4. Data and Summary statistics:

ESG data:

For the purpose of my research, I have studied the ESG scores which were drawn from Sustainlytics, for the period of 2009 to 2019 provided the specific breakdowns into Environmental, Social and Governance and showing the variance in ESG and its financial implications. This Sustainalytics operates universally, and it is mostly used by investors, asset managers, financial advisors. And its customers are all over the world, like North America, Europe, Asia-Pacific and other regions as well. Sustainalytics examines the ESG performance of the firms and countries it is located and mainly focuses on the ESG risks and how the risks are managed. IT also researches the data mostly on shareholder rights, pay policies and so on, which has the greatest influence on investment decisions. The main moto of this is to manage risk related to investments by integrating the ESG policies. There are various components for ESG scores which is mentioned in Sustainlytics. Environmental scores: It measures the company’s sustainable impact which includes energy usage, waste management and pollution control. Social scores: These scores analysis how firms manage its relationships with customers, suppliers, workers and communities considering issues like human rights and employment policies. Governance scores: It always access the governance procedures, focusing on broad structure, audit integrity, executive compensation and compliance.

Each score component is evaluated from multiple indicators, weighted according to their significance and influence it. For benchmarking between business and industries, these scores are then standardised. An aggregate index that provides an overall summary of an organization’s ESG performance is known the Total ESG scores. Sustainlytics examines relationship between financial health and ESG practices. It also analyses how investor opinion is affected by ESG variables. It also identifies different trends how detecting or ESG impacts in different industries.

Loan Data:

For loans, the data has been collected from Dealscan for evaluating the financial health and practices of the company. This data provides information about Spread, maturity and other applicable loan conditions. The variables which include financial data like leverage, profitability has been obtained from Compustat and the size of the firm is measured by logging total assets which is also obtained from Compustat. And the data for facility amount, number of lenders and Number of covenants which is used to find restrictions for the borrower’s firm are also collected from Dealscan database.

Since Dealscan database started tracking ESG related issues. I have focused on filtering the data from 2009 to 2019ensuring that non-skewed data is analysed. This filtration removes the financial dynamics associated with banking and financial services and permits a focused examination on ESG impacts across a wide range of business. This deliberate decision strengthens the analytical robustness of our analysis and reveal the identity between ESG scores and loan characteristics in an expanded economic environment instead of restricting to only financial organisations.

Loan spreads also referred as the cost of loan represented in basis point over the LIBOR rate, where the borrower should pay extra interest rates as the lenders charge beyond the base lending rate to compensate the risk associated with it. A higher loan spread indicates increased risk profile.

The number of loan covenants, which typically ranges between 1 and 5, is directly influenced by the overall ESG (Environmental, Social, and Governance) score of the entity. As the total ESG score improves or increases, there is a corresponding decrease in the number of loan covenants imposed. This inverse relationship underscores the importance of a strong ESG performance, as a higher ESG score indicates reduced risk and, consequently, results in fewer covenants required by lenders.

Additionally, for evaluating the data, I used control variables for both loan and borrower characteristics which may affect the loan spread. The borrower characteristics includes size of the company, a weighted profitability, leverage ratio and industry. On the other hand, the loan characteristics includes facility amount provided to the borrower, and the number of lenders included in the syndicated loans.

I initially began with dataset of approximately 55,435 syndicated loan deals from Dealscan, after filtering out and merging the data with ESG sustainlytics data, we narrowed our focus to 5,602 loan deals.

Loan characteristics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | Median | SD | Min | P25 | P75 | Max |
| spread | 14424 | 246.79 | 200.00 | 155.01 | 1.75 | 150.00 | 300.00 | 1750.00 |
| log\_spread | 14424 | 5.34 | 5.30 | 0.58 | 1.01 | 5.01 | 5.70 | 7.46 |
| numcov1 | 7052 | 1.90 | 2.00 | 0.78 | 1.00 | 1.00 | 2.00 | 5.00 |
| facilityamt | 14424 | 699765387.79 | 3.4e+08 | 1317361164.70 | 1e+05 | 1.25e+08 | 8e+08 | 4.9e+10 |
| log\_facilityamt | 14424 | 19.52 | 19.64 | 1.39 | 11.51 | 18.64 | 20.50 | 24.61 |
| num\_lenders | 14424 | 8.63 | 7.00 | 6.96 | 1.00 | 4.00 | 11.00 | 70.00 |
| log\_num\_lenders | 14424 | 2.03 | 2.07 | 0.69 | 0.69 | 1.60 | 2.48 | 4.26 |

Borrower’s characteristics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | Median | SD | Min | P25 | P75 | Max |
| total\_esg\_score | 5602 | 56.17 | 55.00 | 8.41 | 33.00 | 49.52 | 62.00 | 89.68 |
| log\_total\_esg\_score | 5602 | 4.03 | 4.02 | 0.14 | 3.52 | 3.92 | 4.14 | 4.50 |
| size | 14424 | 12971.01 | 2817.62 | 42946.66 | 0.00 | 953.26 | 8816.97 | 797769.00 |
| log\_size | 14424 | 7.99 | 7.94 | 1.69 | 0.00 | 6.86 | 9.08 | 13.58 |
| profitability\_w | 14375 | 0.18 | 0.16 | 0.14 | -0.32 | 0.09 | 0.26 | 0.67 |
| leverage\_w | 14394 | 0.34 | 0.32 | 0.22 | 0.00 | 0.19 | 0.47 | 1.07 |

The summary statistics of the loan and borrower characteristics reveal significant variability in the dataset. For loan characteristics, the average spread is approximately 246.79 basis points, with a median of 200 basis points, indicating a relatively high variation, as reflected by the standard deviation of 155.01. The natural logarithm of the spread shows a mean of 5.34. The average number of covenants attached to loans is 1.90, with a median of 2.00, suggesting that most loans include at least two covenants, though there is some variability (SD = 0.78). The average loan facility amount is around $699.77 million, with a median of $340 million, but this too varies widely, as shown by the substantial standard deviation of approximately $1.32 billion. The number of lenders involved in a loan also exhibits variability, with an average of 8.63 lenders and a median of 7, while the natural logarithm of this number has a mean of 2.03.

Regarding borrower characteristics, the mean ESG score is 56.17, with a median of 55.00, suggesting that firms in the sample tend to have moderate ESG ratings, but the standard deviation of 8.41 implies that there is considerable variation within the sample. The average firm size is about $12.97 million, with a highly varied range as indicated by the standard deviation of $42.95 million. The natural logarithm of firm size has a mean of 7.99. The return on assets (ROA), a measure of profitability, has an average of 0.18, with a median of 0.16, indicating that most firms have moderate profitability levels, though the range spans from negative to relatively high values. Lastly, the leverage ratio averages 0.34 with a median of 0.32, showing that firms in the sample have a moderate level of debt relative to their equity. Overall, the data indicates a diverse sample in terms of both loan and borrower characteristics, with substantial variability across the different metrics.

Correlation matrix

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. log\_total\_esg\_score | 1 |  |  |  |  |  |  |
| 2. log\_spread | -.22\*\*\* | 1 |  |  |  |  |  |
| 3. numcov1 | -.27\*\*\* | .24\*\*\* | 1 |  |  |  |  |
| 4. log\_size | .45\*\*\* | -.35\*\*\* | -.39\*\*\* | 1 |  |  |  |
| 5. log\_facilityamt | .16\*\*\* | -.37\*\*\* | -.28\*\*\* | .60\*\*\* | 1 |  |  |
| 6. log\_num\_lenders | .09\*\*\* | -.35\*\*\* | -.12\*\*\* | .43\*\*\* | .51\*\*\* | 1 |  |
| 7. profitability\_w | -.05\*\*\* | -.13\*\*\* | -.12\*\*\* | .26\*\*\* | .22\*\*\* | .13\*\*\* | 1 |
| 8. leverage\_w | -.09\*\*\* | .21\*\*\* | -.04\*\*\* | .14\*\*\* | .10\*\*\* | .02\*\* | .17\*\*\* |

The table shows that there is a negative correlation between log\_total\_esg\_score and log\_spread (-0.21\*\*\*), indicating that as the total ESG score increases, the log of the spread tends to decrease. This suggests that companies with higher ESG scores might experience a reduction in their spread.

Additionally, there is also a negative correlation between log\_total\_esg\_score and numcov1 (-0.27\*\*\*), suggesting that higher total ESG scores are associated with a decrease in the number of covenants. This implies that firms with better ESG performance may face fewer restrictive covenants.