

Risk Premiums in the London Market: 1870–1929

William N. Goetzmann, Fernando Reyes De La Luz, and K. Geert Rouwenhorst

Yale School of Management

February 5, 2026

Abstract

The London Stock Exchange was the dominant financial market of the late 19th and early 20th century. An on-going project at the International Center for Finance at the Yale School of Management has made digitized security-level price and dividend data over the period 1869–1929 widely available for research. In this chapter, we use the IMM database to calculate the equity risk premium for a value-weighted portfolio of the top 100 firms by size in the London market. We find a substantial equity premium, with significant co-movement to changes in GDP. We test a major implication of capital structure theory for the relative risk and return of subordinated claims. We document a positive seniority premium and a positive default premium. The equity risk premium with respect to long term government bonds is significantly positive, and the rolling 10-year return spread for stocks minus bonds is positive for every interval in the 60 year sample period.

JEL Codes: G10, N20

We would like to express our gratitude to the many researchers and administrators who contributed to the IMM project. In particular, we thank Will Everett, Alexa Marciano, Tania Diaz-Bazan for programming assistance, Zeyna Malik, Nick Liu, Sarah Hall, Sarah Ben Thkayet, Margot Kohn, Daria Hadjiemmanuil, Danat Kenzhegali and Emir Ahmed, for data curation. We particularly thank the research director of the ICF Francesco Fabozzi and former research directors Milad Nozari and Sumithra Sudhir for their management of the project. We also acknowledge ICF executive director Leigh Ann Clark for her invaluable support, and an anonymous donor who made the data collection, curation and distribution possible.

1. Introduction

The London Exchange was an important public capital market through much of the 19th and 20th centuries. The *Investors Monthly Manual* [IMM] published monthly price records and related information for many of the domestic and international securities that traded on the London Exchange over a sixty-year period from 1869 to 1929. We construct UK and ex-UK capital-weighted return indexes for corporate stocks, bonds, preferred shares, municipal bonds and sovereign debt. We match corporate securities of different types by firm to test implications of contingent claims theory for the risk and return of subordinated claims. We find a realized equity return of more than 6%, and an equity risk premium of more than 3%. We also document significant differences in mean and standard deviation that depend on the relative seniority of claims in the firm's capital structure.

2. The Investors Monthly Manual

The IMM is a statistical supplement to *The Economist*, published monthly from 1865 through 1929.¹ The purpose of the supplement was not to provide a continuous, comprehensive, and consistent historical record for posterity, but rather to be useful to market participants and observers of the day. As such, it was not an official record of securities traded on the London Exchange, but never-the-less extensive, with more than 9,000 securities and more than 1.5 million security/month observations. An on-going project at the International Center for Finance at the Yale School of Management has made the digitized security-level price and dividend data available for research.

3. Testing Capital Structure Theory

The London capital market provides a rich dataset to test basic hypotheses about the relative risk and return of structured claims on the value and cash flows of the corporation. The stocks, bonds, preferred shares and other contingent securities for each firm are listed together in the manual, making it possible to inspect the entire capital structure of a corporation without the need to match across disconnected data sources. Contingent claims theories of the firm (Black and Scholes, 1973; Merton, 1974; Bhamra et al., 2010) make sharp predictions about the relative risk and expected return of corporate securities conditional upon priority position. Equity represents the most junior claim, followed by preferred shares and corporate debt, with senior debt enjoying first priority in default states. Because junior claims

¹ Regular publication of IMM started in January 1869

absorb losses in adverse states and exhibit greater exposure to firm-value volatility, they are inherently riskier, more sensitive to macroeconomic shocks, and should earn higher expected returns. While Modigliani and Miller (1958, 1963) emphasize that leverage reallocates risk without altering total firm value, the contingent-claims framework clarifies how this reallocation generates a strict hierarchy of risk and expected returns across claims. We test this prediction using long-horizon realized returns as proxies for expected returns.

4. Stocks, Bonds, Bills and Inflation

Ibbotson and Sinquefeld (1976b) is a landmark study in the application of modern portfolio theory to the practice of investment management. It was motivated in part by the need to calculate the risk, return and covariance for the major U.S. asset classes that dominated institutional investment portfolios at the time. Their analysis was particularly valuable to professional investment managers, who had only recently adopted quantitative methods of portfolio optimization. What was lacking at the time were reliable inputs to the mean-variance model. Ibbotson and Sinquefeld (1976b) showed that, despite the turbulent performance of equities in the early 1970's the long-term perspective demonstrated that equity investors could have earned a substantial premium over bonds.

In a companion article, Ibbotson and Sinquefeld (1976a) developed a decomposition of expected returns based in part on capital structure theory and in part on the theory of factor premia. They postulated a small stock premium, an equity premium, a default premium, a horizon (term) premium, and a real (inflation-adjusted) return. They found that each of these premia was positive over the fifty-year sample, consistent with the hypothesis that investors required compensation for holding each type of risk. They further showed how to use this building block model to forecast future asset class returns via simulation methods.

We do not focus on exactly the same set of premia as Ibbotson and Sinquefeld (1976a). First, we forego the calculation of a small stock premium. While market commentators in the late 19th and early 20th centuries recognized some shares as more speculative than others, they did not typically differentiate on the basis of market capitalization; late-20th century interest in small stocks as an asset class stems from the foundational academic research on factor premiums Banz (1981). Instead, we calculate two additional premia: a preferred share premium which we call priority premium, and a municipal bond premium over long-term government bond returns. The prevalence of preferred shares in the IMM database provides an opportunity to test whether seniority in the corporate capital structure

is historically associated with lower realized returns. Similarly, the rich set of municipal bonds in the database allows us to test a different but interesting hypothesis, whether UK government debt at the time had a lower risk and return than municipal debt. Finally, we calculate an equity risk premium in two ways: relative to the return on long-term government debt as well as a proxy for a shorter-term riskless security.

5. Methodology

The London market listed and traded securities of issuers from all over the world. In addition to evaluating a global portfolio of UK listed securities, this allows us to compare the performance of UK-only portfolios to the rest of the World ex-UK. For each of these groups we construct annual capital-weighted indexes of each corporate asset class based on the securities issued by the 100 largest firms in terms of equity market capitalization at the end of each year. We then find the corporate bonds and preferred shares of these firms to the extent that they are covered in IMM. We calculate cumulative capital-weighted total returns over the following year on these common stocks, and their matched corporate bonds and preferred shares. We estimate premiums by taking the differences between these indexes.

Total returns are constructed as the sum of price returns and dividend returns. We use the December prices to calculate capital appreciation and price returns. We sum the dividends over the year to calculate income returns and we add price returns and income returns together to calculate total returns. If prices are missing for the December issue, we use the price from the latest available month. Since not all companies have bonds and preferred shares recorded by IMM, these asset class portfolios typically contain fewer than 100 securities. 

Both domestic and foreign municipal debt are represented in our sample, as is foreign sovereign debt. For each of these asset classes we calculate capital-weighted indexes. For domestic long-term debt we form portfolios of long-term government bonds comprised of consols and other long-maturity treasuries. It is difficult to find a perfect proxy for a short-term riskless security available to investors. UK treasury bills did not exist over much of the period of analysis. We instead use the  prime commercial bill rate reported in the IMM. Both inflation and production data are from the Bank of England website.

6. Summary Statistics

Table 1 reports summary statistics for three sets of data: Domestic UK firms only, the World Ex-UK, and the World portfolio. The Table reports the results over the full 60-year time period geometric annual return [GM], arithmetic annual return [AR], standard deviation [SD] and Sharpe ratio [SR], where the commercial paper rate is used as a proxy for the riskless rate.

The annual arithmetic average return for the UK Common Stock index over the 60-year period is 6.48%. This is significantly lower than the large-cap US index return over the post-1925 period documented by Ibbotson and Sinquefeld (1976b) and the post-1900 period studied by Dimson et al. (2023) for UK equities. However, the volatility of the returns from the pre-1930 equity data is lower as well: 7.72% compared to equity index volatility near 20% for most 20th century markets. This risk difference may be due to the relative importance of income return vs. capital appreciation. Much of the return in the IMM period was from dividends, and although variable, they were smoother than price changes. As a result, the Sharpe ratio for the IMM sample, measured conservatively by using the commercial paper rate as the riskless rate, is .41.

Notice the near monotonic decline in both the risk and return of the basic series in the UK market. The Preferred Stock return is lower than the Common Stock return, the Corporate Bond return is lower than the Preferred Stock return, the Municipal Bond return is lower than the Corporate Bond return and the Government Bond return is lower than the Municipal Bond return. The only surprise is the higher Commercial Paper rate compared to the Government Bond return. Odlyzko (2016) argues that the high price of UK consols in the 19th century was due to their role as a benchmark safe asset in the global capital market.

The monotonic relationship among UK corporate securities does not hold for other sets of portfolios we consider. For example, Panel B shows the summary stats for the ex-UK portfolios. The Common Stock return and the Sharpe ratio for the World ex UK are both much lower. In contrast, the returns to Ex-UK Preferred Stock, Municipal Bonds and Government Bonds are all higher than their UK counterparts. Overall, the range of average returns across all the ex-UK asset classes appears more compressed.

Summary statistics differ somewhat for the World portfolio, which is constructed by applying the top 100 rule to the equities from the entire sample of companies listed in the IMM. The Common Stock row for the World category represents the annual average return to a capital-weighted portfolio of the largest stocks reported in the IMM each year, and as before the Preferred Stock and Corporate Bonds are those issued by these same top 100 firms. Ex-UK Government Bonds represent the returns to a cap-

weighted portfolio of sovereign debt of more than 20 countries.

Figure 1 shows the market share by asset class over the sixty-year period, and the total capitalization of the market. The market growth of 4 times in 60 years with long periods in which the capitalization growth was under 3%. This is consistent with consumption of a substantial component of total return each period. The graph also shows that the fraction of Common Stock remained fairly stable, growing only slightly in the 1920's.

Figure 2 graphs the sixty-year cumulative return for corporate asset classes and Government Bond returns. The risk-return tradeoff for Common Stocks vs. senior securities is clear, as is the sensitivity of equities to shocks such as the First World War, the Recession of 1920-21 and the crash of 1929.

Figure 4 plots the correlation among the asset classes, color-keyed as a heat map. Notice that UK equities are highly (but not perfectly) correlated to non-UK equities. moderately correlated to fixed income securities, and negatively correlated to Commercial Paper and Inflation. Among fixed income securities, Preferred Stock and Corporate Bonds are highly correlated, as predicted by theory.

7. Risk Premia

As described above, premia are calculated as the difference between the annual return series' of two value-weighted portfolios (one for each asset type). For corporate securities, conditioning on the set of top firms each year largely controls for cross-sectional firm differences in underlying risk and provides a sharp test for the significance of corporate risk premia.

For the UK, the equity risk premium is computed in two ways: first with respect to the returns on Commercial Paper, the second with respect to returns on a portfolio of long-term UK Government Bonds, mostly consols. The latter may be appropriate given the similar duration of cash flows from equity and long-term bonds, as well as the fact that the British consol was a reference security – during the period of our data it was widely regarded as a safe investment. Both premia are around 3.5%, with t -statistics over 3. Similarly, the equity premium over all other corporate securities is statistically significant.

Consistent with theory, the priority premium of Preferred Stock returns over Corporate Bond returns is also statistically significant at about 60 bps. The difference in Corporate Bond returns and Long-term Government Bond returns measures the realized default premium. It averages about 90 bps and is statistically significant. The only premium with an unexpected sign is the horizon premium, which compensates investors for holding more volatile long-term debt.

Figure 3 plots the annual equity risk premium with respect to Government Bonds. Blue dots are the annual realized premium, the dashed green line is the ten-year backwards-looking rolling equity risk premium and the orange bars are the annual UK GDP growth. In most years the equity risk premium is positive, particularly in the years before the First World War. Negative values are associated with recessions or near zero GDP growth, consistent with equity market exposure to macroeconomic risk. The rolling 10-year equity premium shows that Common Stocks beat Government Bonds over every decade-long period in the sample. The smallest 10-year spread was the final one ending in 1929. It is noteworthy that 1929 was the last year *The Economist* published the IMM. The sample ended as the Great Depression began.

8. Conclusion

The *Investors Monthly Manual* is a record of an important and liquid capital market during its historical peak. We use it to test whether the premia for a hierarchy of the seniority of corporate claims is consistent with theory i.e. subordinate claims should have a higher risk, and thus a higher expected return. We use long-term realized returns over 60 years to test the higher risk hypothesis, and the long-term mean return over the period as a proxy for expected returns. We also test the statistical significance of these premia, as well as that of the equity risk premium with respect to proxies for the riskless rate; long-term government bonds which have a similarly long duration of future cash flows to corporate cash flows, and a commercial paper rate which is typically of 30-60 days duration.

The empirical evidence provided by UK firms strongly supports theoretical predictions about subordinated vs. senior claims. Junior claims are more volatile and more sensitive to macroeconomic shocks. The evidence from the ex-UK firms is less strong but generally correct in sign. One potential concern about these results is that we calculate the premia using data recorded over the heyday of the London capital market. It stops the year after the Crash of 1929. This may bias our estimate of the equity risk premium. However, for an investor in 1929, looking back over nearly a lifetime of performance of financial securities, the relative risk and return of corporate securities with a hierarchy of claims on cash flows and firm value accords well with what later financial theory would predict.

2. Figures

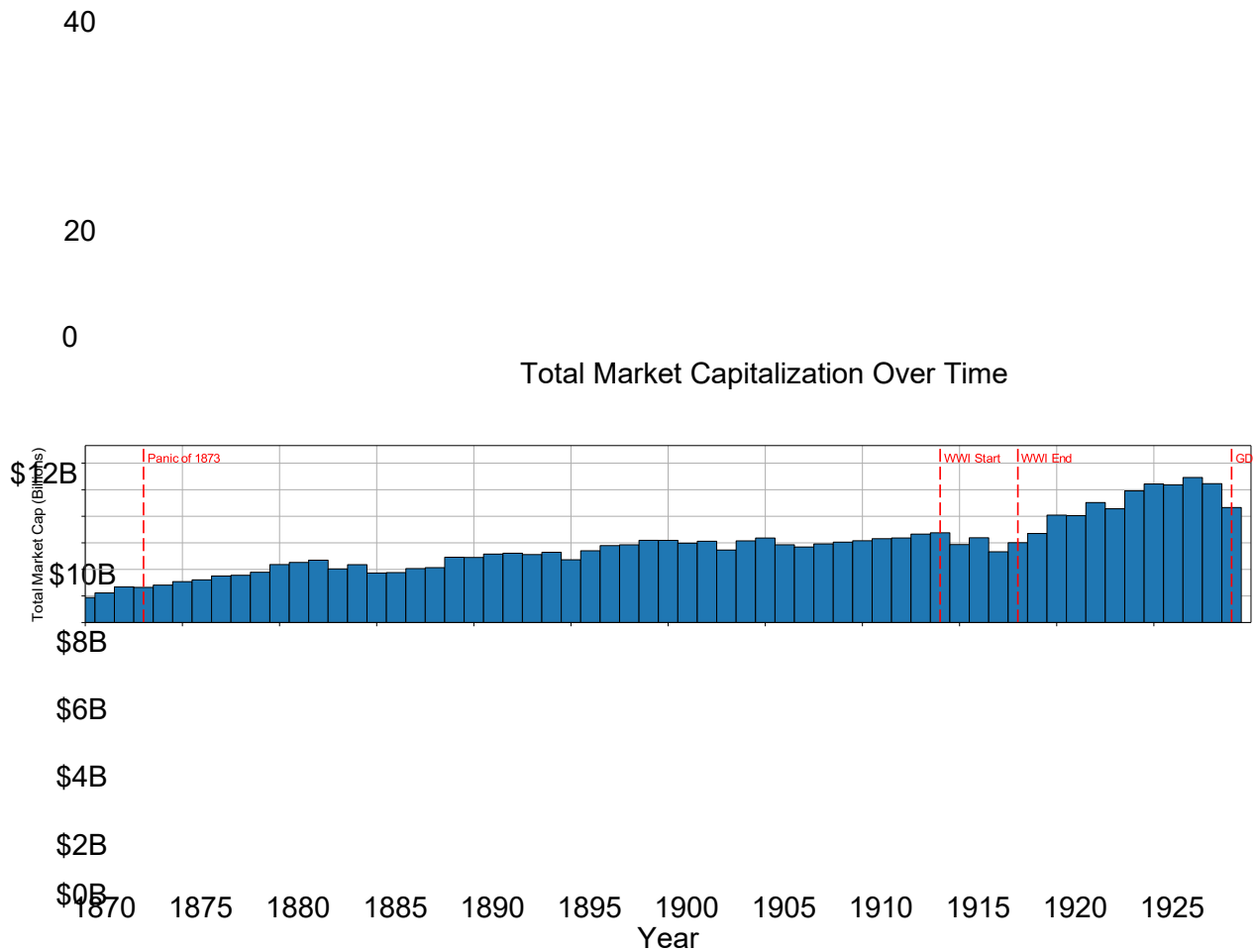
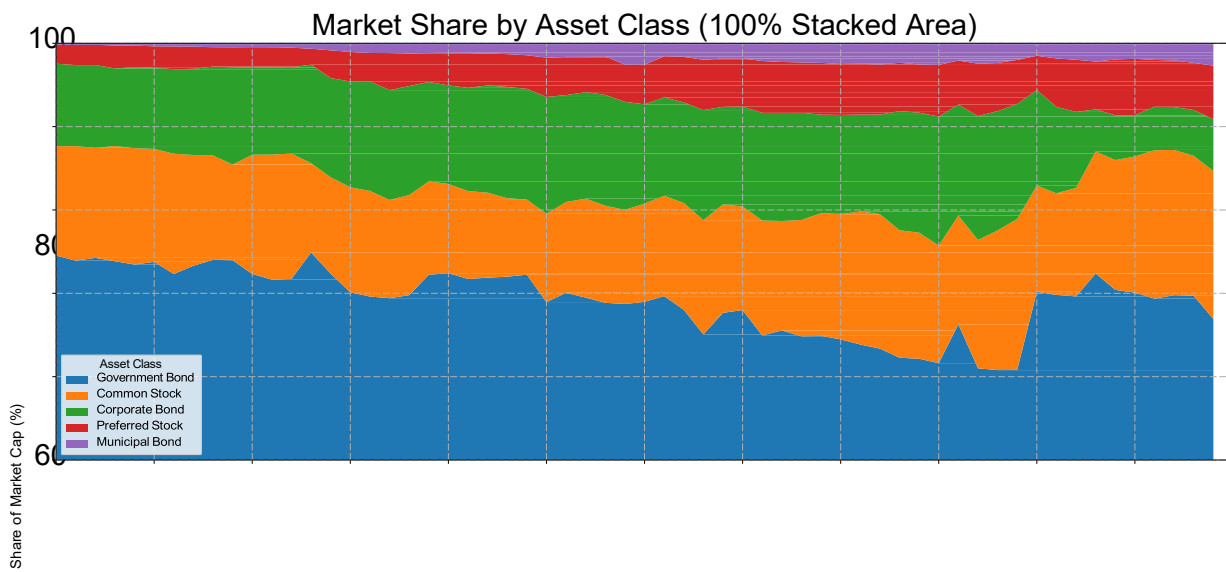


Figure 1: Market Share by Asset Class

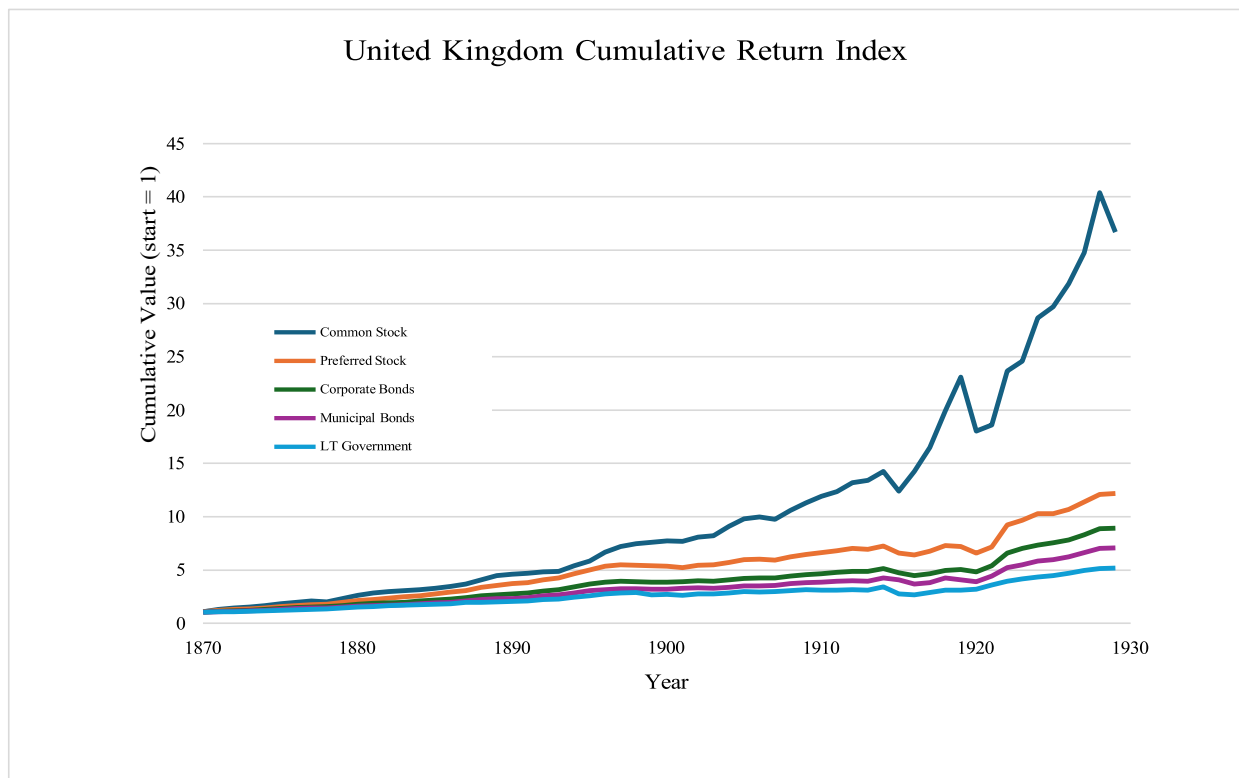


Figure 2: Cumulative total returns by UK asset class, capital weighted

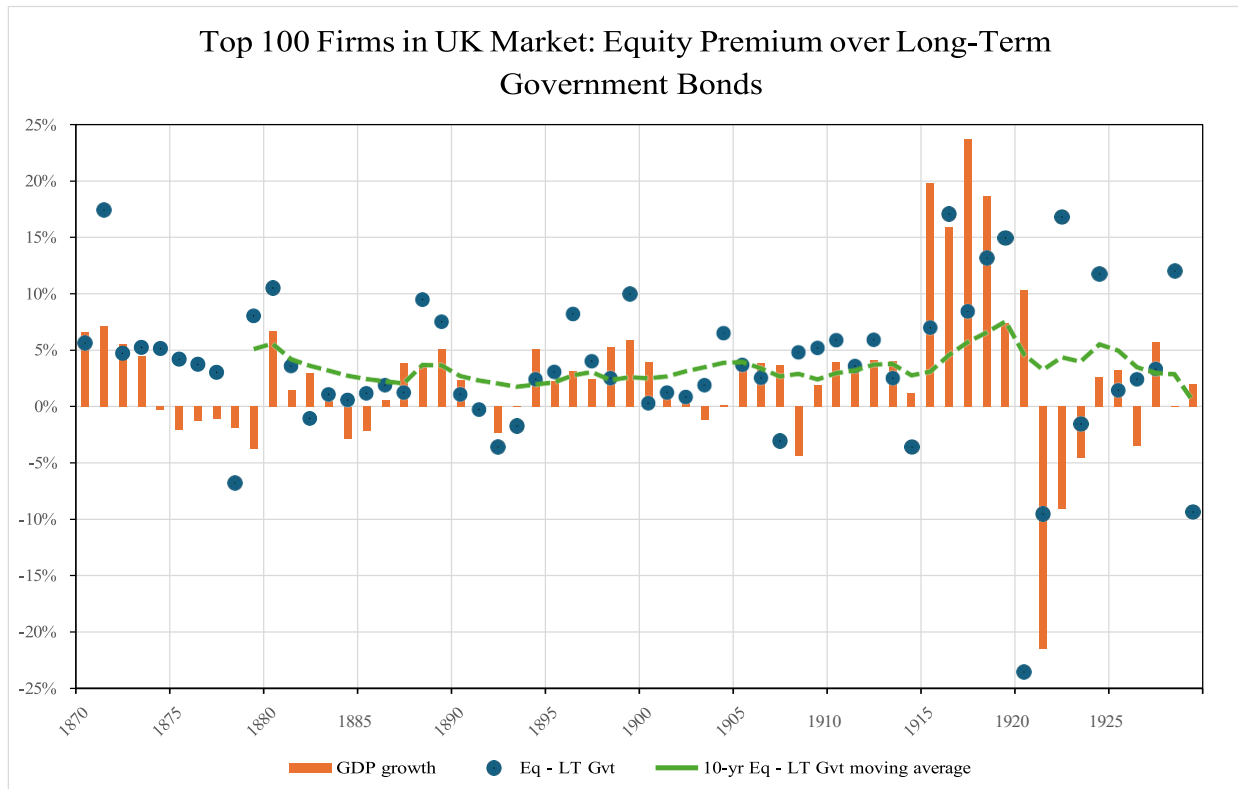


Figure 3: UK Equity risk Premium in UK Market measured as the difference of the capital-weighted index of Top 100 UK firms by size and the return to an index of Long-Term UK Government Bonds. The backwards-looking 10-year moving average in green and the percentage change in UK GDP in orange.

3. Tables

Asset Class	GM	AM	SD	SR	t-stat
Panel A: United Kingdom					
Common Stock	6.19	6.48	7.72	0.41	6.50
Preferred Stock	4.26	4.38	5.22	0.22	6.50
Corporate Bonds	3.71	3.80	4.24	0.14	6.94
Municipal Bonds	3.32	3.40	4.15	0.06	6.35
Government Bonds	2.77	2.87	4.38	-0.05	5.08
Commercial Paper	3.11	3.11	1.07		22.52
Inflation	1.00	1.18	6.31		1.45
Panel B: World Excluding UK					
Common Stock	4.87	5.32	9.56	0.22	4.31
Preferred Stock	5.10	5.29	6.44	0.31	6.36
Corporate Bonds	5.06	5.16	4.48	0.40	8.92
Municipal Bonds	5.03	5.12	4.19	0.43	9.47
Government Bonds	4.50	4.60	4.48	0.30	7.95
Panel C: World					
Common Stock	6.02	6.33	7.97	0.23	6.15
Preferred Stock	4.55	4.68	5.30	0.15	6.84
Corporate Bonds	4.01	4.08	4.02	0.13	7.86
Municipal Bonds	3.85	3.92	3.77	0.19	8.05
Government Bonds	3.86	3.93	3.86	-0.16	7.89

Table 1: Asset returns by category for the UK, World Ex-UK, and World. All returns in annualized percent. GM

= geometric mean, AM = arithmetic mean, SD = standard deviation, SR = Sharpe ratio, t-stat = t-statistics for the AM. Commercial Bill and inflation series only available for the UK.

	UK Eq	UK Prf	UK Corp	UK Munis	UK LT Gov	WxUK Eq	WxUK Prf	WxUK Corp	WxUK Munis	WxUK LT Gov	Commercial Paper
UK Prf	0.73	1.00									
UK Corp	0.63	0.94	1.00								
UK Munis	0.51	0.85	0.93	1.00							
UK LT Gov	0.50	0.68	0.74	0.74	1.00						
WxUK Eq	0.80	0.59	0.51	0.44	0.37	1.00					
WxUK Prf	0.70	0.81	0.75	0.64	0.55	0.75	1.00				
WxUK Corp	0.65	0.86	0.85	0.76	0.68	0.65	0.84	1.00			
WxUK Munis	0.61	0.65	0.63	0.55	0.62	0.66	0.69	0.81	1.00		
WxUK LT Gov	0.53	0.72	0.74	0.74	0.67	0.53	0.68	0.78	0.74	1.00	
Commercial Paper	-0.32	-0.44	-0.41	-0.36	-0.21	-0.37	-0.41	-0.45	-0.35	-0.33	1.00
Inflation	-0.04	-0.47	-0.53	-0.46	-0.27	-0.13	-0.42	-0.51	-0.36	-0.43	0.42

Figure 4: Correlation matrix of capital weighted indexes by asset class

	GM	AM	SD	t-stat
Panel A: United Kingdom				
Eq - Commercial Paper	3.03	3.36	8.12	3.21
Eq - LT Gvt	3.38	3.60	6.70	4.16
Eq - Corp	2.51	2.68	6.02	3.45
Eq - Prf	1.96	2.10	5.30	3.07
Prf - Corp	0.57	0.58	1.86	2.41
Municipal Bond - LT Gov	0.48	0.53	3.09	1.33
LT Gvt - Commercial Paper	-0.36	-0.24	4.72	-0.39
Corp - LT Gvt	0.88	0.92	3.14	2.27
Real Commercial Paper Rate	1.75	1.93	5.94	2.52
Panel B: World Excluding United Kingdom				
Eq - Commercial Paper	1.69	2.20	10.01	1.70
Eq - LT Gvt	0.39	0.72	8.14	0.69
Eq - Corp	-0.12	0.16	7.47	0.17
Eq - Prf	-0.17	0.03	6.35	0.04
Prf - Corp	0.07	0.13	3.62	0.28
Municipal Bond - LT Gov	0.47	0.52	3.16	1.28
LT Gvt - Commercial Paper	1.36	1.48	4.93	2.33
Corp - LT Gvt	0.52	0.56	2.96	1.47
Panel C: World				
Eq - Commercial Paper	2.85	3.22	8.43	2.96
Eq - LT Gvt	2.17	2.39	6.64	2.79
Eq - Corp	2.05	2.25	6.25	2.79
Eq - Prf	1.50	1.65	5.51	2.32
Prf - Corp	0.57	0.59	2.20	2.08
Municipal Bond - LT Gov	-0.03	-0.02	1.92	-0.08
LT Gvt - Commercial Paper	0.73	0.82	4.30	1.48
Corp - LT Gvt	0.12	0.15	2.40	0.48

Table 2: Premium estimates by category for UK, World ex-UK, and World (Full Sample only). GM = geometric mean, AM = arithmetic mean, SD = standard deviation, t-stat = t-statistics for the AM. All premium estimates are stated in annualized percent.

References

- Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of Financial Economics*, 9(1):3–18.
- Bhamra, H. S., Kuehn, L.-A., and Strebulaev, I. A. (2010). The aggregate dynamics of capital structure and macroeconomic risk. *Review of Financial Studies*, 23(12):4187–4241.
- Black, F. and Scholes, M. (1973). The pricing of options and corporate liabilities. *Journal of Political Economy*, 81(3):637–654.
- Dimson, E., Marsh, P., and Staunton, M. (2023). Credit suisse global investment returns yearbook 2013 summary edition. Credit Suisse Research Institute.
- Ibbotson, R. G. and Sinquefeld, R. A. (1976a). Stocks, bonds, bills, and inflation: Simulations of the future (1976–2000). *Journal of Business*, 49(3):313–338.
- Ibbotson, R. G. and Sinquefeld, R. A. (1976b). Stocks, bonds, bills, and inflation: Year-by-year historical returns (1926–1974). *Journal of Business*, 49(1):11–47.
- Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *Journal of Finance*, 29(2):449–470.
- Modigliani, F. and Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 48(3):261–297.
- Modigliani, F. and Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53(3):433–443.
- Odlyzko, A. (2016). Economically irrational pricing of nineteenth-century british government bonds. *Financial History Review*, 23(3):277–302.