



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

Economic History Working Papers

No: 263/2017

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DEPARTMENT OF ECONOMIC HISTORY
WORKING PAPERS
No. 263 – MAY 2017

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Abstract

Newly-assembled datasets on the size and composition of the London Stock Exchange present some results contradicting conventional wisdom. A forensic examination of one study of corporate equities in the *Investor's Monthly Manual* between 1869 and 1929 suggests both idiosyncratic mistakes and generic biases which users of this source need to consider.

Keywords: London Stock Exchange, provincial exchanges, junior market, *Investor's Monthly Manual*, securities, equities, Walter Bagehot.

JEL classification codes: G 30, N 23, N 24.

¹ W Goetzmann, W P Kennedy, L Moore and three anonymous referees commented helpfully on earlier versions; they bear no responsibility for the content. Author's ORCID number 3-0839-7412.

Richard Grossman's "Bloody Foreigners!" (*Economic History Review*, 68, 2015, pp. 471-521) is a study of equity on the London Stock Exchange (LSE), covering thousands of domestic and overseas companies on what was the world's largest exchange at the pinnacle of its influence. It is one of a number of new studies using the *Investors' Monthly Manual (IMM)* database, made available online by the commendably open policies of Yale's International Center for Finance.² The current vogue is to describe such data as "hand-collected," invoking images of the master craftsman: the potential for improved understanding of historical finance excites funding bodies and financial economists alike. Yet Grossman (p. 473) laments that the reality can be outsourced data entry lacking documented transparency and some of his new results are at odds with older authoritative sources that he neglects. This note suggests that on some dimensions the conventional wisdom - derived from other statistical sources - is more securely based.

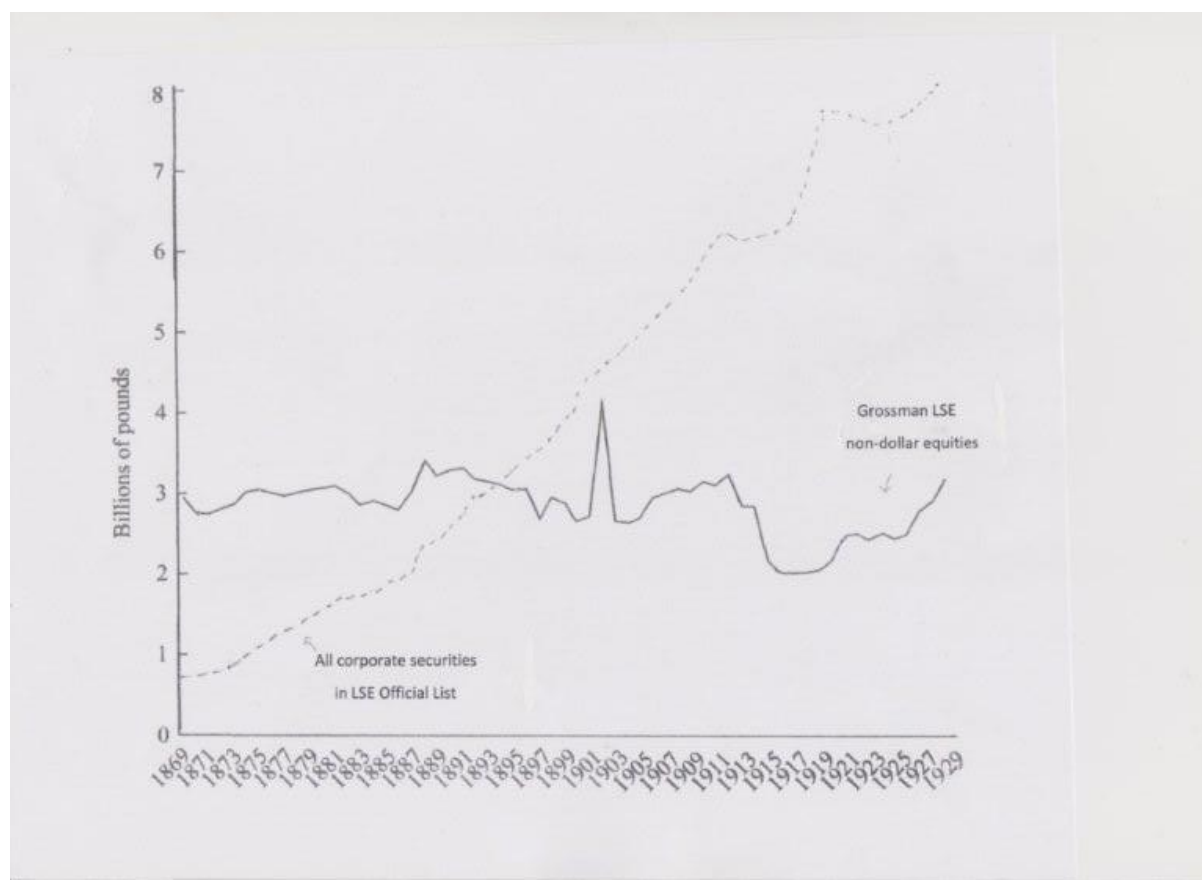
Grossman concludes a paragraph on "equity listed on the London market" thus: "Paid-up capital hovered around £3 billion from 1869 until the beginning of the First World War, when it dropped by about a third, before recovering to its prewar level by the beginning of 1929" (pp.474-5). Yet LSE listed paid-up capital³ was not a well-kept secret awaiting modern research, but was counted annually by its Share and Loan Department, which (since it supervised listing) was in a position to know.⁴ Its statistics separated fixed interest capital (bonds and preferences) from equity (ordinary

² <http://som.yale.edu/imm-issues>. The Yale data begin in 1869 and end in 1929, but 1864-68 and 1930 *IMMs* exist in libraries.

³ All figures in this paragraph and Figure 1 are paid-up par values or what the *Stock Exchange Official Intelligence (SEOI)* described as "present amount" (as opposed to "amount authorised") in "nominal" terms. British and overseas government securities (dominating LSE-listed par values until the 1880s and from World War One) are throughout excluded: following Grossman, this discussion is confined to corporates.

⁴ "Official listing" obliged LSE jobbers (market-maker specialists) to quote bid and offer prices, though only a minority of listed securities had multiple daily trades with negligible bid/offer spreads and some traded infrequently or not at all (de-listing could lag *de facto* non-trading by a year or more). Not all listed securities were *mainly* traded in London: with no government-enforced LSE trading privileges, many listed securities had larger markets in the provinces, "over the counter" and/or overseas. Nor was listing confined to British companies: with the gold standard minimising exchange risks and extensive cross-listing, neither investors nor companies were confined to one domestic exchange.

Figure 1. Corporate Securities: Grossman vs the LSE, 1869-1929.



Sources:

Grossman equities: *Economic History Review* 2015, p. 475.

LSE Official List: The LSE Share and Loan Department (later LSE Records Department) published Mihill Slaughter's *Railway Intelligence* (20 editions, 1849-79), then annually *Burdett's Official Intelligence* (1882-1898), later the *Stock Exchange Official Intelligence* (1899-1933), merging it from 1934 with Skinner's *Stock Exchange Year Book* (founded 1875) as the *Stock Exchange Official Year Book*. All the LSE's volumes are here abbreviated as *SEOI*, which in its 1884 edition published official list valuations at decade intervals back to 1853. Data (for the previous year) were also published annually from 1882 to 1921 and from 1952 (the latter including backdated information to 1949). In the unexplained publication hiatus, the annual statistics were circulated internally (e.g LSE Subcommittee on the Records Department, minutes for May 1938, p. 58, MS 14611, LSE Archives, Guildhall Library, London). Some official valuations for earlier years (at par until 1937 and thereafter at both market and par) were retrospectively published (partially and incompletely) in LSE, *Interest and Dividends upon Securities quoted on the Stock Exchange* (various issues from 1955); LSE, *Fact Book* (various issues from 1972); Michie, *London*, pp. 88, 175, 276, 320, 360; Morgan and Thomas, *Stock Exchange*, pp. 280-1; and Sheppard, *Growth*, p. 188. The data points for 1869-1872 and 1874-80 are interpolated from reported 1863, 1873 and 1881 data, assuming them to vary with the extant capital in UK railways and registered joint-stock companies (*SEOI* and *Annual Abstract of Statistics*). This is less appropriate in 1921-9 (because of railway mergers and the increase of private and overseas companies), so interpolation between published observations is guided by indications in the LSE General Purposes Committee minutes (LSE Archives) and prefaces to the *SEOI*.

and deferred shares) only for railways (which for many decades accounted for most listed capital globally⁵), but Figure 1 shows that the LSE's own nineteenth-century totals - including securities Grossman excluded (all corporate non-equities plus dollar⁶ equities) - mainly lie *below* the figures he reports for non-dollar equities alone.⁷ His earliest figures are unbelievable: a part cannot be three times the whole and the correct figure for non-dollar equities is probably less than one-sixth of the figures he reports. The credibility gap persists around 1900, on the secure assumption that the value of the LSE's non-equity securities and dollar equities was comfortably above zero.⁸ His one-third fall in the First World War is also undetectable in the LSE statistics.⁹ Only his last clause - on equities

⁵ Railways ceased to dominate corporate values on the Berlin bourse in the 1880s and on Paris in the 1930s, when their domestic railways were substantially nationalised. Without similar interventions, railways ceased to be the majority of all listed corporate securities on both the NYSE and LSE at par values in the early 1920s, though in the LSE's case primarily because of overseas listings: from the early twentieth century its *American* rails alone exceeded its listed domestic railways. Exceptionally among countries with entirely capitalist railways, most *domestic* corporate security values on the LSE had been non-railways since the early 1890s, three decades before the NYSE passed that milestone.

⁶ His reason for excluding dollar equities (they mainly traded outside the UK, p. 477, n.25) applies with greater force (before war-induced sales of dollar securities by UK holders) to the French railways that he includes; moreover, France's state-guaranteed rail "equities" behaved like bonds (Denuc, "Dividendes"). By Lewis's estimate (*America's Stake*, p. 546), British holdings of US rail securities in 1914 were \$2.8b at par. Some were not LSE-(or NYSE-) listed, but most were and that figure was nearly one-third of US rail par values listed on the LSE and one-fifth of those on the NYSE; moreover, some large continental European and American investors also used the LSE. By contrast initially large British holdings in French railways (Jenks, *Migration*, p. 148) had long since fallen to modest levels.

⁷ Grossman notes (p. 473, n.11) that, in his earlier *IMM* analysis ("New Indices"), he misclassified many equities, but now uses Yale's classification, whose coding rules are unfortunately unrecorded. The distinction was less clear historically - with multiple hybrid types - than today and contemporaries rarely used the term "equity;" when they did, they used it to distinguish investors who were legally owners from bondholders, who were mere creditors. Preference shares were thus equities (e.g. Meade, "Capitalization," p. 50), while today the term equity is usually reserved for residual claimants (to whom voting rights are now normally confined) after fixed bond and (now rarer) quasi-fixed preference obligations have been met. Grossman follows the modern convention (p. 473), excluding preference shares (which usually had a fixed upper bound dividend combined with a variable lower bound) and, by the same token, he (or Yale) denied equity status to many securities conferring voting rights on their owners (as most preferences and some bonds then did). All ordinary shares and ordinary stocks (with or without full voting rights) and foreign equivalents were presumably classified as equities (even, as in the French case in note 6, shares with government guarantees limiting dividend variation). When ordinaries were sub-divided, creating "preferred ordinaries," it is not stated how the ambiguously labelled were treated. Other types included deferred, founders' and management shares (supercharged equities with highly leveraged dividends and/or votes), participating preferences (with dividends variable both above and below the quasi-fixed rate) and foreign variants. Their returns - often more variable than ordinaries - possibly qualified some as equities.

⁸ *SEOI 1901*, p. 1916.

⁹ Figure 1 shows listed values rose modestly at par during the war, except for a slight fall in 1918.

“recovering” to around £3 billion at par by 1929 - is consistent with the LSE statistics, which report a level for all corporate securities more than twice that from 1920 onwards.¹⁰

The contrast in Figure 1 - between consistently rising LSE official list par values until 1914, then plateaus in war and post-war slump followed by short, sharp growth spurts, and the near six-decade-long £3 billion plateau, with occasional large deviations, in Grossman’s subset of non-dollar equities over the same period - is stark. Both cannot be right.¹¹ Contemporary stock market statisticians used par values to measure the quantity of securities undistorted by short-term market price fluctuations and unhesitatingly reported that they showed massive, steady growth before 1914.¹² Later financial historians might also be surprised at Grossman’s untroubled observation that his equity market capitalisation as early as 1869 (only fourteen years after the introduction of general limited liability and before most overseas investment) was “nearly four times gross national product” - a higher level of financial development than today’s norm - and he suggests this key indicator *declined* over the following decades (p. 475). The conventional view is that London-led global financial development, between the 1860s and a peak around World War One, continuously expanded domestic and overseas securities, and that the global “Great Reversal” in the securities/GNP ratio occurred after the war, not a half century earlier.¹³ All major alternative UK statistical series - including not only LSE listings (Figure 1) but the share capital in registered joint

¹⁰ His equities would account for around a third of the 1920s totals, leaving all dollar corporates plus non-dollar corporate fixed interest securities (and unacknowledged equity omissions discussed below) to account for two-thirds.

¹¹ Increased leverage cannot generate such a large difference between the growth of equities and all corporate securities. Essex-Crosby (“Joint Stock,” pp. 220-23) shows equities at par falling from 70% of the capital of British-registered quoted companies in 1884 to 53% in 1935, but this effect would largely disappear if corrected for the UK statutory and chartered companies that Essex-Crosby omits (or for differentially increased market prices). There was higher bond leverage in overseas than domestic securities at London issue prices, but the 1865-1914 trend was only mildly upward (Stone, *Global*, pp. 396-403) and corporate bonds were only 39% of British overseas corporate portfolios at par by 1929 (Kindersley, “British Foreign Investments,” p. 382), less at market (*BM* index).

¹² Neymarck, “Statistique.” Long-run growth at market prices was usually even greater (*BM* index).

¹³ Rajan and Zingales, “Great Reversals;” O’Rourke and Williamson, *Globalization*; Michie, *London*; Moore, “World;” Le Bris and Hautcoeur, “Challenge;” Annaert et al, “Are.”

stock companies and railways,¹⁴ British-registered companies on the LSE junior market and official list combined,¹⁵ new corporate issues on London (overseas¹⁶ and domestic¹⁷), periodic national balance sheets,¹⁸ corporate tax data,¹⁹ counts from other newspapers,²⁰ and fuller counts of the *IMM* data²¹ - support something nearer the conventional wisdom than Grossman's idiosyncratic picture. They also suggest a more even and gradually changing balance between home and overseas, with the overseas share of values (at market or par) continuing to rise after Grossman's 1880s peaks.²²

So what is going on? One clue is his note (p. 472, n.8) that he includes provincial exchanges, though he references work on their small size, presumably to justify as excusable shorthand his

¹⁴ UK *Statistical Abstract*, passim.

¹⁵ Essex-Crosby, "Joint Stock," pp 220-3. The term "junior market" was not contemporary usage, but Burhop et al ("Regulating") conveniently suggest extending its modern use to describe some historically unlisted but traded securities (see also notes 23, 24 and 27 below).

¹⁶ Stone, *Global Export*.

¹⁷ Hobson, *Export*, pp. 214-5, 219.

¹⁸ Goldsmith, *Comparative*, p. 233. Some Goldsmith balance sheets include unquoted companies, making them questionable securities market indicators, but he states that his UK estimates are primarily LSE securities.

¹⁹ Worswick and Tipping, *Profits*, pp. 99-116, 145-6.

²⁰ Moore, "World."

²¹ Campbell et al, "Rise."

²² William Goetzmann (email to the author, 24 March 2017) notes that Yale coders adopted the following geographical classification rule: "We base it on the country it does business in, not the country it is registered in. We look at the description of the business and determine where its operations are. If a company is multi-country and registered in the UK, then we make it in the UK, so for a South American and Mexico bank which isn't specific to one country, we put it in the UK, but the Mexican Telegraph is listed as Mexico." Rules adopted by other researchers for dividing domestic from overseas companies - including place of registration alone, Essex-Crosby's clear and replicable rule, though it classifies many companies operating principally overseas as British - use various definitional short-cuts and estimates for one year can differ by as much as 25 percentage points. The *SEOI* itself distinguished domestic from overseas corporate par values only for railways: the overseas portion in the official list rose from 14% in 1853 to 55% in 1883, 70% in 1913 and 76% in 1920, falling back to 71% in 1933 and 49% in 1945 (Michie, *London*, pp. 88, 175, 360), but the overseas share in (faster-growing and latterly larger) non-railway par values was lower. Railways rarely operated transnationally and, even where they owned modest cross-border rail or shipping lines and/or overseas subsidiaries, classifying their dominant domicile posed few problems. However, in other sectors, many British-, foreign- and colonially-registered companies on the LSE operated both within the UK and overseas in portions largely unrecorded (whether in terms of assets, personnel, sales, ownership, or directors) and the LSE did not attempt a division.

repeated description of the *IMM* sample as “traded” or “listed” on the LSE.²³ Provincial listings cannot remotely account for discrepancies of the observed magnitude,²⁴ but this clarifies that editorial “listing” in the *IMM* and official listing by the LSE were quite different processes and that has wider ramifications. Comparisons of individual companies on the LSE with companies in the *IMM* reveal massively different listing policies over time.²⁵

When inaugurating its *IMM* supplement in 1864, the *Economist’s* editor, Walter Bagehot, aimed to cover all traded securities, doubling the securities already covered in the weekly journal. UK stock markets, though beyond infancy, were still adolescent - tradable securities numbered under 2,000 - so *IMM* staff were able to cover many listed on the UK’s (then significant) regional exchanges (including dozens of provincial banks and railways later absorbed by London-headquartered amalgamations) as well as around 700 corporate securities then on the LSE official list. Formal exchanges had competitive advantages (liquidity, price transparency and some regulation), but outside markets blunted exchanges’ ability to exploit their consequent market power. Unusually, the LSE (with its larger number of brokers than New York, Paris and Berlin combined) directly ran a parallel junior market in shares, featuring them (alongside those officially-

²³ The mis-description of *IMM* as “a record of the London Exchange” also headlines the Yale website. Grossman uses the terms “listed” and “traded” interchangeably, but the latter can be interpreted as including, in addition to the official list, the LSE junior market (including “special settlement” securities and from 1915 the “supplementary list”), where many (mainly smaller) provincial and other securities traded.

²⁴ The UK securities market was integrated and competitive: LSE brokers dealt in provincial securities and vice-versa. One (rare) estimate for the thousand securities listed on the largest provincial exchange (Manchester) showed par values more than one quarter of the LSE’s around 1914 (Powell, *Evolution*, pp. 538, 540), but many were also LSE-listed, so these cannot be interpreted as net additions to the national market. Other estimates are incomplete. Campbell et al (“Rise”) report a decline from 13% in 1870 to only 4% in 1929 for the market valuation of corporate securities “chiefly traded” (a term not precisely defined) *only* on provincial exchanges. Unfortunately this partly reflects the *IMM’s* increasing truncation of provincial securities: their 286 provincial-only corporate securities in 1929 include only a small portion of the thousands still listed only in the provinces (*SEOI 1939*, p. v). Essex-Crosby (“Joint Stock”) offers fuller and more consistent provincial coverage for 1884, 1894, 1914 and 1935, but is confined to British-registered companies and aggregates provincially-listed with London-listed and informally-traded securities. Together such sources are compatible with the view that all readily tradable corporate securities (including provincial-only listings and the LSE junior market) would struggle to increase the LSE official list total by much more than half in the 1880s (note 34, below) and in 1939 would increase it by under one-fifth for the LSE supplementary list (Michie, *London*, p. 276) and (on the assumption that provincial and supplementary list securities were the same average size) by about another fifth for provincial-only lists (*SEOI 1939*, p. v).

²⁵ “The origin, progress and ending of every security that has ever appeared in its pages” (*SEOI 1883*, p. viii) can be traced in its annual supplementary index; *IMM* de-listings can be tracked in the Yale database.

listed) in the *SEOI*, which bankers used to assess what to accept as collateral or deal in for their clients.²⁶ The *SEOI* (and, initially, the *IMM*) thus included many traded by “special settlement” - involving less stringent vetting than official listing²⁷ - and/or listed on the many provincial exchanges or otherwise “possessing for various reasons some interest for investors.”²⁸ Some stock exchanges then resembled modern venture capital markets as much as modern regulated exchanges: start-ups were acceptable, indeed extensively promoted by brokers. Moreover the *SEOI* and *IMM* included off-exchange securities, *inter alia* those informally traded by local auctioneers, by the issuing firms at their own offices, or in Oldham pubs.²⁹ LSE brokers also transacted in such securities.

By the interwar years, many more companies were listed: there were over 4,000 company securities on the LSE official list, a similar number (generally smaller-sized) on the “supplementary list” increasingly formalised from 1915, and thousands more listed only in the provinces and/or traded informally: larger numbers than on other markets at the time or today.³⁰ The monthly *IMM* increased its page count but, unable to go further while losing sales to rivals, soon abandoned its

²⁶ Many UK banks offered securities trading, but - unlike continental universal banks, which often by-passed bourses, matching bargains in-house - usually used brokers as intermediaries, sharing LSE commission 50/50.

²⁷ Official listing typically involved inspecting 40 documents, special settlement only 12, though the LSE denied acting as a “moral agency” (*SEOI 1898*, p. 2); compare Burhop et al, “Regulating;” O’Sullivan, “Yankee Doodle;” Foreman-Peck and Hannah, “UK corporate law.”

²⁸ *SEOI 1898*, p. 1. The junior market was consistently omitted from LSE statistics (as in Figure 1) - though not *SEOI* entries - until 1937, when supplementary list values were first separately reported.

²⁹ Modern financial economists might under-rate the convenience (and liquidity) of Oldham pubs. In the 1870s it was estimated that one quarter of Oldham’s population were shareholders and the local press reported prices daily, though local brokers did not establish an exchange until 1928. Early *IMMs* solicited information on such securities, even if not formally listed anywhere (e.g. *IMM*, 31 December 1870, p. 353).

³⁰ The NYSE was less hospitable to smaller issues and in 1939 listed only 2,630 securities (including government bonds). In 1939 there were respectively 4,425 and 4,479 corporate securities on the LSE official and supplementary lists and many thousands more (some also tradable on the LSE) with provincial listings or informal trading: the *SEOI 1939* (p. v) reported that it included 21,000 securities issued by 2,000 government entities and 9,400 companies. The increase mainly pre-dated 1900: *SEOI* prefaces reported including 3,000 “undertakings” in 1882 and 9,000 by 1898. Between 1898 and 1939 there were many liquidations, mergers and de-listings, notably of railways and banks, offset by expanded listings of industrials, oils and utilities.

objective of including all tradable securities.³¹ Already by the 1880s it lagged the annual *SEOI*, which had many more pages and more comprehensive coverage, while the *IMM* increasingly focused on official list securities, limiting junior market coverage.³² There was some convergence: *IMM* and official list values were, for several years before World War One, roughly equal,³³ but changing editorial selection means the *IMM* cannot generally be equated with the LSE. In its early years, it measured something approaching the whole national market, covering about one-half more by value than all the LSE official list's corporate securities.³⁴ By 1929, the situation had reversed: the official list alone was nearly half as high again as the value of *IMM* corporate securities.³⁵ In numbers terms the shift was even starker: in 1869 most *IMM* securities were not in the LSE official list; by 1929 most LSE securities were not in the *IMM*.

Plainly this disqualifies Grossman's source as an indicator of changing market size - whether of the LSE or the whole national market - and may partly explain his oddly low market growth rates,

³¹ The first issue had 16 pages and the last 90 on a comparable tabular basis (information per security doubled, so this increased the potential coverage by only half that). Originally a money-spinner (most *Economist* readers initially subscribed), by 1913 the *IMM* had already lost two-thirds of its investor-readers to rival publications and brokers' lists distributed gratis, while 1920s institutional investors preferred Extel's up-dateable, information card technology. Discontinued abruptly in mid-1930, *IMM* had been loss-making long before the stock market collapse (Edwards, *Pursuit*, pp. 432-3, 611).

³² In 1883 (*SEOI 1884*, p. cxxiv) only 1,303 of around 6,000 corporate securities featured were officially-listed. The *IMM* asterisked securities in which there were only limited dealings and they declined over time. Other sources exist for some sectors (e.g. *Australasian Joint-stock Companies Year Book*, *Banking Almanac*, *Railway Year Book*, *Financier's Rubber Share Handbook*, *Skinner's Mining Manual* and *Garcke's Manual of Electrical Undertakings*) but much contemporary price information has been lost. In 1900 the *Investor's Review* accessed security price information on 436 breweries (Hannah, "Pioneering," p. 674), of which only 27% were in the *IMM* and 79% in the *SEOI* (author's calculation).

³³ Some provincial and informally-traded securities remained in *IMM*, offset by several hundred (mainly smaller) omitted official list securities (Hannah, "Rethinking," pp. 25-8).

³⁴ Campbell et al ("Rise") show the market capitalisation of their *IMM* corporate securities in 1880/1 around £2.6b, compared with £1.85b in the official list (adjusting the £1.7b at par in the official list to market by the end-1880 *Bankers' Magazine* market/par index covering nearly half of those par values).

³⁵ Campbell et al ("Rise") report that December market values of their *IMM* corporate securities peaked at £8.3b in 1928 and by 1929 were £7.8b. The par values in the official list in December 1929 were probably around £8.0b (Figure 1, with £0.57b - the mean of 1920 and 1933 - added to match Campbell et al's inclusion of local government and public board securities). The *BM* index shows prices were then 34% above par, but 40% is probably nearer the mark, allowing for the *BM*'s growing over-representation of depreciated railway securities (for the relevant sectors in 1939 the *BM* index was about par when the LSE's own market valuation was 13% above par).

but does IMM editorial policy make it a more appropriate source for some purposes? As today, quoted company sizes were highly skewed: several hundred companies accounted for most of the official list's value and almost all these companies were in the *IMM*.³⁶ It might be argued that *IMM* securities are more interesting than the LSE's full list, if selection eliminated only the smaller, least liquid securities, while including those (wherever traded) of interest to most investor-readers. That rationale is plausible, but what cannot be argued is that such a policy was consistently applied over time or that the results are free of selection bias. Its editorial selectivity ranged from (apparently random) decisions to drop securities one year, sometimes reintroducing them the next³⁷ (which may explain some implausibly large year-on-year changes), to consistent trends over time that could systematically bias results. If there was small firm outperformance,³⁸ the *IMM* - increasingly selective of British £1m+ firms as merger waves multiplied their number tenfold³⁹ - would exaggerate the decline in rates of return over time. Conversely, if *IMM*'s increasing truncation meant that less successful securities that still retained LSE listing were prematurely "delisted," rates of return would be flattered.⁴⁰

³⁶ Almost all 337 large, British-owned companies had at least one security in the *IMM* and amounted to 40% of the official list corporate par values in 1911; most of the 73 largest overseas companies also then had at least one security listed on London (Foreman-Peck and Hannah, "Extreme Divorce," notes 14, 48).

³⁷ Grossman explains his massive collapse at market in 1895 by temporarily missing quotations for giant French railways (p. 475, n. 23).

³⁸ For modern discussion, see Dimson and Marsh "Murphy's Law" and for earlier indications Grossman, "New," p. 134 and Campbell et al, "Rise," p. 17.

³⁹ The number of British-registered companies with £1m or more capital (shares and bonds at par) rose from 88 in 1884, to 188 in 1894, 469 in 1914 and 940 by 1935, a period when company values (similarly-defined but in all size categories) increased nine-fold to around £3.8b (Essex-Crosby, "Joint Stock," pp. 228-31, corrected for 1935 commercial and industrial omissions on the assumption they were similarly distributed as his 20% sample; the *BM* index suggests the rise would have been larger at market prices). Essex-Crosby excluded the more slowly-growing *statutory* and *chartered* sector (companies authorised by parliament, not the Registrar of Companies), of which there were approaching a hundred with £1m+ capital operating substantially in the UK at the pre-war dates (half railways and half finance, shipping, trading and utility companies) and fewer by 1935 (following the statutory mergers of 1923, consolidating British railways into four giant regional monopolies).

⁴⁰ Of course, if appropriately diagnosed, selection biases can be corrected (e.g. Le Bris and Hautcoeur, "Challenge").

Grossman's problems do not stop there: the aggregate discrepancies imply large arithmetical errors, not just misleading descriptions, random omissions and systematic selection biases. Campbell et al have valued *IMM* securities at market, using the same Yale database, for the same period.⁴¹ Like his figures at par, Grossman's at market prices fail to show the strong upward trend of other sources. Again it is logically impossible for Grossman's non-dollar equity-only market values to be above Campbell et al's for all corporate securities, yet for decades they are higher. Again it is his early years' values that are implausibly high. The good news is that Grossman's disaggregated rates of return and capital gains in his later sections and appendices - the main focus of his article - are more plausibly rationalised by the author than the figures questioned here, though it is not obvious how aggregates can be so egregiously wrong, while sectoral and geographical calculations - of which they are (in principle) the sum - remain accurate. Thus, pending clarification from the author, other results should also possibly be treated with caution.

For *any* permutation of Grossman's descriptions (LSE or *IMM*, listed or traded, market or par), his early aggregations are way too high: they are irreconcilable with LSE statistics, *IMM* valuations, and comprehensive conventional evidence that the securities/GNP ratio rose until around 1914. A more general lesson is that those who assess changes in UK securities markets, or distinct sectors, *solely* on the basis of the *IMM* may do so at their peril.⁴²

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Bankers' Magazine, stock exchange index. This was introduced by Ellis ("Quantitation") for 1880-88, and subsequently published monthly in the *Magazine's* "Stock Exchange Values" section.

⁴¹ "Rise."

⁴² Because of increasing truncation, other *IMM*-based studies (e.g. Coyle and Turner, "Law;" Campbell et al "Rise;" Grossman et al, "Monthly") latterly omit the majority - by number, though possibly not value - of, respectively, corporate bonds, provincial securities, and Irish equities. Their conclusions are not necessarily wrong, but arguably require qualification on account of omitted observations, increasing proportionately over time and plausibly with characteristics differing from those included.

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