Sustainable Finance

ESG Factors & Default Risk

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A. ESG INTEGRATION INTO LENDING ACTIVITIES

WHY DOES SUSTAINABILITY MATTER TO LENDING?

- In their monitoring role, there is an opportunity for banks to collect more information on firms, including ESG factors and risks. Banks can thus analyze sector-wide sustainability trends and discover best practices
- Banks can in turn transfer these best practices in sustainability back to firms in their advisory role. In that way, banks can help firms with their transition to sustainable business models
- It's therefore important for banks, when granting loans, to consider the full impact of sustainability on a company's business model, because that affects the company's credit risk
  - *What are the transition challenges for the company's sector? How far is the company in the transition of its business model, also in comparison with its sector peers?*
- Sustainability also has an impact on collateral values
  - The energy efficiency of real estate is, for example, a key determinant of its future value. Similarly, real estate values are also exposed to physical risk from extreme weather events

INTEGRATING ESG INTO LENDING ACTIVITIES

- From a risk-based standpoint, various social and environmental factors and risks are included in the credit risk analysis. These risks can affect both the probability of default and the recovery rate
- Academics showed that the inclusion of ESG factors into banks' credit risk scoring systems can improve the outcome of these models:
  - ✓ Weber, Scholz, Michalik (2010): The inclusion of ESG factor into a bank's credit scoring system for private firms improves the prediction of defaults/non-defaults by 5% (Business Strategy and the Environment*)*
- Researchers also proposed Sustainability Credit Score Systems for banks:
  - ✓ Zeidan, Boechat, Fleury (2015): they developed a credit scoring system that integrates the sustainability of companies and of their industries into a business as usual ratings-based model. They explicitly recognized that sustainability is about the future (Journal of Business Ethics)
- As these credit score models have not yet been widely implemented by banks, there is still no hard evidence that incorporating sustainability into credit score systems leads to less defaults. *The issue is also complicated by the private nature of banks' borrowers: currently available ESG scores and analytics only cover public companies for which sustainability information is available*

ESG FACTORS AS DRIVERS OF DEFAULT RISK

ESG factors influence credit risk through multiple channels

- **"Risk Channel":** ESG-related exposures create tangible financial risks
  - ✓ Environmental issues (e.g., carbon regulations, physical climate events) increase operating costs or impair assets (transition and physical risks)
  - ✓ Social/governance shortcomings (e.g., poor labor relations, weak controls) lead to legal liabilities or reputational damage
- ✓ **"Preference Channel":** Investors and lenders increasingly prefer sustainable firms, leading to funding advantages for high-ESG companies
  - ✓ Some investors accept lower returns or require lower risk premia for greener companies
  - ✓ They demand higher compensation to lend to firms with high sustainability risks
  - ✓ This affects credit spreads and risk premium on debt, but does not directly change the firm's actual (physical) PD

Together, the risk and preference channels mean ESG factors are intertwined with credit risk, affecting both actual PD and market pricing

IMPACT OF ESG FACTORS ON DEFAULT RISK

- There has been growing interest in understanding how a company's environmental, social, and governance (ESG) performance impacts its default risk or credit risk
- The empirical findings generally suggest that better ESG performance is associated with lower default risk:
  - Vivel-Búa et al. (2023) found that ESG factors influence default risk in the Eurozone, with the relationship potentially varying across economic cycles
  - Cohen (2023) documented that Altman's Z-score, a measure of bankruptcy risk, is negatively influenced by environmental and social risk scores for S&P 500 firms
  - However, there are mixed results regarding the relative importance of the different ESG pillars. While some studies found all three pillars (environmental, social, and governance) to be significant [e.g., Maquieira et al. (2024) for family firms], others reported only certain pillars as having a significant impact on default risk [e.g., Cohen (2023) found environmental and social risks to be significant but not governance risk]

EMPIRICAL EVIDENCE: ESG IMPACT ON PD

A growing body of empirical research confirms that **better ESG profiles are associated with lower default risk** for European corporates

- Studies find a statistically significant negative relationship between a firm's ESG score and its PD across multiple horizons
- Ferriani and Pericoli (2024) found a significant negative relationship for listed European non-financial firms (2014-2022). They used Moody's Expected Default Frequency (EDF) for PD and LSEG (Refinitiv) for ESG score
  - Crucially, the effect of ESG is **more pronounced at longer maturities** of default risk: A one-standard-deviation improvement in ESG score corresponded to a roughly 4 basis point reduction in 1-year PD, but about a **15 basis point reduction in 10-year PD**
  - **Higher ESG ratings therefore flatten the term structure of default risk:** Companies with stronger sustainability profiles see a greater reduction in their long-term default risk than in the short term
  - This implies that ESG factors are primarily **long-term risk drivers**, bolstering the view of sustainability as a material factor for a firm's viability over extended horizons

B. ESG REGULATORY EXPECTATIONS

ESG REGULATORY EXPECTATIONS

European regulators actively encourage ESG integration into risk models:

- **European Banking Authority (EBA):** Includes ESG risks in loan origination and monitoring guidelines
- **European Central Bank (ECB):** Set supervisory expectations for banks to incorporate climate/environmental risks in risk management/capital models

- Banks are increasingly using **climate scenario analysis** to adjust PDs for long-term portfolio risks (5–20 year horizons)
  - ✓ Example: Estimating a carbon-intensive manufacturer's 10-year PD doubling under a stringent carbon price scenario, potentially leading to rating adjustment or higher provisions
- Expected loss and economic capital models require PDs as key inputs; PDs must incorporate ESG to reflect true risk
  - ✓ Industry innovation and supervisory pressure drive development of ESG-adjusted models

ESG INTEGRATION METHODS: BANK IMPLEMENTATION

Many banks are explicitly including ESG metrics in internal rating models or scorecards

Challenges include limited historical data and uncertainty. Experimenting with methodologies, including:

- Adjusting **macroeconomic assumptions** in scenario forecasts
- Indirectly capturing ESG via its effect on **existing risk drivers** (e.g., carbon tax impact on debt-to-income)
- Making **in-model parameter adjustments or add-ons** (e.g., penalizing factor for high climate risk)
- Applying **post-model overlays** as expert judgment adjustments

- Direct integration into the PD model structure is the most rigorous but requires sufficient data and validation
- Indirect/macro approaches can lack precision for individual obligors. Overlays are subjective

C. ESG & IFRS 9

MAPPING ESG-ADJUSTED PDs TO IFRS 9 STAGES

- IFRS 9 requires classifying financial assets into stages determining credit loss measurement
  - Stage 1: No significant increase in credit risk (SICR) – **12-month ECL**
  - Stage 2: Significant increase in credit risk – **Lifetime ECL**
  - Stage 3: Defaulted/credit-impaired – **Lifetime ECL** (impaired basis)

- Integrating ESG primarily affects Stages 1 and 2 by influencing the SICR assessment and magnitude of lifetime default risk
- IFRS 9 requires incorporating **forward-looking information** into PD estimates and staging judgments
  - ✓ Climate and ESG factors are squarely within this mandate. Forward-looking risks (e.g., rising carbon costs, physical threats) must be considered

IFRS 9: SICR (Stage 2) & Lifetime ECL

- **Significant Increase in Credit Risk (Stage 2):** Banks often use PD-based metrics for Stage 2 migration (e.g., lifetime PD rising above a threshold). A deteriorating ESG profile or emerging ESG risk should cause lifetime PD to rise, potentially triggering Stage 2 earlier.
  - ✓ ECB 2022 survey: 80% of banks did not reflect climate risks in ECL models, missing forward-looking ESG signals in staging. Regulators expect change
  - ✓ IFRS Foundation clarifies climate matters affect future scenarios and SICR assessment under IFRS 9. Ensuring ESG adjustments flow through staging for *individual* exposures is a challenge
- **Lifetime PD and ECL Measurement (Stages 2/3):** Stage 2 or 3 requires **multi-year PD projections** for lifetime expected losses. ESG-adjusted PD term structures are directly relevant here. An ESG-incorporated PD yields higher loss allowances for high-ESG-risk and lower for low-ESG-risk exposures. This avoids underestimating losses on "brown" assets. Ignoring ESG risks can lead to systematic **under-provisioning**. A backward-looking approach misses long-term ESG risks that materialize gradually. Failing to integrate ESG in IFRS 9 models may result in non-compliance

D. CONCLUSIONS

KEY TAKEAWAYS

- ESG factors have a measurable impact on credit risk, growing over longer horizons
- Integrating ESG into PD models and IFRS 9 is a necessary evolution
- Ignoring ESG can understate credit risk
- Systematic integration enhances risk estimates and aligns with prudential/accounting requirements

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