Into the ESG Ratings: Algorithm and Link to Financial Materiality

An exploratory study of Environmental, Social and Governance (ESG) Ratings

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Introduction

Assets in sustainable funds hit a record high of $1258 billion as of September 2020. The increasingly popular integration of Environmental, Social and Governance (ESG) factors into investment decision-making has made the quality of ESG data more important. With increasing demand from investors as well as issuers, the market has seen a proliferation of ESG data providers, which heightened the public scrutiny towards their divergence in methodologies, debatable link to financial materiality, and lack of unanimity between different ESG ratings. Our project consists of two sub-topics: 1. Testing the link between ESG and Corporate Financial Performance (CFP) with evidence from China; 2. Investigating Western ESG Rating methodologies and the relationship with company performance. We also envision the mutually beneficial relationship between ESG rating and public blockchain.

Literature Review

Evidence on the relationship between ESG and CFP is mixed. Existing literature found positive, negative, and nonexistent correlations between ESG and financial performance, although most researchers found a positive correlation. Despite some of the studies stating ESG as a premature indicator for financial performance, the majority of relevant studies display a tendency of concluding that more sustainable firms are likely to have better long-term financial performance and lower systematic risk. For example, Friede, Busch, and Bassen (2015) conduct a meta-analysis of over 2000 empirical studies on ESG and CFP, and most results show a positive relationship between ESG and CFP. Moreover, there are many emerging institutions that study ESG related issues and construct corresponding ESG Ratings or indexes, and two of the well-known representatives are RepRisk and MSCI. However, several common issues still exist among these institutions, such as lacking a unified framework, transparency of rating methodologies and data sources.

Findings: Difference Between Mainstream Ratings

Comprehensive assessment reliant on human insights

Example: MSCI ESG Rating

- Capture both opportunities and risks
- Utilize self-disclosed data as well as alternative data from trusted third parties
- Use rule-based methodology
- Focus on issues relevant to financial materiality
- Large analyst team supported by technologies for data collection and automation
- Forward-looking assessment based on emerging risks and opportunities

Risk-centered assessment powered by technologies

Example: RepRisk Rating

- Flags and monitors ESG risks and violations of international standards
- On a daily basis, screens over 100,000 public sources and stakeholders
- Use rule-based methodology, excluding company self-disclosures
- Focus on 28 ESG key issues, which covers 67 topic tags specifically
- Issues, events driven, rather than company driven
- AI and machine learning techniques are applied to automatically tag each novel risk incident

Research Questions and Results

- **How do ESG ratings based in China and the West differ?**
  We choose 372 China-A share companies that are covered by both RepRisk (based in Switzerland) and SynTao Green Finance as the analytical set. As ***Figure 1*** and ***2*** show, the two ratings exhibit distinct sample distributions, reflecting the divergence between ratings methodologies and have implications for investors. Syntao's rating is a relatively standard normal distribution. Assuming investors prefer companies with higher ESG ratings, a standard distribution might limit their options which could lead to a concentration of assets.
- **Is ESG an effective indicator for future financial performance?**
  As ***Figure 3*** shows, the prediction accuracies when having either one of the ESG ratings are consistently higher than those without the ESG information. This proves our hypothesis that ESG ratings are an effective financial indicator for predicting the trend of future financial performance. We could then further conclude that ESG ratings have incorporated a certain degree of information that implies firms' future financial performance.
- Based on the disclosed methodologies, RepRisk Rating (RRR) is constructed by two numerical factors: Peak RepRisk Index and country-sector average. By analyzing the historical data, we figured out scale RepRisk Rating corresponding to letter RepRisk Rating, which is summarized in ***Table 1***.
- Based on the simulation, the mathematical formula of calculating RepRisk Rating with Peak RRI and Country-sector average was found: *Scale RRR* = 0.5 · (country sector average + peak RRI)
- Limitations: Accessibility of acquiring source data; Transparency of disclosed ESG rating methodologies.

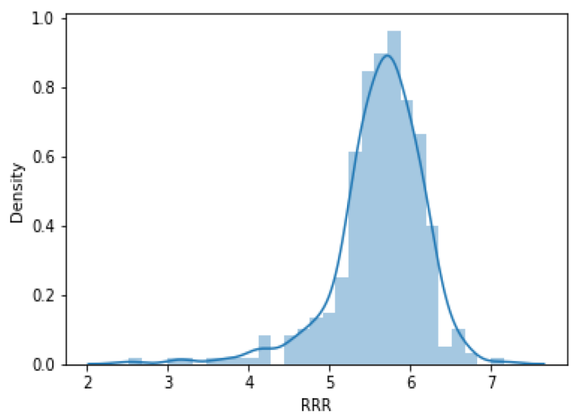


Figure 1 RepRisk ESG Rating Dist.

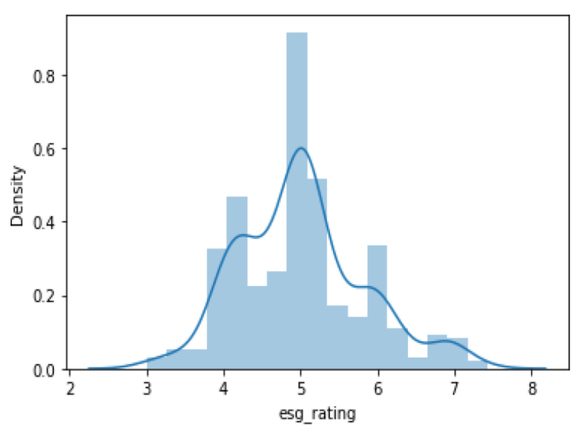


Figure 2 SynTao ESG Rating Dist.

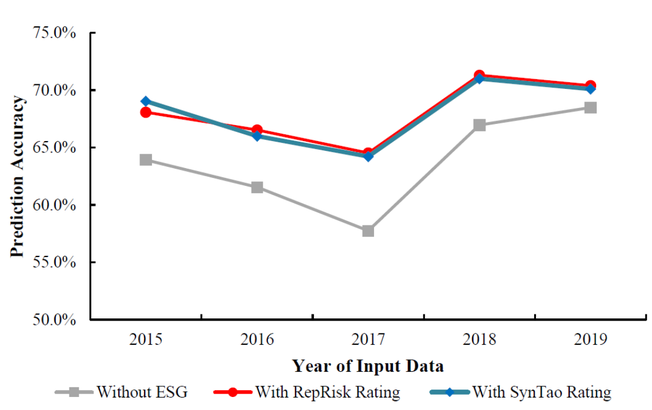


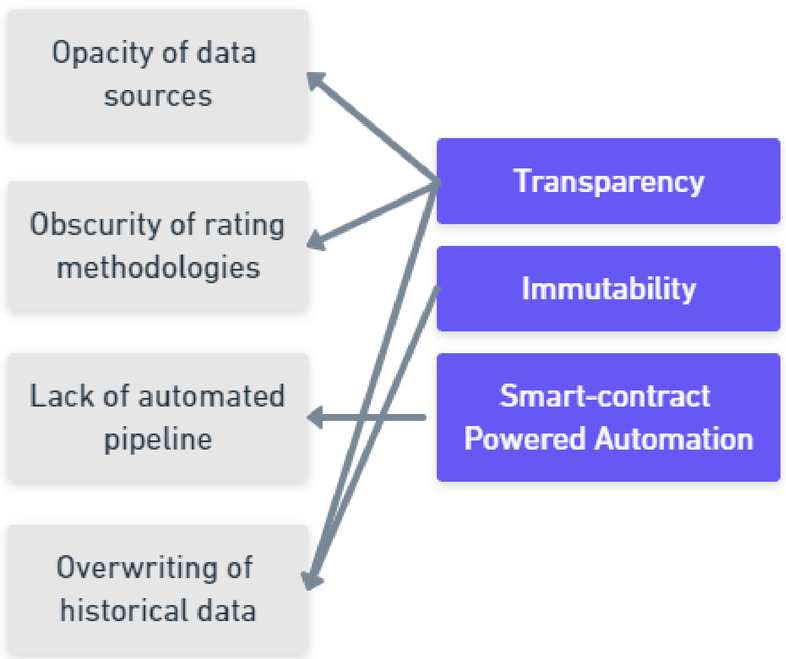
Figure 3
Prediction accuracies with and without ESG

RepRisk Rating (RRR) – Letter rating	Scale RRR Score (0 - 100)
AAA	0 - 10
AA	11 - 20
A	21 - 30
BBB	31 - 40
BB	41 - 50
B	51 – 60
CCC	61 – 70
CC	71 – 80
C	81 – 90
D	91 – 100

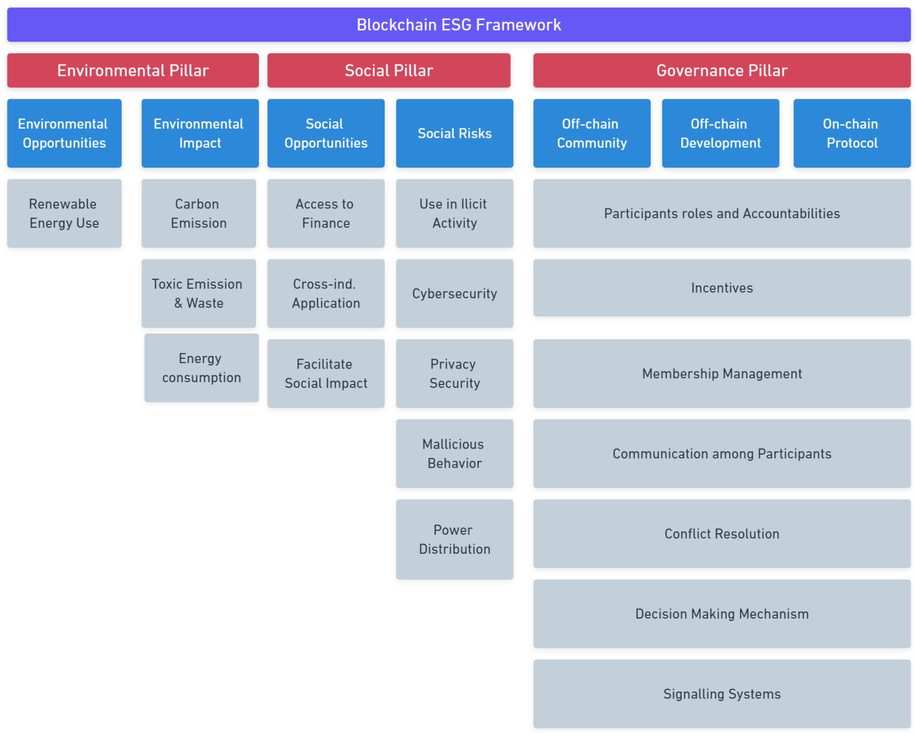
Table 1 RepRisk Rating (letter vs scale)

ESG and Blockchain: A Promising Pair

Public blockchain for ESG



ESG for Blockchain Economy



Conclusion

- ESG is an effective long-term financial indicator
- The divergence in ESG rating methodologies is pronounced between ones based in China and the West with implications for investors.
- The combination of blockchain and ESG could be mutually beneficial.

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