

Assessment of circular and linear risks of the banking portfolio and implications on banks' capital requirements - *Slaven Mićković and Jurij Giacomelli*

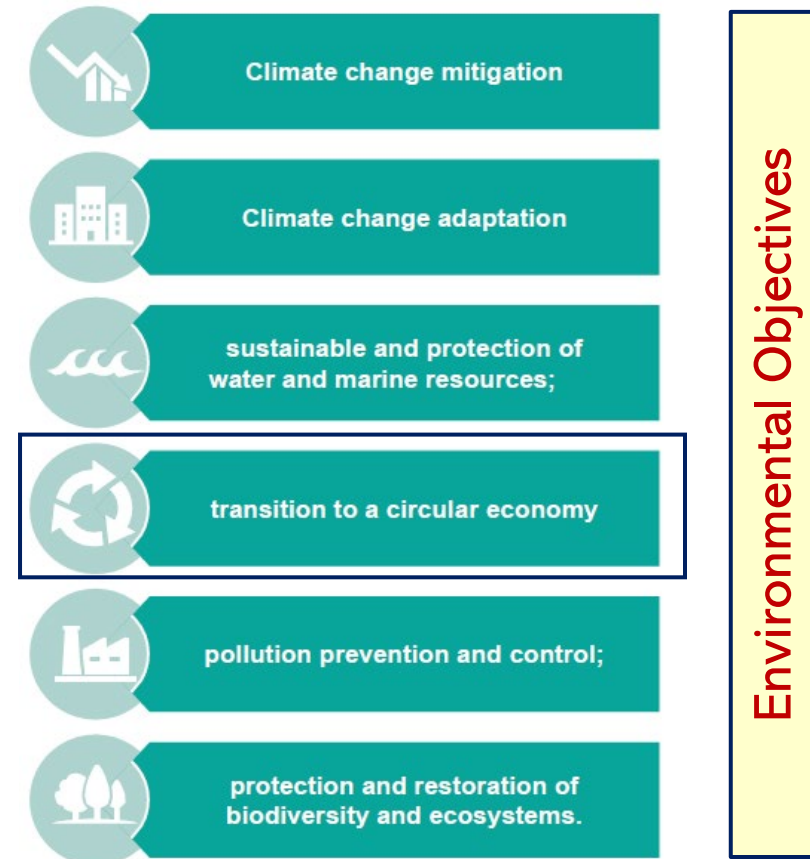
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The circular economy and sustainable finance are two mutually enabling policies

Our aim:

1. To promote and accelerate the transition to the circular economy.
2. To inspire circular economy practitioners to engage in the enhancement of frameworks for sustainable finance, and to motivate sustainable finance actors to integrate circular economy issues into the sustainable finance agenda.



Major challenge

The cost of financing the transition to the circular economy - current risk assessment methodologies are insufficiently developed for circular/ sustainable businesses/projects:

1. For the linear industry, they do not always identify the risks of remaining in the linear model (e.g. climate, societal, regulatory, tax, etc.).
2. Existing models insufficiently capture the specific financial profile of circular business models (e.g. asset ownership, cash flow dynamics, depreciation) and fail to value the benefits/risk mitigants of circularity.

Major challenge (con't)

Traditionally, externalities have been largely excluded from company's risk profiles and the measurements of corporate value or income statements:

1. This means that investors and companies have not been fully rewarded for the positive environmental or societal impacts they created through externalities, like creating jobs, using proven net-positive circular products or providing education and healthcare to workers or communities.
2. Conversely, investors and companies have also not been penalised for negative societal impacts, like generating or incinerating waste, depletion of scarce resources, noise and air pollution, or degrading ecosystems.

Major challenge (con't)

Circularity-related risks can potentially endanger the stability of the financial sector and they are only marginally addressed by Basel capital requirements:

1. Basel Agreement gives a more rigorous prudential treatment to long-term loans. This characteristic can then negatively impact the lending to circular projects which are by nature mid to long-term projects.
2. The Basel Agreement can be adverse to circular financing!

To support and accelerate the financing the transition to the circular economy in an economy where more than 70% of finance comes from banks, it is necessary to keep working on the recognition of the beneficial nature of these transition.

What has to be done?

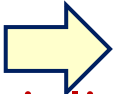
1. Define circular/linear (ESG) risks
2. Incorporate the ESG risk to the risk inventory
3. Select/define quantitative and qualitative indicators for the assessment of the impact of circular (ESG) risks on the financial stability of bank
4. **Decide on capital allocation towards circular (ESG) risks**
5. Establish CIRCULAR/ESG ambition level
6. Determine risk appetite
7. ...

Integrate Circular-related Risks into Banks' Capital Requirements

The idea of adjusting banks' capital requirements is linked to two objectives:

1. incorporating circular risks in the bank's risk assessment and
2. filling in the existing circular investment gap to support the transition to more sustainable economy.

The prudential calibration for circular and sustainable finance must be consistent with the associated financial risks of the projects and investments.

Financial stability, which is the goal of macroprudential policies, must always be ensured  **the capital required must be enough to cope appropriately with the materialisation of the associated risks!**

Integrate Circular-related Risks into Banks' Capital Requirements

To achieve this, the possibility of introducing a **Circular Supporting Factor** and/or **Linear Penalising Factor** should be analyzed and discussed.:

1. The Circular Supporting Factor relieves capital requirements for circular-friendly projects, making them more profitable and trying to close the circular finance gap.
2. The Linear Penalizing Factor could reduce credits to linear projects and help banks to bear losses from the materialization of circular-related risks.

The Circular Supporting Factor

- The idea behind the GSF, is to reduce the capital adequacy ratio for projects classified as circular - a factor would be applied to lower the risk weight of green assets, reducing the capital requirement of these assets and consequently the overall capital adequacy ratio (CAR) of the bank.
- It is expected that banks would more easily finance circular projects, which would become more profitable with the lower capital requirement

$$CAR_{\text{circular}}^t = \frac{\text{Bank's Capital}_t}{RWA_t} = \frac{\text{Bank's Capital}_t}{\alpha_{\text{linear}} \cdot L_t^{\text{linear}} + (\alpha_{\text{circular}} - \text{CSF}) \cdot L_t^{\text{circular}}} \geq \beta$$

where RWA_t is bank's risk-weighted assets, $\alpha_{\text{linear}} \cdot L_t^{\text{linear}}$ and $\alpha_{\text{circular}} \cdot L_t^{\text{circular}}$ are respectively the linear and the circular risk-weighted loans portfolios, and β is the CAR set by regulator.

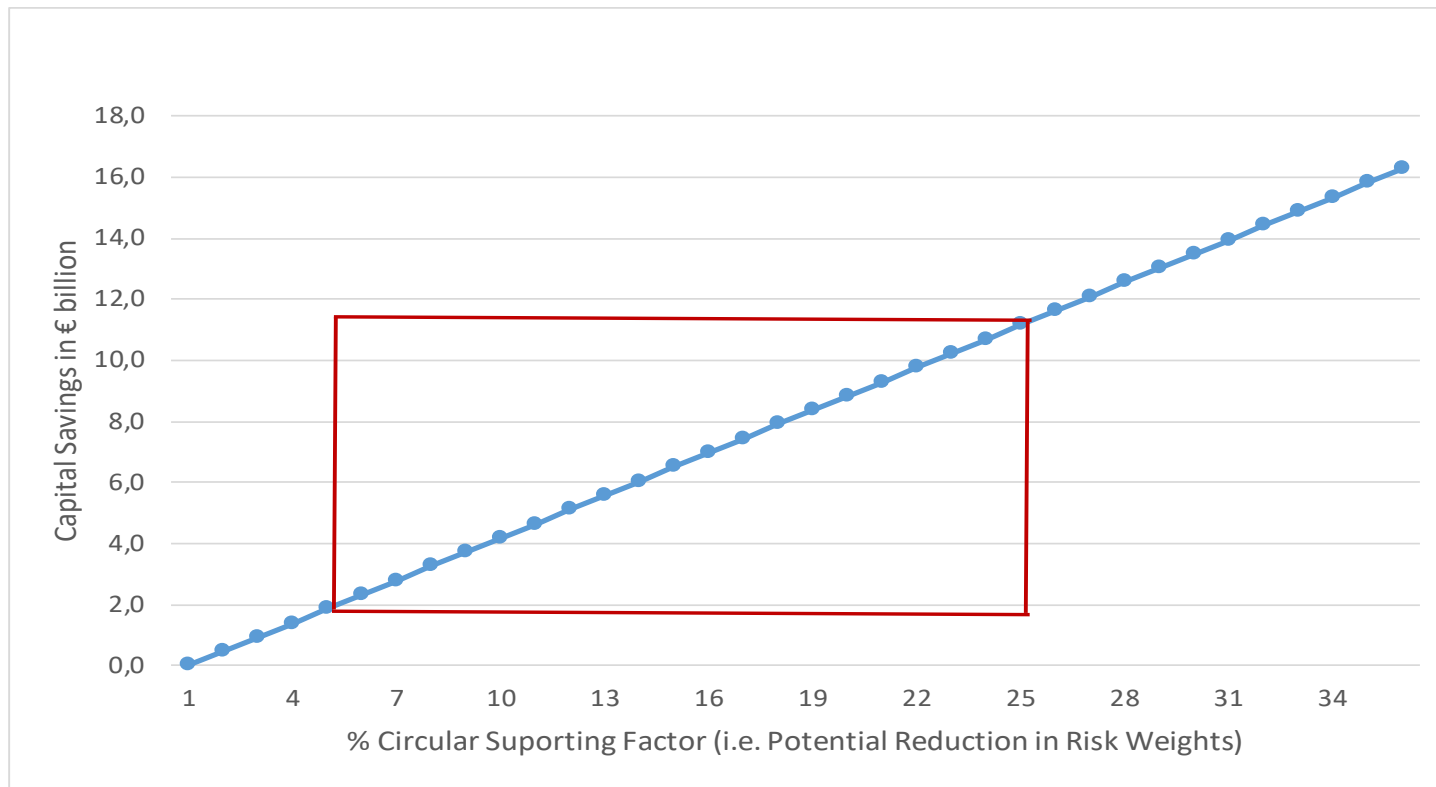
The Circular Supporting Factor

- Estimated selected financial assets of European banks

Type of instrument	Total (in billion €)	Risk Weight (in billion €)	RWA	Circular share (%)	Linear share (%)	RWA circular (in billion €)
Loans financial corporations	1.047,0	20,0	209,4	0	0	0
Loans non-financial corporations (large)	2.848,0	100,0	2.848,0	10	30	284,8
Loans non-financial corporations (SMEs)	1.500,0	100,0	1.500,0	5	10	75
Consumer credit	654,0	100,0	654,0	0	0	0
Loans - house purchase	4.220,0	50,0	2.110,0	0	0	0
Other loans - household	723,0	100,0	723,0	0	0	0
Loans government	1.016,0	100,0	1.016,0	0	0	0
Loans non-euro area residents	2.898,0	100,0	2.898,0	5	10	144,9
Equity funds	1.532,0	300,0	4.596,0	5	10	229,8
Government debt securities	1.505,0	20,0	301,0	0	0	0
MFI debt securities	970,0	20,0	194,0	0	0	0
Debt securities - non-euro area residents	2.151,0	100,0	2.151,0	0	0	0
TOTAL	21.064,0		19.200,4			734,5
CAPITAL DIFFERENCE			1.536,0			58,8

The Circular Supporting Factor

- Estimated impact of application of a CSF



The total impact of a CSF in the range between 5-25 per cent is estimated to be between €2,3-11,6bn in capital savings

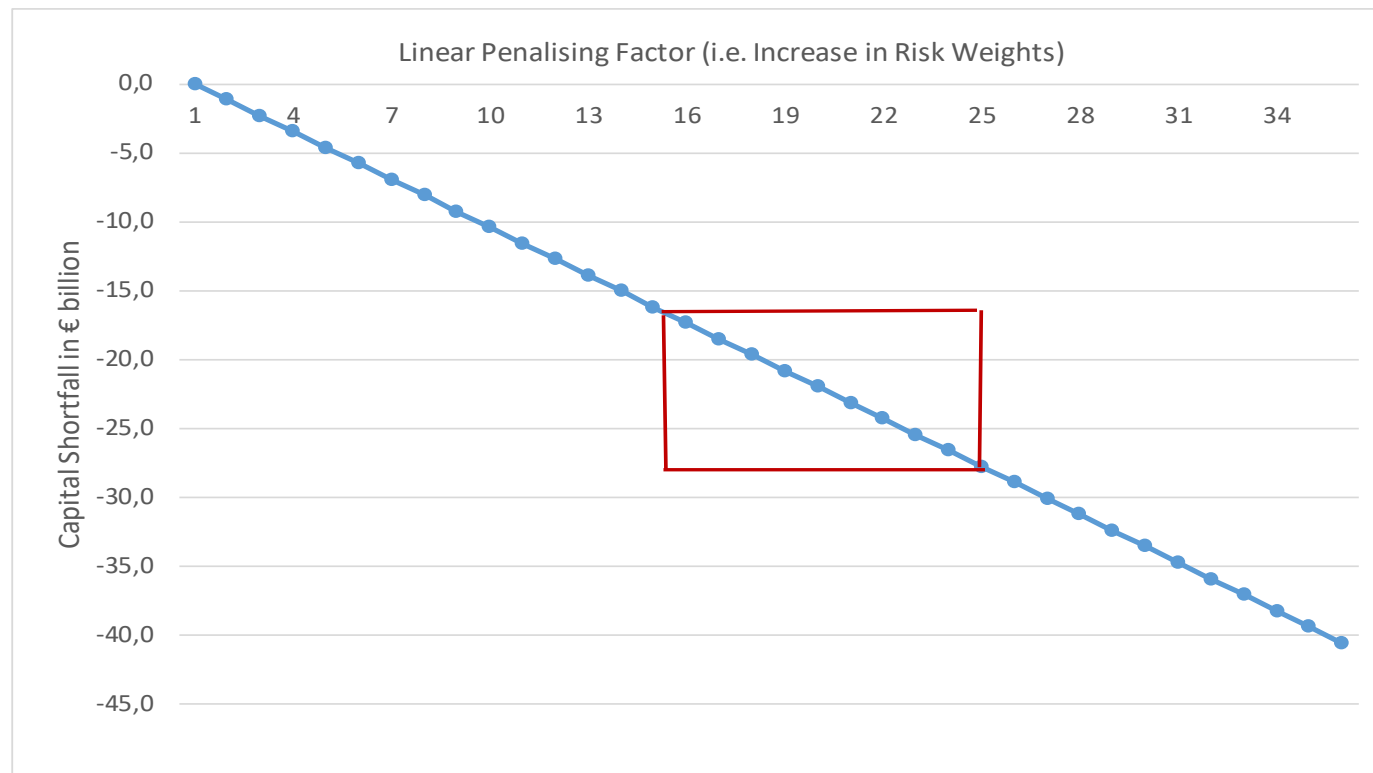
The Linear Penalizing Factor (LPF)

- The mechanism of the LPF is very similar to the CSF and it would be included as a component in the calculation of the risk-weight assets of linear loans - the LPF would be added up to the current risk-weight and increase the RWAs of this class of loans as shown by the example of the simplified equation below:

$$CAR_{\text{linear}}^t = \frac{\text{Bank's Capital}_t}{RWA_t} = \frac{\text{Bank's Capital}_t}{(\alpha_{\text{linear}} - \text{LPF}) \cdot L_t^{\text{linear}} + \alpha_{\text{circular}} \cdot L_t^{\text{circular}}} \geq \beta$$

The Linear Penalizing Factor (LPF)

- Estimated impact of a linear penalising factor on capital of EU banks



Integrate Circular-related Risks into Banks' Capital Requirements

- In theory, part of the assets (notably the “linear” ones) would potentially bear additional risks and therefore require additional capital.
- Another part of the assets would not bear additional risks in relation with circularity and/or linearity and should not require additional capital.
- To achieve that this more “circular” part of assets require less capital it is necessary to upgrade the credit-risk assessment methodology in order to be more sensitive to the specific nature of the risks posed by the circular/linear component of projects or entire projects.
- In such a way upgraded methodology will be able to identify the remaining risks of in the linear model (e.g. climate, societal, regulatory, tax, etc.) and to value the benefits/risk mitigants of circularity (currently often resulting in penalising effects).

Integrate Circular-related Risks into Banks' Capital Requirements

This new credit risk assessment methodologies that are fit for measuring the risks of circular economy will allow for a comparison of risks between linear and circular investment opportunities, and ultimately reduce the barriers preventing access to finance for circular businesses and projects.

Circular risks and linear risks

Circular risk	Linear risk
Shift of mindset needed to see (used) products as valuable sets of modules and/or materials instead of waste.	Dependency on virgin resources (risk of supply chain disruption).
Required initial investment can cause deterioration in short-term margins.	Exposure to resource price volatility.
Balance of short-term margin versus long-term stability.	Increasing environmental legislation.
Market demand for the offered products: customers and companies are currently used to owning products.	Growing population and increasing financial wealth.
Dependency on supply chain collaboration.	Effects of climate change.
Unknown residual value of many products, due to small market of circular output companies (i.e. companies that upcycle, re-use, remanufacture or refurbish).	Demand for environmentally sound products.
Supply chain lock-in risk.	Businesses/products that become obsolete by holding onto old linear business practices (stranded assets).

Thank you.