

Banques centrales et durabilité environnementale

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Council on Economic Policies

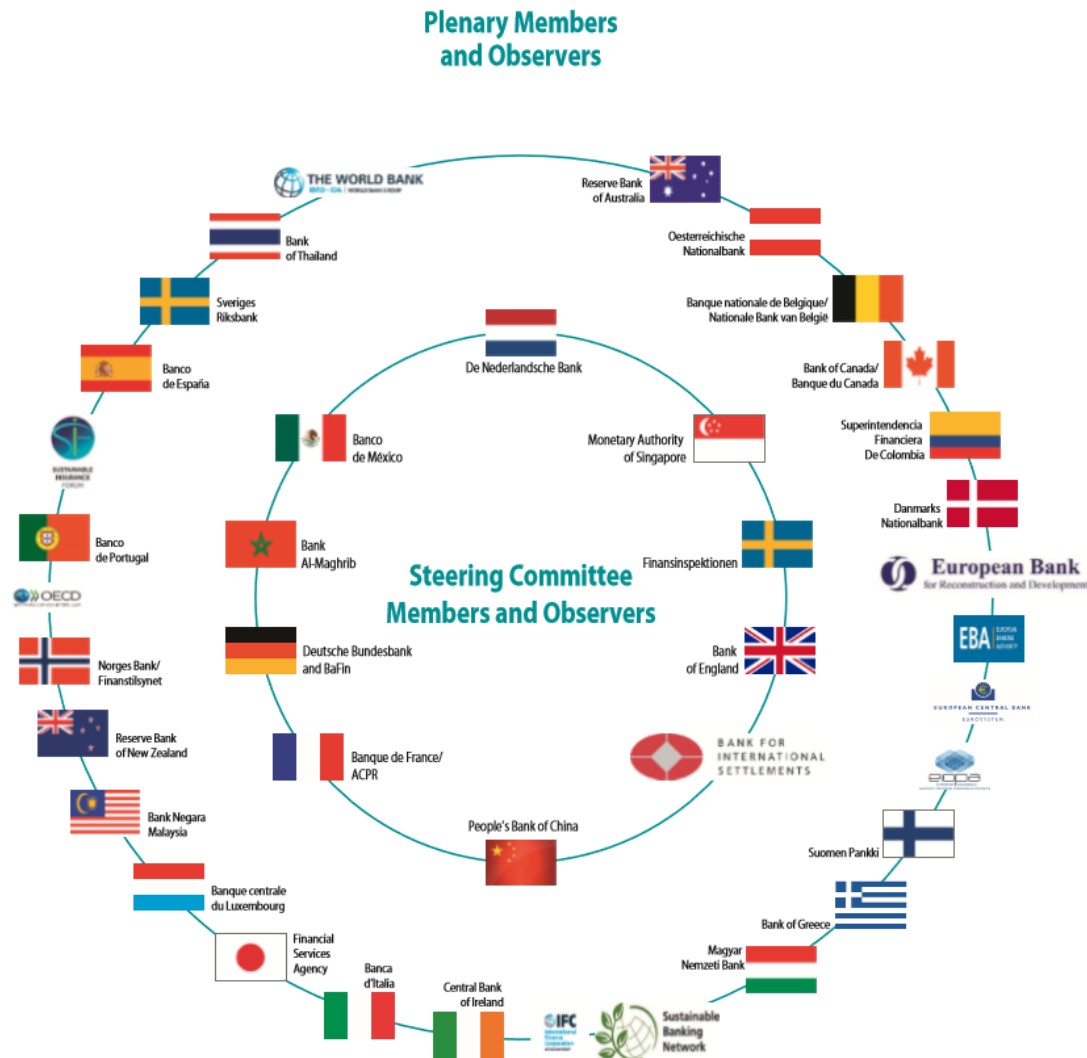
18 avril 2019

Chaire Energie et Prospérité

Questions abordées

- Quelles sont les conséquences du changement climatique sur les missions des banques centrales ?
- Les banques centrales peuvent-elles participer plus activement à la transition vers une économie environnementalement durable ?

Central Banks and Supervisors Network for Greening the Financial System



Central Banks and Supervisors Network for Greening the Financial System

NGFS members' jurisdictions cover:



31%
of the global population

Source: United Nations, 2017.



Supervision of **2/3**
of the global systemically
important banks and insurers

Source: Financial Stability Board, 2018.



45%
of global greenhouse
gas emissions

Source: Global Carbon Budget, 2017.



44%
of the global GDP

Source: World Bank, 2017.

Conclusions du Central Banks and Supervisors Network for Greening the Financial System

“ NGFS Members acknowledge that climate-related risks are a source of financial risk.

It is therefore within the mandates of Central Banks and Supervisors to ensure the financial system is resilient to these risks.”

Agenda

- Changement climatique et risques financiers
 - Sources de risque
 - Quantification des risques
 - Risques financiers liés au climat et marché financiers
 - Options pour les banques centrales
- Politique monétaire et transition écologique
 - Politique monétaire et flux financiers
 - Situation actuelle
 - Options pour les banques centrales

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Les sources de risques financiers liés au climat

- Risques physiques
- Risques de transition
- Risque de responsabilité

What are the types of climate risks?

- Physical risks
 - Potential economic and financial losses caused by climate hazards
 - Acute (droughts, floods and storms) vs. chronic (progressive increasing temperatures, sea-level and changes in precipitation)
 - direct impacts (damages to property or disruptions of firms' operations) vs. indirect impacts (disruptions in supply chain or lower aggregate demand)

What are the types of climate risks?

- Transition risks
 - Risks of economic dislocation and financial losses associated with the process of adjusting toward a low-carbon economy
 - Three sources of transition risks
 - Changes in policy (e.g. higher carbon prices)
 - Changes in technology (e.g. more competitive low-carbon technologies)
 - Changes in market preferences (e.g. households switching toward greener consumption)

Why is climate change a risk for financial institutions?

- Physical risks and cash-flows
 - Reduced revenues
 - Decreased production capacity (supply chain interruptions and worker absenteeism)
 - Lower sales (demand shocks and transport difficulties)
 - Increased operating costs
 - Increased operating costs (e.g. need to source inputs from alternative more expensive supplies)
 - Increased capital costs (e.g. due to damage to facilities)

Why is climate change a risk for financial institutions?

- Transition risks and cash-flows
 - Reduced revenues
 - Reduced demand for carbon-intensive products and services
 - Increased operating costs
 - Research and development expenditures
 - Costs to adopt and deploy new practices and processes
 - Increased production costs due to changing input prices (e.g. for energy and water)
 - Output requirements (e.g. for carbon emissions and waste treatment)

Why is climate change a risk for financial institutions?

- Physical risks for capital and collateral
 - Direct damages e.g. to houses and factories during extreme weather events
 - Write-offs of assets situated in high-risk locations
- Transition risks for capital and collateral
 - Re-pricing of stranded fossil fuel assets
 - Changes in real estate valuation due e.g. to stricter energy efficiency standards
 - Write-off of assets using an obsolete technology

What are the transmission channels from climate risks to financial risks?

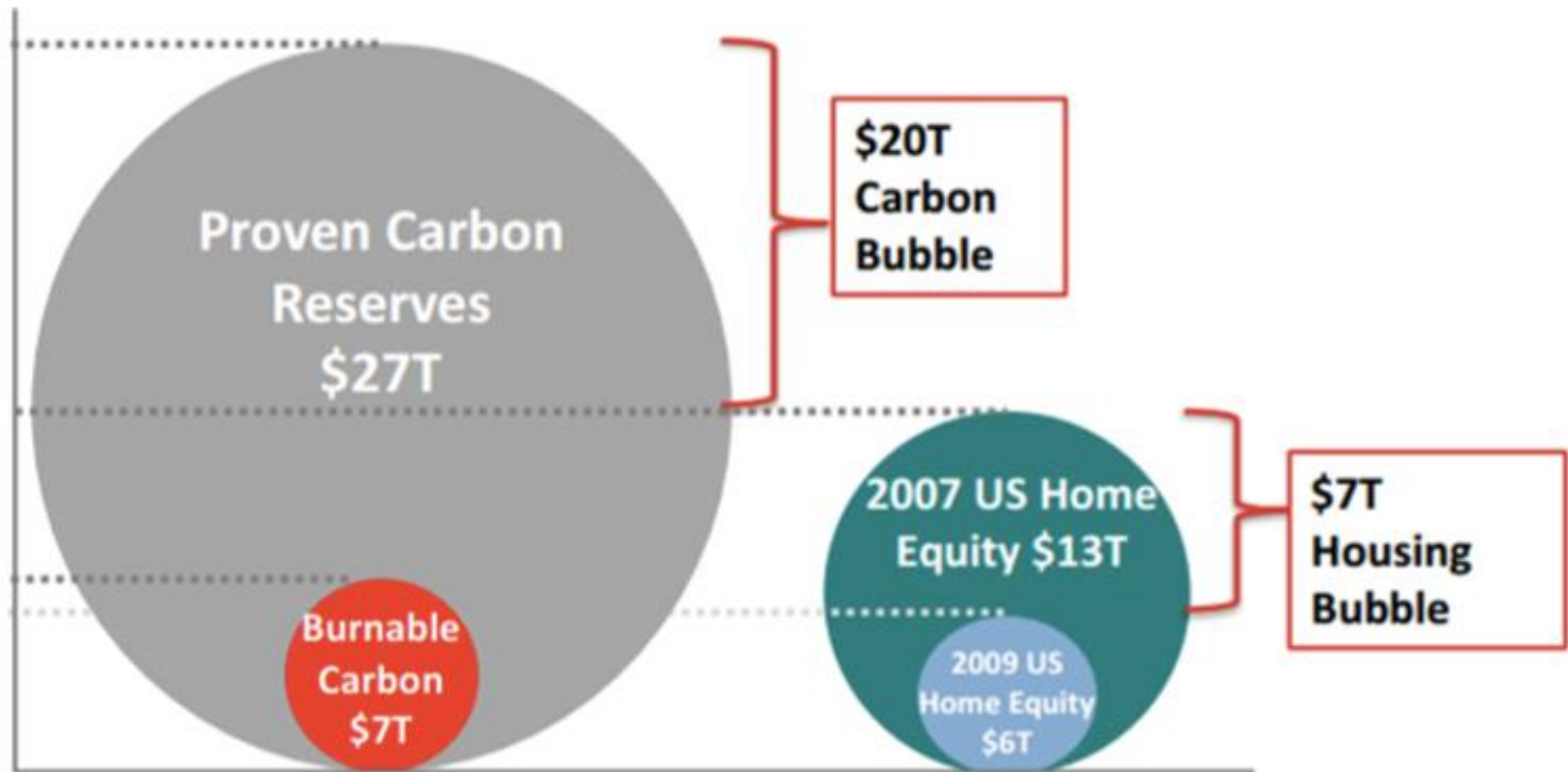
- Equity
 - Higher expected losses (i.e. lower dividends)
 - Stranded assets
 - Stranded business plans
- Bonds
 - Higher default rates (i.e. lower available income)
 - Higher losses given default (i.e. lower value for collateral)
- Loans
 - Higher non-performing loans
- Asset-backed securities

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Empirical assessments of climate financial risks

- Fossil fuel stranded assets



Empirical assessments of climate risks

- Stranded assets



Up to 16% of global commercial facilities affected by coastal flooding

The Emission | February 19, 2019 | Issue 2

Carbon Delta estimates that approximately 16% of global enterprise facilities are under threat from coastal flooding. With rising sea levels, these facilities exhibit significant climate risk in equity portfolios. Nearly 80% of all enterprises in the MSCI All Country World Index have at least one facility in a flood-prone area – a striking number that underlines the importance of accounting for these risks and integrating that information into investment decision making.*

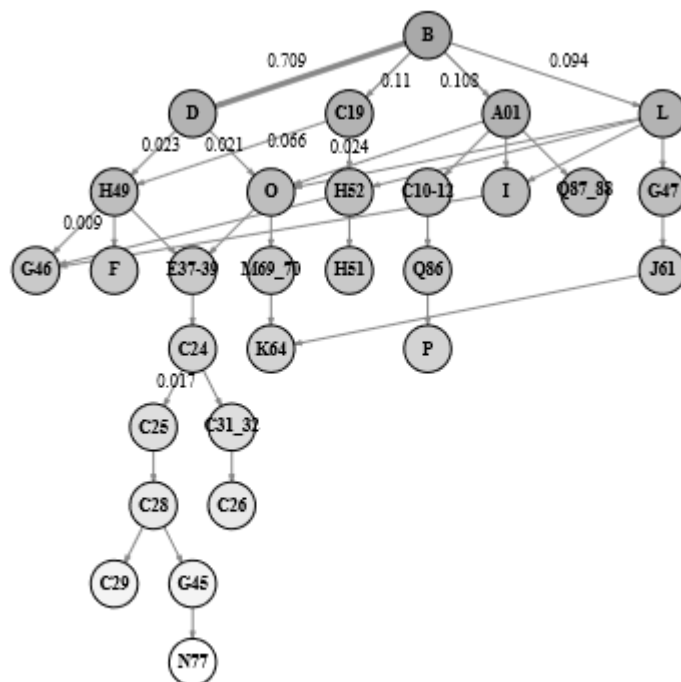
Empirical assessments of climate financial risks

- Fossil fuel stranded assets will materialize irrespective of implementation of climate policies because of ongoing technological change.
- These losses may amount to USD 1 to 4 trillions (Mercure et al. 2018)
- Estimated VaR at 99% of global financial assets is 26.5 trillions including mitigation costs (Dietz 2016)

Indirect stranded assets

Capital stranding cascades: The impact of decarbonisation on productive asset utilisation*

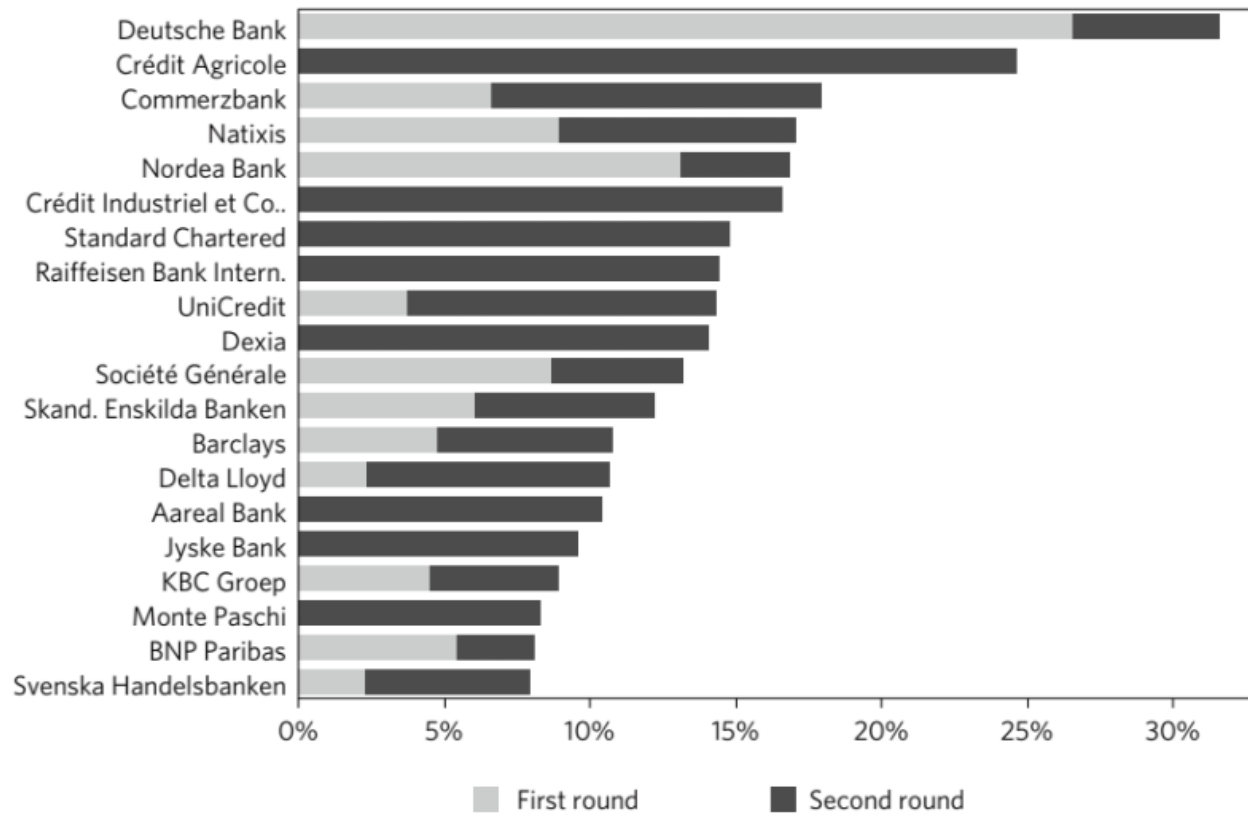
Louison Cahen-Fourot¹, Emanuele Campiglio^{†1,2}, Elena Dawkins³, Antoine Godin^{4,5}
and Eric Kemp-Benedict³



(a) Austria ($q=0.05$)

Second round effect

- Battiston, Mandel, Monasterolo, Schütze and Visentin (2017)



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Les marchés sous-estiment les risques financiers liés au climat

- Empiriquement, les actifs les plus exposés aux risques climatiques ne présentent pas de prime de risque différentes
- Les marchés ne réagissent pas aux informations concernant le climat
- Tragédie des horizons

Les marchés sous-estiment les risques financiers liés au climat

- Balckrock (2019)

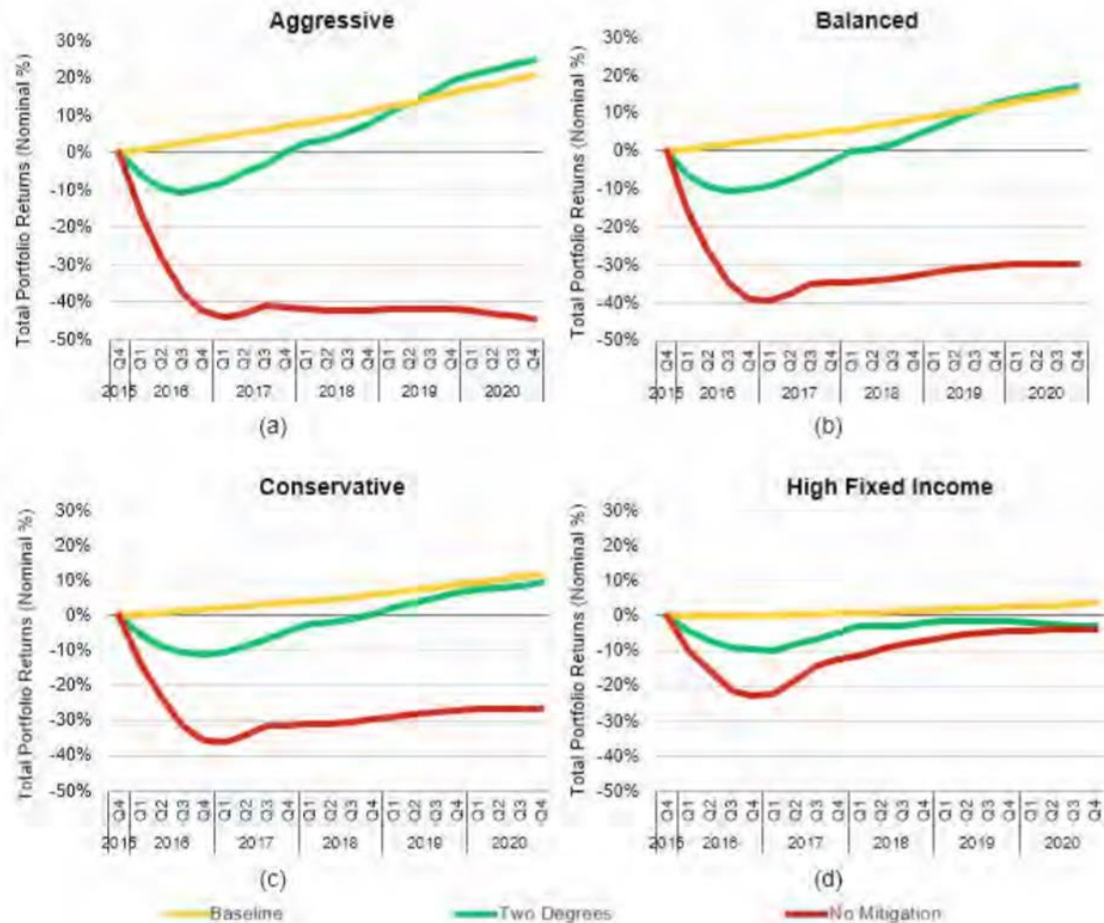
Our research suggests many of these risks are not priced in. Why? First, financial markets tend to be short-sighted – and underestimate risks that appear uncertain and distant. This may lead to a discounting of physical risks that are already biting. Second is a lack of tools and data.

Le paradoxe de la non-prise en compte des risques climatiques par les marchés financiers

- **Foreseeable nature:** while the exact outcomes, time horizon and future pathway are uncertain, there is a high degree of certainty that some combination of physical and transition risks will materialise in the future.
- **Irreversibility:** the impact of climate change is determined by the concentration of greenhouse gas (GHG) emissions in the atmosphere and there is currently no mature technology to reverse the process. Above a certain threshold, scientists have shown with a high degree of confidence that climate change will have irreversible consequences on our planet, though uncertainty remains about the exact severity and time horizon.

Tragédie des horizons

- Quand les horizons se rejoignent...



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Monitoring: climate stress tests

- European Systemic Risk Board recommends European Supervisory Authorities to include a disruptive energy transition scenario into stress test exercises
- Methodologies are available but in development; no consensus has been reached on a standard methodology

Methodologies available to stress test the financial sector

- Qualitative assessment: the survey by the Bank of England

A transition in thinking is taking place as firms enhance their approach

 **30%**
Responsible
Viewing climate change primarily through the lens of Corporate Social Responsibility (CSR)

 **60%**
Responsive
Assessing climate change as a financial risk focusing within a three to five year time horizon

 **10%**
Strategic
Taking a forward-looking view, grounded in long-term financial interests

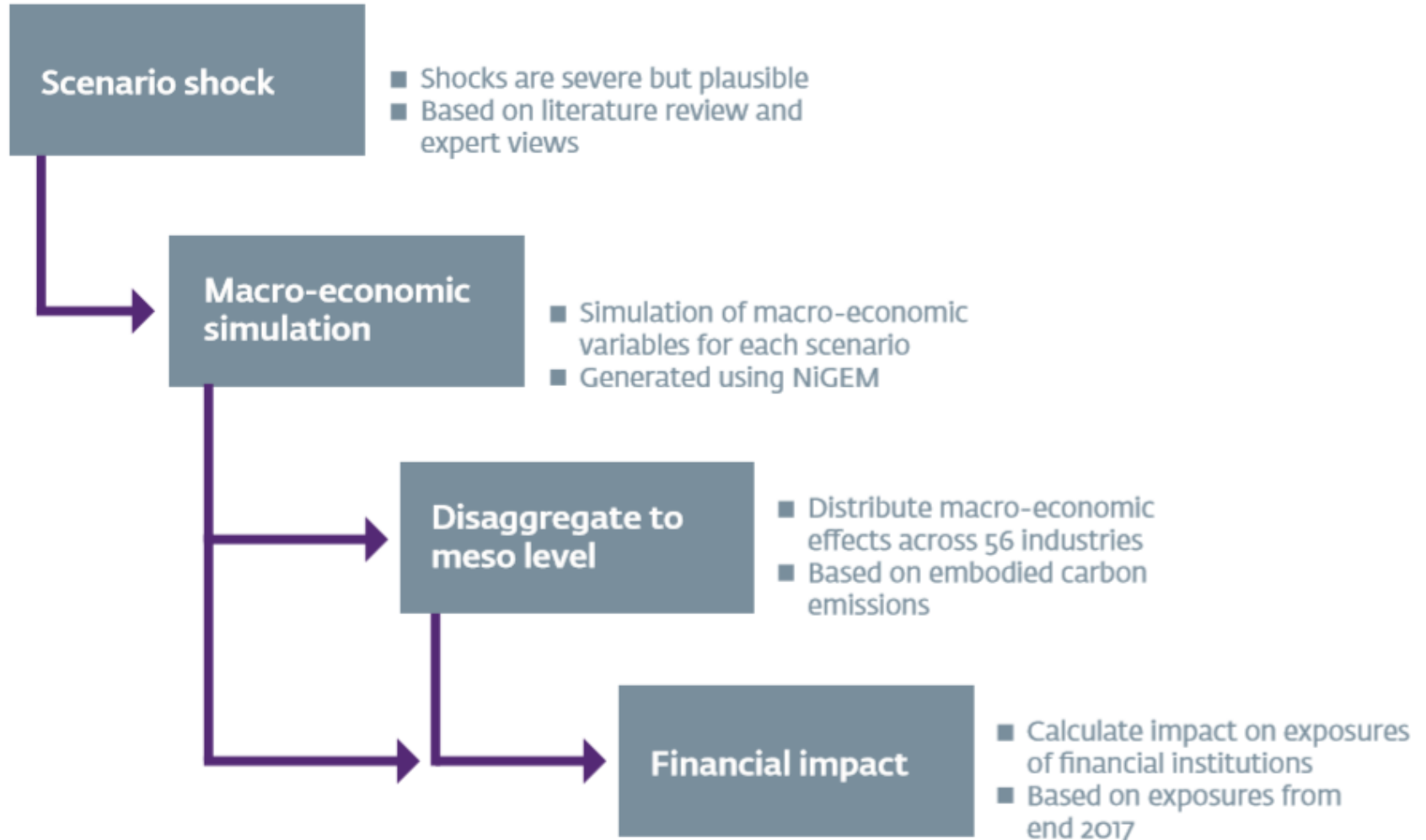
Firms developing a strategic approach are:

 Deepening understanding by leveraging enhanced disclosure and scenario analysis

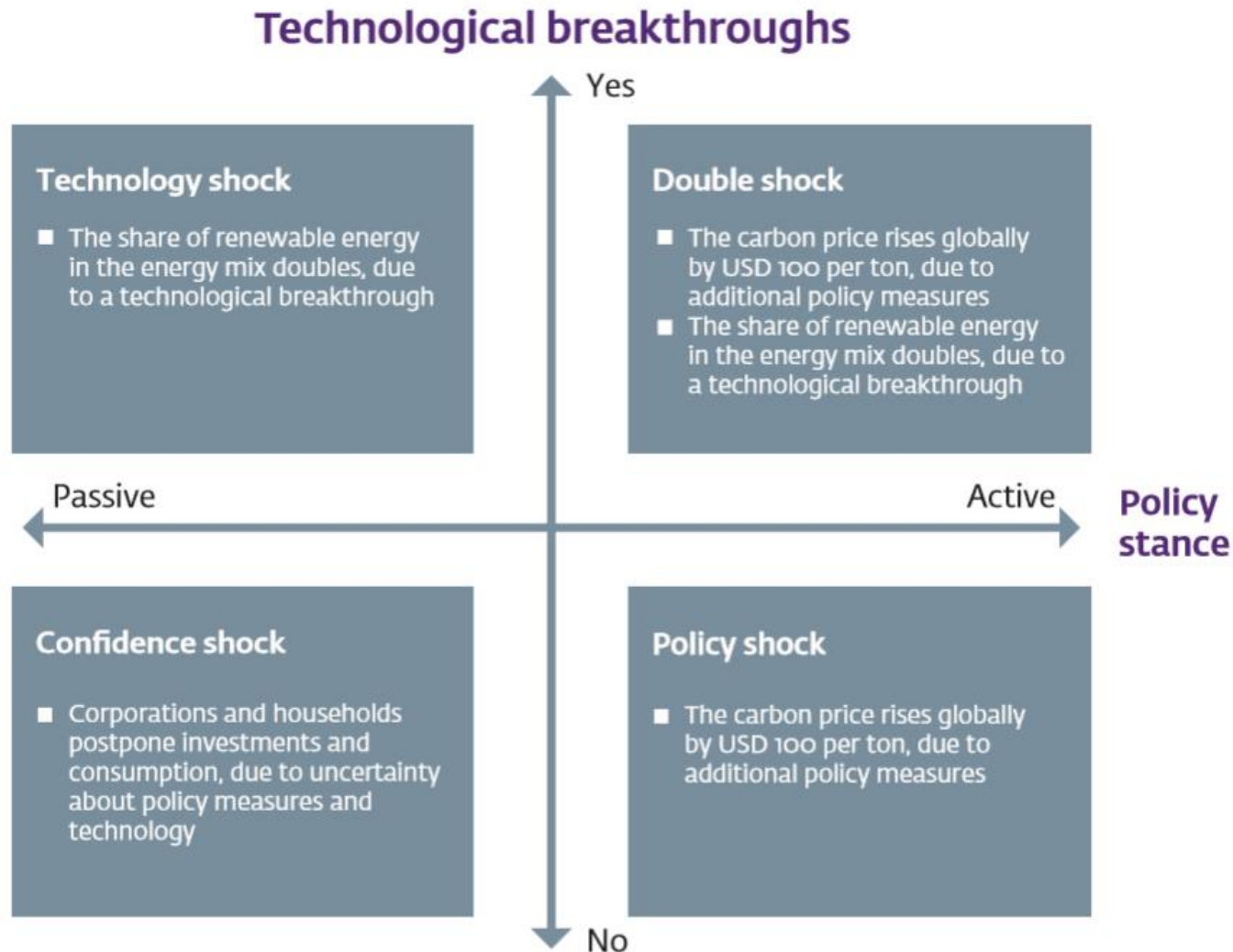
 Agreeing a board level, firm-wide strategic response

 Integrating climate-related factors into present day risk management to reduce future risks

Quantitative assessment : the DNB transition stress test

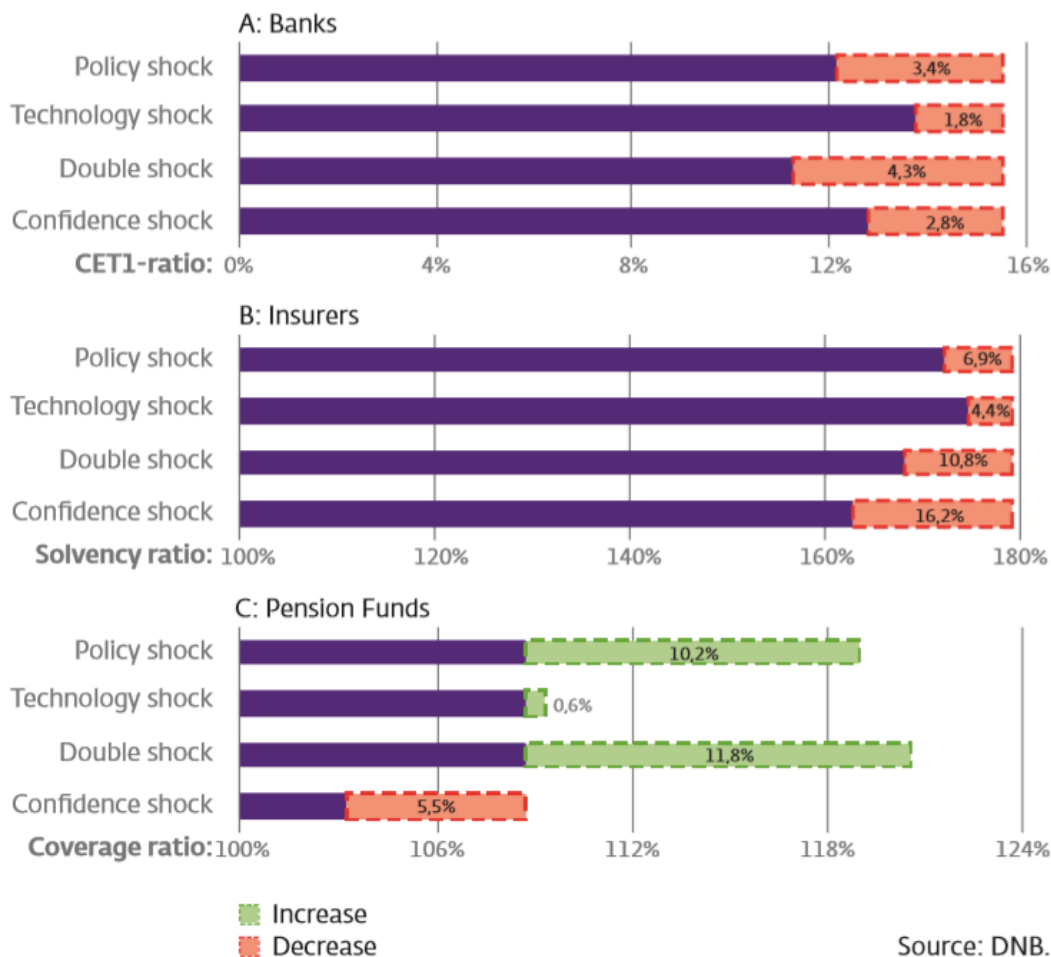


Quantitative assessment : the DNB transition stress test



Les risques climatiques sont substantiels

Figure 4.3 Impact on supervisory ratios by sector



Source: DNB.

Les options prudentielles

- Micro-prudentielles
 - Intégrer des mesures de risques climatiques dans le calcul des ratios d'adéquation de capital
 - Green supporting factor vs. Brown penalizing factor
- Macro-prudentielles
 - «Capital buffer» climatique

Le principe de précaution

- Risque vs. Incertitude
- Ryan-Collins (2019)

Under such conditions, the case for preventative or precautionary policy intervention to steer credit and investment away from 'brown' sectors or potentially stranded assets, even if the form and level of financial stability risk is unclear, becomes stronger

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Central banks at the heart of financial flows

- The implementation of any monetary policy generates financial flows
 - Foreign exchange reserves managements
 - Asset purchase programs
 - Loan to banks through collateral framework

Central banks at the heart of financial flows

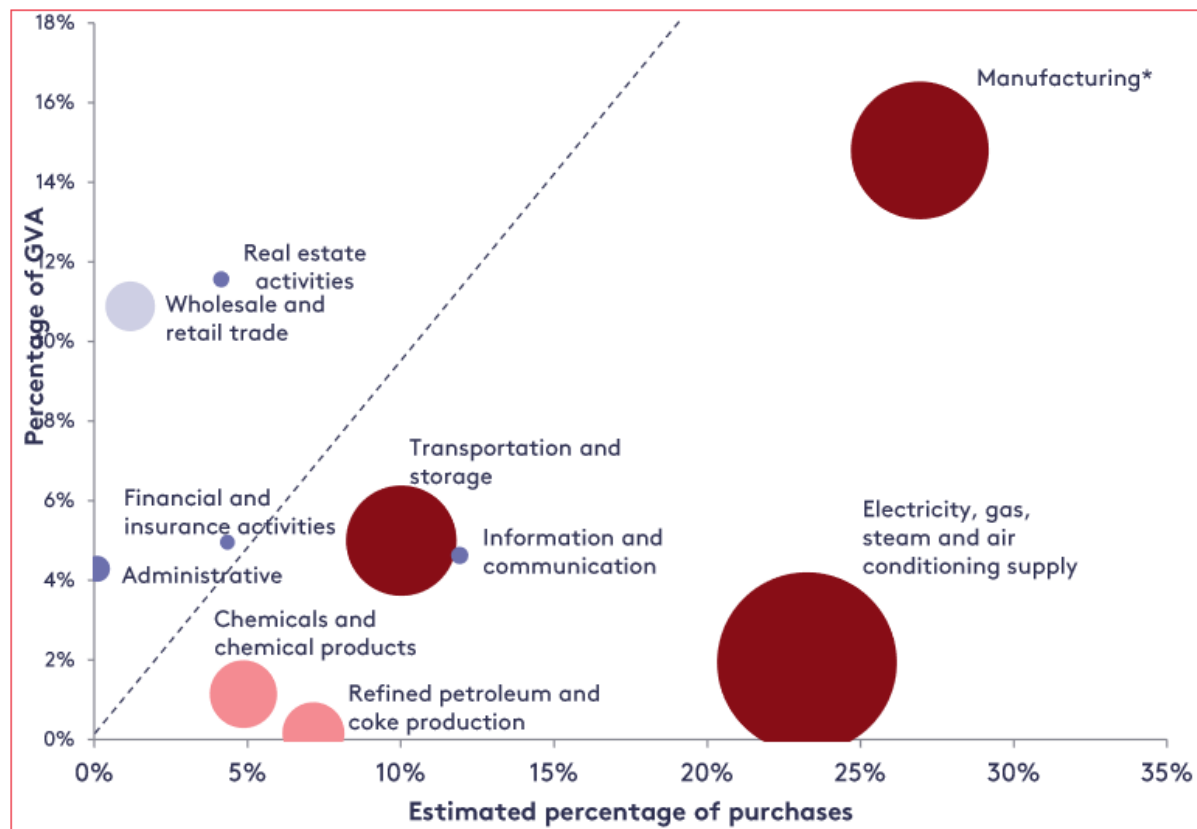
- The implementation of any monetary policy generates financial flows
- Buying an asset or accepting it as collateral as an impact of the funding conditions of the underlying firm
 - Central banks introduce biases in financial markets
 - These biases have an impact on the real economy

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ECB Corporate Sector Purchase Programme

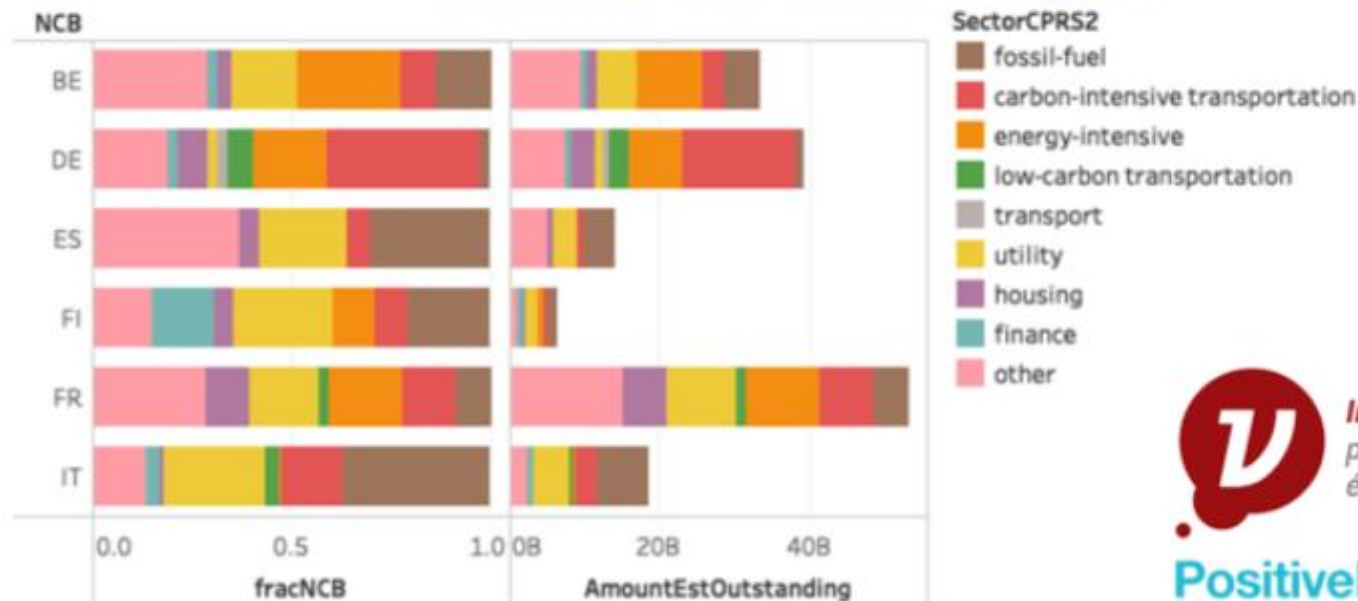
Figure 3. ECB Corporate Sector Purchase Programme purchases, contributions to euro-area gross value added (GVA) and to greenhouse gas emissions (carbon dioxide equivalent), by NACE sector



Source: Matikainen, Campiglio and Zenghelis (2017)

ECB Corporate Sector Purchase Programme

CSPP PORTFOLIO BREAKDOWN ACROSS NATIONAL CENTRAL BANKS



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Aligning central banks' monetary policy operations with the transition

- Including climate risk considerations in monetary policy operations
 - Rebalance central banks' asset portfolios (by reevaluating risk-return profiles)
 - Enhance the collateral framework (through higher haircuts for climate risky assets and eligibility criteria that account for climate risk)

Integrating climate risk into ECB's CSPP



Integrating Climate Risks into Credit Risk Assessment

Current Methodologies and the Case of Central
Banks Corporate Bond Purchases

Aligning central banks' monetary policy operations with the transition

- Including climate risk considerations in monetary policy operations
- Going beyond risk considerations and favour green assets?

Going beyond risk considerations and favour green assets?

- Reinvesting CSPP into sustainable projects

Green Money Without Inflation



Paul De Grauwe | 7 March 2019

Blog, Monetary | Tags: [Environment](#), [European Central Bank](#), [Inflation](#), [Quantitative Easing](#)

Going beyond risk considerations and favour green assets?

- Reducing carbon ECB's carbon footprint

GREENING MONETARY POLICY

DIRK SCHOENMAKER