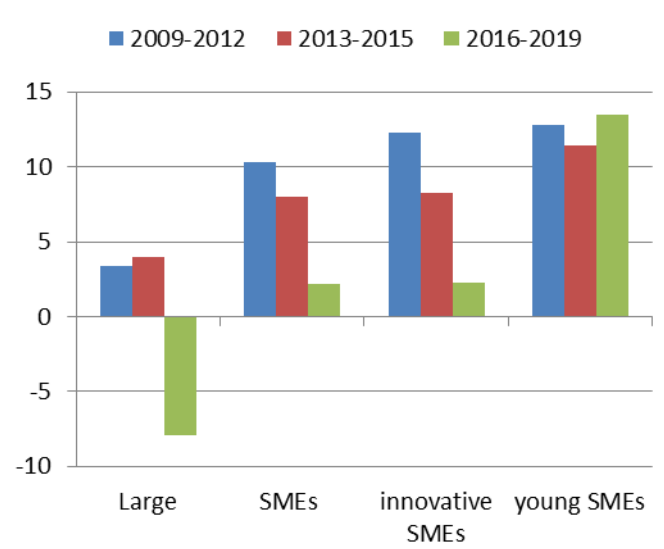
### Trade credit



### External equity



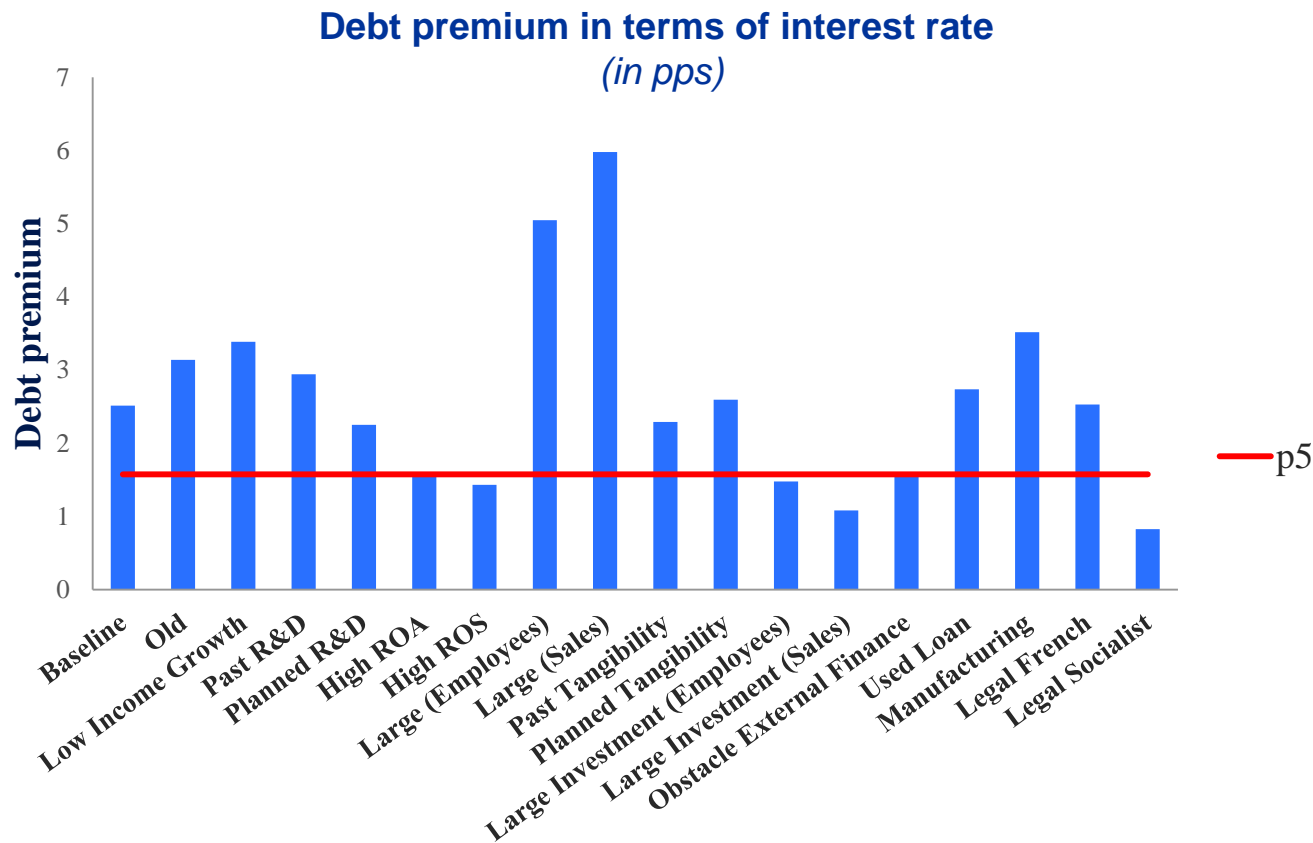
### Debt securities



Financing gap as difference between needs and availability of external finance

Source: ECB/EC SAFE. Note: EA:11 countries. Note: net percentages.

# 1. Trade-off between debt and external equity: an EIB(IS) choice experiment



- Net premium on debt is around 250bps.
- Larger debt premium for firms that are more suited to receive bank loans: large, manufacturing, with collateral

Source: Brutscher and Hols (2019) based on EIB Investment survey data.

Note: Debt premium corrected for corporate control rights, taxes and growth expectations.

- Preference for debt partially explained by tax treatment of debt, fear of loss of corporate control and positive growth expectations (3/4 of the gap)
- The rest is due to a “culture” of debt:
  - a financial sector dominated by bank finance has led to a strong selection towards firms that are “bankable” and, thus, have the strongest preference for debt



### A snapshot on enterprises' financing

- Access to finance improved over time
- High reliance on bank loans - capital markets funding is seldom an option
- A financial sector dominated by bank finance has led to a strong selection towards firms that are “bankable” with the strongest preference for debt

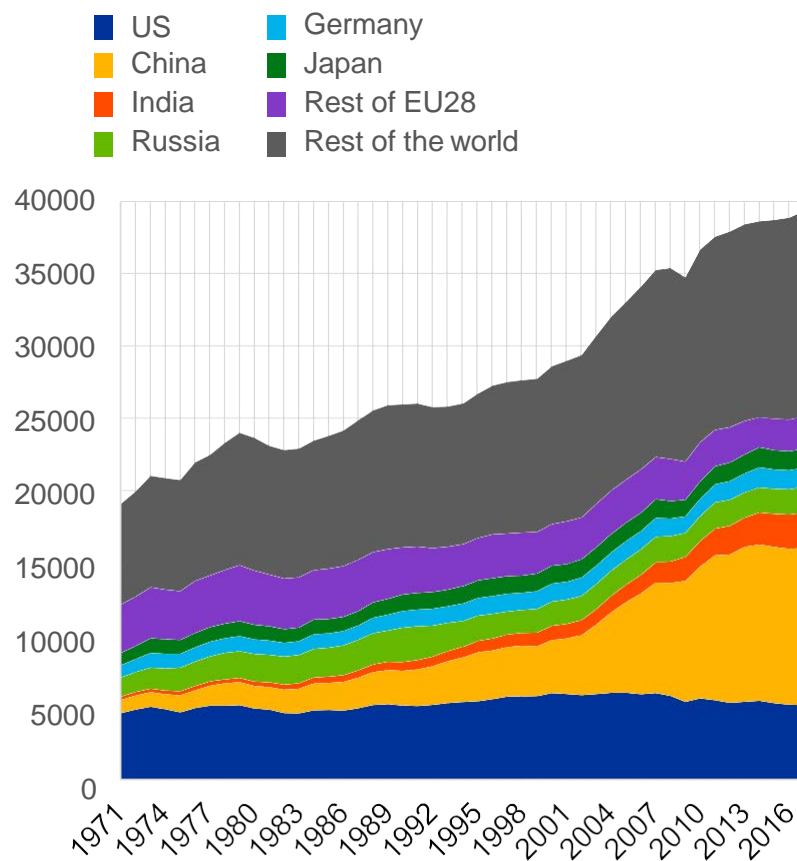
What is important for sustainable finance? The role of banks !

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# 2. Climate risks on the rise with few changes in investment exposures

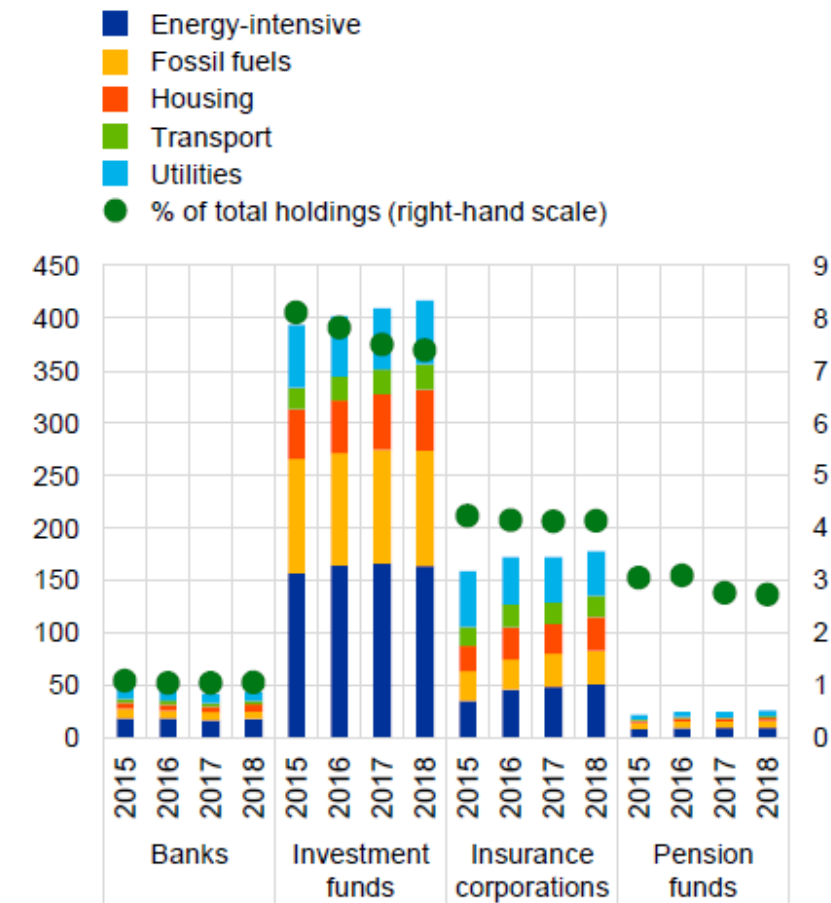
## CO2 emissions over time

Thousands of tonnes



## Evolution of investment exposures to climate-sensitive sectors

left-hand scale: € billions; right-hand scale: % of total holdings



Sources: Hiebert (2019), based on EDGAR, SUP. (LHS chart). RHS chart = ECB supervisory statistics, European Commission EDGAR dataset, Eurostat, ECB SHSS, ECB CSDB and ECB calculations.

Notes: Left panel: the share of carbon emissions is calculated from Eurostat data on air emissions accounts by NACE activity, which cover the EU28, Turkey and Serbia. Electricity and gas supply also includes steam and air conditioning supply. Right panel: the classification of climate-sensitive assets follows the approach of Battiston et al. (2017). Sectoral holdings are classified according to the NACE categorisation in the ECB's Centralised Securities Database (CSDB).

## 2. How can central banks be engaged to assess climate-related financial risk? \*

- **Micro-prudential regulation**
  - **WS1 of Network for Greening the Financial system (NGFS since 2017)**
  - requiring banks and other financial institutions to adopt environmental and social risk-management standards to assess and disclose climate-related risks (risk differentials between green/brown assets)
- **Macro-prudential regulation**
  - **WS2- NGFS**
  - using climate-related stress testing
  - adopting differentiated capital requirements (brown-penalizing or green-supporting)
- **Financial market development**
  - **WS3-NGFS on scaling up green finance NGFS**
  - establishing information disclosure requirements or encouraging the issuance and trading of “green” securities
  - assessing sustainability criteria into central banks’ portfolio management
- **Economic analysis**
  - **WS4-NGFS on economic analysis**
  - models, forecasting methods and risk assessment

Upcoming NGFS deliverables in 2020: a **handbook for supervisors** on the incorporation of environment and climate-related risks into micro-prudential supervision, dealing also with setting supervisory expectations; a report on **role of central banks and monetary policy**

\* Dikau and Volz, 2019 and NGFS 2019

## 2. Why does climate change matter for monetary policy? (Boneva et al., 2020)

1. Impact on key economic variables and monetary policy strategy
  1. Climate change may complicate the correct identification of shocks, increase the likelihood of extreme events, erode central banks' conventional policy, increase trade-off between stable prices and output.
2. Analytical tools
  2. Changes in the distribution of shocks, the likely impact of climate policies and long-term structural changes in the economy matter both for projections and models used to assess optimal monetary policy
3. Fiscal and structural policies to fight climate change
  3. Need to reconsider whether and how monetary (and financial) policies are complements or substitutes to fiscal tools
4. Dislocations in financial markets due to climate change
  4. Repricing of climate change risks, stranded assets and the transition to a low carbon economy can trigger sudden adjustments in financial markets with spillovers to the real economy and implications for monetary policy
5. Carbon bias in financial markets and thus in central bank portfolios
  5. Financial markets are biased towards brown companies. This bias is generally inherited by central bank portfolios creating a carbon lock-in and running counter to government policies.

## 2. What are central banks doing already (focusing on monetary policy)?










### Central bank mandates

- Only few central banks operate under a mandate that explicitly refers to sustainability, mainly in emerging and developing markets
- For the ECB, an active role in mitigating climate change seems to be within its legal mandate:
  - Art 127[1] TFEU: “[...] **Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Union [...].**” Specifically:
  - Art 3[3] TEU: “[...] It shall work for the sustainable development of Europe based on balanced economic growth and price stability, [...], **and a high level of protection and improvement of the quality of the environment.**”
  - Art 11 TFEU: “Environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities.”

## 2. Potential active role is contentious (Campiglio et al. 2018, Brunnermeier et al., 2020)

- Musgrave (1939) distinction between three functions of public economic policies:
  - allocation of resources; redistribution of income and stabilisation
  - decisions on 1 and 2 taken by elected bodies; 3 mandate of central banks
- Climate change mitigation is a discretionary policy with large *distributional* and *allocative* consequences, more akin to fiscal policy
- Danger that too much power may be extended to unaccountable institutions – distribution effects
- Potential conflicts with the central bank's primary goals
- Role may be incompatible with central bank independence by submitting to specific interest groups
- Distorting effects of direct interventions aimed at “greening” the economy



- Most central banks typically own and manage three different types of asset portfolios:
  - dedicated to pension funds 
  - related to the central bank's own funds 
  - covering foreign exchange reserves 
- More recently, resulting from the need to preserve price stability
  - separate monetary policy portfolios 
- Not all of these portfolios are equally suited to promoting green finance (    )
- A strong debate has emerged over the potential use of asset purchases for monetary policy portfolios to pursue climate-related goals

# The role of central banks policies to support sustainable (green) finance: a critical review

- Several open questions on how central banks and financial regulators should address climate-related financial risks
- First crucial challenge is the development of a comprehensive framework to assess the potential impact of climate change on financial stability
- The resulting enhanced risk measures could then be incorporated in the assessment of central banks' climate change policies

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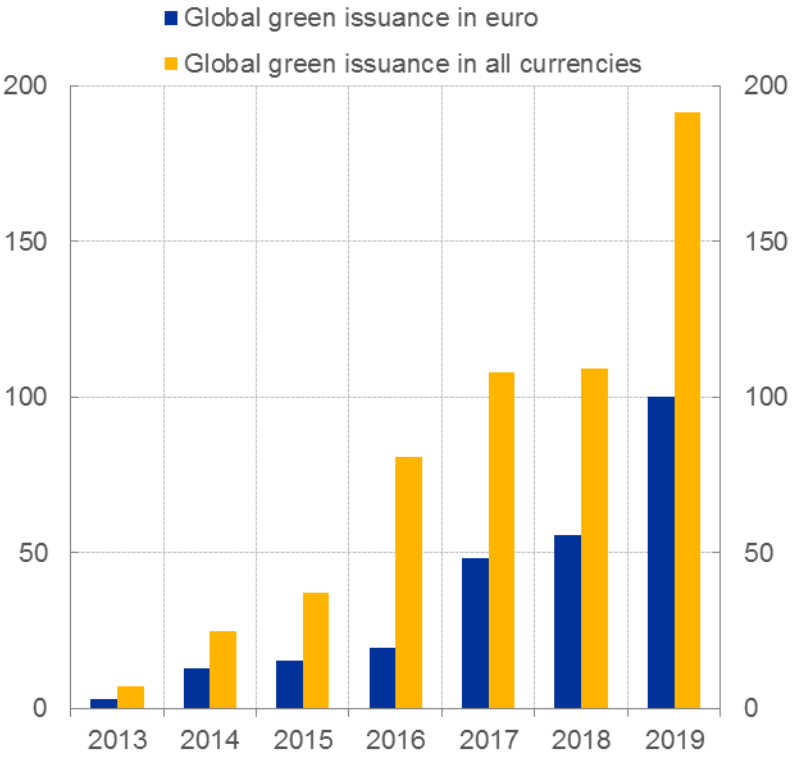
### 3. Asset Purchase programme (APP) and green bonds

- **Aim of APP is to support a sustained adjustment in the path of inflation consistent with the ECB's primary objective of price stability**
- Eligibility criteria are deliberately broad in order to provide a large range of purchasable securities and avoid distortions
- The implementation of the APP is guided by the **principle of market neutrality**
- In the case of CSPP, the purchases of securities issued by NFCs reflect proportionally the market value of all eligible bonds in terms of sectors of economic activity and rating groups
- **Despite the absence of an explicit environmental target in the APP, ECB has purchased green bonds under both the CSPP and the public sector purchase programme (PSPP)**

# 3. The market for green bonds has developed rapidly in recent years

## Issuance of global green bonds

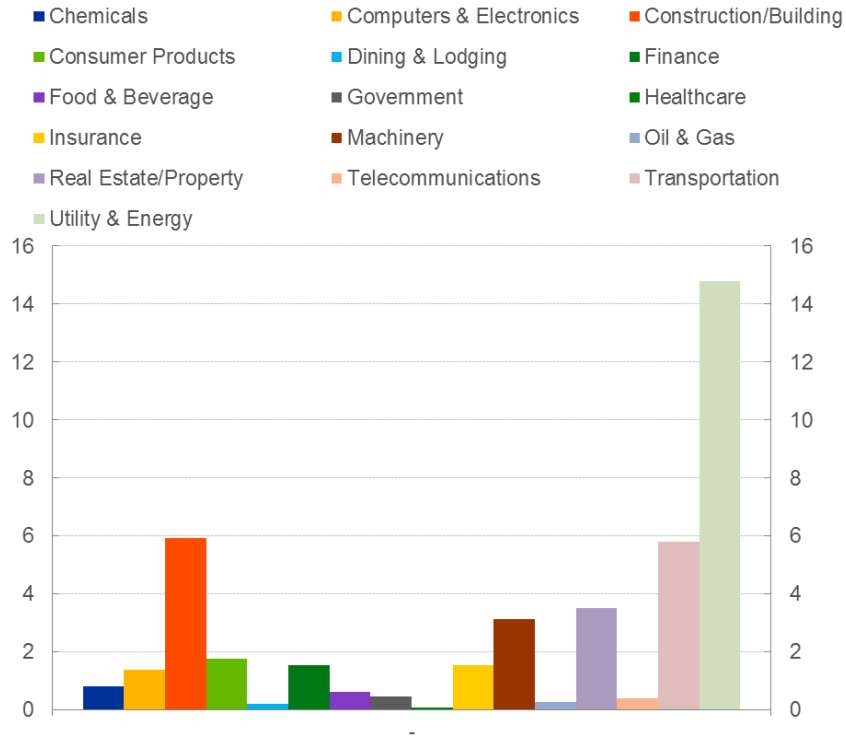
(EUR billions)



## Euro denominated green bonds by sectors: average 2013-2019

average 2013-2019

(as percentages of total issuance)



Source: DCM Analytics by Dealogic and ECB calculations.

- Size still small – on average 0.3% of total euro denominated issuances (but 5.1% in 2019)
- Mostly concentrated in Europe (57% of total issuances)
- Mostly concentrated in carbon-intensive sectors

### 3. “Greenium” effect is going down

#### Asset class statistics ( in percent)

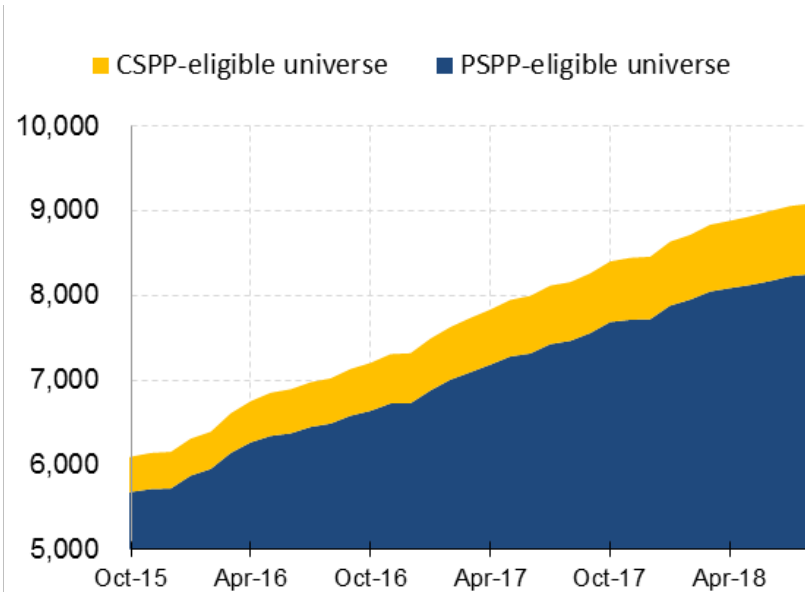
	US dollar assets			Euro assets		
	Government bonds	Green bonds	Conventional bonds	Government bonds	Green bonds	Conventional bonds
Average return	0.19	0.26	0.24	0.34	0.36	0.39
Volatility	0.88	0.76	0.67	1.3	1.18	1.17
VaR return (97.5%)	-1.39	-0.97	-0.82	-2.17	-2.23	-2.18
Expected shortfall (97.5%)	-1.82	-1.55	-1.44	-2.37	-2.68	-2.69
Probability of negative return	52.31	35.38	36.92	38.46	30.77	29.23
Duration (years)	5	5	5	9	9	9

Source: Fender et al. (BIS Quarterly Review, September 2019) based on Board of Governors of the Federal Reserve System; Deutsche Bundesbank; Bloomberg; ICE BofAML indices; authors' calculations. Note: Historical statistics using monthly returns from January 2014 to July 2019

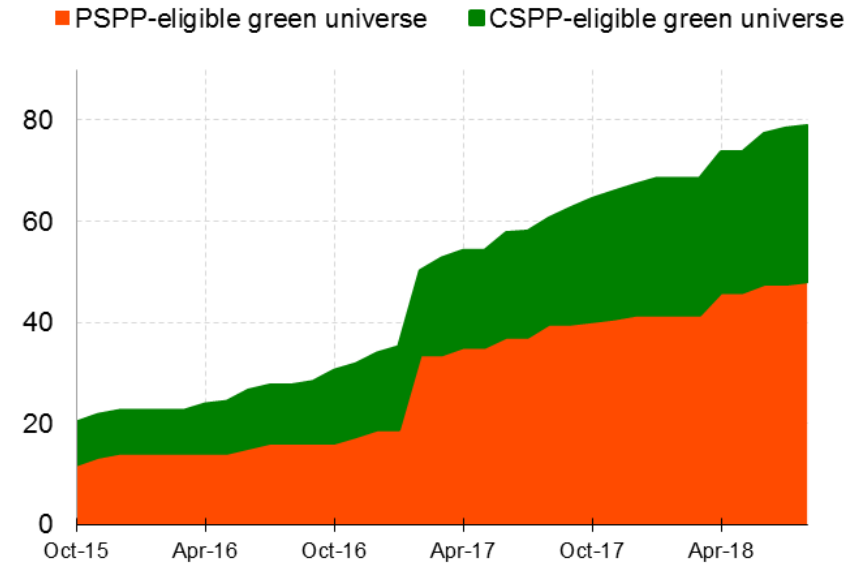
- Returns, volatility and tail risk of the conventional and green instruments are broadly similar
- From a safety perspective, investment in green bonds would not seem to subject reserve managers to higher risk than their conventional alternative
- However, accessibility and liquidity still pose some constraints

### 3. Green bond purchases are broadly in line with shares in CSPP eligible universe

**CSPP and PSPP eligible universe**  
(amounts outstanding)



**CSPP and PSPP eligible green bonds**  
(amounts outstanding)



Sources: De Santis et al. (ECB EB box , 2018) based on Bloomberg and ECB calculations.

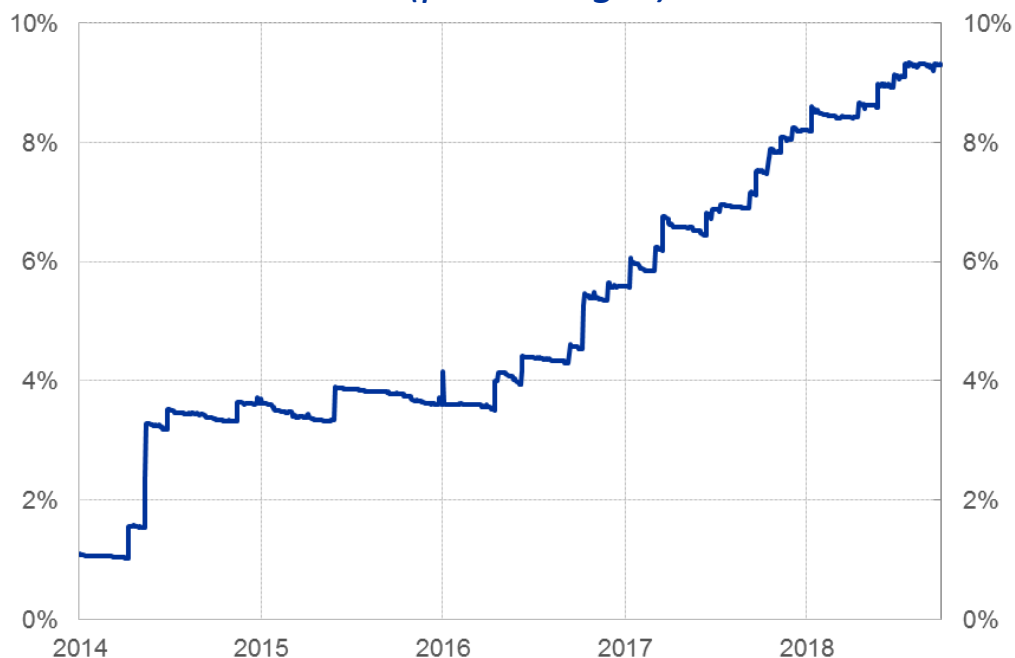
Notes: Based on amounts outstanding in nominal terms. The latest observation is for 31 August 2018

#### More recent data:

- The Eurosystem holds close to 20% of the eligible green bonds as part of its CSPP. This is in line with the share it holds of all bonds in the eligible universe.
- In the overall CSPP-eligible universe, green bonds represent a small but growing segment

### 3. A CSPP effect on issuance of green bonds?

#### Volume of CSPP-eligible green bonds relative to total CSPP-eligible bonds in the industrial sector (percentages)



Sources: De Santis et al. 92018), based Bloomberg and ECB calculations.

Notes: based on amounts outstanding in nominal terms. Industrial sector includes utilities, infrastructure, transportation and construction.

- Since the announcement of the CSPP, the ratio has increased steadily



## Green bonds and the Eurosystem's asset purchase programme

- ECB has purchased a fair amount of green bonds under both CSPP and PSPP
- Evidence suggests that through its purchases the Eurosystem has also supported their issuance by NFCs

Thank you

- Boneva, L., Ferrucci, G. and F.P. Mongelli, 2020. “To be or not to be (green): How can central banks tackle climate change? A critical review”, *ECB unpublished manuscript*.
- Brunnemeier, K. and Landau J-P., 2020. “Central banks and climate change”, *Vox*, 15 January.
- Brutscher, P-B. and C. Hols, 2019. “The European Corporate Equity Puzzle”, *Comparative Economic Studies* <https://doi.org/10.1057/s41294-019-00107-x>.
- Campiglio, E., Y. Dafermos, P. Monnin, J. Ryan-Collins, G. Schotten, and M. Tanaka, 2018. “Climate change challenges for central banks and financial regulators,” *Nature Climate Change* 8:462–468.
- Carney, M., 2015. “Breaking the tragedy of the horizon – climate change and financial Stability,” Speech at Lloyd’s of London, September 29.
- Carney, M., 2019. “A New Horizon,” Speech at the European Commission Conference: A global approach to sustainable finance, Brussels, March 21.
- Coeuré, B., 2018. “Monetary policy and climate change,” Speech given at the conference on “Scaling up Green Finance: The Role of Central Banks,” organized by the Network for Greening the Financial System, the Deutsche Bundesbank and the Council on Economic Policies, Berlin, November 8.
- De Santis, R., Hettler, K., Roos M. and F. Tamburrini, 2018. “Purchase of green bonds under the Eurosystem’s asset purchase programme”, *ECB Economic Bulletin*, Issue 7, pp. 21-31.
- Dikau, S., and U. Volz, 2019a. “Central Banking, Climate Change, and Green Finance,” in *Handbook of Green Finance*, J. D. Sachs, W. T. Woo, N. Yoshino, and F. Taghizadeh- Hesary (eds.), Singapore, Springer.
- Dikau, S., and U. Volz, 2019b. “Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance,” SOAS Department of Economics, Working Paper No. 222.

- ECB, 2019 “Survey on access to finance of enterprises”, [https://www.ecb.europa.eu/stats/ecb\\_surveys/safe/html/index.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html)
- Fender, I., McMorro, M., Sahakyan, V. and O. Zulaica, 2019. “Green bonds: the reserve management perspective” BIS Quarterly review September.
- Hiebert, P., 2019. “Financial and climate risk: the ECB view”, Speech at the Launch of the Quarterly Economic Outlook- Prometeia, Bologna, December 2019.
- Krogstrup, S. and W. Oman, 2019. “Macroeconomic and Financial Policies for Climate Change Mitigation: a Review of the Literature”, IMF WP/19/185.
- Network for Greening the Financial System, 2019. “A call for action: climate change as a source for financial risk”, April.
- Network for Greening the Financial System, 2019. “A sustainable and responsive investment guide”, October .
- Signorini, L. F., 2019. “Rischi climatici e regolamentazione prudenziale”, Speech Centro Convegni Ciampi, July.
- Schoenmaker, D., 2019. “Greening monetary policy”, Bruegel WP02, February.
- Solana, J., 2019. “The Power of the Eurosystem to Promote Environmental Protection”, European Business Law Review, 30, n. 4, pp. 547-576.
- Visco , I., 2019. “Sviluppo sostenibile e rischi climatici: il ruolo delle banche centrali” , Speech at Festival dello sviluppo sostenibile 2019, Rome, May 21.

# Background slides



Source: First comprehensive report, NGFS, April 2019



ECB will become member of the **Steering Group of the NGFS**