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Workshop on Climate Change Risk and Credit Assessment

ESG adjusted credit rating: the indirect approach

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Bank of Italy, 21th October 2022



Objectives

A new approach to integrate ESG information in credit rating models (*indirect approach*)

1. Technical feasibility for the banking system

- by channeling (and thus limiting) the adjustment to the financial module of the existing internal rating models, through financial variables homogeneously available for all firms
- without extending modelling needs and specifications to ESG explanatory variables

2. Compliance with the European sustainability reporting and the EU Taxonomy

- by adopting financial materiality criteria
- by focusing the input information on the financial plan deriving from the adoption of the firms' sustainability plan (CapEx Plan)

3. Allow a long-run credit risk assessment

- necessary to make the creditworthiness assessment consistent with the time horizons of the ESG transition processes and the duration of their financing exposures



The indirect approach: the methodology

The approach is founded on four sequential sets of assumptions

1. First set: *causal relationships among ESG information, financial information and creditworthiness*
2. Second set: *types of information to be used/included*
3. Third set: *specification of the functional form of the internal credit rating model*
4. Fourth set: *the time horizon*



The adoption of each assumption is motivated with respect to:

- the regulatory constraints and
- the alternatives available in the literature



Assumption 1: causal relationships

It is assumed that the ESG performance of a firm impacts its financial performances, which then affects its creditworthiness.

- the ESG sustainability plan adopted by a firm has effects on the firm's products, costs, investments, and market positioning. These aspects are all reflected on the financial indicators and therefore on its ability to repay contractual obligations
- For the dynamics of causal relationships, it is assumed that the ESG impacts on the financial Key Performance Indicators (KPIs) are distributed over time, as there is always a time lag between the outcome of the ESG performance and its financial effect that is articulated in short, medium and long-term effects.



A firm's credit rating refers to the firm's prospective ability to repay its debts; it is assumed to be directly explained only by the financial KPIs of the firm. Therefore, ***the credit rating depends indirectly on the ESG performance, through its impact on the financial KPIs.*** For this reason, the proposed approach is called “indirect approach”.



Assumption 1:

causal relationships - compliance

These assumptions **meet the regulatory requirements to assess financial materiality**, required by the new sustainability standards

- EFRAG standards

“a sustainability matter is material from a financial perspective if it triggers or may trigger significant financial effects on undertakings, i.e., it generates or may generate significant risks or opportunities that influence or are likely to influence the future cash flows and therefore the enterprise value of the undertaking in the short-, medium- or long-term, but it is not captured or not yet fully captured by financial reporting at the reporting date”

- ISSB standards

“The assessment of materiality shall be made in the context of the information necessary for users of general-purpose financial reporting to assess enterprise value”

“Enterprise value reflects expectations of the amount, timing and certainty of future cash flows over the short, medium and long term and the value of those cash flows in the light of the entity’s risk profile, and its access to finance and cost of capital. Information that is essential for assessing the enterprise value of an entity includes information that is provided by the entity in its financial statements and sustainability-related financial information”



Assumption 2:

information (Idiosyncratic Forward-Looking)

The indirect approach focuses on financial KPIs to be used in the credit rating models

The second set of assumptions concerns the **types of information and their sources** to compute these **financial KPIs impacted by ESG performance**:

- First, it is assumed that firms' prospective ability to fulfil their obligations is better assessed on the basis of the financial KPIs contained in the **firm's financial plan**, related to future time horizons, rather than relying on historical data.
- Furthermore, since the ESG transition is only in its initial stages, it is assumed that the firm's **historical data are not very informative** on the causal relationship between ESG information and financial KPIs.



Therefore, it is proposed to adopt the **idiosyncratic forward-looking information** related to firms' **financial plans** as inputs of the ESG-adjusted credit rating models

For the analytical definition of the contents of the idiosyncratic forward-looking information and of the financial idiosyncratic forward-looking data, impacted by ESG performance, see Giacomelli (2022).



Assumption 2: information (Financial KPIs)

To measure the financial impacts of the ESG sustainability plan, the following financial KPIs directly related to the ESG sustainability plan must be considered:

- **The Turnover component**: the positive or negative changes in turnover deriving from the activities included in the sustainability plan.
- **The OpEx component**: the operating costs to be incurred to carry out the activities included in the sustainability plan.
- **The CapEx component**: the costs of fixed assets to implement the transition process envisaged by the ESG sustainability plan.
- **Financial instruments**: the amounts, maturities and typologies of financial instruments adopted to finance the investments envisaged by the sustainability plan.



Assumption 2: information (Risk Dimension)

To assess the prospective creditworthiness of a firm, it has to be considered that deviations from the ESG KPIs' targets can raise costs and cause financial KPIs' deviations no more consistent with the financial coverage of the ESG sustainability plan.

- The idiosyncratic forward-looking information to be adopted must consider two types of financial impacts:
 - **financial impacts generated by ESG transition targets** (represented by **target values** included in the firm's financial plan)
 - **financial impacts generated by ESG transition risks** (represented by risks of the firm's financial plan that are measured as **deviations from the financial target values**)
- The deviations from the targets of financial KPIs are caused by ESG risk factors directly linked to the ESG sustainability plan, which must include:
 - **Physical risk factors** (both acute and chronic): with direct impact on financial KPIs as they can cause significant unexpected losses
 - **Transition risk factors**: the financial impacts (e.g., changes in costs, in the level of fixed assets, in the debt structure) are due to the deviations of ESG KPIs that may occur during the implementation of sustainability plans



Assumption 2:

information (suitable for credit rating models)

The forward-looking financial KPIs, as impacted by ESG sustainability plans, represent appropriate inputs for credit rating models since:

- **They are indicators that meet the mandatory disclosure requirements.** This compliance characteristic is necessary to feed credit rating models, which require data that are homogeneous, structured, certified and available for all firms.
- **They are forward-looking indicators.** This characteristic is necessary to feed the credit rating models as the traditional historical data (backward-looking) do not currently contain significant information/manifestations of the effects of ESG factors.
- **They are idiosyncratic forward-looking indicators,** directly linked to firms' ESG sustainability and financial plans. This idiosyncratic characteristic is necessary for credit ratings to be able to support the different phases of the credit process.

They are data that banks must consider in any case as they are necessary for the calculation of the **Green Asset Ratio (GAR)**, which explicitly requires considering the counterparties' CapEx Plans required by the EU Taxonomy.



Assumption 2:

types of information (SMEs Extension)

Information sources are:

- **direct engagement of the firm by bank's relationship managers**
- **the firm's regulatory sustainability reporting** (this second set of assumptions focuses then on the regulatory sustainability reporting source)
- **external data sources**



- It is important to note that the information sources here proposed are mandatory at regulatory level for companies over 250 employees.
- However, by adopting the proportionality principle, the financial materiality assessment can be extended and collected/requested in a simplified form, through direct engagement of firms, even to SMEs with less than 250 employees.
- For SMEs: direct engagement of the firm by bank's relationship managers



Assumption 2:

types of information - compliance

It would be important that all the forward-looking financial KPIs should be regulatory indicators, compliant with the ESG disclosure regulations:

- The source of idiosyncratic forward-looking information proposed in this approach is:
 - the Action Plan required by the European Sustainability Reporting Standards - EFRAG
 - the Capex Plan required by the EU Taxonomy, comprehensive of the ESG sustainability plan and the related financial plan, both formulated over a multi-year horizon (Capex Plan has to be contained in EFRAG Action Plan).
- This second set of assumptions permits also to satisfy the specific EBA LOM requests of:
 - adopting idiosyncratic forward-looking information in the assessment of creditworthiness
 - identifying ESG factors and integrate them into credit ratings



Assumption 3:

specification of the credit rating functional form

Significant implications:

- Only the financial KPIs, as in the current versions of internal rating models, should continue to be used as **explanatory variables**.
 - According to the indirect approach, ESG explanatory variables should not be considered.
- Compared to the current credit rating models, risk indicators are also introduced among the exogenous variables to consider the effects of possible deviations from the financial plan targets.
 - To satisfy the exhaustiveness of idiosyncratic forward-looking information defined in Giacomelli (2022), **two types of input indicators** must be considered in credit rating models: financial plan's target and deviation indicators.
- The impacts, distributed over time, of the ESG sustainability plan on the financial KPIs are already considered in the values of the financial KPIs specified for the individual time horizons of the financial plan.
 - Therefore, the **dynamic specification** of credit rating models remains unchanged with respect to current credit rating models.



Assumption 4:

time horizon of the internal credit rating model

The explicit inclusion of information from the ESG sustainability plan and the related financial one permits to consider a multi-year horizon that covers all the horizons of the ESG sustainability plan formulated by a firm.

- **A long-run credit risk assessment is thus adopted**, which is necessary to make the creditworthiness assessment consistent with the time horizons of the transition processes and the duration of their financing exposures.
- The horizon of the ESG sustainability plan and the related financial plan constitutes the broadest time horizon that can be taken into consideration to have reliable idiosyncratic forward-looking financial data to feed the credit rating model.
- Therefore, compared to current credit rating models, it is necessary to move from a **single-period to a multi-period logic** for considering the overall time horizon of the plans.
- It is fundamental to consider **the long-run risk effect**: *the occurrence of an initial deviation from a target generates impacts that can cause, over time, new forms of deviation and therefore amplify the possibility of further deviations from targets in subsequent periods*



Summary:

indirect approach based credit rating process



Assumption 1 & 2



Assumption 3

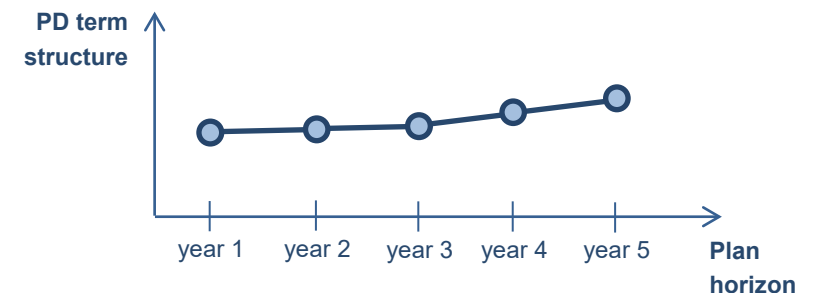
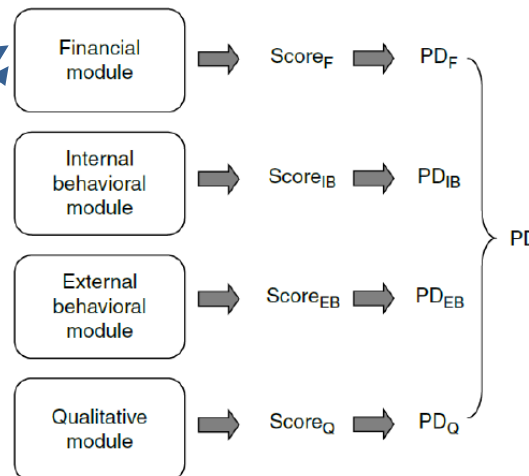
Only the financial module is affected: $F(X_F\beta) = Score_F$
 Specification of $(X_F\beta)$ contains two types of forward-looking variables: target values and risk indicators

Assumption 4

ESG adjusted PD term structure is estimated, considering the overall time horizon of the ESG sustainability plan and the related financial plan: long-run credit risk assessment

Idiosyncratic forward-looking Financial KPI computed by financial materiality assessment:

- Financial KPIs target: financial impacts generated by ESG transition targets (*point value referred to the target*)
- Financial KPIs deviations: financial impacts due to physical and transition risks (*risk indicator to take into account the magnitude of the possible deviations from the target*)





Collection of information

Assumption 1 and 2 define the **two-step process** to be used to collect the information to feed the credit rating model

Step 1: ESG sustainability plan

Step 2: financial plan

Assumption 1

causal relationships
among ESG and
financial information

- ✓ Impact materiality assessment requested by EFRAG standards
- ✓ ESG sustainability plan articulated on multi-year time horizon

- ✓ Financial materiality assessment requested by EFRAG standards
- ✓ Causal direction: ESG sustainability plan has explainable effects on the firm's products, costs, investments, and market positioning
- ✓ Dynamics of causal relationships: ESG impacts on the financial KPIs are distributed over time (short, medium and long-term impacts)

Assumption 2

types of information
to be used/included

- ✓ Idiosyncratic forward-looking ESG KPI: to be selected in the technical screening criteria of the EU Taxonomy
- ✓ KPI target: set to reach ESG regulatory science-based objectives
- ✓ KPI deviations: caused by transition risks

- ✓ Idiosyncratic forward-looking Financial KPI: Turnover, OpEx, CapEx, Financial instruments
- ✓ KPI target: financial impacts generated by ESG transition targets
- ✓ KPI deviations: financial impacts due to physical and transition risks

Relationships between the two plans

The ESG sustainability plan (step 1) is transposed in the financial plan (step 2) through the following certified evaluations:

- Estimates of cost of ESG sustainability plan: estimated costs of fixed assets and operations provided by experts (engineers or consultants) involved in ESG sustainability plan
- Estimates of turnover change (positive or negative) due to the implementation of ESG sustainability plan: obtained by adopting the usual best practices of planning (expert judgment based) to set turnover change targets in function of ESG target values



Conclusions

The indirect approach is specified through a complete system of assumptions compliant with the regulatory framework and provides the following contributions:

- ✓ **A structural explanation of the relationship between ESG performance and the firm's economic-financial performance**, both in terms of causal direction and dynamic effects.
- ✓ Limit the input information of the model only to indicators that are compliant with the legislation and therefore homogeneously available for all firms.
- ✓ **Provide reasons for considering only economic-financial variables in the specification of internal rating models, without extending the specification to ESG explanatory variables.**
- ✓ Introduce an idiosyncratic forward-looking credit rating, overcoming the limits of the models with a systematic forward-looking component such as those adopted for IFRS9.
- ✓ **Propose a solution for the long run assessment** of credit ratings, considering time horizons equal to the duration of exposures and overcoming the limits of one year PD credit rating models.



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Thank you for your attention

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