Explaining Victorian Entrepreneurship: A Cultural Problem? A Market Problem? No Problem?

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1. Introduction

      The quality of British entrepreneurship in the half century before 1914 excites controversy. Contemporaries were of mixed minds about the matter. Alfred Marshall (1920: 92-106), for example, was uneasy about the competitive inroads entrepreneurs from other advanced industrial countries had made into British markets, yet did not pinpoint an obvious cause of the problem, nor propose an immediate response. With increasing frequency, more popular, but less cautious and less reflective, expressions of concern erupted in books and national newspapers, with titles such as *Made in Germany* (1896), *American Invaders* (1902), and, in *The Times* (1902), "Crisis in British Industry". In contrast, many contemporaries took solace from Britain's undeniable wealth – in per capita terms the richest country in Europe by a comfortable margin throughout the period

international norms and arguing that British entrepreneurs of the period responded rationally to the resource and technological environment in which they operated.

And so the arguments continue. There is more evidence on all sides - examples and counter-examples abound - but consensus seems as remote as ever. While this debate has obvious implications for the analysis of Britain's own long-term economic performance, in particular the extent to which the problems of the twentieth century were foreshadowed before 1914, the ramifications are considerably broader. Perhaps most importantly, the decades from the middle of the nineteenth century to the outbreak of the First World War saw the first emergence of science-based industry, an important new development for long-term economic growth, since scientific understanding is not obviously subject to diminishing returns (or at least not to the same degree as other kinds of capital accumulation). The current role of the science and engineering departments of universities in the creation of rapidly growing, technologically advanced companies amply attests to the significance of this development. While it is now universally acknowledged that scientific understanding is an essential driver of technological advance, itself the basis of economic growth, that awareness was, although certainly present, less much less complete then than it has become since. Hence great importance attaches to how the first science-based industries (most notably chemicals and electrical engineering) became established and evolved in their early stages, when their significance was less obvious. Such knowledge may enhance the effective fostering of future industries capable of playing a similarly disproportionate role in initiating and sustaining growth.

The effective commitment of resources to such industries in their embryonic stages is clearly a key issue. In particular, was the nature of early science-based innovation one whereby initial success solved all financing problems, rendering access to external finance a relatively unimportant detail in the story? Or, alternatively, was access to external finance of critical importance, both in determining the fortunes of first movers and in determining the subsequent contestability of the markets in which they operated? Because Britain had then by far the world's most advanced capital markets, of unparalleled depth and breadth, involved closely in a range of activities that spanned the globe, Britain's experience with early science-based industries promises to be particularly revealing.

Nowhere else did investors have the same diversity of choice in arranging their portfolios, nor the same depth of financial intermediaries to help them do it. The same arguments apply to more traditional forms of technological advance. After all, important technologies like motor transport arose and flourished during the period, while owing much less to scientific advances than to the traditional practical engineering skills that had underpinned the classical Industrial Revolution. How did these industries establish themselves? What role did finance play? And all these issues played themselves out in an international economic environment of unparalleled flexibility. Together trade, capital, and people then flowed across national frontiers with a freedom unseen before or since, creating both literally and figuratively the golden age of "globalization" (Williamson, 1996). In terms of economic environment, the beginning of the twenty-first century more closely resembles the end of the nineteenth than most of the years in between.

This paper seeks to bring fresh evidence to the debate over Victorian entrepreneurship, and to the wider issues that debate touches, by taking advantage of the information generated within Britain's sophisticated financial markets of the period. In particular, it exploits the equity valuations generated by the London Stock Exchange to observe how British entrepreneurship was priced. To what extent did Britain get the entrepreneurs its sophisticated financial markets were willing and able to pay for? The

S&P 500 lines, although that task is not attempted here). The data here also record the scale and timing of new issues, so that recourse to external finance can be observed. Secondly, although Edelstein included all classes of traded securities (ordinary shares, preference shares, and debentures) in his studies, he did not link them to give a company-wide overview. The data here do that, so that total market capitalization can be

The second section of the paper briefly describes this new data. The third sets out the Dividend Discount Model (DDM) used to extract estimates of risk premiums from the data. The fourth section provides estimates of benchmark Victorian risk premiums, first for the large capitalization corporate (large-cap) sector as a whole, then for railways, the largest single sector of the Victorian corporate economy. The fifth section presents estimates of risk premiums for two successfully expanding high-risk sectors: science-based companies and mining ventures. The science-based sector was much smaller than the mining one and its experience is examined by detailed consideration of Brunner, Mond, by far the most financially successful company in this group. A sole mining venture (Tharsis Copper and Sulphur) first entered the benchmark rankings of Britain's largest companies in 1873. Subsequently, however, the sector grew with extraordinary rapidity, to reach a peak of importance of 16.7% of the ordinary share market capitalization of Britain's 125 largest companies in 1903. Both Brunner, Mond and the mining sector exhibited risk premiums that were far above the average for the large-cap corporate sector as a whole. Consequently, in terms of the logic of the DDM, both their current dividend and expected dividend growth were valued at a discount to the market as a whole, resulting in a relatively low share price given their capacity for above-average dividend yield and growth rate. Depending upon exactly how the rapid entry and exit of mining ventures from the ranks of Britain's largest companies are treated, it is possible to argue that mining ventures actually had lower risk premiums than science-based companies. That is, entrepreneurial efforts in mining were possibly more generously and supportively priced than in chemistry. A final section concludes with a few observations on the factors operating within capital markets that might explain this cross-sectional pattern of risk premiums.

2. The Data

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to the data he used the same uncertainty investors faced, but which would also be different from the selection procedure used for all other sectors. In the end he opted for a different treatment of the international mining sector in which he drew on other sources to arrive at an average return of 5%, a reasonable figure in itself, but one which concealed the huge variance in experience.

The data are as follows: (1) the market value of the ordinary shares of Britain's 125 largest companies at benchmark dates at five-year intervals, beginning in 1868 and ending in 1913 (as measured by ordinary share market capitalizations); (2) the dividends paid by these large companies; (3) the total market capitalizations of these companies (i.e. the market value of all traded securities, fixed interest as well as equities). [2] Tables 1 through 4 illustrate the data for the close of the last trading day of June for four years – 1868, 1883, 1898, and 1913. Column (2) shows for each company the market value of ordinary shares outstanding, the basis of the rankings. The total was arrived at in the obvious

securities traded only on one or another of Britain's provincial exchanges are not considered until they were quoted (and traded) in London as well. While this procedure is not suitable for all investigations, it is unlikely to omit the large companies that are the focus here. [3]

While the *IMM* provided dividend and capital structure data as well as prices, *The Stock Exchange Official Yearbook* was the preferred source for such non-price information. As its name implies, the *Yearbook* appeared annually and was often more accurate (and timely) in its reporting of dividends and new issues than was the *IMM*. While the

in the 1898 list but qualified by 1913. Their 1913 rank is indicated. "Surviving" companies, those in both the 1898 and 1913 lists, follow in the rankings. For these companies, the first part of the second column in the table displays the company's 1898 ordinary share capitalization and second part the percentage change in capitalization that occurred between 1898 and 1913. Thus, for example, the largest ranking company in 1898, the London and North-Western Railway (LNWR), was still the largest ranked company in 1913, despite suffering a fall of 31.2% in the value of its ordinary shares over the interval. Drop-outs, whose numbers of course must equal those of new entrants, are indicated by a ranking in 1898 but a "." in1913. Related footnotes give some idea of the company's fate. The minus 100% in the ordinary capitalization column only signifies disappearance from the rankings, not that the company's ordinary shares became worthless. Thus, for example, the first "drop-out" noted in Table 6, London & County Banking Company (#21 in 1898), merged with the second "drop-out", London & Westminster Bank (#25 in 1898), to form London County & Westminster Bank (#18 in 1913, and the third "new entrant" in Table 6). As the footnotes indicate, the most common reason for firms to drop out of the rankings was that their market capitalizations simply failed to grow fast enough, causing them to be overtaken and replaced by newcomers. Negative capitalization growth between 1898 and 1913 certainly did occur in some cases, but was somewhat less common than inadequate positive growth. As we have seen with the two London banks, mergers also account for a significant number of drop-outs. We have treated mergers between near-equals as creating a new firm (two drop-outs and one new entrant). In cases where one firm was clearly larger than another (especially if the larger firm kept its original name), the dominant firm was treated as a "survivor" while only the smaller firm "disappeared" from the rankings. London City & Midland Bank (#34 in 1898, #17 in 1913), which absorbed North & South Wales Bank (#106 in 1898), is an example of a merger that produced no newcomer and only one drop-out.

The next two columns in the table reveal, for example, that the LNWR had no uncalled amounts outstanding on its ordinary shares: the column "total paid-up" equals the

column "total nominal". Note however that both these amounts increased equally over the internal, indicating that at some stage during the 15 years the LNWR sold additional shares for no less than par 5.09%. On the next page, the number of shares outstanding between end-June 1898 and end-June 1913, is shown to have increased by 5.09% as well. London City & Midland Bank illustrates another pattern, in this case quite common among banks. Only just over 20% of Midland's nominal capital was paid up (compare the total paid-up column with the total nominal one). The unpaid difference was a contingent liability borne by registered shareholders. In the event of the bank suffering a catastrophe, shareholders were liable to make good any losses (but only up to the nominal total – by 1898 no large banks had unlimited liability). Midland issued new shares, but maintained the same uncalled liability on the newly issued shares as existed on the ones outstanding in 1898. A more complicated development is illustrated by Brunner, Mond (#62 in 1898). There the paid-up amounts increased at a faster rate than the nominal, indicating that

26.58%, reflecting the impact of the rise in long-term interest rates over the interval. Even so, the market value of LNWR's non-equity securities in 1913 was still nearly a third greater than the nominal value, indicating substantial capital gains on these instruments, since the issue price of non-equity issues for established companies of this size was usually very close to the nominal price stated on the instrument. Once issued, of course, the market and nominal prices could vary.

The benchmark tables identify Britain's largest companies at five-year intervals. Once a company enters the rankings, however, we continue to track its fortunes, back to its birth or to 1867, whichever is the later, and forward to its extinction (by merger or liquidation) or to 1913, whichever is the earlier. [5] The basic data (market capitalization by ordinary shares, total cumulated dividends, and the value at time issue of shares outstanding) are displayed in Figures 1a and 2a for two illustrative companies: Brunner, Mond, perhaps the period's most successful British science-based start-up, and LWNR, one of Britain's largest railways. The same data is displayed in a different format in Figures 1b and 2b. In these figures, the data are in ratio form, with at any time "t" the numerator (top line) showing the market capitalization of the ordinary shares at that time, plus the cumulated value of dividends paid from the date of the company's creation (or from 1867, whichever occurs later) up to time "t", both discounted at 6% from the same fixed point, 1867. The denominator shows the cumulated value of shares issued and outstanding, valued at the issue price, up to time "t" (including shares issued to vendors), each issue discounted also at 6% from 1867. (See appendix for further explanation).

The lower line in Figs.2a and b plots the numerator with only the (discounted) value of cumulated dividends, with the same denominator as before. [6] This ratio format

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[5]   We are still tracking down some companies that ceased to be quoted in the *IMM* but did not obviously disappear through liquidation or merger. When these are accounted for, there may be more liquidations than the footnotes currently indicate.

[6]   The lower (dividend) line also has the virtue that it reveals immediately, by downward movements, any increase in capital (new issues). Once paid, a dividend in this calculation procedure is no longer subject to discounting. If a company simply stopped paying dividends, and issued no further shares, the dividend line would be horizontal from the time of the last dividend, whereas the total return line will fall whenever the total return in a year (capital gain plus dividend) is less than 6%.

allows one to see at a glance whether (and when) the company's internal rate of return beat a 6% "hurdle rate" on invested capital – the ratio is unity at 6% - as well as the share of total return provided by dividends alone. Fig.1b shows that Brunner, Mond very comfortably beat the 6% hurdle from about 1890 onwards (indeed dividends alone achieved that hurdle by about 1892). Fig.2b shows the characteristic pattern of a company whose best days are believed by market participants to be past, as denoted by the narrowing gap between the total valuation ratio (market capitalization plus cumulated dividends) and the dividend ratio alone. Companies like Brunner, Mond, believed in the early 1890s to have good growth prospects ahead, will show a widening gap between the two ratios, rather than the narrowing gap shown by the LNWR. The data collection procedure used here, which has resulted in a database of nearly 400 companies, does not, however, necessarily capture all of the top 125 companies that existed at any point in the period 1867-1913. Companies of the requisite size that both entered the top 125 and left between benchmark years would escape detection. We don't know how many companies might have met these conditions, but we have no reason to believe there were many. [7]

3. Measuring Risk Premiums: Some Preliminaries

To establish the risk premium borne by various securities, we need to make some assumptions about the relationships that might plausibly exist among the data. The most convenient means for this purpose is a simplified, steady-state version of the widely used Dividend Discount Model (DDM) [8]. The model is set out in Eq. (1):

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[7] For example, some companies, such as United Alkali, which were known to be large at the time of creation but which subsequently suffered severe capital losses, removing them from the rankings, are in fact captured in at least one benchmark year.

[8] The classical full-length exposition of DDMs is found in M.J. Gordon (1962). Gordon had earlier developed the ideas in a series of influential articles. A good textbook presentation may be found in Sharpe, Alexander, and Bailey (1995), Ch. 18. As used here, "dividends" should be understood to include all payments to shareholders – including the proceeds of share buybacks and cash paid for shares acquired in a merger – and not just

$$\text{Eq.}(1) \qquad P_{0i}^* = \sum_{t=0}^{\infty} \frac{E_0\left(D_{ti}^*\right)}{\left(1 + k_{0i}\right)^t}$$

where $P_{0i}^* =$ rational price of security i at time t = 0.

$E_0\left(D_t^*\right) =$ the expectation at time t= 0 of dividends (or interest)to

be paid on security i at time t.

$k_{0i} =$ a discount rate applied to security i at time t = 0, $k_{0i} > 0$.

The model asserts that the rational value of a security i at time t = 0 (the present) is equal to the discounted value (at the 'required rate', k_{0i}) of the payments it is expected at time t = 0 to make in the infinite future. The required discount rate is likely to vary across securities, reflecting varying perceptions of risk, among other things. It is important to note here that "dividends" include not only regular cash dividends, but any kind of distribution to shareholders that has a positive cash value. "Dividends" therefore include, among other things, the money firms might spend on share buy-backs and the difference (if any) between a share's market price and the amount called up on a deeply discounted rights issue. Any reasonable discount rate will cause dividends more than twenty-five or so years in the future to be negligibly small, so in practice the model is concerned with dividends expected in the relatively near term.

The "required rate of return" can in turn be broken into two components: (1) a risk-free (or nearest approximation thereto) rate of return, which might best be interpreted as the pure cost of "waiting" or minimal opportunity cost; and (2) a risk premium over the minimal opportunity cost, to reflect the possibility that expectations of higher pay-outs may not be met. As it stands, however, without the imposition of some sort of structure on the infinite stream of future dividends, Eq.(1) is not operational. The most straightforward assumption that might be used to impose the necessary structure is that of steady dividend growth, as shown in Eq. (2):

Eq. (2) $$E_0(D_{ti}^*) = D_{0i}^*(1 + g_{0i})^t, \quad t = 0, \quad , \infty .....$$

where $E_0(D_{ti}^*) = $ dividend expected at time t $=$ 0 to be paid at time t in future.

$D_{0i}^* \quad = \quad$ dividend paid currently (observed).

$g_{0i} \quad = \quad$ assumed growth of dividends through time, expectation formed at time t $=$ 0.

Eq. (2) thus provides the means to link the current (observed) dividend with future dividends. Although it is well known that whenever possible companies smooth dividends over time in relation to earnings, either by holding dividends steady, even if they are not covered by current earnings, or, alternatively, by boosting internal reserves when earnings temporarily exceed sustainable levels, the actual path of dividends is unlikely to be as predictable as Eq. (2) implies (Lintner: 1956). The natural way to accommodate this is to allow the required rate of return, k_{0i}, to vary with the uncertainty associated with a given company's dividend growth rate. Substituting the expression for $E_0(D_{ti}^*)$ given in Eq. (2), yields Eq. (3).

Eq. (3) $$P_{0i}^* = D_{0i}^* \sum_{t=0}^{\infty} \frac{(1 + g_{0i})^t}{(1 + k_{0i})^t}$$

where the ith subscript relates to the ith company.

Since $k_{0i} > g_{0i}$, a little algebra and the exploitation of some of the properties of convergent infinite series yields Eq. (3.1):

Eq. (3.1)
$$P_{0i}^* = \frac{D_{0i}^*(1 + g_{oi})}{(k_{0i} - g_{0i})}$$

Rearranging terms yields Eq. (3.2):

Eq. (3.2)
$$\frac{D_{0i}^*(1 + g_{0i})}{P_{0i}^*} = k_{0i} - g_{0i} \Rightarrow \frac{D_{0i}^*(1 + g_{0i})}{P_{0i}^*} + g_{0i} = k_{0i}$$

Let
$$D_{1i}^* = D_{0i}^*(1 + g_{0i})$$

where D_{1i}^* is the expected dividend of the next period, divided by the current share price. Next, split k_{0i} into the minimal opportunity cost, approximated by the Consol (or other benchmark interest) rate at time 0 (the point of observation), and an asset specific risk premium, $(rp)_{0i}$ assumed to hold at time t = 0, as shown in Eqs. (4a) and (4b):

Eq. (4a)
$$\frac{D_{1i}^*}{P_{0i}^*} + g_{0i} = CONSOL_0 + (rp)_{0i}$$

Eq. (4b)
$$\frac{D_{1i}^*}{P_{0i}^*} + g_{0i} - CONSOL_0 = (rp)_{0i}$$

where g_{0i} = expected growth of dividend of company i at time 0.

$(rp)_{0i}$ = risk premium for security i at time 0.

Eq.(4b), with its attendant assumptions, enables us to use the available data to estimate risk premiums. Given that dividend growth very rarely averaged more than 10% per annum for any length of time, and was generally much less, at 4% (or less), $D^*_{1i}\big/P^*_{1i}$ was correspondingly close to the current dividend yield. If for convenience the current dividend yield is used, rather than the adjusted one stipulated in Eq.(4), which relates the next expected dividend (not the last one actually paid) to the current price, the implied risk premium is lowered, since the Consol yield is given at any date and the current yield is lower than the adjusted yield one year forward (assuming positive dividend growth)[9]. Plausible estimates of expected dividend growth can be obtained in the first instance in two ways. One is to assume that market participants exactly extrapolated dividends paid over some period in the past (say five, ten or fifteen years) into the future over a comparable horizon (again five, ten or fifteen years). The other is to assume that over some horizon, market participants "forecast" actual growth with perfect accuracy. Consol yields at monthly intervals (to maturity or expected call) are taken from Klovland (1994). An alternative benchmark rate, derived from prime three month bills of exchange, is also used.

Since Consol (or other benchmark) yields are taken as the "universal" minimum opportunity cost of holding any security, note that for a given level of the risk premium there is an exact one-for-one trade-off between current dividend yield and the expected growth of dividends: a 1% increase (or decrease) in current yield is secured at the cost of a 1% decline (or increase) in expected dividend growth (holding the risk premium constant). By the same token, a reduction in the risk premium associated with any given company is translated into an equal reduction of some combination of a decrease in dividend yield (as wealth-holders bid up the share price for any given expected dividend

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[9] Positive (or at least non-negative) dividend growth is a reasonable assumption in this context. British companies in the Victorian period that repeatedly or permanently cut their dividends quickly lost their market value and, with few exceptions, are not considered here. In any event, a cut of 100% in dividends expected to be permanent would produce a rational share value of zero.

growth) and in expected dividend growth (for any given dividend yield, wealth-holders accepted lower dividend growth).

However, it is likely that arbitrage will cause expectations of future rapid growth of dividends to manifest themselves in low current (or near-term) dividend yields. In the limit, arbitrage will push current dividend yields nearly (or entirely) to zero. The converse is also true: high current dividend yields imply scepticism that the current dividend will be maintained, let alone be increased soon. This is a useful insight because zero-dividend companies should be those whose future dividend growth is expected to be particularly rapid. But it is also likely to be true that zero-dividend companies will possess a relatively low risk premium, that arbitrage will not only push the dividend yield for rapidly growing companies down, but will also result in a reduction in the risk premium. This follows because as the dividend yield falls, the payoff from holding the security moves farther into the future, an intrinsically risky proposition. Consequently, dividend yields and expected dividend growth rates are unlikely to change one-for-one. A one percentage point fall in current (or near-term) dividend yield is therefore likely to reflect an increase in expected dividend growth of less than one percent, implying a decrease in the risk premium. Eq.(4) also confirms intuition: a falling risk premium generally implies a rising share price.

The data in Tables 7 and 8, combined with Eq. (4b), allow an immediate inference from the DDM: the average British risk premium has fallen sharply over the past century. Dividends generally, and dividend growth in particular, are now valued significantly more highly than they were in the Victorian period. This can be seen most easily by re-arranging Eq.(4a) so that the observable variables are both on the left hand side while both unobserved variables are on the right, and replacing CONSOL with the more general notation BENCHMARK.BOND. Also the subscripts for prices and dividends are amended (the i subscripts are deleted) to denote broad market averages rather than individual securities. The result is Eq.(4c):

Eq.(4c) $$\frac{D_1^*}{P_0^*} - (BENCHMARK.BOND)_0 = (rp)_0 - g_0$$

If the near-term dividend yield is greater than the benchmark interest rate, then the risk premium must be greater than the expected dividend growth rate, whatever that rate may be.[10] If near-term dividend yield is equal to the benchmark interest rate, then the risk premium just equals expected dividend growth. If the benchmark rate is less than the near-term dividend yield, then the risk premium is less than expected dividend growth, and equity prices are correspondingly higher (note the inverse relationship between P_0^* and $(rp)_0$). Such inferences can be made without further knowledge of either dividend growth expectations or risk premiums. Consider Table 7, setting out dividend yield and Consol data for the pre-1914 period, indicating that dividend yields were unambiguously greater than Consol yields. To be concrete, using the data for 1913 (Consol current yield of 3.25%; near-term dividend yield of 5.69%, obtained from the current yield of 5.52% and assuming average dividend growth of 3.02% [see Col. (1) of Table 9]) the left hand side of Eq.(4a) has a value of 2.44%. Col. (1) of Table 9 shows the actual dividend growth over the three 15-year benchmark intervals to have averaged 3.02%, albeit with substantial variance, especially over the period 1883-1898, when dividend growth fell sharply. If we use the average growth for the entire 45-year period as a reasonable representation of expectations, we obtain an aggregate risk premium for 1913 of 5.46% (= 2.44% + 3.02%). (As might reasonably be inferred from the current dividend yields, this rate is somewhat higher than the average for all five per-1914 benchmarks, which was 4.70%.)

Now consider Table 8, relating to the very recent past, where, equally unambiguously, benchmark interest rates are higher than the average current dividend

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[10] Risk premiums cannot plausibly be negative. A negative premium would result in an expected yield less than that earned on the safest asset available. Over very long horizons, some economists (see in particular Siegel (1998)) have argued that the risk premium might rationally be lower than generally observed (i.e. that equities are generally undervalued), but few are persuaded that the risk premium should be even close to zero (say under 1.0%), let alone zero or negative. See Wadhwani (1999) for further discussion. As noted above, expected dividend growth rates cannot be negative for any extended period without driving the rational price to zero. In the discussion here, no attention is devoted to implausible outcomes and both the risk premium and expected dividend growth are assumed to be positive.

yield of large-cap British companies: using the current yield of the long-dated benchmark bond (maturing in December 2028), the difference is – 2.46%. If we use a generous estimate of current dividend growth for British companies of some 3.50%, giving full allowance for such factors as share buy-backs and mergers and acquisitions financed by cash, factors which plausibly can be considered as a form of dividend payment, we obtain (using 2.12% as the appropriate near-term dividend yield) a risk premium for the current period of 1.20%, which some consider to be so low as to border on the irrationally exuberant.[11] At 1.20%, the current risk

to fall (yields to rise) as investors adjust their portfolios or that the level of risk premiums may be linked dividend growth, they do serve to illustrate both the innate inverse relationship between security prices and risk premiums (*ceterus paribus* prices rise as risk premiums fall, and *vice versa*) and the markedly warmer reception investors now extend to entrepreneurs.

4. Risk Premiums in Victorian Capital Markets

Table 9 sets out key features of the financial performance of the Victorian large-cap corporate economy as displayed by the data described in Section 2 above. Most notably, dividend growth averaged 3.02% over the 45 year period, while share price appreciation (reflecting evolving expectations of future dividend growth) averaged 2.76%. Both series exhibited substantial fluctuations over the period, but the variations in price appreciation were both greater in magnitude and persistently downward, failing to register the recovery in nominal dividend growth that began around the turn of the twentieth century. Note that Table 9 makes no allowance for new capital raised or for "index drift", the fact that relatively poorly performing companies drop out of the rankings as stronger performers enter. Both factors serve to enhance reported dividend growth and annual average share price appreciation, and should be considered upper bound estimates of the experience of large companies generally.

Table 10 reports risk premiums for the entire large-company data set. For each interval, g_0

interest yield curve: Consol yields to maturity (or date of first call) at the long end and prime 90-day bills at the short end. The 90-day bill rates are taken from Mitchell and Deane (1962). The two columns at the far right report the results for the relevant benchmark rates. The data of Table 10 show risk premiums ranging from a maximum of 6.43%, for the interval 1868-1883, using the money market benchmark rate, to a

in Table 5, the average dividend yield of the railways was lower than that of the top 125. Only in the period 1868-1883, when ironically railways had a slightly larger risk premium than did the large-cap sector as a whole, did the railway sector out-perform the large-cap sector as a whole (9.28% vs. 8.21% for all large-caps, a difference of 1.07%). That period, 1868 and 1883, encompassed the golden age of the railways. Between those two benchmark years, the railways enjoyed faster growth than all companies of both market capitalization and dividends, although the difference was not great, especially for dividend growth, 4.16% *vs.* 3.80% (a difference of 0.36%, or 36 basis points).

The next five years proved to be difficult for all companies, but especially for the railways. The top 125 as a whole experienced a very slight decline in aggregate dividenduc -a whpau

not, that the railways would be restored to their former financial glory. So firmly held was this conviction, that if one is looking for evidence of irrational exuberance in Victorian stock exchanges, it is to be found most readily in the rail sector, as indicated by the number of estimated risk premiums of 1.00% or lower (or even negative, as in 1883-1888 [perfect foresight]).

Before concluding this sketch of the broad dimensions of the evolution of the Victorian risk premium for large companies as a whole and the important railway sector in particular, it is useful to consider briefly the evolution of the benchmark Consol yield (see Table 7).[13] After all, the Consol (or other benchmark) yield offers an indication of the opportunity cost of investment in terms of nominal default-free time preferences and plays directly a key role in the calculation of the risk premium. Because the Consol yield is negatively related to the risk premium (see Eq.(4)), the lower is the Consol yield (*ceterus paribus*), the higher is the risk premium. This relationship also makes intuitive sense, for a shift by investors out of Consols and into equities will serve to lower Consol prices (and hence raise Consol yields) while raising equity prices (and hence tending to lower dividend yields).

The data on Consols in Table 5 suggest that the opportunity cost of investment was not great, although risk aversion must have been. First, Consol yields remained markedly lower than dividend yields throughout the period. These low yields were sustained despite the fact that the government was well known to be vigilantly seeking every opportunity to reduce the cost of servicing its massive debt, of which £500m. nominal was held by the public in 1888. [14] The terms of the two 3% debt instruments introduced in the eighteenth century – the Reduced 3% Consols of 1749 and the famous, and much more liquid, 3% Consols of 1751 - permitted redemption at par with one year's notice. The 3%s issued in 1844 allowed redemption in thirty years' time, (that is, after 1874) without notice. Once

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[13]   This is not the place for a full discussion of the Victorian yield curve. It should be borne in mind, however, that comprehensive treatment of Consol yields also requires some discussion of yields at the short end of the fixed-interest market.

[14]   Since the issues were redeemable only at par, and interest rates were quite low in the mid-1880s, the nominal and market values in 1888 were essentially identical.

Gladstone had reformed Britain's budget to the point where surpluses were frequently assigned to debt sinking funds, redemption at par became a real possibility. If broad market interest rates were sufficiently below 3%, the government could forcibly retire the now-expensive 1751 3%s and replace them with issues bearing a smaller coupon. Gladstone himself had sought to exploit this possibility by introducing in 1853 "new" Consols that paid only a 2.5% coupon, the reduced pay-out sweetened by terms that deferred any threat of compulsory redemption for 40 years, to 1894 at the earliest. However, wealth-holders refused to take the bait and the government managed to sell very few of the New (Gladstone) 2.5%s. The succession of budget surpluses in the 1880s in an environment of low interest rates, however, was to tip the balance decisively.

In 1884, Consol holders were offered the opportunity to swap at rates above par their various 3%s into New (Childers) issues carrying coupons of either 2.5% (at a conversion rate of £108 for every £100 nominal of a 3% issue) or 2.75% (at a conversion rate of £102), the government more than gaining in reduced servicing cost what it lost in the increased nominal value of the debt outstanding. Again the uptake was disappointing for the government - few were sold. But time and continued budget surpluses were on the government's side. Finally in 1888, George Goschen did the trick, making the holders of 3%s the offer they couldn't refuse. In return for accepting conversion of their 3%s at par, holders were offered new (Goschen) Consols paying 3% until April 1889, then 2.75% until April 1903, and 2.5% thereafter, with no possibility of redemption before 1923. The point is that until a real military crisis broke out in 1914, there was no scope for an increase in the coupon paid on the most liquid government issue. Market speculation was confined to how much the government might be able to cut the coupon: all the way to £2.50 or only to £2.75?[15] Given that the scope for income increases from

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[15] In Panel C of Table 4, the reported decline in income growth between 1868 and 1883 reflects the government's efforts to reduce the coupon paid from 3.00% to 2.50&. The threat of conversion at par prevented the price of 3%s from rising above £100. Although relatively few 2.50%s were sold, the government's threat was a credible one, believed by contemporaries to directly affect the price of Consols (*The Economist*, quoted in Harley (1976: 102). The increase reported between 1888 and 1898 reflects Goschen's compromise, undertaken to guarantee at long last the success of the conversion, whereby the coupon was

Consols was so limited, it can come as no surprise that the scope for capital growth was limited as well. Indeed, given the persistent downward pressure on coupons, the only scope for increased income and attendant capital gains came from falling prices, thereby permitting real returns to be greater than nominal ones. Consol returns were thus unusually sensitive to inflation (or deflation).

The relatively high price of Consols (relative to dividend yield) is therefore curious, for their exposure to inflation risk was high. That risk could manifest itself in either or both of two ways. First, a war, even one as small as the Boer War, could force the government to issue more bonds, pushing down their price even while suddenly increased urgent government spending pushed up domestic inflation, both influences damaging Consol holders. Secondly, even in the absence of a war serious enough to materially affect Consol prices, the value of the instrument was still vulnerable to inflation arising (most plausibly) from gold discoveries. While the commitment of British governments to the gold standard was rationally unquestioned, that same commitment meant that gold would flood into the Bank of England in the event of large gold discoveries, matched by an equal flow of sterling banknotes out. Moreover, the Bank of England had become adept through central bank co-operation and other strategies (the "gold devices") at making whatever gold reserve it possessed go further in the quest to maintain the convertibility of sterling. Contemporary appreciation of this ability can be seen in the marvel at how the Bank managed to be "leader of the orchestra" in the foreign exchanges with extraordinarily slender gold reserves. By the early twentieth century the Bank's gold reserves, at about £40m., were only about half those of the Bank of France and Reichsbank, not to mention those of the profligate Americans, whose failure to have a central bank condemned them to maintain inefficiently and expensively large gold stocks elsewhere within their financial system. Of course, the Bank's growing skill at leveraging

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reduced only 25 basis points, to 2.75%, for 14 years, followed by an automatic reduction to 2.50% after April 1903.

its gold reserve meant that the impact of a surge of gold discoveries would also be amplified. It is therefore ironic that an economy that valued Consols so highly should also be the economy that financed gold discoveries so enthusiastically and effectively, as we shall see in the next section.

5. Risk Premiums in Growth Sectors: Chemicals and Mining

Against the benchmark risk premiums presented in the previous section, this section looks at two specific sectors chosen for their importance and for their financial success. The first is the chemical industry. While other firms (Nobel Dynamite Trust [incorporated 1886; #78 1913] and Kellner-Partington [incorporated 1889; #98 1913]) in this industry appear within the data set, the analysis here is confined to Brunner, Mond [incorporated 1881; #22 1913], by far the most successful firm in the industry as measured by its profitability and the growth of its market capitalization. In terms of risk premium, Brunner, Mond's experience can be taken as the lower bound for the large-cap chemical industry as a whole (i.e. the other two companies in the 1913 rankings were valued less highly)[16]. The chemical industry is a particularly useful one to analyse in the context of the debate over Victorian entrepreneurial performance. The industry was at the forefront of commercially exploiting growing scientific understanding and its success (or otherwise) acted as a vivid example to many. Hence the pricing of entrepreneurship in this industry is central to debates about Britain's economic performance not only in the nineteenth century but in the twentieth as well.

Table 12 sets out the calculation of the risk premium for Brunner, Mond. The periodization corresponds where possible exactly to that used in Section 4. The calculation procedures are identical as well. Although Brunner, Mond (henceforth B-M) was incorporated in 1881 (the predecessor partnership had been established in 1873), the company first appears in the large-cap benchmark in 1888 (at # 89). Thus all comparisons are from that year. However, not surprisingly, given the rapid growth of its

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[16]   The dividend yield for Nobel Dynamite trust in June 1913 was 6.02%; for Kellner-Partington, 5.98%.

market capitalization, its experience between 1881 and 1888 was consonant with its subsequent performance. The data permit the calculation of eight estimates of risk premiums. What emerges most clearly from Table 12 is that for every permutation (over periods; over representations of expectations of dividend growth, whether extrapolation or perfect foresight; over benchmark interest rate) the risk premiums are markedly higher than the large-cap benchmarks. Using current dividend yields as a proxy for risk premiums - on the grounds that while current dividend yields capture only some elements of expectations of future growth, they are less sensitive to the particular assumptions used – reveals that not until the very end of the period, from 1908 onwards, does B-M's dividend yield slip even marginally below that of the large-cap average (5.19% *vs.*5.52% in 1913). At no time does it drop below the railway average. B-M's relatively high risk premium translates into a relatively low share price. Had B-M been accorded just the average risk premium applied to large-cap companies, its market capitalization in 1913 would have been twice as large as it actually was. Had the railway sector risk premium been applied, B-M would have been worth approximately three times its actual 1913 capitalization. Given its remarkable record of dividend growth, the efforts of its principals were curiously lowly valued. Victorian capital markets afforded entrepreneurs in this sector remarkably little fuel, in the form of high share prices, to drive further expansion and experimentation. Table 12a, which reports BM's actual financial out-turn, which was in total consistently comfortably above 10%, suggesting that in the chemical sector at least investors were slow to appreciate unusually good performance.

The same cannot be said so confidently about the mining industry, a sector in which Victorian investors were deeply involved, often highly successfully. The industry emerged slowly into the rankings of Britain's largest companies. None were present in 1868. Only a single, relatively small company, Tharsis Copper & Sulphur, appeared in the 1873 rankings, to be joined by another Spanish mine, Rio Tinto, and a domestic coal company, Mason & Barry, in 1878. This early trickle became a flood after 1883, as South Africa (and other centres of gold mining) attracted strong interest. For example, in the 1878-1883 benchmarks, the three mining companies then represented among the large-caps (Tharsis, Rio Tinto, and Mason & Barry) had in 1883 a combined market

capitalization of ordinary shares of £13.6m. (2.3% of the aggregated value of the ordinary shares of the 125 largest companies in that year). Between 1883 and 1898, newcomers to the 1898 large-cap rankings raised in their early public offerings an even larger amount, £21.8m. To put this sum in perspective, the capital raised by B-M, Nobel Dynamite, and Kellner-Partington combined down to 1913 was only £6.1m. (of which £2.9m. [48%] was B-M and £2.3m. [38%] Nobel Dynamite). In the 1898 benchmark, the combined market capitalization of all the mining companies ranked then reached the ample figure of £90.2m. (9.6% of the aggregated value of the ordinary shares of the 125 largest companies in that year). This success encouraged more ventures. Between 1898 and 1913, perhaps a further sum of £40m-£50m. was raised through new issues.[17] While many of the 27 new-comer ventures in the period 1898-1913 were not successful (eleven failed to appear in the 1913 rankings despite having been ranked in 1903 or 1908), and while of the 19 mining companies in the 1898 rankings 10 had dropped out by 1913 – seven through sharply falling market capitalizations and three through mergers with ranked companies - nevertheless the 25 mining ventures ranked among large-cap companies in 1913 had a combined market value of ordinary shares of £145.3m. (13.9% of the aggregated value of the ordinary shares of the 125 largest companies in 1913).

A successful mine could be fabulously profitable. In 1913, De Beers (#6, the largest ranking mine) with only £4.500m. in paid-up capital (the amount originally invested in the venture, but excluding premiums), paid dividends on ordinary and preference shares in excess of £2.0m., rivalling those paid by the largest railways. Rio Tinto (#9), the next largest mine with even less total paid-up ordinary capital, amounting

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[17] The sum of £40m-£50m. is only an approximation. The large number of companies that entered, and left, the large-cap rankings make an exact calculation difficult. The £40m-£50m. figure was reached by first taking the IPO values of all large-cap companies created in the period 1898-1913 (i.e. that first appear in either the 1903 or 1908 benchmark rankings) that were still in the large-cap rankings in 1913. This value was £20.7m, raised by 16 companies. The remainder, some £20-£35m. (a conservative estimate; the actual value was £33.5m.), was reached by taking the market capitalization of the ordinary shares of new mining companies established after 1898 that appeared in either (or both) of the 1903 and 1908 benchmarks but were unable to hold their value sufficiently to hold a place in the 1913 rankings. There were 11 of theses companies. As a group, these mines had a very chequered career, with some showing losses over their IPO values quite early in their existence. Even so, £30m. is probably in excess, perhaps considerably so, of their IPO values.

to only to £1.875, paid £1.69m. in dividends. Rand Mines (#20), the third largest mine by market capitalization of ordinary shares, with paid-up ordinary capital of £0.515m., paid £1.17m. in dividends. However, despite such remarkable capital gains and generous dividend pay-outs, in some cases sustained over many years, the intrinsic risks of the mining sector still showed through: De Beers current dividend yield in June 1913 was 10.11%; Rio Tinto's 6.22%, and Rand Mines' 8.63% (see Table 13). Investors clearly did not expect the good times to be highly durable. The mining industry, then, is complex. Good mines paid extremely well, at least for a while, but the search for a bonanza was fraught with risks. An example, drawn from the 1898 large-cap rankings, and thus excluding the most egregious losses, might illustrate the situation.

The Simmer and Jack Proprietary Mine had been incorporated in 1887, six years before the incorporation of Rand Mines. Simmer and Jack had aimed high, raising in paid-up capital £5.0m., almost exactly 15 times the amount ultimately raised before 1913 by Rand Mines in its public offerings. But by June 1898, the £5.0m. originally invested in Simmer and Jack was worth only £3.8m. (a mere 39% of the value of Rand Mines in that same month). Moreover, the outlook in mid-1898 for Simmer and Jack's ordinary shareholders was not good either, for the company paid no dividend. Indeed it appeared in the 1898 rankings only because it had raised so much money to begin with. Had the market value of the company simply held its paid-up amount, the mine would have been #40 in the 1898 rankings rather than #60. Although the company paid sporadic dividends, including one of £600,000 in 1908, the market capitalization of its ordinary shares fell to

by 1913, well below the top-125 cut-off value of £2.388m. Moreover, the experience of mines that made it into the large-cap rankings is generally better than the many that didn't. To achieve a large-cap ranking, even when it could not be sustained for long, meant that a mining venture had to have an unusually appealing story, suggesting a better than average chance of bigustainclimm 9 fr

small ventures like Rand Mines that struck it rich on a comparative shoestring, survivor bias is perhaps more important to bear in mind when analysing the mining industry than most others.

With survivor bias in mind, consider Table 14, which sets out the British-based mining industry's experience in terms of averages of annual dividend growth and capital appreciation. The dates of the first panel – 1a. and 1b.- match as far as possible the periodization of first panels used earlier. The period covers 1873-1883 (rather than 1868-1883, because no mining venture appeared in the 1868 rankings). In the second period, 1883-1898, the data is split into two categories. The first, (labelled 2.1) records the experience of the three companies (Tharsis, Rio Tinto, and Mason & Barry) that appeared in the 1878 and 1883 benchmarks. While the three companies had enjoyed phenomenal success between 1873 and 1883, that success was not sustained over the following 15 years: in fact total return, at –0.44% per year, was slightly negative. Table 13 throws some light on this performance. Both Tharsis and especially Rio Tinto were long-term survivors, but both hit a difficult patch between 1883 and 1888. Rio Tinto recovered strongly and by 1913 had come to enjoy a 21% capital gain over its 1883 capitalization. Tharsis did not fare so well: in 1898 its capitalization was marginally below the level achieved 15 years earlier but still sufficient to keep the company in the top rankings, albeit at a considerably lower level. Mason and Barry had the poorest performance of the lot, dropping out altogether by 1883, never to reappear.

The second category (labelled 2.2) for the 1883-1898 period records the experience of 17 new-comer mining ventures, companies not in the rankings in 1883, but which

replicate the experience of someone who invested in the two categories in proportion to their average market capitalizations over time. Since the new-comers raised more money in the period than the incumbents' initial value in 1883, and the new-comers as a group also enjoyed strong capital growth, their experience dominates the average. In the final period, the situation is more complex still. Category 3.1 reports the experience of all 1898 incumbents, including those that dropped out of the rankings at some point before 1913. The performance of this group was better than that of the 1883 incumbents (Category 2.1), but represented still a sharp decline from the previous experience of the same group of mines, suggesting that most mines at the time (and particularly mining companies concentrated on one mine or one area) had only a limited life-span. As in the previous period, the 16 new entrants into the large-cap rankings (Category 3.2) enjoyed strong performance, with a total return (over paid-up capital) of 17.0%.

However, in 1898-1913, unlike in 1883-1898, there are too many transient new entrants (those that appeared in the 1903 or 1908 rankings but dropped out by 1913) to ignore. For these 11 companies, which had a combined market capitalization of £33.5m. in 1903, the estimate of average capital appreciation is based on the assumption that in 1913 these companies had an average market value of ordinary shares equal to 90% of the 1913 cut-off value. (The value of the lowest ranking large-cap firm in 1913 (#125) was £2.388m. Hence 90% of this figure would be £2.149m., making the estimate of the combined value of the 11 drop-out firms in Category 3.3 £23.6m). Given the short tenure of these companies in the large-cap rankings – all 11 ventures appear in the 1903 rankings, but only one, Waihi Gold Mines, is still ranked by 1908 and none by 1913 – the 90% assumption is probably too generous. On the other hand, 10 of the 11 mines paid dividends in 1903, so investors did not face a complete loss. Since the paid-up amounts of these 11 mines is not currently available, it is not possible to give a more precise estimate of the overall profitability of these ventures, but it is unlikely to have been great.

Indeed, these companies paid generally modest regular dividends in 1903

using the money market benchmark. This average is markedly higher than B-M's at 10.35% (Consol benchmark). However, perhaps not surprisingly given the diversity of the industry's experience, the variance of risk premium estimates is much greater than for B-M. For example, in the period 1883-98, for the three companies that had appeared in a benchmark before 1883 (Tharsis, Rio Tinto, Mason & Barry), the risk premium assuming perfect foresight was no more than 3.79% (the product of a high initial dividend yield and a slight erosion of the dividend paid over time [i.e. negative growth]). The premium was even lower for the 11 new-comers to the ranks of large-cap mining companies after 1898 which were not still in the rankings in 1913. For them, the risk premiums were negative, the product of relatively low (for mines) initial dividend yields (4.75%) and negative dividend growth.

A first glance, it might appear that these two industries - chemicals (as represented by Brunner, Mond) and mining – prospered in spite of the valuations rendered by

the railways, this dismal performance of the sector's largest members was partially offset by the good performance of others lower down the rankings in 1898. The star performer in this regard was London, City and Midland, which increased its ordinary share capitalization from £6.223m at end-June 1898 to £14.720m at end-June 1913. Only a fraction of this increase in ordinary share market capitalization of 136.54% (equal to £8.497m) can be explained by the

sector average, at 3.89% and 4.44% respectively. In marked contrast, a dynamic group of more successful banks - London, City & Midland, Lloyds, and Hong Kong & Shanghai Banking Company (HSBC) - that had their origins outside London and subsequently sought in the late nineteenth century to consolidate their success by establishing a London presence had grown conspicuously rapidly while still increasing their dividends payments. The cash dividend increases over the period 1898-1913 for these banks were 188%, 118% and 155% respectively. Nevertheless, these dynamic, growing banks had dividend yields at end-June 1913 either above the financial sector average or, in the case of Midland, only slightly below it (at 4.88%). These relatively high current dividend yields and thus (given the rapid growth of their dividends) unusually high-risk premiums resulted in correspondingly depressed share prices. Once again, in another important sector, good entrepreneurial performance was conspicuously under-valued. All in all, the financial sector as a whole, especially the banking part of it originating in and concentrating first on London, while not suffering to the same

were in mining, an activity that we have argued should normally be expected to pay large dividends, paid more to ordinary shareholders. [22] Had Maypole's dividend been valued in 1913 at the average railway multiple, the company's market capitalization would have been 41% larger than it actually was. Here again was an innovative new departure curiously undervalued by an investment community transfixed by railways and London-oriented banks.

However, before rushing to the conclusion that Victorian stock exchanges marked down entrepreneurial initiatives and successes wholesale, it is necessary to consider the mining sector more closely, for two main reasons. First, the structure and variance of the risk premiums for the large-cap mining industry shown in Table 15 suggest that survivor bias has caused them to be sharply higher than they would have been on a more comprehensive basis. The dividend growth of successful mines was impressive. Failed ventures paid no dividends, yet failed ventures are seriously under-weighted in the large-cap rankings. Few appear there - only those that were able to raise a huge amount of capital in the first place (enough to get them into the top rankings with only the money raised from early public offerings, without the buttress of operating profitability) and yet despite the promise of such backing, were nevertheless unsuccessful. Compared with all mining ventures, the dividend growth (and dividend yield) of the long-term survivors alone was misleadingly large. Table 13 helps illustrate the point. Compare the current dividend yield of all ranking mines with those of three of the most successful in the group (or, in the case of Tharsis, the most long-lived, appearing in every benchmark since 1873, a kind of success). The all-mines group had an average dividend yield that is usually below the market weighted average of the successful and proven three. The most plausible explanation for this otherwise strange finding is that the current dividend yield of all large-cap mines as a group was temporarily depressed by those mines that had high valuations but paid little, if any, dividends. The 1903 benchmark, which among the benchmark years employed here captures most closely the peak of the pre-1914 mining boom, is a clear example of this phenomenon. Such transitory mines of course would

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[22.] For example, the Hong Kong Shanghai Bank (ranked 26 in 1913), which was the lowest ranking company that paid dividends greater than Maypole's, at £510,000, had a market capitalization, at £9.720m, some 31% greater than Maypole's.

fairly quickly drop out of the rankings, causing the dividend yield to rise (dividend paying

industry, and the experience of retailers like Maypole Dairies, it is clear that a wide range of important entrepreneurial activities were under-valued, at least relative to railways. What kind of story might explain extreme caution in some areas of great promise, but not others?

In considering this question, it is important at the outset to make clear that it is not concerned with the short-lived manias that beset Victorian (and other) capital markets from time to time, when caution was thrown to the wind and the risk premiums associated with some industries became sharply negative, in the sense that no plausible path of dividend growth could have justified the extreme prices some companies were able briefly to achieve in the absence of any dividends or even credible earnings. Such manias, for example, are well documented for electrical engineering and motor vehicles. But these outbursts of irrational exuberance did not last long enough to propel the beneficiaries of investor carelessness into the ranks of Britain's largest companies for any perceptible length of time, if at all.[23] Indeed, the mining industry had more than its share of recurring manias, but in mining, unlike electrical engineering and motor vehicles, viable, highly profitable companies also emerged. Investment discipline, if occasionally loosened, was never entirely abandoned in the mining industry. The interesting issue here is a longer-term one. In the case of B-M, for example, exemplary growth sustained over decades was only grudgingly acknowledged by a very slowly declining risk premium (also mirrored by the persistently high current dividend yield).

It might be useful to approach the matter by thinking in terms of information flows. For convenience, we might think of categories of obstacles (or the lack of obstacles) to information flow that might exist on the buy-side of the market and on the sell-side. We might suppose that the buy-side consisted of three groups of individuals: (1) those who

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[23] Telegraph Construction and Maintenance Company [TCMC] (#102 1883) is a partial exception to this claim. TCMC became briefly involved in early lighting schemes in London. Although it achieved some success, the company grew wary of the growing complexity and voracious capital requirements of the new industry, and gradually withdrew from it over the decades of the 1880s. Moreover, the firm's base of operations always remained the telegraph industry. It was established in 1864, well before the brief electrical mania of 1880-82. Between 1890 and 1914, it paid out an impressive stream of dividends, but at the expense of future growth. The high-dividend strategy was in effect a means of slowly winding the company up.

were not interested in hearing of new, potentially risky investment opportunities; (2) those who could not hear, even if they had been potentially interested; (3) those who were interested and could act, albeit with varying degrees of skill.[24] If Category (3) individuals dominated the buy-side, it is very hard (if not impossible) to account for the observed structure of risk premiums. Therefore members of Categories (1) and (2) must have been present in relatively large numbers.

Into the first group might fall many wealth-holders whose interests were focused on things other than active, informed investment management, people who were sufficiently wealthy that, as long as a catastrophe (like the First World War) did not occur, they

sensible intention, and perhaps in many cases saved those who were incapable of making informed choices from serious loss. But the laws also ensured that a large stock of wealth was confined to Consols, selected railway debentures and other low-yield securities. As a growing mass of wealth was transmitted across generations, more of Britain's investment funds were constrained by the Trustee laws. But such a simple, rigid rule was not adequate to the complex task of rational investment, leaving those subject to it, for example, badly exposed to inflation. Echoes of this dilemma can be heard today in debates over the guidelines for the management of pensions prescribing a minimum funding requirement and the form in which that requirement must be met (although now the existence of low cost index tracker funds make the current problem more manageable than its Victorian cognate).

The final category consists of those who were interested to learn of new investment opportunities. At least some of this group also took active steps to become well informed. The flow of funds into mining ventures suggests this group was not small. But why, of the wide range of growth opportunities of the late nineteenth century, was the mining industry so conspicuously dominant in new entrants to the rankings of Britain's largest firms? Perhaps part of the answer lies in experience. Although direct experience in gold or diamond mining was not common among them, many British investors had long experience with the mining of coal as well as base metals. The technology was reasonably well known and the value of a successful strike could be ascertained quickly, especially for gold, whose price in terms of currency was fixed by the Gold Standard. Harvey and Press (1989) describe a process by which domestic investment mining expertise was projected overseas. Long established experience might also explain the much more muted response to possibilities in science-based industries. In the case of these industries, unlike mining, there was no tradition of commercial exploitation. The value of discoveries was more difficult to ascertain and technological vision harder to develop. Consequently, perhaps it should not be surprising that scepticism should have

been greater and market valuations correspondingly lower. But perhaps part of the answer also lies on the sell-side of the capital markets.

The sell-side, like the buy-side, might be split into three categories: (1) those who were not interested in seeking out new ventures, perhaps because their existing securities businesses were good ones even if not growing very fast, but ones which might be harmed by ill-judged forays into new territory; (2) those who could not seek out new ventures, or could do so only with difficulty, because of limited experience or education; (3) those who would and could seek out new securities business. It may have been the case that inertia in category (1) on the sell-side was at least as great as that on the buy-side. One way of adjusting to dwindling demand at home in, say, government bond or railway securities was to find more attractive foreign substitutes to sell. That way expertise in analysing railways for example could be preserved. Moreover, by sticking to familiar business, hard-won reputations would not be squandered while exploring new markets. Sell-side inertia was certainly not a British preserve. In the U.S. for example, the Morgan partnership was the only leader in the railway securities market that was able to establish an equally successful position in the emerging industrial one (Navin and Sears: 1955). The other great railroad houses either stayed with the industry, and followed it into long-term decline, or came to grief in new markets.

A higher educational system that did not stress science and engineering affected the sell-side as well as the buy-side. In Britain, gaining first-hand knowledge of recent scientific and engineering advances was harder than in Germany, Sweden, Switzerland or the U.S., where more men were actively engaged in the research. But even so, one would have thought that British financiers would have exhibited more curiosity and initiative than they did. One way of illustrating this is to consider the introduction of electric light into Britain. As in other advanced countries, the wealthy in Britain were first intrigued by the possibilities and sought out inventors. The first house in Britain to be lit by electricity was Cragside, in Northumbria, the home of Sir William Armstrong, the industrialist and friend of Joseph Swan, the co-inventor of the incandescent lamp. But Swan's hydro installation at Cragside remained a curiosity. Armstrong's counterpart in the U.S., however, was not an industrialist, but a banker, J.P. Morgan, and Thomas

Edison's installation in Morgan's New York townhouse was one development in a process that eventually resulted in the formation of General Electric.

It would appear from this example – limited, but directly concerned with one of the great science-based industries of the day – that financiers in New York were more amenable to new ventures in electricity than their London counterparts were.[25] To be sure, when Edison finally had a system to demonstrate, he was well received by London money men, who enthusiastically backed his English lighting company, at least at first. Of course, an introduction from his New York backers helped greatly in securing British funding. But the London men were relatively new to the business, and more reluctant to back it when the inevitable problems of pioneering emerged. No British banker was as deeply involved in the industry as Morgan was, to the point where Morgan not only helped arrange mergers in the fledgling industry, but also took an active role in selecting the management of the companies he formed and floated. In the case of General Electric, created in 1892 by the merger of Thomson-Houston and Edison General Electric, this meant ensuring that the more technologically progressive management of Thomson-Houston dominated the new firm, while the personal of Edison General Electric, including Edison himself, were shunted aside. The degree of involvement of British financiers in electricity stands in stark contrast to their involvement in mining. This lack of involvement almost certainly translated into a higher risk premium for British electrical firms than that imposed on their American (and probably German) counterparts. For example, preliminary calculations of the risk premium accorded General Electric (GE) show it to be much lower than B-M's. Over some periods, the premium on the American company was found to be negative. However, the calculation of GE's premium is complicated by the fact that the company was forced to eliminate its dividend during the financial crisis of 1893 and did not restore it for five years. As we have seen above, zero dividends inevitably lower the risk premium. Nevertheless, despite a chequered dividend

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[25] As we have seen above, London financiers were not especially interested in chemistry either, the other great science-based industry of the day. For Brunner, Monds' early reception in the City, see Reader

history, in marked contrast to B-M's smooth one, in 1913 GE's current dividend yield was 5.68%, compared with the U.S. railroad average of 5.20% (Cowles, 1939: Series Y-3 and Y-15), valuing GE's dividend stream at an 8.5% discount to the U.S. railroad average.   In the same year, although B-M's current dividend yield, at 5.19%, was marginally lower than GE's, it stood at a 21.3% discount to the British rail market.

To what extent did the differing market reception of investment proposals depend not on the dispositions of financiers, but on the differing abilities of entrepreneurs themselves to articulate a credible vision of investment opportunities?   Mining entrepreneurs, despite all the well-known risks – not for nothing did Mark Twain once describe a mine as a big hole in the ground with a liar standing beside it – seem to have been able to yell "Strike" with amazing credibility[26].   And, on the basis of their claims, they could raise new money with an ease few, if any, other sectors of the British economy could match.   No doubt mining entrepreneurs were helped by a knowledgeable investor base, able to appreciate at an early stage key evidence of success.   But mining entrepreneurs also seem to have been able to articulate their visions with a persuasiveness rarely matched elsewhere, and certainly not in the science-based industries.

A cultural element may be at work here.   American entrepreneurs, faced with an abundance of resources but an acute shortage of capital, from a very early (still colonial) stage grew used to presenting their case to distant financiers, first in the coastal cities of the colonies, later to London and other European centres.   An ability to project an

communication was perhaps a less developed feature of British economic life. But mining might be the exception.

It is perhaps well to conclude with a note on the importance of dialogue between the two sides of the investment market, the buyers and the sellers. Problems they might have in communication help to explain why arbitrage is generally more difficult than one might have expected.[27] If the buy-side is sufficiently unreceptive, entrepreneurs with good projects are unlikely to attempt public offerings of securities in their ventures. The gap between their relatively well-informed private valuations of their ventures and what the less well informed public would be willing to pay is often too great to be bridged. But this often means good projects go unfunded or under-funded, and that the public offerings that do occur are dominated by "lemons", projects in which sellers attach low private valuations but seek to portray publicly as good ones deserving high valuations. If the sell-side is too cautious and too unresponsive to emerging opportunities, investors miss good opportunities, even if they are prepared to listen. But when communication problems are overcome, on-going dialogue holds out the promise of improving investment capabilities all around. Buyers are knowledgeable and appreciative. Sellers know that if they offer on average good projects, they will be rewarded (and correspondingly punished for too many "lemons"), and a virtuous circle is established and ventures flourish in a competently discerning environment.

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[27] Intrinsic problems in effective arbitrage among investment opportunities, especially when pay-offs are in the more distant future, are concisely discussed in Shleifer and Vishny (1990).

Table 1: Top British companies in 1868 ranked by ordinary share market capitalization:

Rank	Year Created	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Ordinary dividend yield at market
1	1694	Bank of England	8140	(banks)	35218	35218	100.00	0	0.00	1.65
2	1846	London and North-Western Rly.	7100	(rails)	53028	34540	65.14	15372	28.99	5.18
3	1836	Lancashire & Yorkshire Rly.	7100	(rails)	22979	17833	77.61	5145	22.39	4.63
4	1844	Midland Rly.	7100	(rails)	27443	12814	46.69	9823	35.80	4.87
5	1854	North-Eastern Rly.	7100	(rails)	25733	8333	32.38	14478	56.26	9.52
6	1846	Great Northern Rly.	7100	(rails)	19572	8173	41.76	10436	53.32	5.05
7	1834	London & Sourth-Western Rly.	7100	(rails)	10889	7151	65.68	3737	34.32	4.89
8	1783	Bank of Ireland	8140	(banks)	6855	6855	100.00	0	0.00	3.72
9	1834	London and Westminster Bank	8140	(banks)	5988	5988	100.00	0	0.00	5.66
10	1845	Caledonian Rly.	7100	(rails)	13875	5685	40.97	7297	52.59	4.60
11	1836	South-Eastern Rly.	7100	(rails)	11178	5671	50.73	5507	49.27	4.04
12	1835	Great Western Rly.	7100	(rails)	23511	4213	17.92	14458	61.49	4.54
13	1853	Metropolitan Rly.	7100	(rails)	4795	4045	84.36	0	0.00	3.00
14	1844	Great South. & West. of Ireland Rly.	7100	(rails)	5391	4026	74.68	69	1.29	4.85
15	1695	Bank of Scotland	8140	(banks)	3750	3750	100.00	0	0.00	4.80
16	1846	London, Brighton and South Coast Rly.	7100	(rails)	11275	3539	31.39	7736	68.61	0.43
17	1727	Royal Bank of Scotland	8140	(banks)	3460	3460	100.00	0	0.00	4.62
18	1833	National Provincial Bank of England	8140	(banks)	3411	3411	100.00	0	0.00	7.92
19	1844	North British Rly.	7100	(rails)	9453	3205	33.90	2736	28.94	0.00
20	1862	Great Eastern Rly.	7100	(rails)	11432	3042	26.61	5889	51.51	0.00
21	1837	Glasgow and South-Western Rly.	7100	(rails)	5084	3022	59.45	608	11.96	5.44
22	1835	National Bank of Ireland	8140	(banks)	2988	2988	100.00	0	0.00	6.78
23	1840	Peninsular and Oriental Steamship Co.	7400	(ships)	2910	2910	100.00	0	0.00	2.78
24	1824	Imperial Continental Gas	1620	(gas)	2772	2772	100.00	0	0.00	7.07
25	1839	Union Bank of London Bank	8140	(banks)	2720	2720	100.00	0	0.00	8.82
26	1838	London and St Katherine Docks	7630	(docks)	3736	2706	72.42	1031	27.58	5.85
27	1836	London Joint Stock Bank	8140	(banks)	2680	2680	100.00	0	0.00	6.46
28	1810	Commercial Bank of Scotland	8140	(banks)	2575	2575	100.00	0	0.00	5.05
29	1825	National Bank of Scotland	8140	(banks)	2510	2510	100.00	0	0.00	4.78
30	1837	Union Bank of Australia	8140	(banks)	2475	2475 [1]	100.00	0	0.00	8.59
31	1746	British Linen Company	8140	(banks)	2465	2465	100.00	0	0.00	5.27
32	1838	East and West India Docks	7630	(docks)	2376	2376 [2]	100.00	0	0.00	6.09
33	1836	London and County Bank	8140	(banks)	2306	2306	100.00	0	0.00	9.76

Table 1: Top British companies in 1868 ranked by ordinary share market capitalization:

Rank	Year Created	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Ordinary dividend yield at market
34	1829	Manchester and Liverpool Dist. Bank	8140	(banks)	2220	2220	100.00	0	0.00	7.41
35	1864	John Crossley and Sons [carpets]	2210	(misc)	2200	2200 [3]	100.00	0	0.00	7.50
36	1720	Royal Exchange Insurance	8200	(insur)	2068	2068	100.00	0	0.00	6.67
37	1853	London, Chatham and Dover Rly.	7100	(rails)	3106	2037	65.59	420	13.53	0.00
38	1830	Union Bank of Scotland	8140	(banks)	2020	2020	100.00	0	0.00	4.95
39	1846	North London Rly.	7100	(rails)	2691	1987	73.85	0	0.00	4.64
40	1825	Provincial Bank of Ireland	8140	(banks)	1964	1964 [4]	100.00	0	0.00	5.50
41	1849	Manchester, Sheffield & Linc Rly. [a]	7100	(rails)	5559	1878	33.78	3681	66.22	3.51
42	1847	North Staffordshire Rly.	7100	(rails)	3453	1873	54.25	0	0.00	6.03
43	1856	National Discount Company	8150	(invest)	1800	1800 [5]	100.00	0	0.00	7.11
44	1838	Clydesdale Bank	8140	(banks)	1782	1782	100.00	0	0.00	5.05
45	1836	Taff Vale Rly.	7100	(rails)	1729	1729	100.00	0	0.00	4.31
46	1853 [b]	Electrical and International Telegraph	7902	(teleg)	1722	1722	100.00	0	0.00	5.92
47	1720	London Assurance Co.	8200	(insur)	1721	1721	100.00	0	0.00	5.21
48	1806	Rock Life (Insurance)	8200	(insur)	1700	1700 [6]	100.00	0	0.00	4.41
49	1836	Bristol and Exeter Rly.	7100	(rails)	3251	1679 [7]	51.64	0	0.00	5.27
50	1826	Imperial Gas Co.	1620	(gas)	1671	1671 [8]	100.00	0	0.00	7.78
51	1835	Bank of Australasia	8140	(banks)	1605	1605	100.00	0	0.00	8.41
52	1824	Indemnity Marine Assurance Co.	8200	(insur)	1587	1587 [360]				

Table 1: Top British companies in 1868 ranked by ordinary share market capitalization:

Rank	Year Created	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Ordinary dividend yield at market
70	1803	Imperial Fire Insurance Co.	8200	(insur)	950	950 [22]	100.00	0	0.00	5.31
71	1865	Surrey Commercial Dock	7630	(docks)	937	937 [23]	100.00	0	0.00	5.66
72	1831	Gloucestershire Bank	8140	(banks)	905	905 [24]	100.00	0	0.00	6.63
73	N/a	Birmingham and Staffordshire Gas Co.	1620	(gas)	895	895 [25]	100.00	0	0.00	4.94
74	1836	Ulster Rly.	7100	(rails)	986	886 [26]	89.85	0	0.00	4.51
75	1823	Law Life Insurance Co.	8200	(insur)	885	885 [27]	100.00	0	0.00	4.26
76	1793	Grand Junction Canal	7610	(canal)	933	821 [28]	88.07	0	0.00	5.52
77	1834	West of Eng. & S. Wales District Bank	8140	(banks)	800	800 [29]	100.00	0	0.00	7.50
78	1859	Ocean Marine Insurance Co.	8200	(insur)	800	800 [30]	100.00	0	0.00	7.50
79	1818 c	Westminster Chartered Gas	1620	(gas)	795	795 [31]	100.00	0	0.00	8.19
80	1836	Colonial Bank	8140	(banks)	770	770	100.00	0	0.00	7.79
81	1862	Manchester and County Bank	8140	(banks)	770	770	100.00	0	0.00	6.23
82	1827	Belfast Banking Company	8140	(banks)	765	765 [32]	100.00	0	0.00	4.93
83	1858	National Bank of Australasia	8140	(banks)	743	743 [33]	100.00	0	0.00	9.09
84	1867	National Steamship Co.	7400	(ships)	781	731 [34]	93.60	0	0.00	3.08
85	1836	Ulster Banking Company	8140	(banks)	706	706	100.00	0	0.00	5.19
86	1723	Chelsea Waterworks	1700	(water)	705	705	100.00	0	0.00	5.13
87	1809	North British and Mercantile Insurance	8200	(insur)	700	700	100.00	0	0.00	4.29
88	1835	Union Bank of Liverpool	8140	(banks)	698	698 [35]	100.00	0	0.00	6.45
89	1831	Dublin and Kingstown Rly.	7100	(rails)	697	697 [36]	100.00	0	0.00	4.77
90	1845	Royal Insurance Co.	8200	(insur)	694	694	100.00	0	0.00	5.04
91	1847	South Yorkshire and River Don Rly.	7100	(rails)	1871	690 [37]	36.89	874	46.75	5.10
92	1844	South Devon Rly.	7100	(rails)	689	689 [38]	100.00	0	0.00	4.62
93	1864	The Bradford Old Bank	8140	(banks)	686	686 [39]	100.00	0	0.00	6.34
94	1843	Yorkshire Banking Co.	8140	(banks)	685	685 [40]	100.00	0	0.00	7.01
95	1826	Lancaster Banking Co.	8140	(banks)	680	680 [41]	100.00	0	0.00	7.17
96	1836	Liverpool & London Globe Insurance	8200	(insur)	678	678 [42]	100.00	0	0.00	7.74
97	1845	Dublin and Belfast Junction Rly.	7100							

Table 1: Top British companies in 1868 ranked by ordinary share market capitalization:

Rank	Year Created	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Ordinary dividend yield at market
106	1824	Alliance, British & Foreign Insurance	8200	(insur)	625	625	100.00	0	0.00	6.16
107	1836	North of Scotland Bank	8140	(banks)	620	620 [49]	100.00	0	0.00	4.52
108	1811	Grand Junction Waterworks	1700	(water)	616	616	100.00	0	0.00	5.36
109	1805	Caledonian Fire and Life Insurance	8200	(insur)	615	615 [50]	100.00	0	0.00	3.90
110	1812	Regent's (or London) Canal Co.	7610	(canal)	615	615 [51]	100.00	0	0.00	5.56
111	1827	Bradford Banking Company	8140	(banks)	607	607 [52]	100.00	0	0.00	7.83
112	1865	East London Rly.	7100	(rails)	602	602 [53]	100.00	0	0.00	13.95
113	1855	City Bank	8140	(banks)	600	600	100.00	0	0.00	7.08
114	1840	Dublin and Droghedra Rly.	7100	(rails)	879	600 [54]	68.20	280	31.80	4.92
115	1865	Highland Railway (Rly).	7100	(rails)	1617	597	36.89	0	0.00	2.80
116	1833 [e]	London Gas	1620	(gas)	596	596 [55]	100.00	0	0.00	5.88
117	1845	Southwark and Vauxhall Water Co.	1700	(water)	587	587 [56]	100.00	0	0.00	5.60
118	1836	Union Bank of Manchester	8140	(banks)	580	580 [57]	100.00	0	0.00	8.16
119	1825	Hibernian Banking Company	8140	(banks)	578	578 [58]	100.00	0	0.00	3.68
120	1833	Commerical Gas Co.	1620	(gas)	577	577	100.00	0	0.00	7.58
121	1785	Lambeth Waterworks	1700	(water)	577	577	100.00	0	0.00	5.86
122	1861	Birmingham Joint Stock Bank	8140	(banks)						

5. By 1898, no longer quoted in *IMM*
6. At £900, below the 1898 cut off of £1,875
7. The Bristol and Exeter Railway amalgamated with the Great Western Railway in 1876
8. Imperial Gas merged with Gas Light and Coke in June 1876
9. Bought out by the London Joint Stock Bank in 1893
10. At £288, below the 1898 cut off of £1,875
11. Incorporated into the North Easter Railway
12. At £1,731, below the cut off of £1,875
13. London and Blackwell equity no longer separately quoted because of links to the Great Eastern Railway
14. By 1898, no longer quoted in *IMM*
15. At £765, below the 1898 cut off of £1,875
16. No price quoted in June 1898
17. At £366, below the 1898 cut off of £1,875
18. At £1,760, below the 1898 cut off of £1,875

[1868 Notes cont.]

[1868 Notes cont.]

19. Merged with Parr's Bank
20. Absorbed, by South Metropolitan Gas, April 1880
21. At £893, below the 1898 cut off of £1,875
22. Bought out by London Joint Stock Company in 1893
23. At £1,724, below the 1898 cut off of £1,875
24. By 1898, no longer quoted in *IMM*
25. Purchased by Birmingham Corporation for annuities in 1875
26. By 1898, no longer quoted in *IMM*

42. At £128, below the 1898 cut off of £1,875
43. Merged with the Dublin and Droghedra Rly in 1875 as part of the formation of the Great Northern of
    Ireland Rly.
44. By 1898, no longer quoted in *IMM*
45. At £520, below the 1898 cut off of £1,875.
46. By 1898, no longer quoted in *IMM*
47. By 1898, no longer quoted in *IMM*
48. By 1898, no longer quoted in *IMM*
49. At £1,031, below the 1898 cut off of £1,875.
50. At £753, below the 1898 cut off of £1,875.
51. By 1898, no longer quoted in *IMM*
52. At £959, below the 1898 cut off of £1,875
53. At £243, below the 1898 cut off of £1,875.
54. Merged with the Dublin and Belfast Junction Rly. in 1875 as part of the formation of the Great Northern
    of Ireland Rly.

[1868 Notes cont.]

<u>END OF TABLE 1</u>

Table 2: Top British Companies in 1883 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
1	London and N. Western Rly.	7100	(rails)	135449	65566	48.41	69884	51.59	4.33
2	Bank of England	8140	(banks)	43222	43222	100.00	0	0.00	3.54
3	North-Eastern	7100	(rails)	76339	39122	51.25	15171	19.87	4.69
4	Midland	7100	(rails)	89333	32778	36.69	28151	31.51	4.19
5	Great Western	7100	(rails)	91483	24886	26.91	52117	56.35	4.62
6	Lancashire & Yorkshire	7100	(rails)	41208	18964	46.02	9736	23.63	3.93
7	Great Northern	7100	(rails)	43857	14740	33.61	11492	26.20	3.32
8	South-Eastern								

Table 2: Top British Companies in 1883 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
35	Furness	7100	(rails)	7670	3540	46.16	2420	31.56	5.22
36	Peninsular and Oriental Steam	7400	(ships)	3450	3450	100.00	0	0.00	5.80
37	Manchester & Liverpool District	8140	(banks)	3428	3428	100.00	0	0.00	5.28
38	North London	7100	(rails)	5788	3407	58.87	1186	20.50	4.35
39	Taff Vale	7100	(rails)	6047	3307	54.68	1935	31.99	6.36
40	East London Waterworks	1620	(misc)	3272	3272	100.00	0	0.00	3.63
41	British Linen Company	8140	(banks)	3050	3050	100.00	0	0.00	4.59
42	London Chatham & Dover	7100	(rails)	17019	3045	17.89	8205	48.21	0.00
43	West Middlesex Waterworks	1620	(misc)	2944	2944	100.00	0	0.00	3.92
44	Royal	8200	(insur)	2925	2925	100.00	0	0.00	4.28
45	Bank of Australasia	8140	(banks)	2885	2885	100.00	0	0.00	7.63
46	Royal Exchange, Fire Life and Mar	8200	(insur Tj 5Û022						

Table 2: Top British Companies in 1883 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
71	North and South Wales	8140	(banks)	1681	1681	100.00	0	0.00	5.20
72	Phoenix Fire	8200	(insur)	1681	1681	100.00	0	0.00	4.20
73	Manchester and Salford	8140	(banks)	1639	1639	100.00	0	0.00	5.22
74	Vickers, Sons & Co Limited	2210	(iron)	1635	1635	100.00	0	0.00	6.19
75	Highland	7100	(rails)	4070	1632	40.09	1118	27.46	4.38
76	Rock Life	8200	(insur)	1600	1600	100.00	0	0.00	5.31
77	Bank of Liverpool	8140	(banks)	1588	1588	100.00	0	0.00	5.51
78	Kent Waterworks	1620	(misc)	1579	1579	100.00	0	0.00	9.08
79	Southwark and Vauxhall	1620	(misc)	1575	1575	100.00	0	0.00	4.41
80	Brazilian Submarine Tel	7902	(teleg)	1544	1544	100.00	0	0.00	5.89
81	Surrey Commercial Dock	1620	(						

Table 2: Top British Companies in 1883 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
107	Rylands and Sons, Limited	9999	(misc)	1200	1200	100.00	0	0.00	6.25
108	Hull Docks	7630	(docks	2556	1200	46.94	1356	53.06	5.41
109	Alliance and Dublin	1620	(misc)	1192	1192	100.00	0	0.00	4.95
110	Grand Junction Canal	7610	(canal)	1287	1158	89.99	0	0.00	3.90
111	London, Til. & Southend	7100	(rails)	1429	1148	80.35	281	19.65	3.73
112									

Table 3: Top British companies in 1898 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
1	London & N. Western	7100	(rail)	182100	81525	44.77	100575	55.23	3.57
2	Midland	7100	(rail)	151906	61366	40.40	49045	32.29	1.85
3	Bank of England	8140	(bank)	50863	50863	100.00	0	0.00	

Table 3: Top British companies in 1898 by ordinary share market capitalization:

Rank	Name	Industry

Table 3: Top British companies in 1898 by ordinary share market capitalization:

Rank	Name	Industry

Table 3: Top British companies in 1898 by ordinary share market capitalization:

Rank	Name	Industry

Table 4: Top British companies in 1913 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
1	London and N. Western	7100	(rails)	133786	59939	44.80	45742	34.19	4.65
2	Midland	7100	(rails)	129254	52004	40.23	37583	29.08	4.78
3	Coats, J and P	9999	(misc)	55525	51900	93.47	0	0.00	6.07
4	Great Western	7100	(rails)	116610	42144	36.14	59664	51.17	4.82
5	North-Eastern	7100	(rails)	81655	38744	47.45	26802	32.82	4.96
6	Bank of England	8140	(banks)	33690	33690	100.00	0	0.00	3.89
7	British-American Tobacco Co	9999	(misc)	30314	28135	92.81	0	0.00	5.89
8	Rio Tinto	2100	(mines)	28847	27141	94.09	0	0.00	6.22
9	De Beers	2100	(mines)	36721	35100	58.55	1621	4.41	10.11
10	Guinness (Arthur), Son & Co	4270	(brewr)	21100	18250	86.49	0	0.00	4.52
11	Lancashire & Yorkshire	7100	(rails)	56844	16845	29.63	18188	32.00	4.61
12	London and S. Western	7100	(rails)	46036	16771	36.43	12435	27.01	4.76
13	Gas Light and Coke	1021	(gas)	25787	16498	63.98	5430	21.06	4.84
14	'Shell "Transport and Trading	1300	(oil)	17070	15514	90.88	0	0.00	5.82
15	Great Northern	7100	(rails)	49431	15205	30.76	16912	34.21	4.33
16	Lloyds Bank Limited	8140	(banks)	14862	14862	100.00	0	0.00	5.24
17	London City & Midland Limited	8140	(banks)	14720	14720	100.00	0	0.00	4.88
18	London County & Westminster	8140	(banks)	14700	14700	100.00	0	0.00	5.06
19	Caledonian	7100	(rails)	50277	14293	28.43	21094	41.96	4.36
20	Rand Mines	2100	(mines)	13553	13553	100.00	0	0.00	8.63
21	Crown Mines	2100	(mines)	12809	12809	100.00	0	0.00	8.07
22	Imp. Tob. Co (Gt. Bn & I)	9999	(Misc)	17876	11522	64.46	0	0.00	2.29
23	London, Brighton & S. Coast	7100	(rails)	32413	10733	33.11	10227	31.55	5.01
24	Brunner, Mond and Co	9999	(misc)	12974	10724	82.66	0	0.00	5.87
25	National Provincial Bank of England	8140	(banks)	10578	10578	100.00	0	0.00	5.11
26	Hongkong and Shanghai Banking	8140	(banks)	9720	9720	100.00	0	0.00	5.25
27	North British	7100	(rails)	47995	9518	19.83	17971	37.44	4.28
28	Gt. S. & Western of Ireland	7100	(rails)	13487	9354	69.35	2748	20.38	2.85
29	Great Eastern	7100	(rails)	46956	9026	19.22	24160	51.45	4.26
30	Parr's Bank, Limited	8140	(banks)	8819	8819	100.00	0	0.00	5.12
31	Alliance Assurance Co Limited	8200	(insur)	8725	8725	100.00	0	0.00	4.81
32	South-Eastern	7100	(rails)	31119	8721	28.02	11538	37.08	4.53
33	Barclay and Co	8140	(banks)	8494	8494	100.00	0	0.00	5.47
34	Royal Insurance Co	8200	(insur)	9080	8245	90.80	835	9.20	4.73

Table 4: Top British companies in 1913 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
35	Imperial Continental Gas	1021	(gas)	9139	8077	88.38	1062	11.62	5.50
36	Union of London and Smiths Bank	8140	(banks)	7454	7454	100.00	0	0.00	5.72
37	South Metropolitan Gas	1021	(gas)	8411	7009	83.32	1403	16.68	5.02
38	Commercial Union Assurance Co	8200	(insur)	8841	6933	78.41	1908	21.59	3.83
39	Manchester and Liverpool District	8140	(banks)	6853	6853	100.00	0	0.00	4.84
40	Burmah Oil	1300	(oil)	7996	6548	81.89	245	3.06	5.82
41	Armstrong (Sir W.G) Whitwh	2210	(iron)	9795	6520	66.57	2400	24.50	6.15
42	Vickers, Limited	2210	(iron)	10573	6475	61.24	2575	24.36	5.71
43	London & River Plate, Limited	8140	(banks)	6360	6360	100.00	0	0.00	6.60
44	East Rand Proprietary	2100	(mines)	6268	6268	100.00	0	0.00	9.76
45	Bank of Ireland	8140	(banks)	6231	6231	100.00	0	0.00	4.44
46	Glasgow & S-W	7100	(rails)	18069	6030	33.37	6924	38.32	4.94
47	New Jagersfontein	2100	(mines)	5684	5684	100.00	0	0.00	6.73
48	Liverpool & London & Globe	8200	(insur)	6748	5527	81.91	1221	18.09	4.89
49	Randfontein Central	2100	(mines)	5500	5500	100.00	0	0.00	9.09
50	British Linen Bank	8140	(banks)	5381	5381	100.00	0	0.00	4.41
51	London Joint Stock, Limited	8140	(banks)	5297	5297	100.00	0	0.00	5.98
52	Capital and Counties, Limited	8140	(banks)	5250	5250	100.00	0	0.00	5.33
53	Eastern Telegraph, Limited	7902	(teleg)	8415	5180	61.55	1735	20.62	5.41
54	Babcock and Wilcox, Limited	2210	(iron)	5111	4980	97.43	0	0.00	5.33
55	Royal Bank of Scotland	8140	(bank)	4840	4840	100.00	0	0.00	4.55
56	Consolidated Gold Fields of S.A	2100	(mines)	7359	4813	65.39	203	2.76	6.23
57	Metropolitan	7100	(rails)	13827	4691	33.92	4146	29.99	0.00
58	Great Northern Telegraph	7902	(teleg)	4650	4650	100.00	0	0.00	6.45
59	Anglo-American Telegraph	7902	(teleg)	4612	4612	100.00	0	0.00	5.69
60	Bank of Australiasia	8140	(banks)	4560	4560	100.00	0	0.00	5.96
61	Maypole Dairy	9999	(misc)	4916	4522	91.99	0	0.00	10.74
62	Met. Carr. Wagon and Finance	9999	(misc)	4995	4408	88.24	0	0.00	4.85
63	Tharsis Sulphur and Copper	2100	(mines)	4375	4375	100.00	0	0.00	5.71
64	Modderfontein (New)	2100	(mines)	4331	4331	100.00	0	0.00	9.70
65	North British and Mercantile	8200	(insur)	5915	4235	71.60	0	0.00	5.19
66	Randfontein Estates Gold	2100	(mines)	4219	4219	100.00	0	0.00	8.89
67	London & Brazilian Limited	8140	(banks)	4125	4125	100.00	0	0.00	6.06
68	Great Northern of Ireland	7100	(rails)	8777	4087	46.57	3200	36.46	5.07
69	Premier (Transvaal) Diamond	2100	(mines)	5440	4040	74.26	0	0.00	9.90
70	Bank of Liverpool, Limited	8140	(banks)	4008	4008	100.00	0	0.00	5.29

Table 4: Top British companies in 1913 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
71	Consett Iron, Limited	2211	(iron)	4819	3963	82.23	0	0.00	9.15
72	Central Mining and Investment	2100	(mines)	3931	3931	100.00	0	0.00	6.49
73	Commercial of Scotland, Limited	8140	(banks)	3825	3825	100.00	0	0.00	5.23
74	London & Provincial, Limited	8140	(banks)	3825	3825	100.00	0	0.00	4.97
75	Eastern Ext., Austr. and China	7902	(teleg)	4517	3825	84.68	692	15.32	5.49
76	Nobel Dynamite Trust, Limited	9999	(misc)	4899	3799	77.55	0	0.00	6.02
77	Taff Vale	7100	(rails)	7914	3791	47.89	1114	14.08	5.14
78	Bank of Scotland	8140	(banks)	3684					

Table 4: Top British companies in 1913 by ordinary share market capitalization:

Rank	Name	Industry		(1) total cap (£'000)	(2) total ord (£'000)	(2)/(1) %	(3) total deb (£'000)	(3)/(1) %	Dividend rate of return at market
107	Arizona Copper	2100	(mines)	2850	2850	100.00	0	0.00	8.67
108	Marconi's Wireless Telegraph	7902	(teleg)	3594	2813	78.26	0	0.00	5.33
109	Pacific Phosphate Co	9999	(misc)	2969	2813				

Table 5: Top British companies in benchmark years, aggregated by financial instrument (all companies and selected sectors):

No. of Firms	Year	Instrument	All Companies (£'000)	Railways (£'000)	Mines
888	1868	All types	832200.00 (1)		
888	1868	Ordinary	522310.00 (2)		
125	1868	All types	453410.71	291366.12	0.00
125	1868	Ordinary	308836.49 (3)	147983.77	0.00
125	1868	Preference	33700.03	33538.78	0.00
125	1868	Debenture	110874.19	109843.57	0.00
125	1868	Dividends	15145.07 (4)	6991.37	0.00
888	1868	(2)/(1) %	62.76%		
888	1868	(3)/(2) %	59.13%		
125	1868	(4)/(3) %	4.90%	4.72%	0.00%
984	1873	All types	1340800.00 (1)		
984	1873	Ordinary	771900.00 (2)		
125	1873	All types	670504.62	455214.99	3606.78
125	1873	Ordinary	440732.77 (3)	228675.07	3606.78
125	1873	Preference	53103.51	51045.26	0.00
125	1873	Debenture	176668.34	175494.66	0.00
125	1873	Dividends	22000.01 (4)	11425.82	125.66
984	1873	(2)/(1) %	57.57%		
984	1873	(3)/(2) %	57.10%		
125	1873	(4)/(3) %	4.99%	5.00%	3.48%
1051	1878	All types	n/a		
1051	1878	Ordinary	n/a		
125	1878	All types	874639.94	600221.21	5142.61
125	1878	Ordinary			

Table 5: continued:

No. of Firms	Year	Instrument	All Companies (£'000)	Railways (£'000)	Mines (£'000)
1317	1888	All types	2623400.00 (1)		
1317	1888	Ordinary	1101400.00 (2)		
125	1888	All types	1260541.89	912635.68	23758.65
125	1888	Ordinary	635403.49 (3)	322565.00	20174.27
125	1888	Preference	229791.26	215597.27	0.00
125	1888	Debenture	395347.15	374473.40	3584.38
125	1888	Dividends	26108.38 (4)	11565.94	1311.73
1317	1888	(2)/(1) %	41.98%		
1317	1888	(3)/(2) %	57.69%		
125	1888	(4)/(3) %	4.11%	3.59%	6.50%
1273	1893	All types	7169300.00 (1)[1]		
1261	1893	Ordinary	3692700.00 (2)[1]		
125	1893	All types	1811258.53	1236395.43	36838.30
125	1893	Ordinary	717061.11 (3)	366689.18	30992.42
125	1893	Preference	287515.54	262818.91	0.00
125	1893	Debenture	806681.88	606887.34	5845.88
125	1893	Dividends	26892.15 (4)	10951.04	1882.75
1273	1893	(2)/(1) %	51.51%		
1261	1893	(3)/(2) %	19.42%		
125	1893	(4)/(3) %	3.75%	2.99%	6.07%
1419	1898	All types	2982200.00 (1)		
1415	1898	Ordinary	1406500.00 (2)		
125	1898	All types	1841006.44	1293738.43	101746.21
125	1898	Ordinary	935807.37 (3)	450252.59	90172.52
125	1898	Preference	318851.01	291407.51	3298.44
125	1898	Debenture	586348.06	552078.34	8275.25
125	1898	Dividends	33723.00 (4)	13955.54	4808.24
1419	1898	(2)/(1) %	47.16%		
1415	1898	(3)/(2) %	66.53%		
125	1898	(4)/(3) %	3.60%	3.02%	5.33%
1518	1903	All types	3086600.00 (1)		
1518	1903	Ordinary	1537300.00 (2)		
125	1903	All types	1876051.10	1183415.28	186716.97
125	1903	Ordinary	965573.55 (3)	389057.33	160887.43
125	1903	Preference	326710.93	260970.57	19463.57
125	1903	Debenture	583766.62	533387.38	6365.98
125	1903	Dividends	39846.10 (4)	13587.00	7670.14
1518	1903	(2)/(1) %	49.80%		
1518	1903	(3)/(2) %	62.81%		
125	1903	(4)/(3) %	4.13%	3.49%	4.77%

[1] *Foreign firms whose security prices were quoted in sterling were not distinguished from domestic ones prior to, or in, the 1893 benchmark year. However, the expansion of the IMM's coverage of sterling-priced foreign firms accelerated considerably between 1888 and 1893, resulting in a near tripling of the sterling market capitalisation of quoted companies, even as the number of companies listed fell. By 1898 the IMM's coverage had further expanded but was organised so that the IMM had segmented the foreign, sterling-priced, firms into separate sections which we automatically exclude from the valuations considered here (e.g. most notably Foreign Railway). Hence, because of these differences in coverage, the capitalised amounts of the total market experience a break in coverage between 1893 and 1898. By 1898, only "domestic" sterling-priced companies are included.*

Table 5: continued:

No. of Firms	Year	Instrument	All Companies (£'000)	Railways (£'000)	Mines (£'000)
1508	1908	All types	2810800.00 (1)		
1508	1908	Ordinary	1501300.00 (2)		
125	1908	All types	1680958.37	957641.46	140862.52
125	1908	Ordinary	934748.31 (3)	330974.48	121292.58
125	1908	Preference	333859.32	258857.93	15955.94
125	1908	Debenture	412350.74	367809.05	3614.00
125	1908	Dividends	43661.08 (4)	13758.87	7227.61
1508	1908	(2)/(1) %	53.41%		
1508	1908	(3)/(2) %	62.26%		
125	1908	(4)/(3) %	4.67%	4.16%	5.96%
1552	1913	All types	3200900.00 (1)		
1552	1913	Ordinary	1690600.00 (2)		
125	1913	All types	1752954.93	957969.93	166210.15
125	1913	Ordinary	1044695.68 (3)	331734.95	145336.22
125	1913	Preference	312390.03	262816.65	19050.00
125	1913	Debenture	395868.22	363418.32	1823.93
125	1913	Dividends	57714.02 (4)	15334.31	12608.26
1552	1913	(2)/(1) %	52.82%		
1552	1913	(3)/(2) %	61.77%		
125	1913	(4)/(3) %	5.52%	4.62%	8.68%

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

		Rank by size of ordinary cap.	Ordinary capital	Total paid up (PAR)	Total nominal
Created	**Name**				

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Created	Name	Rank by size of ordinary cap. market value 1898	Rank by size of ordinary cap. market value 1913	Ordinary capital Amount 1898 (£'000)	Ordinary capital % change 1898-1913 or amount 1913 (£'000)	Total paid up (PAR) Amount 1898 (£'000)	Total paid up (PAR) % change 1898-1913 or amount 1913 (£'000)	Total nominal Amount 1898 (£'000)	Total nominal % change or amount 1913 (£'000)
1884	Arizona Copper Mine (mine)	-	108	0.00	2850.00	0.00	379.97	0.00	379.97
1897	Marconi's Wireless Telegraph (teleg)	-	109	0.00	2813.00	0.00	750.00	0.00	750.00
1902	Pacific Phosphate Co. (misc)	-	110	0.00	2813.00	0.00	562.50	0.00	750.00
1888	Anglo-South American Bank (bank)	-	111	0.00	2805.00	0.00	1650.00	0.00	3300.00
1862	British Bank of South Africa (bank)	-	112	0.00	2750.00	0.00	1000.00	0.00	2000.00
1908	Modderfontein 'B' Mine (mine)	-	116	0.00	2669.00	0.00			

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Created	Name	Rank by size of ordinary cap. market value 1898	1913	Ordinary capital Amount 1898 (£'000)	% change 1898-1913 or amount 1913 (£'000)	Total paid up (PAR) Amount 1898 (£'000)	% change 1898-1913 or amount 1913 (£'000)	Total nominal Amount 1898 (£'000)	% change or amount 1913 (£'000)
1873	Rio Tinto Mines (mine)	24	9	8450.00	221.20	1625.00	15.38	1625.00	15.38
1834	London & Westminster Bank (bank)	25	-	8050.00	-100.00[2]	2800.00	-100.00	14000.00	-100.00
1865	Lloyds Bank Ltd (bank)	26	16	8033.00	85.01	2040.00	106.31	12750.00	106.31
1824	Imperial Continental Gas (gas)	27	34	7961.00	1.46	3800.00	30.00	3800.00	30.00
1842	South Metropolitan Gas Co (gas)	28	37	7771.00	-9.81	5531.25	16.25	5531.25	16.25
1837	Glasgow & South Western Rly (rail)	29	47	7302.00	-17.42	10331.09	22.49	10331.09	22.49
1844	Gt. Southern & Western of Ireland Rly (rail)	30	53	7233.00	29.32	4971.15	87.09	4971.15	87.09
1872	Eastern Telegraph Ltd (teleg)	31	56	7000.00	-26.00	4000.00	0.00	4000.00	0.00
1845	Royal Insurance Co Ltd (insur)	32	33	6825.00	20.81	1001.87	-55.91	2504.68	17.57
1876	Great Northern of Ireland Rly (rail)	33	70	6304.00	-35.17	3541.80	14.26	3541.80	14.26
1836	London City and Midland Bank (bank)	34	17	6223.00	136.54	1467.69	171.80	7044.90	171.80
1746	British Linen Company (bank)	35	52	6125.00	-12.15	1250.00	0.00	1250.00	0.00
1865	Parr's Bank Ltd (bank)	36	29	5907.00	49.30	1320.00	67.03	6600.00	67.03
1892	Consolidated Gold Fields of S. Africa (mine)	37	59	5653.00	-14.86	1350.00	48.15	1350.00	48.15
1829	Manchester & L'pool District Bank (bank)	38	39	5250.00	30.53	1000.00	89.60	6000.00	58.00
1898	Goldfields Deep Mine (mine)	39	-	5063.00	-100.00[3]	600.00	-100.00	600.00	-100.00
1849	Great Central Rly (rail)	40	114	4779.00	-43.31	9552.81	11.57	9552.81	11.57
1886	Mount Morgan Mine (mine)	41	91	4688.00	-29.33	875.00	14.29	1000.00	0.00
1727	Royal Bank of Scotland (bank)	42	58	4630.00	4.54	2000.00	0.00	2000.00	0.00
1809	North British and Mercantile Insurance (insur)	43	67	4620.00	-8.33	687.50	0.00	2750.00	0.00
1846	North London Rly (rail)	44	117	4536.00	-42.00	2020.40	35.34	2020.40	35.34
1869	Great Northern & Telegraph Co (teleg)	45	61	4500.00	3.33	1500.00	0.00	1500.00	0.00
1840	P&O Steam Navigation (shipping)	46	46	4466.00	35.83	2320.00	50.86	2320.00	50.86
1873	Eastern Ext., Austral and China (teleg)	47	77	4438.00	-13.81	2500.00	20.00	2500.00	20.00
1695	Bank of Scotland (bank)	48	79	4413.00	-16.52	1250.00	-29.33	1250.00	6.00
1887	Robinson Mines (mine)	49	-	4400.00	-100.00[4]	2750.00	-100.00	2750.00	-100.00
1810									

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Created	Name	Rank by size of ordinary cap. market value 1898	Rank by size of ordinary cap. market value 1913	Ordinary capital Amount 1898 (£'000)	Ordinary capital % change 1898-1913 or amount 1913 (£'000)	Total paid up (PAR) Amount 1898 (£'000)	Total paid up (PAR) % change 1898-1913 or amount 1913 (£'000)	Total nominal Amount 1898 (£'000)	Total nominal % change or amount 1913 (£'000)
1866	Tharsis Sulphur and Copper Mines (mine)	58	65	3906.00	12.01	1250.00	0.00	1250.00	0.00
1839	Union Bank of London (bank)	59	-	3850.00	-100.00[7]	1705.00	-100.00	11000.00	-100.00
1887	Simmer and Jack Proprietary Mine (mine)	60	-	3813.00	-100.00[8]	5000.00	-100.00	5000.00	-100.00
1834	Capital and Counties Bank Ltd (bank)	61	54	3777.00	39.00	932.50	87.67	4662.50	87.67
1881	Brunner, Mond and Co (misc)	62	22	3942.00	323.88	950.84	153.44	1381.69	109.70
1867	Hongkong and Shanghai Banking Co (bank)	63	26	3680.00	164.13	2250.00	33.33	2250.00	33.33
1893	East Rand Proprietary Mine (mine)	64	44	3516.00	78.27	750.00	226.12	750.00	226.12
1806 1862	West Middlesex Water (water)	65	-	3436.00	-100.00[9]	1155.07	-100.00	1155.07	-100.00

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Created	Name	Rank by size of ordinary cap. market value 1898	1913	Ordinary capital Amount 1898 (£'000)	% change 1898-1913 or amount 1913 (£'000)	Total paid up (PAR) Amount 1898 (£'000)	% change 1898-1913 or amount 1913 (£'000)	Total nominal Amount 1898 (£'000)	% change or amount 1913 (£'000)
1889	Randfontein Estates Gold Mines (mine)	92	68	2500.00	68.76	2000.00	50.00	2000.00	50.00
1836	Colonial Bank (bank)	93	-						

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

		Rank by size of ordinary cap. market value		Ordinary capital		Total paid up (PAR)		Total nominal	
				Amount 1898 (£'000)	% change 1898-1913 or amount 1913 (£'000)	Amount 1898 (£'000)	% change 1898-1913 or amount 1913 (£'000)	Amount 1898 (£'000)	% change or amount 1913 (£'000)
Created	Name	1898	1913						
1894	Associated Gold of Western Australia (mine)	125	-	1875.00	-100.00[43]	500.00	-100.00	500.00	-100.00

Notes: Table 6

The following notes relate to the top companies of 1898 that did not appear in the 1913 list. Values in £'000.

[1] London and County Bank merged with London and Westminster Bank to form London, County and Westminster Bank.

[2] London and County Bank merged with London and Westminster Bank to form London, County and Westminster Bank.

[3] In liquidation. Assets transferred to Consolidated Gold fields of South Africa for two fully paid Consolidated shares plus 4/- bonus for each share held.

[4] At £1,719, below 1913 top 125 cut-off of £2,388.

[5] Absorbed by Metropolitan Water Board (unquoted).

[6] Absorbed by Metropolitan Water Board (unquoted).

[7] Merged with Smiths Bank to form Union of London and Smiths Bank.

[8] At £1,875, below 1913 top 125 cut-off of £2,388.

[9] Absorbed by Metropolitan Water Board (unquoted).

[10] Merged with East and West India Docks in January 1901 to form London and India Docks Company. Subsequently transferred to Port of London Authority (unquoted) in March 1909.

[11] Absorbed by Metropolitan Water Board (unquoted).

[12] At £1,804, below 1913 top 125 cut-off of £2,388.

[13] Absorbed by Metropolitan Water Board (unquoted).

[14] Purchased by Post Office (unquoted) in December 1911.

[15] Absorbed by Metropolitan Water Board (unquoted).

[16] At £1,232, below 1913 top 125 cut-off of £2,388.

[17] At £2,260, below 1913 top 125 cut-off of £2,388.

[18] At £2,097, below 1913 top 125 cut-off of £2,388.

[19] After voluntary liquidation in 1904, this firm merged with Machinery Trust, Ltd. to become Linotype and Machinery Trust, Ltd., whose equity was not quoted in 1913.

[20] After voluntary liquidation in 1900, this firm's assets were transferred to De Beers for £1,625, giving shareholders £16 per 10/- share (nominal).

[21] At £625, below 1913 top 125 cut-off of £2,388.

[22] At £1,396, below 1913 top 125 cut-off of £2,388.

[23] At £879, below 1913 top 125 cut-off of £2,388.

[24] At £2,181, below 1913 top 125 cut-off of £2,388.

[25] At £2,100, below 1913 top 125 cut-off of £2,388.

[26] By 1913, no longer quoted by *IMM*.

[27] Wound up in January 1912 by merger with Ferreira Deep, with a distribution of one Ferreira Deep share and 10/- cash being made per share.

[28] At £2,113, below 1913 top 125 cut-off of £2,388.

[29] Merged with London, City and Midland Bank (No. 17 in 1913).

[30] Absorbed by Metropolitan Water Board (unquoted).

Notes: Table 6 [Cont.]

The following notes relate to the top companies of 1898 that did not appear in the 1913 list. Values in £'000.

[31] At £1,105, below 1913 top 125 cut-off of £2,388.
[32] At £1,650, below 1913 top 125 cut-off of £2,388.
[33] At £1,829, below 1913 top 125 cut-off of £2,388.
[34] Merged with Guest, Keen to form Guest, Keen and Nettlefolds (No. 102 in 1913).
[35] At £1,850, below 1913 top 125 cut-off of £2,388.
[36] By 1913, no longer quoted by *IMM*.
[37] Merged with London and Midland Bank to form London, City and Midland Bank (No. 17 in 1913) in November 1898.
[38] At £748, below 1913 top 125 cut-off of £2,388.
[39] At £850, below 1913 top 125 cut-off of £2,388.
[40] At £1,959, below 1913 top 125 cut-off of £2,388.
[41] At £1,032, below 1913 top 125 cut-off of £2,388.
[42] At £1,875, below 1913 top 125 cut-off of £2,388.
[43] At £186, below 1913 top 125 cut-off of £2,388.

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Name	Total issued no. shares		Cash Dividends		Total non-equity mkt. cap		Total non-equity nominal cap	
	Number 1898 (000)	**% change 1898-1913 or number 1913 (000)**	**Amount 1898 (000)**	**% change 1898-1913 or amount 1913 (000)**	**Amount 1898 (000)**	**% change 1898-1913 or amount 1913 (000)**	**Amount 1898 (000)**	**% change 1898-1913 or amount 1913 (000)**
British American Tobacco Co (misc: tobacco)	0.00	6252.17	0.00	1656.80	0.00	2179.00	0.00	2100.00
'Shell''Transport and Trading Co (oil)	0.00	3008.77	0.00	902.63	0.00	1556.00	0.00	1500.00
London County and Westminster Bank (bank)	0.00	700.00	0.00	743.75	0.00	0.00	0.00	0.00
Crown Mines (mine)	0.00	1880.21	0.00	1034.10	0.00	0.00	0.00	0.00
Imperial Tobacco (Gt. Bn & I) (Misc. tobac)	0.00	7898.69	0.00	262.82	0.00	6354.00	0.00	4959.25
Barclay and Co. (bank)	0.00	450.00	0.00	464.94	0.00	0.00	0.00	0.00
Union of London & Smiths Bank (bank)	0.00	229.34	0.00	426.57	0.00	0.00	0.00	0.00
Maypole Dairy Co. (retail: misc)	0.00	3650.00	0.00	485.62	0.00	394.00	0.00	350.00
Burmah Oil Co. (oil)	0.00	1905.00	0.00	381.00	0.00	1448.00	0.00	1240.00
New Jagersfontein Mine (mine)	0.00	850.00	0.00	382.50	0.00	0.00	0.00	0.00
L'pool & London & Globe Insurance Co (insur)	0.00	245.64	0.00	270.20	0.00	1221.00	0.00	1250.65
Randfontein Central Mine (mine)	0.00	4000.00	0.00	500.00	0.00	0.00	0.00	0.00
Babcock and Wilcox (iron)	0.00	1660.00	0.00	265.60	0.00	131.00	0.00	100.00
Anglo-American Telegraph Co. (teleg)	0.00	70.00	0.00	262.50	0.00	0.00	0.00	0.00
Met. Carriage, Wagon & Finance (misc: engin)	0.00	1424.71	0.00	213.71	0.00	587.00	0.00	483.13
Modderfontein (New) Mine (mine)	0.00	350.00	0.00	420.00	0.00	0.00	0.00	0.00
London & Brazilian Bank (bank)	0.00	125.00	0.00	250.00	0.00	0.00	0.00	0.00
Premier (Transvaal) Diamond Mine (mine)	0.00	320.00	0.00	400.00	0.00	1400.00	0.00	40.00
Central Mining and Investment Co. (mine)	0.00	425.00	0.00	255.00	0.00	0.00	0.00	0.00
Chartered Bank of India, Austral & China (bank)	0.00	60.00						

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Name	Total issued no. shares		Cash Dividends		Total non-equity mkt. cap		Total non-equity nominal cap	
	Number 1898 (000)	% change 1898-1913 or number 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)
Furness, Withy and Co (ships)	0.00	2000.00	0.00	200.00	0.00	1425.00	0.00	1500.00
Arizona Copper Mine (mine)	0.00	1519.90	0.00	246.98	0.00	0.00	0.00	0.00
Marconi's Wireless Telegraph (teleg)	0.00	750.00	0.00	150.00	0.00	781.00	0.00	250.00
Pacific Phosphate Co. (misc)	0.00	750.00	0.00	140.62	0.00	156.00	0.00	125.00
Anglo-South American Bank (bank)	0.00	330.00	0.00	198.00	0.00	0.00	0.00	0.00
British Bank of South Africa (bank)	0.00	100.00	0.00	200.00	0.00	0.00	0.00	0.00
Modderfontein 'B "Mine (mine)	0.00	700.00	0.00	280.00	0.00	0.00	0.00	0.00
Lyons (J) & Co (misc: retail)	0.00	756.00	0.00	151.30	0.00	931.00	0.00	925.00
Powell-Duffryn Steam Coal Co (coal)	0.00	825.00	0.00	123.75	0.00	193.00	0.00	155.79
London and Blackwall Rly (rail)	0.00	23.21	0.00	104.47	0.00	1124.00	0.00	1064.06
United Counties Bank (bank)	0.00	298.33	0.00	156.62	0.00	0.00	0.00	0.00
Brakpan Mine (mine)	0.00	750.00	0.00	337.50	0.00	0.00	0.00	0.00
London and N. Western Rly (rail)	408.14	5.09	2908.00	-4.13	100575.00	-26.58	75716.12	8.29
Midland Rly (rail)	698.33	11.81	1134.80	119.18	90540.00	-14.68	96056.74	28.52
Bank of England (bank)	145.53	0.00	1455.30	-10.00	0.00	0.00	0.00	0.00
North-Eastern Rly (rail)	276.38	15.86	1761.90	9.04	56510.00	-24.06	43490.53	12.28
Great Western Rly (rail)	243.96	47.96	1463.80	38.71	98270.00	-24.22	57924.07	9.86
London and S. Western Rly (rail)	142.68	53.01	826.65	-3.42	35080.00	-16.58	27061.89	26.08
Caledonian								

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Name	Total issued no. shares		Cash Dividends		Total non-equity mkt. cap		Total non-equity nominal cap	
	Number 1898 (000)	% change 1898-1913 or number 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)
Rand Mines (mine)	332.71	539.00	0.00	1.17	0.00	0.00	0.00	0.00
Metropolitan Rly (rail)	79.23	14.89	198.07	-100.00	9941.00	-8.10	6967.37	56.34
Rio Tinto Mines (mine)	325.00	15.38	650.00	159.62	5559.00	-69.31	5143.22	-68.41
London & Westminster Bank (bank)	140.00	-100.00	350.00	-100.00	0.00	0.00	0.00	0.00
Lloyds Bank Ltd (bank)	255.00	106.31	357.00	118.10	0.00	0.00	0.00	0.00
Imperial Continental Gas (gas)	38.00	30.00	380.00	17.00	37947.00	-97.20	38113.60	

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

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	Number 1898 (000)	% change 1898-1913 or number 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)
Taff Vale Rly (rail)	51.92	0.00	175.24	11.12	4161.00	-0.91	3321.57	39.36
Rylands and Sons (misc)	100.00	0.00	202.71	-18.50	0.00	0.00	0.00	0.00
East London Waterworks (water)	17.21	-100.00	133.34	-100.00	1457.00	-100.00	1044.74	-100.00
Tharsis Sulphur and Copper Mines (mine)	625.00	0.00	156.25	60.00	0.00	0.00	0.00	0.00
Union Bank of London (bank)	110.00	-100.00	179.03	-100.00	0.00	0.00	0.00	0.00
Simmer and Jack Proprietary Mine (mine)	1000.00	-100.00	0.00	0.00	505.00	-100.00	500.00	-100.00
Capital and Counties Bank Ltd (bank)	93.25	87.67	149.20	87.67	0.00	0.00	0.00	0.00
Brunner, Mond and Co (misc)	138.17	1997.32	237.71	164.68	942.00	138.85	523.26	186.66
Hongkong and Shanghai Banking Co (bank)	80.00	50.00	200.00	155.00	0.00	0.00	0.00	0.00
East Rand Proprietary Mine (mine)	750.00	226.12	0.00	0.61	0.00	0.00	0.00	0.00
West Middlesex Water (water)	11.55	-100.00	115.51	-100.00	327.00	-100.00	200.00	-100.00
Manchester and County Bank (bank)	54.600	400.00	131.04	-41.04	0.00	0.00	0.00	0.00
Williams, Deacon's Bank Ltd (bank)	125.00	25.00	125.00	50.00	0.00	0.00	0.00	0.00
Bank of Liverpool Ltd (bank)	80.00	606.25	130.00	62.98	0.00	0.00	0.00	0.00
London & St. Katherine's Docks (dock)	57.57	-100.00	143.92	-100.00	6164.00	-100.00	4636.25	-100.00
National Bank Ltd (bank)	150.00	0.00	135.00	11.11	0.00	0.00	0.00	0.00
London and River Plate Bank Ltd (bank)	60.00	100.00	180.00	133.30	0.00	0.00	0.00	0.00
Wilts and Dorset Banking Co Ltd (bank)	60.00	16.67	120.00	16.67	0.00	0.00	0.00	0.00
Nobel Dynamite Trust Limited (misc)	175.40	30.30	210.48	8.58	0.00	1100.00	0.00	1000.00
Consett Iron Ltd (iron)	100.00	0.00	150.00	141.65	0.00	856.00	500.00	0.00
Kent Waterworks (water)	8.68	-100.00	114.44	-100.00	0.00	0.00	0.00	0.00
European Gas Limited (misc)	144.01	-100.00	82.68	-100.00	0.00	0.00	0.00	0.00
Grand Junction Waterworks (water)	27.88	-100.00	91.80	-100.00	421.00	-100.00	295.00	-100.00
Mysore Gold Mining Co (mine)	500.00	22.00						

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

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London & Provincial Bank Ltd (bank)	120.00	66.67	105.00	80.95	0.00	0.00	0.00	0.00
Linotype Co (misc)	403.00	-100.00	18.00	-100.00	0.00	0.00	0.00	0.00
Standard Bank of South Africa (bank)	40.00	674.26	160.00	30.66	0.00	0.00	0.00	0.00
London and S. African Exploration (invest co)	200.00	-100.00	80.00	-100.00	0.00	0.00	0.00	0.00
Randfontein Estates Gold Mines (mine)	2000.00	50.00	0.00	0.38	0.00	0.00	0.00	0.00
Colonial Bank (bank)	120.0	-100.00	36.00	-100.00	0.00	0.00	0.00	0.00
Vickers Limited (iron)	750.00	393.33	112.50	228.89	3097.00	32.32	2700.00	53.65
Northern Assurance Limited (insur)	30.00	900.00	90.00	33.33	0.00	0.00	0.00	0.00
Clydesdale Bank Litd (bank)	100.00	0.00	100.00	50.00	0.00	0.00	0.00	0.00
Royal Exchange Fire, Life & Marine (insur)	6.89	-100.00	96.49	-100.00	0.00	0.00	0.00	0.00
Geldenhuis Deep Mines (mine)	300.00	-100.00	90.00	-100.00	0.00	0.00	0.00	0.00
Commercial Gas Co (gas)	7.46	-100.00	94.88	-100.00	295.00	-100.00	196.31	-100.00
Bolckow, Vaughan and Co Ltd (iron)	174.53	1900.00	137.31	0.00	596.00	-14.93	472.08	0.00
Ulster Bank Ltd (bank)	180.00	-100.00	90.00	-100.00	0.00	0.00	0.00	0.00
London & Globe Finance Corp (investment co)	2000.00	-100.00	0.00	-100.00	0.00	0.00	0.00	0.00
Phoenix Assurance Ltd (insur)	53.78	686.33	94.11	23.43	0.00	1235.00	0.00	1277.95
Ferreira Mines (mine)	90.00	-100.00	135.00	-100.00	0.00	0.00	0.00	0.00
Distillers Ltd (misc)	88.77	-100.00	110.96	-100.00	0.00	0.00	45000.00	-100.00
North & South Wales Bank (bank)	60.00	-100.00	90.00	-100.00	0.00	0.00	0.00	0.00
Commercial Union Assurance Co (insur)	50.00	490.00	75.00	254.00	332.00	474.70	300.00	562.62
New River Water Co (water)	5.00	-100.00	33.13	-100.00	2152.00	-100.00	1500.00	-100.00
Brazilian Submarine Telegraph (teleg) later Western Telegraph	130.75	59.03	91.00	59.95	0.00	749.00	0.00	818.67
Champion Reef Gold Mines Ltd (mine)	440.00	-100.00	231.00	-100.00	0.00	0.00	0.00	0.00
Broken Hill Proprietary Mines (mine)	960.00	-100.00	240.00	-100.00	0.00	0.00	0.00	0.00
London Assur Corp, Fire, Life & Marine (insur)	35.86	-100.00	89.65	-100.00	0.00	0.00	0.00	0.00
London & South-Western Bank Ltd (bank)	30.00	733.33	78.00	117.95	0.00	0.00	0.00	0.00
Nettlefold Ltd (misc: engineering)	42.00	-100.00	63.00	-100.00	320.00	-100.00	210.00	-100.00
Guardian Fire and Life Insurance Co (insur)	200.00	-100.00	70.00	-100.00	0.00	0.00	0.00	0.00
Liebig's Extract of Meat (misc. food)	25.00	380.00	100.00	35.00	0.00	1025.00	0.00	1000.00
York City & County Banking Co (bank)	163.77	-100.00	81.88	-100.00	0.00	0.00	0.00	0.00
Bank of Australiasia (bank)	40.00	0.00	80.00	240.00	0.00	0.00	0.00	0.00
City Bank Ltd (bank)	100.00	-100.00	95.00	-100.00	0.00	0.00	0.00	0.00

Table 6: Causes of changes in the market capitalization of the ordinary shares of the top British companies 1898-1913:

Name	Total issued no. shares		Cash Dividends		Total non-equity mkt. cap		Total non-equity nominal cap	
	Number 1898 (000)	% change 1898-1913 or number 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)	Amount 1898 (000)	% change 1898-1913 or amount 1913 (000)
Aerated Bread Ltd (misc: food)	155.80	-100.00	58.42	-100.00	0.00	0.00	0.00	0.00
City and Suburban Mines (mine)	340.00	-100.00	105.40	-100.00	0.00	0.00	0.00	0.00
Sheffield United Gas Light (gas)	7.91	-100.00	79.15	-100.00	0.00	0.00	0.00	0.00
Highland Rly (rail)	25.64	-100.00	28.85	-100.00	5187.00	-100.00	3669.37	-100.00
Howard & Bullough Ltd (misc. engineering)	50.00	-100.00	60.00	-100.00	670.00	-100.00	500.00	-100.00
Associated Gold of Western Australia (mine)	500.00	-100.00	100.00	-100.00	0.00	0.00	0.00	0.00

TABLE 7

CONSOL YIELDS *VS.* DIVIDEND YIELDS, SELECTED YEARS, 1868-1913

	(1)	(2)

TABLE 8

GOVERNMENT BENCHMARK BOND YIELDS *VS.* DIVIDEND YIELDS
NOVEMBER 2000

EQUITY INDEX	DIVIDEND YIELD ON EQUITY INDEX	BOND MATURITY COUPON	CURRENT YIELD (ANNUALIZED)	BID PRICE (17 NOV 2000)
FTSE 100 (17 NOV 2000)	2.05%	UK 12/09 £5.75	5.09%	£104.75
FTSE UK SECTION ALL-WORLD INDEX SERIES (16 NOV 2000)	2.1%	UK 12/28 £6.00	4.51%	£123.62
FTSE US SECTION ALL-WORLD INDEX SERIES (16 NOV 2000)	1.2%	US 08/10 $5.75	5.70%	$100.34
DOW JONES INDUSTRIAL AVERAGE (10 NOV 2000)	1.67%	US 5/30 $6.25	5.78%	$106.66

Source: *Financial Times,* November 18/19, 2000, pp.22-23, 30.

TABLE 9

ALL-COMPANY (125) APPROXIMATE OUT-TURN OF TOTAL RETURN*

COL. (1)	COL.(2)	COL.(3)
Average Annual Dividend Growth	Average Annual Dividend Growth	Average Annual

ALL-COMPANY (125) ESTIMATE OF RISK PREMIUM

	$\dfrac{D_0}{P_0}$	$\dfrac{D_1}{P_0}$	g_0	Consol (end-June)	Money Market (yearly average)	$(rp)_0$ Consol	$(rp)_0$ Money Market
1.1868-1883 Extrapol	4.90%	N/A	N/A	N/A	N/A	N/A	N/A
1868-1883 Perfect Fore-sight	4.90%	5.09%	3.80%	3.16%	2.46%	5.73%	6.43%
2.1883-1898 Extrapol	4.49%	4.66%	3.80%	2.84%	3.22%	5.62%	6.43%
1883-1898 Perfect Fore-sight	4.49%	4.56%	1.62%	2.84%	3.22%	3.34%	2.96%

	$\dfrac{D_0}{P_0}$	$\dfrac{D_1}{P_0}$	g_0	Consol (end-June)	Money Market (yearly average)	$(rp)_0$ Consol	$(rp)_0$ Money Market
2a. 1883-1888 Extrapol.	4.49%	4.64%	3.36%	2.84%	3.22%	5.16%	4.78%
1883-1888 Perfect Fore-sight	4.49%	4.48%	-0.34	2.84%	3.22%	1.30%	0.92%
2b. 1888-1898 Extrapol.	4.11%	4.17%	1.51%	2.63%	2.53%	3.05%	3.15%
1888-1898 Perfect Fore-sight	4.11%	4.22%	2.59%	2.63%	2.53%	4.18%	4.28%

TABLE 10

ALL-COMPANY (125) ESTIMATE OF RISK PREMIUM

$\dfrac{D_0}{P_0}$	$\dfrac{D_1}{P_0}$	g_0	Consol (end-June)	Money Market (yearly average)	$(rp)_0$ Consol	$(rp)_0$ Money Market

TABLE 10 [Cont.]

ALL-COMPANY (125) ESTIMATE OF RISK PREMIUM

$\dfrac{D_0}{P_0}$	$\dfrac{D_1}{P_0}$	g_0	Consol (end-June)	Money Market (yearly average)	$(rp)_0$ Consol	$)_0$

TABLE 11

RAILWAYS: ESTIMATE OF RISK PREMIUM, 1868-1913

	$\dfrac{D_0}{P_0}$	$\dfrac{D_1}{P_0}$	g_0	Consol (end-June)	Money Market (yearly average)	$(rp)_0$ Consol	$(rp)_0$ Money Market
1.1868-1883 Extrapol.	4.72 %	N/A	N/A	N/A	N/A	N/A	N/A
1868-1883 Perfect Fore-sight	4.72 %	4.92%	4.16 %	3.16%	2.46%	5.92%	6.62 %
2.1883-1898 Extrapol.	4.12 %	4.29 %	4.16 %	2.84 %	3.22%	5.61 %	5.23 %
1883-1898 Perfect Fore-sight	4.12 %	4.14 %	0.53 %	2.84 %	3.22%	1.83 %	1.45 %
2a. 1883-1888 Extrapol. 1883-1888 Perfect Fore-	4.12 %	4.29 %	4.09 %	2.84 %	3.22 %	5.54 %	5.16 %

RAILWAYS: APPROXIMATE OUT-TURN OF TOTAL RETURN, 1868-1913*

		COL. (1)		COL.(2)		COL.(3)	
		Average Annual Dividend Growth	Average Annual Dividend Growth	Average Annual Capital Apprec.	Average Annual Capital Apprec.	Total Return (1)+(2)= (3)	Total Return (1)+(2)= (3)
1. 1868-1883		4.16 %		5.12 %		9.28 %	
2. 1883-1889		0.53%		2.46%		2.99%	
	2a. 1883-1888		-2.15%		0.62%		-1.53%
	2b. 1888-1898		1.90%		3.39%		5.29%
3. 1898-1913		0.63%		-2.02%		-1.39%	

TABLE 12

BRUNNER, MOND: ESTIMATE OF RISK PREMIUM, 1868-1913

	$\dfrac{D_0}{P_0}$	$\dfrac{D_1}{P_0}$	g_0	Consol (end-June)	Money Market (yearly average)	$(rp)_0$ Consol	$(rp)_0$ Money Market
1888-1898 Perfect Fore-sight	8.44 %	8.89 %	5.34 %	2.63 %	2.53%	11.60 %	11.70 %
3.1898-1913 Extrapol.	6.44 %	6.78 %	5.34 %	2.29 %	2.62 %	9.83 %	9.50 %
1898-1913 Perfect Fore-sight	6.44 %	6.87 %	6.70 %	2.29 %	2.62 %	11.28 %	10.95 %
4.1913-1928 Extrapol.	5.19 %	5.43 %	6.73 %	3.45 %	4.36 %	8.68 %	7.77 %
1913-1928 Perfect Fore-sight	5.19 %	?	?	3.45 %	4.36 %	?	?

Average Risk premium, 1888-1913 (4 observations)　　　　10.35　　　9.98

TABLE 12a

BRUNNER, MOND: OUT-TURN OF TOTAL RETURN, 1888-1913*

	COL. (1)		COL.(2)		COL.(3)	
	Average Annual Dividend Growth	Average Annual Dividend Growth	Average Annual Capital Apprec.	Average Annual Capital Apprec.	Total Return (1)+(2)= (3)	Total Return (1)+(2)= (3)

Table 13.

MARKET CAPITALIZATIONS AND DIVIDEND YIELDS OF THE ORDINARY SHARES OF
SELECTED COMPANIES, 1873-1913

	All Ranking Mines		Tharsis		Rio Tinto		De Beers		Brunner, Mond	
	Market Capitalization (£ m.)	Current Div Yield.	Market Capitalization (£ '000)	Current Div Y'ld.	Market Capitalization (£ '000)	Current Div Yield.	Market Capitalization (£ '000)	Current Div Yield on Ords.	Market Cap. (£'000)	Current Div Yield.
1873	£ 3.6	3.48%	£3,607	3.48%						
1878	£ 3.1	9.76%	£2,155	7.83%	£ 956[1]	14.1%				
1883	£ 11.0	7.10%	£3,964	8.15%	£6,988[2]	6.51%				
1888	£ 20.2	6.50%	£2,937	4.00%	£6,094[3]	5.33%	£ 3,544 £ 3,544*	8.93%	£ 1,644	8.44%
1893	£ 31.0	6.07%	£3,008	6.23%	£ 7,982	1.91%	£14,655 £18,472*	6.73%	£ 5,566	6.58%
1898	£ 90.2	5.33%	£3,906	4.00%	£ 8,450	7.69%	£21,323 £24,869*	7.41%	£ 3,693	6.44%
1903	£160.9	4.77%	£2,422	7.74%	£15,194	5.35%	£17,200 £35,269*	6.10%	£ 5,786	5.91%
1908	£121.3	5.96%	£3,438	7.27%	£24,094	3.70%	£10,889 £25,411*	8.04%	£ 9,814	6.00%
1913	£145.3	8.68%	£4,375	5.71%	£27,141	6.22%	£21,500 £36,721*	10.1%	£12,120	5.19%†

Sources:
  All ranking mines: Table 5.
  Individual companies: Benchmark year tables.

  *Total market capitalization, all classes of traded assets. De Beer's capital structure underwent large changes with some frequency. Gearing (by market valuation) was 21% in 1893. It had been zero in 1888. In 1908, by market valuation, preference shares accounted for 44% of De Beer's capital structure, debentures for 13%, and equities for only 43%. The preference holders were entitled to a cumulative dividend of 40% on shares with a nominal value of £2.50 (that is, £1), to be paid before any dividends were paid to deferred holders. Equity values had recovered somewhat by 1913. By then debentures (by market value), accounted for only 4.4% of the total market value of the company, preference shares for 37.0% and equities for 58.6%..

  † The current dividend yield of 5.19% was calculated as follows. In June 1913, the market value of ordinary shares, fully paid and therefore eligible for a full dividend, was £10.7m. At the same time, some 600,000 new shares, issued in January 1913, were

TABLE 14

MINING: APPROXIMATE OUT-TURN OF TOTAL RETURN, 1868-1913*

		COL. (1)		COL.(2)		COL.(3)	
		Average Annual Dividend Growth	Average Annual Dividend Growth	Average Annual Capital Apprec.	Average Annual Capital Apprec.	Total Return (1)+(2)= (3)	Total Return (1)+(2)= (3)
1a. 1873-78 (Tharsis only)		6.05 %		-9.07 %		-3.45 %	
1b. 1878-83 (3 firms)*		27.12 %		13.41 %		40.53 %	
2. 1883-98							
.	2.1 Same firms as in 1b Basis: 1883 £13.6m		-0.72 %		0.28 %		-0.44
	2.2 Newcomers. Basis: 1898						

TABLE 14 [Cont.]

MINING: APPROXIMATE OUT-TURN OF TOTAL RETURN, 1868-1913*

		COL. (1)		COL.(2)		COL.(3)	
		Average Annual Dividend Growth	Average Annual Dividend Growth	Average Annual Capital Apprec.	Average Annual Capital Apprec.	Total Return (1)+(2)= (3)	Total Return (1)+(2)= (3)
1898-1913							
	3.1 1898 listed (inc. dropouts). Basis 1898: £95.2m. Cap. 1913 £113.7m		4.03 %		1.19 %		5.22 %
	3.2 16 new entrants still listed in 1913. Basis: 1913 paid up: £20.7m. 1913 cap: £65.7m.		9.45 %		7.55 %		17.00 %
	3.3 11 new entrants not still ranked in 1913 Basis: 1903 cap: £33,466 See text.		? almost certainly negative		-3.49 %		-3.49 % or less
	Average of (3.1) and (3.2) Basis: average of 1898 and 1913 bases. See text.		5.56 %		2.99%		8.55 %

END TABLE 14

TABLE 15

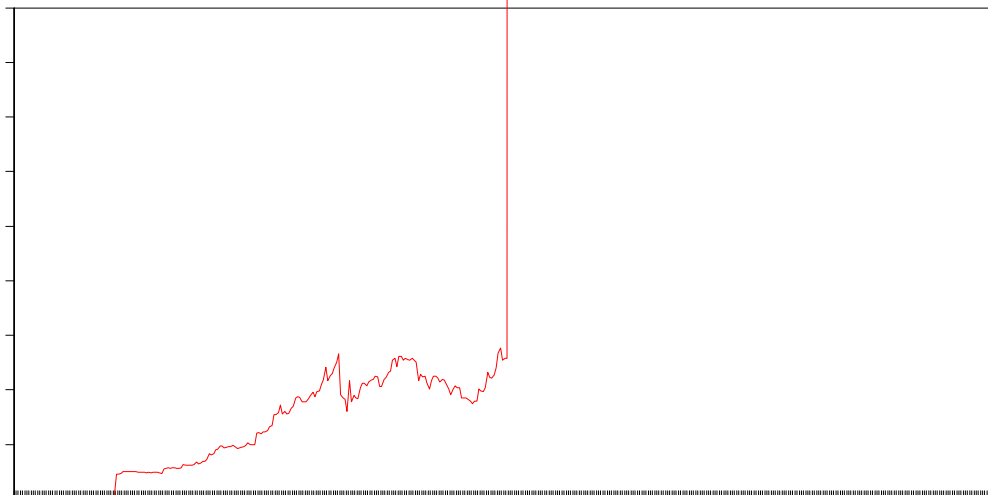MINING: ESTIMATE OF RISK PREMIUM, 1873-1913

0

TABLE 15 [Continued]

MINING: ESTIMATE OF RISK PREMIUM, 1873-1913

$$\frac{D_0}{P_0}$$

TABLE 15 [Continued]

MINING: ESTIMATE OF RISK PREMIUM, 1873-1913

$$\frac{D_0}{P_0}$$

Bibliography

Aldcroft, Derek H. (1964), "The Entrepreneur and the British Economy, 1870-1914", *Economic History Review*, Vol. 17 (August), 113-134.

------- (1968). "Editor's Introduction", in Aldcroft, Derek H. (Ed.), *Development of British Industry and Foreign Competition, 1875-1914*, London: Allen & Unwin.

Broadberry, Stephen. N. (1997), *The Productivity Race: British Manufacturing in International Perspective, 1850-1990,* Cambridge: Cambridge University Press.

------- (1998), "How Did the United States and Germany Overtake Britain? A Sectoral Analysis of Comparative Productivity Levels, 1870-1990", *Journal of Economic History*, Vol.58 (June), 375-407.

Coleman. Donald C. (1973). "Gentlemen and Players." *Economic History Review*. Vol. 26. (February). 92-116.

Cowles, Alfred 3rd and Associates. (1939), *Common-Stock Indexes* [Second Edition], Bloomington, IN: Principia Press.

De Long, J. Bradford; Shleifer, Andrei; Summers, Lawrence H.; and Waldmann, Robert J. (1990), "Noise Trader Risk in Financial Markets", *Journal of Political Economy*, Vol.98 (August), 703-738.

Edelstein, Michael. (1976), "Realized Rates of Return on UK Home and Overseas Portfolio Investment in the Age of High Imperialism". *Explorations in Economic History*. Vol.13. (July). 283-329.

---------- (1982), *Overseas Investment in the Age of High Imperialism: The United Kingdom, 1850-1914*, London: Methuen.

Gordon, M.J. (1962), *The Investment, Financing, and Valuation of the Corporation*, Homewood, IL: Richard D. Irwin.

Charles Harvey & Jon Press, (1989), "Overseas Investment and the Professional Advance of British Metal Mining Engineers, 1851-1914." *Economic History Review*. Vol 41 (February), 64-86.

Klovland, Jan Tore, (1994), "Pitfalls in the Estimation of the Yield on British Consols, 1850-1914". *Journal of Economic History,* Vol. 54 (March), 164-187.

Landes, David S. (1969), *The Unbound Prometheus*, Cambridge: Cambridge University Press.

Lewchuk, Wayne. (1985). "The Return to Capital in the British Motor Vehicle Industry, 1896-1939." *Business History* ,Vol. 27 (March), 3-25.

Lintner, John. (1956). "Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes, American Economic Review, Vol.46 (May), 97-113.

Marshall, Alfred. (1920), *Industry and Trade* [Third Edition], London: Macmillan.

McCloskey, Donald N. (1970), "Did Victorian Britain   *Economic History Review*, Vol.23 (December), 446-459.

--------- (Ed.) (1971), *Essays on a Mature Economy: Britain after 1840*, London: Methuen.

McCloskey, Donald N. and Sandberg, Lars G. (1969), "From Damnation to Redemption: Judgements on the Late Victorian Entrepreneur", *Explorations in Economic History*, Vol.9 (Fall), 89-108.

Mitchell, B.R., with Deane, Phyllis. (1962), *Abstract of British Historical Statistics*, Cambridge: Cambridge University Press.

Navin, Thomas R. and Sears, Marian V. (1955). "The Rise of a Market for Industrial Securities, 1887-1902." *Business History Review*. Vol 29. (June). 105-138.

Reader, William J. (1970), *Imperial Chemical Industries: A History, Vol.1: The Forerunners, 1870-1926*, Oxford: Oxford University Press.

Sharpe, William F., Alexander, Gordon J. and Bailey, Jeffrey V. (1995 [Fifth Edition]) *Investments*, Englewood Cliffs, New Jersey: Prentice-Hall.

Siegel, Jeremy J. (1998 [Second Edition]), *Stocks for the Long Run: The Definitive Guide to Financial Market Returns and Long-Term Investment Strategies*, New York: McGraw-Hill.

Shleifer, Andrei and Vishny, Robert W. (1990), "Equilibrium Short Horizons of Investors and *American Economic Review: Papers and Proceedings*, Vol.80, (May), 148-153.

Wadhwani, Sushil B. (1999), "The U.S. Stock Market and the Global Economic Crisis", *National Institute Economic Review, (January)*, 86-105.

Wiener, Martin J. (1981), *English Culture and the Decline of the Industrial Spirit, 1850-1980*, Cambridge: Cambridge University Press.

Williamson, Jeffrey G. (1996), "Globalization, Convergence, and History". *Journal of Economic History,* Vol. 56. (June), 277-306.