

Fund management in the interwar period: UK investment trust portfolio asset allocation in the 1920s

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This study investigates the portfolio asset allocation of UK investment trusts between 1914 and 1928 using a unique hand-collected dataset of 41 companies, which comprises 40,875 portfolio holdings. UK investment trusts not only survived WWI without major losses but also had a remarkable performance in the 1920s, which led to a wave of new incorporations. The 1920s was a period of significant shifts in investment trust portfolio composition and our analysis examines the main reasons for this. We show that investment trust managers were able to adjust quickly to the new socioeconomic circumstances and secure high profitability for their shareholders.

1. Introduction

There has been a growing interest in the history of professional asset management. From small beginnings, when stock market investment was dominated by individual investors, professional asset management has grown to become the backbone of modern finance.¹ The rise of UK investment trusts in the wake of the limited liability laws of the 1850s and 1860s is one of the most interesting episodes in this history. Formed as trusts on their initial appearance in the late 1860s, by the 1880s the majority of UK investment trusts had acquired limited liability company status. These trusts generally used a global rather than a domestic diversification strategy and promoted the principles of global ‘distribution of risk’ to the public.²

UK investment trust companies issued shares and fixed-interest securities (debentures), which were then traded on the London Stock Exchange (LSE) and other provincial stock

¹ See *Financial Times*, 13 April 2020: <https://www.ft.com/content/d9812fee-798a-11ea-9840-1b8019d9a987>.

² For the general principles of UK investment trusts see: Glasgow (1930, 1935), Gilbert (1939), Robinson (1930), Parkinson (1932, Ch. 17), Corner and Burton (1968), Rutterford (2009), Sotiropoulos *et al.* (2020).

exchanges. They used the funds raised by such issuance to create an investment portfolio of marketable securities, the great majority of which were listed securities. Investment trusts are thus closed-end funds in the sense that their capitalization is fixed (unless there are new issues of securities), and the supply of shares is inelastic.³ Shareholders can exit a closed-end fund any time by selling their shares in a secondary market. The fund has no obligation to redeem investors' holdings.

This study investigates the portfolio asset allocation of UK investment trusts between 1914, the onset of WWI, and 1928. Prior research has concentrated on the portfolio composition of investment trusts before WWI (Chambers and Esteves 2014; Sotiropoulos *et al.* 2020). Our analysis extends this research to the post-war period. We exploit a unique hand-collected dataset of 41 UK trust companies, comprising 40,875 portfolio holdings between 1914 and 1928. Investigating portfolio management in the post-war period is an exciting and under-researched topic. The outbreak of WWI radically reshaped the world's economic and political order. UK fund managers encountered unprecedented challenges, risks, and uncertainty. The UK government's policy of non-interference in economic and financial activity was very quickly replaced by massive intervention in the workings of the financial markets, which continued after the end of the war. A big wave of inflation between 1915 and 1920 (when prices rose a total of 150 percent), followed by a deflationary period in the 1920s (when prices fell by a total of 30 percent), replaced the relative stability of pre-war prices in the UK. Between 1914 and 1925, Britain left the gold standard, with sterling no longer fixed against gold. Exchange risk became thus an important factor when making investment decisions. While investors were not unfamiliar with crisis episodes in the pre-war period, the post-war global investment geography embraced increased political uncertainty and financial instability. Our analysis explores how UK investment trusts navigated the new post-war socioeconomic landscape and how the unique historical circumstances of the 1920s affected their asset management decisions.

Our results show that UK investment trusts not only survived WWI without major losses but also had a very strong performance in the 1920s—as captured by their cumulative real returns in relation to the market. This led to a huge wave of new trust incorporations. Our findings also reveal three main shifts in portfolio asset allocation. First, investment in the US, which dominated pre-war investment trust portfolios, had significantly declined by the end of the 1920s in a rather dramatic portfolio rebalancing. Second, UK trusts became more attracted to UK industrial and commercial securities, with a special interest in preferred shares and debentures/bonds. During this period, investment trust portfolios gradually moved from a 60–40 ratio between fixed-interest securities and equity (including ordinary and preferred shares) to a 50–50 strategy. This does not imply a shift away from fixed-interest securities (which in the 1920s still represented a significant part of available investment options); however, it made perfect sense in an environment of domestic disinflation, high FX risk, and plenty new bond and preferred share domestic issues with higher coupons and nominal yields. Third, UK investment trusts perceived the process of the European post-war reconstruction as a major financial opportunity and Europe became the new investment focus in the second half of the decade.

We find some significant variation in individual portfolio selection, which implies that investment trust directors did not merely follow the same (or any) benchmark objective (e.g. the market portfolio). Our analysis does not attempt to compare individual investment

³ See Corner and Burton (1968), Rutterford (2009) Sotiropoulos *et al.* (2020).

strategies to a hypothetical optimum selection or benchmark,⁴ but rather aims at revealing—on the basis of historical evidence—the rationale for the above three common portfolio shifts in the background of the new socioeconomic conditions that shaped the interwar world order. Professional asset managers running UK investment trusts were able to understand and adjust quickly to the post-war era, pursuing investment opportunities in a challenging environment and securing high profitability for their shareholders. They were able to take advantage of their exposure to foreign currency and realize significant capital gains when FX rates went in their favour. They were cautious with FX risk, took into consideration FX appreciation/depreciation in their portfolio selection, and were open to seeking new investment opportunities in world regions with which they were not familiar. Professional fund management proved much more successful than one would have expected—at least up to 1928—given the changes in the overall historical challenges.

Studying aggregate financial flows at the macro level has been one of the most exciting episodes in economic history, with the literature focusing on the UK before WWI (Edelstein 1982; Michie 1999; Goetzmann and Ukhov 2006). However, very little is known about the actual decision-making at the investor level, especially during periods of economic and financial instability. According to the estimate of *The Economist*, UK investment trusts comprised a total paid-up capital of £295.7 million at par values at the beginning of the 1930s and held investments with a book value of £332.3 million.⁵ The total nominal capitalization of this sector was thus less than 2 percent of the capitalization of the LSE official list (see Michie 1999)—and even less still if we include the UK financial markets as a whole (comprising the provincial stock exchanges and the junior London market). Despite the relatively small size of the investment trust sector, a study of investment trust portfolio asset allocation offers important and original evidence and insights into how experienced professional investors responded to the economic and financial turmoil of the 1920s. UK investment trusts were at the forefront of financial innovation: their asset management style had a wide influence and attracted considerable attention on both sides of the Atlantic.⁶

This paper adds to the growing literature on the history of fund management by both institutional and individual investors (Chambers and Esteves 2014; Rutterford and Hannah 2016; Sotiropoulos *et al.* 2020). In addition to the research on investment trust portfolio strategies, there has been considerable research on the portfolio strategies of life assurance companies in the UK (Scott 2002; Baker and Collins 2003; Bogle *et al.* 2021) as well as in other countries, such as Australia (Keneley 2012), Denmark, France, Germany, and the Netherlands (Bennet *et al.* 1984). This literature includes studies of the asset management strategies of banks (Baker *et al.* 2009), pension funds (Avrahampour 2015), as well as university endowments (Chambers *et al.* 2020). More recently, there has been research on asset management by individual investors (Sotiropoulos and Rutterford 2018) and by influential figures such as John Maynard Keynes (Chambers *et al.* 2015; Chambers and Kabiri 2016; Carlo and Marcuzzo 2018), who was both an individual and professional investor. Finally, research on portfolio selection in the 1920s contributes to the historical discussion of

⁴ In contemporary financial markets, active investment managers claim to provide a better return on average relative to a given benchmark or index, for a given level of benchmark tracking risk (see Grinold and Kahn 2020). Benchmark tracking was an alien concept to asset managers in the interwar period. Our results reveal substantial heterogeneity in the underlying portfolio asset allocations, without any mention of any individual benchmark that could be used as a reference index.

⁵ *The Economist*. 1 December 1934, Investment Trust Supplement.

⁶ See Glasgow (1935) and Robinson (1930).

the financial markets in the interwar period (Bordo *et al.* 1999; Ferderer 2003; Accominotti and Chambers 2016; Accominotti 2019).

The paper is structured as follows. Section 2 discusses the data behind this study. Section 3 highlights the major changes in investment trust portfolio composition after 1914. Section 4 explains what led UK investment trusts to minimize their portfolio exposure to the USA. Section 5 investigates domestic portfolio investment. Section 6 explains the reasons behind the interest in European bonds. Section 7 offers a brief conclusion.

2. Data

A detailed list of English and Scottish investment trusts is provided by the three studies published by George Glasgow: one in 1930 on English investment trusts; one in 1932 on Scottish investment trusts; and one updated and revised study in 1935 of both English and Scottish investment trusts.⁷ These three studies by Glasgow offer an important resource for our analysis because they identify *investment* trust companies, which applied an effective portfolio diversification, and distinguish them from *financial* trust companies, which pursued a different investment approach foregoing broader diversification.⁸ Investment trusts became known also as ‘average investment trusts’, a term initially coined by Scratchley (1875) as early as the mid-1870s to emphasize the difference between investment trusts and financial trust companies.

In this study, we follow the sampling approach applied by Sotiropoulos *et al.* (2020) for their investigation into pre-WWI investment trust portfolios. Our sample comprises those investment trusts that disclosed the list of their portfolio investments. These lists provided a detailed description of every single portfolio holding along with the nominal value of the investment in it. For instance, one can find security descriptions like the following: ‘Atchison, Topeka, & Santa Fé R.R. 6% Skg. Fund Coupon Bonds, 1911’, accompanied by a nominal investment of \$100,000. In the great majority of these holdings, the description was enough to identify the country of the investment (the USA in this example), the sector (Railways in this example), and the type of security (bond in this example). We additionally consulted the Stock Exchange Yearbook (SEYB) in the cases where the name was not enough to classify the portfolio holding.

As a rule, Scottish companies did not reveal their portfolio holdings before the 1930s—with only one exception: The Scottish Investment Trust. But neither did all English trusts: only about half of them disclosed their investment lists before the 1930s.⁹ It was only after the turmoil of 1929 that more investment trusts started to give detailed information as to the structure of their investment portfolios.¹⁰ These lists of portfolio holdings were published together with the annual reports of investment trusts, and they can be found at the Guildhall library in London. Following the approach of Sotiropoulos *et al.* (2020), and to investigate the portfolio strategies of the 1920s, we took pictures of all available lists of holdings in 1920,

⁷ See Glasgow (1930, 1932, 1935).

⁸ For this issue, see Robinson (1930, p. 288), Rutterford (2009, pp. 162–3), Corner and Burton (1968), Chambers and Esteves (2014).

⁹ See Glasgow (1935, p. xivi), Rutterford (2009, pp. 157–181), Ripley (1934, pp. 126–7).

¹⁰ Before 1929, opinions were split as to whether portfolio holdings should be disclosed. The argument against disclosure was that it was impractical for investors to calculate the income and capital gains for the overall portfolio. On the other hand, non-disclosure was also considered equivalent to putting a blank cheque in the hands of the directors. For this debate see Glasgow (1935) and Parkinson (1932).

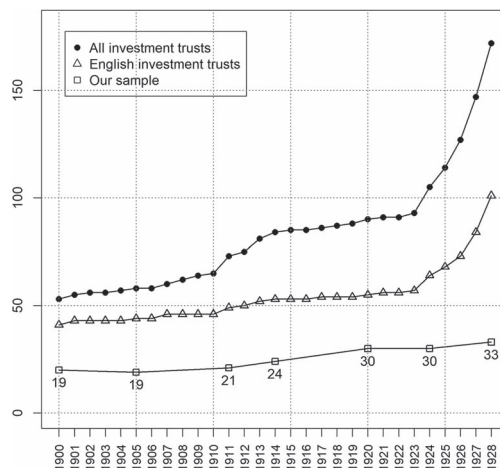


Figure 1. The number of incorporated UK investment trusts in our dataset in relation to all UK investment trust companies. Sources: Our dataset and Glasgow, Glasgow's Guide. Notes: Data for the years 1900, 1905, 1911, and 1914 are from Sotiropoulos *et al.* (2020). The lowest line indicates the size of our sample and the numbers underneath it are the number of portfolio observations in every sampling year (see also Online Appendix 1).

1924, and 1928. Not all trusts reported their investment lists consistently every year. Online Appendix 1 offers an overview of our sample. Figure 1 shows the number of the firms in our sample in relation to all existing incorporated UK investment trusts in the 1920s according to Glasgow's studies. To assist our analysis and have an overview of the changes over a longer period, we have added to our sample the pre-WWI dataset of investment trust portfolios from the study of Sotiropoulos *et al.* (2020) starting from the year 1900. Our final sample includes 176 annual portfolio observations (firm-years) of 41 different investment trusts. These portfolio snapshots comprise 58,047 observations of individual holdings. From these observations, 32,787 are in the 1920s (this is the new data this study provides) and 40,875 are after 1914, which is the focus of our discussion.

Before we proceed with our data analysis, there are some caveats concerning our sample one should have in mind.

First, our sample includes all the English investment trusts and the one Scottish investment trust that disclosed the list of their portfolio holdings for the sampling years. Are these trusts representative of the whole sector? In other words, did the decision to disclose the list of their portfolio investments by this group of trusts lead to a diversification strategy radically different from the rest of the sector? In the absence of evidence for the trusts that did not reveal their portfolio holdings, it is not easy to answer this question. Neither in discussions related to investment trusts before the 1930s nor in related research is there any indication that portfolio disclosure affected portfolio selection. We therefore have no strong reason to assume that there is bias in our sample, and we believe that our sample is representative of the whole sector. Our analysis in Online Appendix 2 compares the averages of several corporate variables at the firm level between our sample (excluding the Scottish Investment Trust) and

the remaining English investment trust sector in 1928.¹¹ These data were collected from the SEYB. There is no evidence of any statistically significant difference with respect to company paid-up capital, leverage, number of directors, and performance. This implies that that our sample is not biased towards small or large trusts and does not embrace performance winners.

Second, the lists of portfolio holdings that accompanied annual financial statements reported nominal values of individual securities. These values may have been quite different from market values, or from cost prices at purchase, which were the book values in the balance sheet. Given the size of investment trust portfolios in our sample (which also includes securities traded on non-UK markets) in relation to available information in sources such as the SEYB, estimating the market value for every single security would be impossible in practice. Unfortunately, price indices for the full range of sectors, countries, and security types in investment trust portfolios are not available. However, calculating the portfolio structure based on nominal values captures the big picture of portfolio selection. It is the best available choice despite its limitations. It also provides portfolio decisions unrelated to market price movements, which is a more accurate measure of actual portfolio rebalancing. These are the portfolio data that investment trust directors chose to provide to investors.

3. An overview of investment trust performance and asset allocation in the 1920s

The striking finding of [Figure 1](#) in the above section is that there was a big wave of new investment trust incorporations in the 1920s.¹² In 1914, on the eve of WWI, there were 84 investment trust companies in the UK and this figure had slightly increased to 87 by the end of the war. The number of investment trusts then almost doubled to 172 by 1928. We believe that the main reason for this success was the overall outstanding performance of the sector in the 1920s.¹³ [Figure 2](#) shows the cumulative *real* returns (based on annual data) of a value-weighted portfolio that includes the issued ordinary shares of *all* UK investment trusts between 1900 and 1928 (not just the investment trusts in our sample). The prices and dividends of the ordinary shares were collected from the SEYB for all trusts that we see in [Figure 1](#)—more details about our calculations can be found in the online Appendix 4. This real cumulative performance of the investment trust sector is compared with two ‘market’ portfolios. The first is from the landmark study of [Dimson *et al.* \(2002\)](#)—indicated as ‘Market – DMS’ in [Figure 2](#)—and shows cumulative real returns of the index of the ordinary shares of the top 100 companies based on annual data from the *Financial Times*.¹⁴ The second is a value-weighted index of all ordinary shares included in the *Investor’s Monthly Manual* (IMM)—indicated as ‘Market – IMM’ in the figure, based on our calculations of IMM data.

The real return performance of investment trusts before — but mostly after — WWI was exceptional in relation to the ‘market’. This probably explains the wave of new incorporations

¹¹ This is the very last year in our dataset and the largest cross-sectional subsample. The results in the table of Online Appendix 2 are not different in the other years.

¹² The studies of Glasgow that led to the results of [Figure 1](#) report new investment trust incorporations as well as existing financial trusts that changed their operations and became investment trusts. The latter were already incorporated companies—so typically not ‘new’ incorporations—but represent a very small part of the sample.

¹³ This was a point also made by several investment trust chairmen, as reports of proceedings of annual general meetings of our sample investment trusts showed.

¹⁴ As explained by [Dimson *et al.* \(2002, p. 299\)](#), the index resembles the FTSE 100 in its method of construction. This value-weighted equity index contains those hundred companies that, before the start of each year, have the largest market capitalization for their ordinary or deferred shares.

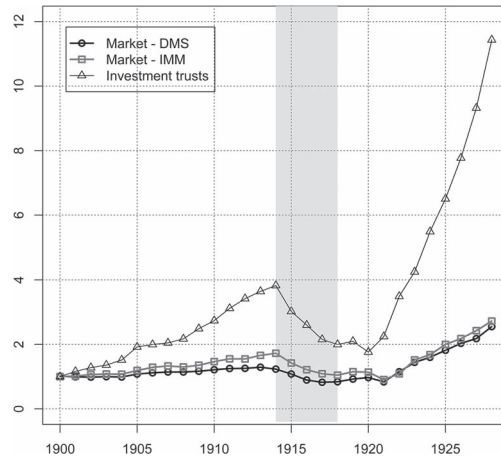


Figure 2. Cumulative real returns of the investment trust sector in relation to the market between 1900 and 1928. Sources: *Glasgow (1930)*; the Stock Exchange Yearbook; the Investor's Monthly Manual; *Dimson et al. (2002)*; *O'Donoghue et al. (2004)*. Thanks to the generous efforts of William Goetzmann and K. Geert Rouwenhorst, the IMM data at large (1869–1929), have been digitalized. Notes: The grey area in the figure highlights WWI. The figure shows cumulative real returns based on annual data of three value-weighted portfolios of ordinary shares according to their capitalization in market values. The real annual returns for the DMS market portfolio were taken from the study of *Dimson et al. (2002)*. The Market-IMM portfolio includes all available GBP-denominated ordinary shares or stocks in the IMM dataset. For details about our calculation see Online Appendix 4.

after the end of the war we see in [Figure 1](#). The war affected the performance of the investment trust sector negatively, but the rebound in the 1920s was remarkable. This success of investment trusts did not pass unnoticed among investors and analysts at the time.¹⁵

[Figure 3](#) offers an overview of the global distribution of portfolio assets in nominal values for the trusts in our sample. The figure includes box plots to capture the variation in asset allocation across trusts as well as averages to identify the overall trends.¹⁶ A first finding from these results is the significant heterogeneity in the underlying individual portfolio selection. This clearly implies that investment trusts had very different portfolio objectives, far from

¹⁵ The way investment trusts weathered both the Baring crisis in 1890 and WWI was offered as evidence of the success of the principle of portfolio diversification at a global level (*Glasgow 1935*, p. xxxii). The link between profitability and new incorporations was explicitly made by investment trust chairmen at the company meetings of investment trusts (for instance, see the proceedings of the general meeting of the American Trust Company in 1928, Guildhall library, company annual reports, item no. 2014).

¹⁶ [Figure 3](#) shows unweighted averages and box plots to visualize the difference in portfolio strategies between trusts. It adapts the individual trust as an observational unit. The weighted averages (that effectively aggregate all individual trust portfolios into a single portfolio) are, for this sample, very similar to the unweighted averages in [Figure 3](#) and are not reported in this study. This similarity with the weighted averages implies that the unweighted averages, as shown, also depict the overall trend of the aggregate investment flows made by the trusts in our sample.

following/tracking a single ‘benchmark’—whether the market or not.¹⁷ Nevertheless, the results also reveal some major common trends in asset allocation that affected all investment trust portfolios, indicating a clear paradigm shift in portfolio strategies after WWI. Whilst the portfolio exposure to Latin American securities does not change (in nominal values), there is a striking fall in US portfolio investment. By the end of the 1920s, US securities, the most popular pre-war portfolio investment, had almost disappeared from investment trust portfolios in nominal values.¹⁸ The shifts in portfolio weights we see in [Figure 3](#) mirror similar shifts in average portfolio investment in absolute terms (million GBP in [Figure 3](#)), which means that overall portfolio rebalancing reflects actual portfolio investment in each region. UK trusts appear to be somewhat more interested in domestic securities compared with pre-war levels. There is also a sudden rise in the appetite for European securities in the second half of the 1920s—a radical departure from the pre-war indifference to Europe reported by [Sotiropoulos et al. \(2020\)](#). Investment share in Asia and the Pacific or in Africa did not change much; there is a small increase towards the end of the decade reflecting the rebalancing of USD holdings.

The remainder of the paper examines the three main shifts in the asset allocation of investment trusts between WWI and 1928: the drastic decline in US investment, the increased interest in domestic investment opportunities, and the sudden appetite for European securities in the second half of the 1920s. Our discussion seeks to explain how the unique socioeconomic circumstances of the interwar period drove these three key overall decisions by investment trust asset managers, despite the heterogeneity in the underlying portfolio selection.

4. Leaving the USA

The average portfolio investment in North America (which we assume to include both the USA and Canada) before WWI was about a third of total portfolio value in nominal terms, the great majority of which went to the USA. Most of these holdings were denominated in US dollars (USD) even when they were listed and traded on UK financial markets. For instance, in 1914, as much as 85 percent of portfolio investment in the USA was denominated in USD for the trusts in our sample. [Figure 4](#) breaks down the US portfolio investment into different security types. The majority of US portfolio holdings before the war were in bonds, with railway bonds having the predominant position. The USA was a net debtor economy and portfolio investment from abroad was mostly in bonds and not shares ([Wilkins 2004](#), p. 6).¹⁹

¹⁷ The idea of asset managers tracking the performance of an index is very recent and by no means applies to investment trusts in the interwar period. See also footnote 4.

¹⁸ To translate USD nominal values into GBP in the 1920s, we used the current exchange rate at the reporting month of each trust in our sample. From all our sampling years, the USD/GBP exchange rate was different from its historical level only in 1920 (3.64 on average instead of 4.87) and 1924 (4.42 on average instead of 4.87). The overall differences in the calculated portfolio shares would be very small if we used the historical level of the exchange rate for all years in [Figure 3](#).

¹⁹ See also [Sotiropoulos et al. \(2020\)](#). Preference for US bonds did not mean complete avoidance of US ordinary and preferred shares. As we see in [Figure 4](#), the average investment in US equities (including both ordinary and preferred shares) before WWI fluctuated around 10 percent, which is by no means negligible. After WWI, there was an accelerated wave of industrial equity listings on US stock exchanges, but US markets were also predominantly in favour of corporate bonds, especially before WWI (see [Hannah 2019](#) and [O’Sullivan 2016](#)).

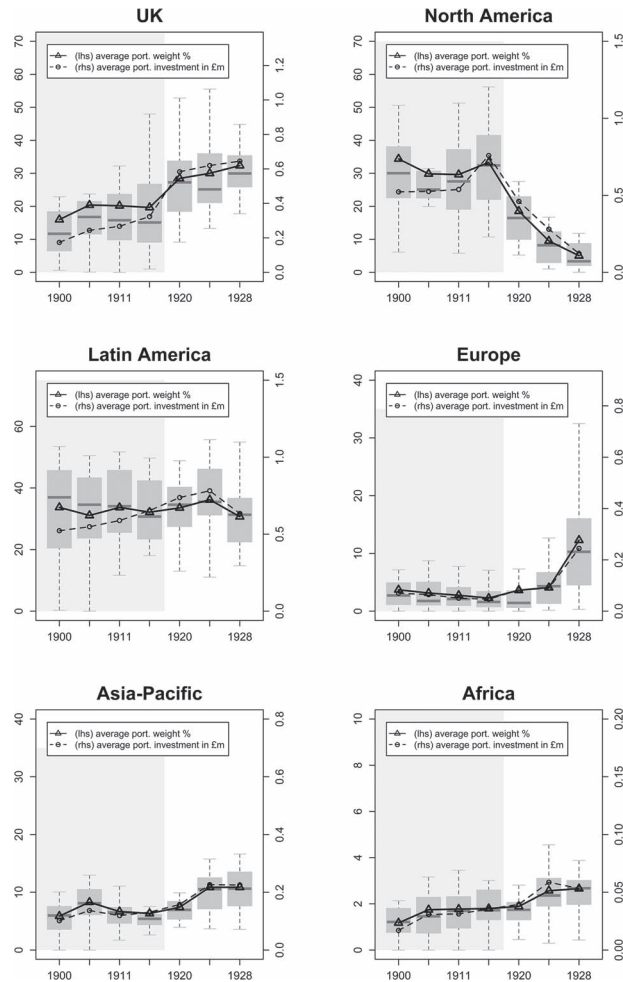


Figure 3. Investment trust portfolio allocation in different world regions (percentage of portfolio nominal value). Sources: Our dataset. Notes: Our calculations are based on the reported nominal values in the investment trust annual reports. The chart area before WWI has been shaded to highlight the difference in the 1920s. Russia has not been included in Europe. North America includes the USA and Canada and Latin America the rest of the American continent. The figure shows box plots of portfolio weights to capture the variation in asset allocation as well as unweighted averages of portfolio weights to identify the overall trend. Box plots are non-parametric; they display variation in samples of a statistical population without making any assumptions about the underlying statistical distribution. The box measures the range of the second and the third quartile, including the median. Outside the box lie the first and fourth quartiles, while the so-called whiskers capture the minimum and maximum values (excluding outliers). In the picture, we have also included the unweighted average of the portfolio investment in £m.

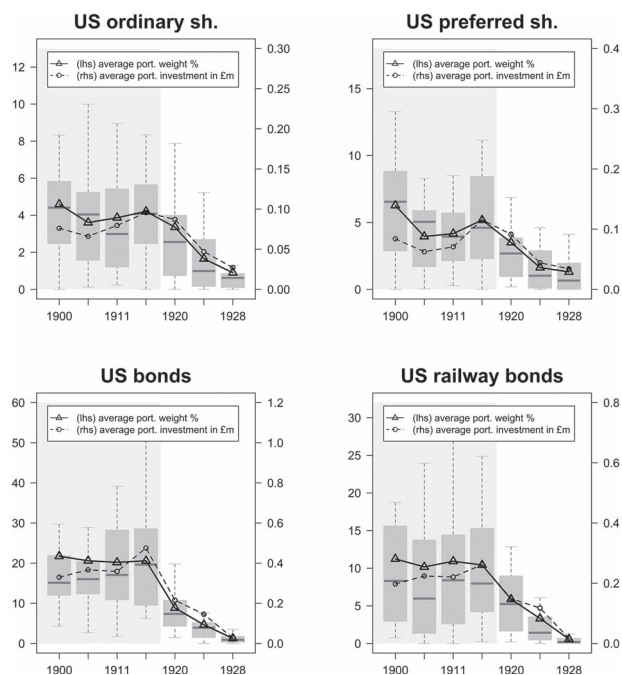


Figure 4. *Portfolio investment in the USA (percentage of portfolio nominal value)*. Sources: Our dataset. Notes: Our calculations are based on the nominal values of the portfolio holdings in the investment trust annual reports. The chart area before WWI has been shaded to highlight the difference from the 1920s.

For the trust companies in our sample, investment in the USA declines consistently during the 1920s, reaching very low levels by 1928.²⁰ As we can see in Figure 4, this trend applies to all types of US investment and sectors. In the same figure, we also see that portfolio weights moved in tandem with actual portfolio investment, which means that the fall in US investment was not relative to an increasing portfolio value but absolute in nominal terms. This is a striking shift in the portfolio selection of investment trust managers, a finding that invites more discussion.

The outbreak of WWI forced the British government to a complete change in attitude and policy towards overseas investment, an area in which investment trusts had been very active.²¹ Due to the abrupt decline in exports caused by the war, the government required a considerable amount of USD for munition and food purchases from the USA. Capital controls were the only option. At the same time, such controls would also make sure that the British government would not face competition from foreign borrowers for funds in the

²⁰ Scottish investment trusts did not typically publish the lists of their investments. The analysis of Gilbert (1939, pp. 120–1) for the Scottish trusts in Dundee—based on unpublished information—also highlights the decline ‘in the percentage of total funds invested in the United States’ after the war. This is an extra indication that our sample depicts the overall trends of the UK investment trust sector.

²¹ For a comprehensive analysis of the restriction in overseas investment, see Atkin (1970), Morgan (1952; Ch. II and VI), Morgan and Thomas (1962; Ch. 14), Michie (1999; Ch. 6), and Wormell (2000).

domestic capital market.²² Restrictions on foreign investment were duly introduced soon after the declaration of war, prohibiting dealings in any security that had not been in the physical possession of the holder in Great Britain since September 1914.

One of the most notable interventions in the financial markets was that of the three mobilization schemes organized by the American Dollar Securities Committee established by the Treasury in December 1915.²³ The committee provided a list of USD securities and offered to buy them “at current New York prices, with payments being made in sterling at the exchange rate of the day either in cash or, at the option of the seller, in 5 per cent Exchequer Bonds’ (Wormell, 2000, p. 178). The alternative was for securities to be deposited with the Treasury for 2 years receiving all dividends or interest payments with an additional annual bonus of 0.5 percent.²⁴ There were two (non-compulsory) mobilization schemes with these conditions, but these schemes were withdrawn in September 1916. A third scheme was launched in February 1917 requiring the owners of those securities specified by the Treasury to deliver them to the Committee, without accepting deposits. These schemes allowed the government to purchase or borrow as many as 2,027 different securities, among which were 680 million USD in bonds and 241 million USD in shares (Wormell 2000, p. 179). Our dataset does not cover any years during WWI and so does not allow us to capture to what extent investment trusts participated in these USD mobilization schemes, selling or depositing their US holdings. Gilbert (1939, p. 104) suggests that Dundee investment trusts deposited a significant amount of USD securities with the Treasury and subscribed to War Loans on the sale of USD securities. It may well be that this was the case for English investment trusts, as well.²⁵ Trust portfolios showed a considerable decline in holdings of US bonds, from an average of 20.5 percent in nominal values in 1914 to 9.6 percent in 1920, which was accompanied by an average increase in the proportion invested in UK government debt of almost 7 percent.²⁶

The restrictions to foreign investment were officially withdrawn in 1919, under great pressure from the city. However, this did not imply a return to the pre-war regime of non-interference. The Treasury appeared to step into the background, but it was the Bank of England that then took a central role, and ‘intermittently regulated the issue of overseas loans in London. [...] The Treasury and the Bank worked harmoniously together in the regulation of the capital market’ (Atkin 1970, p. 326).²⁷ The embargo on empire borrowing in London was partially removed after 1921. It remained unchanged for foreign borrowing—except for foreign company issues for small amounts (Atkin 1970, p. 327)—before being fully

²² Public debt soared as a consequence of WWI, reaching almost double the size of GDP, with about 15 percent in foreign currency by the 1920s (Crafts 2016, p. 208, Wormell, 2000).

²³ For more details see Wormell (2000, pp. 177–180), Atkin (1970), and Morgan (1952)

²⁴ The depositor received certificates negotiable on the LSE. The depositor could have their securities released either by paying the dollar value to Treasury in New York or when the Treasury sold them against a sterling payment in London—in that case the depositor would receive the sterling rate of the day price plus 2.5 percent (Wormell 2000, p. 179).

²⁵ When the Chancellor announced the first scheme to mobilize British holdings, he asked the life and insurance companies as well as the investment trusts to submit lists of USD securities that they were willing to sell or lend to the Treasury (Wormell 2000, p. 179). This consultation perhaps provided the ground for significant participation to the scheme by institutional investors. In some cases, like the Mercantile Investment and General Trust, there is clear evidence that trusts relied on the USD mobilization schemes to reduce exposure in the US (see *Financial Times*, 23 February 1927, p. 2).

²⁶ We return to this issue in the next section. As we see in Figure 4, between 1914 and 1920 investment in US ordinary and preferred shares did not change much.

²⁷ For a detailed discussion on this issue, see Michie (1999) and Atkin (1970, 2005).

withdrawn in November 1925. By 1924, the embargo served little purpose as the need for the government to issue Treasury bonds had declined, while foreign government long-term debt was being issued at lower yields and did not conflict with the British government's immediate or prospective borrowing plans (*ibid.*). The only reason for keeping the embargo for an extra year until 1925 was the desire to protect the pound before joining the gold standard. This was also the main reason that the embargo was re-introduced in 1929–1931, but this is after the period we are examining in this study.

The financial options available to investors on British markets were thus very different from those in the pre-war period. Large fixed-interest new issues for foreign governments and companies remained under significant government control, with limited escape from this financial repression between 1926 and 1929. The effects of this regulation on the capital markets are evident in the pattern of the new overseas issues in UK markets during the 1920s (see online Appendix 5). Colonial investment picked up after 1921 reaching pre-war levels by 1923; this was not the case for foreign investment.

It was not just the embargo that shaped the post-war investment appetite. The collapse of the gold standard led to a significant rise in currency or FX risk and related uncertainty.²⁸ FX risk was a type of risk that had not been a major concern for British investors before the war when most of the countries in which they invested had currencies linked to the gold standard or issued securities denominated in sterling. It seems that the main tenets of the pre-WWI 'global distribution of risk', an approach promoted and established by UK investment trusts,²⁹ no longer existed. The capital market embargo together with FX risk provided an entirely different investment environment for asset managers to navigate.³⁰

The above reasons may explain why investment trusts stopped viewing US securities as a desirable asset class. However, this financial repression cannot fully capture the fact that portfolio investment in the USA declined steadily over the period. UK trusts could have evaded this embargo, as did many other British investors (*Atkin 1970*, p. 331), by directly purchasing USD securities using US stock exchanges.³¹

An important factor for US portfolio investment after the end of WWI was the significant depreciation of GBP in relation to USD. As we see in *Figure 5*, from the pre-war historical level of 4.87 USD per GBP (the gold standard level), the pound depreciated to the level of 3.5 USD per GBP at the beginning of 1920 and fluctuated between 3.5 USD and 4 USD per GBP until 1922 before it gradually reverted to its pre-war level towards the middle of the decade, when the UK restored the gold standard. By selling existing USD-denominated holdings, investment trusts could realize a profit of 15 to 20 percent at any time before 1922.³² Given that the average annual return on Consols for the four years between 1921 and 1924

²⁸ There has been some interesting recent research studying uncertainty in the interwar period, using either article-based indices (*Lennard 2020*) or FX data (*Lopez and Mitchener 2021*).

²⁹ By the beginning of the twentieth century, portfolio diversification by investment trusts had been coined as 'geographical distribution of risk' to highlight its global perspective. See *Scratchley (1875)*, *Glasgow (1935)*, *Michie (1983)*, and *Sotiropoulos et al. (2020)*.

³⁰ The embargo restrictions were not welcomed by the financial industry. As later explained by *Glasgow (1935*, p. xxxii), the embargo did not allow investment trusts to take full advantage of the benefits from global diversification.

³¹ Except for the embargo, British (individual and institutional) investors did not face any other restrictions by the UK government.

³² According to our dataset, the great majority of the sales of USD denominated securities was not due to redemptions.



Figure 5. Monthly exchange rate of 1 GBP to USD, monthly price of Consols, and annual inflation rate in the UK between 1918 and 1929. Sources: *The Economist* and Bank of England. Notes: The figure shows the price of 1 GBP in USD on the left-hand side. The price of Consols is measured on the right-hand side as a ratio to the par value of £100. The bar chart at the bottom shows annual inflation rates in percentages. Annual inflation data are taken from the Bank of England Historical Macroeconomic Dataset, which is based on the study of O'Donoghue et al. (2004). There are differences between retail and wholesale price inflation in interwar Britain (see Keynes 1931; Dimsdale 1981; Solomou 1996). We report inflation rates based on the retail price index to be consistent with the calculations of Figure 2.

was about 9 percent,³³ just by selling USD holdings and investing in risk-free Consols for a year could provide a total return as high as 30 percent; investing in riskier asset categories could further improve this return. This use of the USD exchange rate to their benefit became the strategy explicitly followed by many investment trust managers, as evidenced by many investment trust Chairmen at their annual company meetings. For example, as early as 1919, the chairman of the Mercantile and General Investment Trust mentioned that ‘advantage has been taken by some of the [investment trust] companies of the present position of the American exchange to realize American securities at a handsome profit on the book values.’³⁴

The anticipated appreciation of the pound in the period before the return of the sterling to the gold standard at the pre-war parity level would also have made any new investment in USD unattractive.³⁵ In other words, UK trusts had reasons to avoid the US market. Neither reports of investment trust annual meetings nor the financial press of the time made any

³³ See Table 1 in the next section for more information about performance of difference asset classes in the 1920s.

³⁴ See *The Economist*, March 1919, p. 686; for the same point, see also *The Economist* 1920, p. 686. The explicit use of the dollar exchange rate for their benefit was highlighted by other investment trust directors and was used as a common strategy, as our inspection of reports of annual company meetings suggests.

³⁵ As early as November 1919, the UK government announced the official intention of returning to the gold standard at the pre-war parity (Solomou 1996, p. 93). Although not entirely unchallenged, the question for the British authorities was the timing of the return to gold standard and not the rate (Dimsdale 1981, p. 314).

explicit case against US investment in the expectation of the appreciation of GBP before 1925. However, the anticipated appreciation of the GBP in this period implied that the performance of USD securities would be poor when expressed in GBP. This is evidence consistent with the downward trend in US portfolio investment.³⁶

As we see in [Figure 6](#), US share prices increased quite drastically during the second half of the 1920s in the run-up to the 1929 crash, as opposed to bonds. However, common stock dividend yields remained at the level of bond yields but were much more volatile. From the long-term perspective of UK investment trusts (targeting yields, not returns), US financial yields did not compare well with other investment alternatives—such as the UK industry bond yields also shown in [Figure 6](#)—even after 1925, when the gold standard was re-established.³⁷ Many UK analysts stressed that the US market was in a speculative mode with many overvalued shares and bonds.³⁸ This by no means implies that UK investors predicted the 1929 financial crash in the US but indicates that low US yields remained unattractive from the long-term perspective of UK asset managers. Looking at the whole decade of the 1920s, according to calculations by [Dimson *et al.* \(2002\)](#), the real annual returns on USD-denominated US equities and bonds between 1920 and 1929 were 14.4 and 7 percent, respectively. The same figures for GBP-denominated UK equities and bonds were 9.3 and 8.3 percent, respectively. Given the high FX risk for the most part of the decade and the (anticipated) appreciation of the GBP after 1920, US investment did not come across as very attractive when compared with other investment options, as we discuss in the next sections.³⁹

5. Domestic investment

UK investment trusts were pioneers of the ‘global distribution’ of risk, a top-down strategy based on the idea that domestic investors would benefit significantly from international portfolio diversification around the globe. Noted financial advisors before WWI, such as Henry Lowenfeld, argued that as much as 90 percent of portfolio value should be invested in non-domestic securities.⁴⁰ Although investment trusts did not fully embrace this rather extreme advice, they were not particularly keen on UK securities before WWI, as shown in

³⁶ For instance, the performance of US railway fixed interest securities in sterling terms was very weak in the first half of the decade. As we can see in [Table 1](#) in the next section, the excess return of US railway bonds and preferred shares in GBP relative to Consols between 1921 and 1924 was disappointing at an annual level of –5 percent. Many trusts would have been better-off by simply holding Consols.

³⁷ Some UK investment trusts had established links in the US as early as the 1920s (this comes from our inspection of the boards of directors). [Wilkins \(2004, p. 37\)](#) argued that the poor financial performance of US railways and the possibilities of higher returns in Europe reshaped the world financial geography in the 1920s. US affiliates of UK investment trusts were interested in selling, not buying, US securities (*ibid.*).

³⁸ See [Gardner \(1924, p. 51\)](#) and [Whorlow \(1926, p. 73\)](#) in their analysis published by the *Financial Review of Reviews*. As also put by [Ripley \(1934, p. 188\)](#), ‘Englishmen were sceptical of the solidity of the foundations of the rise in American shares and practically all English money was safely home again before the collapse [of 1929].’ See also [Cheffins \(2019, Ch. 2\)](#).

³⁹ There was a major transformation in foreign exchange trading in the interwar years, see [Atkin \(2005\)](#), [Accominotti and Chambers \(2016\)](#). The latter study the currency speculation in the interwar years, having Keynes’ transactions as point of reference, showing that momentum currency strategy for USD offered negative annualized excess returns for the period 1920–1939. The practice of liquidating their US portfolio exposure when USD appreciated in the early 1920s and of avoiding USD investment when the GBP was expected to appreciate implies that investment trusts successfully tied FX to their portfolio reallocation.

⁴⁰ See [Lowenfeld \(1907\)](#), [Sotiropoulos and Rutterford \(2018\)](#).

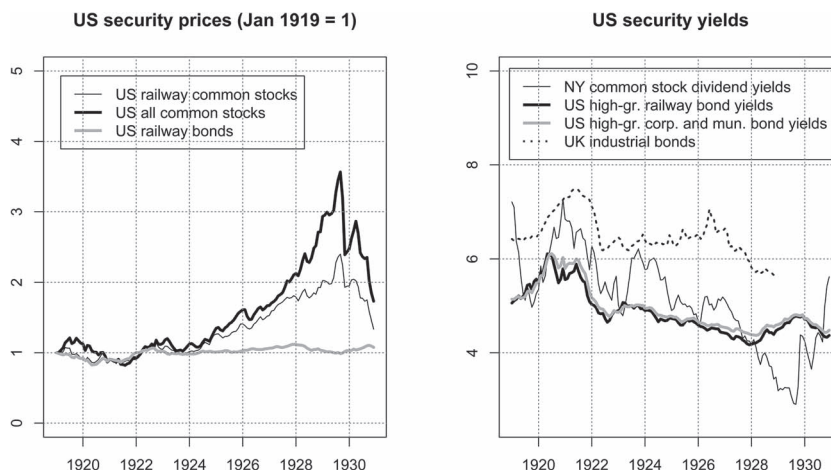


Figure 6. US security prices and yields for selected asset categories. Sources: NBER Macrobistory database and Investor's Monthly Manual. Notes: The detailed sources of the data can be found in the NBER Macrobistory database. US railway common stocks depict the series *m11005b*; US all common stocks the series *m11025a*; the US railway (high grade) bonds the series *m11016*; the New York stock exchange common stock dividend yield the series *m13046a*; the US high-grade railway bond yields the series *m13024*; the US high grade corporate and municipal bond yields the series *m13021*. For the data on UK industrial bonds see notes to Table 1.

Figure 3. In 1914, about a fifth, on average, of portfolio nominal value was invested in UK securities. By the end of the 1920s, the picture was different. The average portfolio exposure to domestic holdings reached 32.4 percent in 1928. In the same year, there was almost no investment trust in our sample with domestic investment less than 20 percent of portfolio value in nominal terms, while there were six trusts (out of thirty-three in our sample) with domestic investment over 45 percent of portfolio value.

Figure 7 breaks down portfolio investment by selected sectors and security types. Table 1 shows the performance in GBP of several asset classes that appear in investment trust portfolios. Our calculations are based on monthly data from the IMM dataset.⁴¹ The table reports annualized returns and excess returns in relation to Consols, the risk-free asset in our calculations. It then uses these excess returns to calculate Sharpe ratios as a measure of risk-adjusted performance.⁴² The table also reports dividend/interest yields. Up to the 1920s, the dividend yield was a key valuation metric for UK investors, including investment trust managers, consistent with their long-term investment horizon (Rutterford 2004). The rise of FX risk and the inflation/disinflation swings in the early 1920s made investors gradually more aware of the additional impact of capital gains/losses. Yet, the dividend yield seems to

⁴¹ For more details on the calculations see the notes to Table 1. Online Appendix 3 shows the securities that made up each asset class in Table 1.

⁴² For a discussion of this point see Sharpe (2007). An appropriate performance measure is one that can capture risk-adjusted returns. In our calculations, we have adopted the Sharpe ratio, which is a standard measure of risk-adjusted return. Other measures of risk-adjusted performance have been suggested by the literature, all having their own weaknesses. For a general discussion of the Sharpe ratio as a measure of performance see Lo (2002).

be a good predictor of long-term investment performance.⁴³ When reading the results for excess performance reported in [Table 1](#), we should not overlook the fact that the average performance of Consols—our risk-free asset—was exceptionally good in the first half of the decade, offering an annual return of about 9 percent between 1921 and 1924 (this return was higher if we expanded the start of the period from 1921 to 1919). Every other return is compared to this already high benchmark. The results in [Table 1](#) offer the background for us to interpret some of the decisions made by investment trust managers.⁴⁴

In 1920, UK investment trusts held on average about 7 percent of their portfolios in UK government debt, which is a striking change compared with the pre-war period, when there was practically no investment in UK government bonds. The lack of (international) investment opportunities during the war, accompanied by high economic/political uncertainty and increased market restrictions, led many trusts to subscribe to War Loans on the sale of USD securities—under the pressure from the government ([Gilbert 1939](#), p. 104).⁴⁵ In 1920, as much as 80 percent of the investment by trusts in UK government debt was in several War Loans,⁴⁶ while the rest was in Funding loans and Treasury bills issued by the government. There may have been a patriotic element in these decisions,⁴⁷ but war debt performed rather well. The results of [Table 1](#) are somewhat misleading for the performance of the War Loans right after the war. Over the 10 years between 1921 and 1928, war loans did not offer a return or running yield very different from Consols ([Table 1](#)), but for the years 1919–1921, their return outperformed Consols by 3.5 percent per annum.⁴⁸ Picking up UK government debt right after the war was by no means a bad investment choice — and this was explicitly mentioned by both financial analysts in the press and investment trust directors in their reports.⁴⁹ Moving towards the end of the decade, the share of UK government debt in investment trust portfolios declined to negligible pre-war levels, reflecting the overall performance of UK debt in relation to other existing options.

The other major change, we note in [Figure 7](#), is the rise of portfolio investment in the domestic sector. There are several reasons that can explain this portfolio rebalancing. On the supply side, the early 1920s was a period of a wave of new security issues by industrial

⁴³ This also applies to [Table 1](#). The [Cambell and Shiller \(1988\)](#) model relates the dividend yield to a present value of expected future returns and future dividend growth rates (see also [Vuolteenaho 2002](#)).

⁴⁴ For instance, Latin American government and railway bonds offered relatively high risk-adjusted returns, especially in the second half of the decade (see [Table 1](#)). This justifies the investment trusts' decisions to sustain their exposure to Latin America. For that reason, we do not discuss Latin American portfolio investment in this study. Most Latin American holdings in our sample were fixed-interest securities denominated in GBP. This minimized the risk of the British investor and led to good returns in the disinflationary environment in the UK after 1920 (see [Figure 5](#)).

⁴⁵ As mentioned above, our dataset has portfolio observations in 1914 and 1920, so we cannot capture the portfolio transactions during the war. Reports of the annual meetings of UK investment trusts offer evidence that trusts did buy government debt during and right after the war.

⁴⁶ These War Loans were long-term bonds with maturity typically higher than 20 years when they were issued (this applies to 4, 4.5, and 5 percent War Loans; see [Morgan, 1952](#)).

⁴⁷ See [Rutterford and Sotiropoulos \(2017\)](#). In the general meeting of the Mercantile Investment and General Trust in 1927, the chairman mentioned the “response to the appeal made in the national interest” as one (but not the only one) of the reasons of investing in War Loans or Treasury bills (*Financial Times*, 23 February 1927, p. 2).

⁴⁸ In addition, the 5 percent war loan in our sample was repayable at £105, which is 5 percent above par. This has not been included in our calculations.

⁴⁹ See for instance [Gardner \(1924](#), p. 51) as well as the chairman's statement of the Stock Conversion and Investment Trust.

Table 1. *Financial performance of selected portfolio categories in the 1920s*

	1921–1924			1925–1928			1921–1928		
	Yield	Return	Sharpe return ratio	Yield	Return	Sharpe return ratio	Yield	Return	Sharpe return ratio
Consols	0.046	0.088	0.000	0.045	0.040	0.000	0.045	0.063	0.000
USD railway fixed income	0.048	0.044	-0.047	0.046	0.061	0.018	0.047	0.053	-0.014
Latin American railway fixed income	0.097	0.172	0.073	0.085	0.108	0.064	0.091	0.139	0.069
Latin American government bonds	0.061	0.120	0.024	0.058	0.087	0.043	0.059	0.103	0.033
UK government War Loans	0.046	0.081	-0.014	0.045	0.047	0.004	0.045	0.064	-0.005
UK industry—ordinary shares	0.072	0.164	0.065	0.047	0.044	0.002	0.059	0.102	0.033
UK industry— debentures/bonds	0.066	0.111	0.015	0.063	0.082	0.039	0.064	0.096	0.027
UK industry—preferred shares	0.063	0.132	0.034	0.062	0.073	0.030	0.062	0.102	0.032
European bonds	0.094	0.158	0.060	0.089	0.125	0.080	0.091	0.141	0.070
European government bonds	0.086	0.142	0.045	0.090	0.128	0.083	0.088	0.135	0.064
European corporate bonds	0.125	0.207	0.105	0.085	0.115	0.071	0.105	0.160	0.088

Source: The *Investor's Monthly Manual* (IMM) dataset. Notes: The table reports average 'running' yields, annualized returns, excess returns, and corresponding Sharpe ratios for different asset classes. Our calculations are based on monthly data from IMM. A detailed list of the securities included in each asset class/portfolio can be found in Online Appendix 3. For details about our calculations see Online Appendix 4.

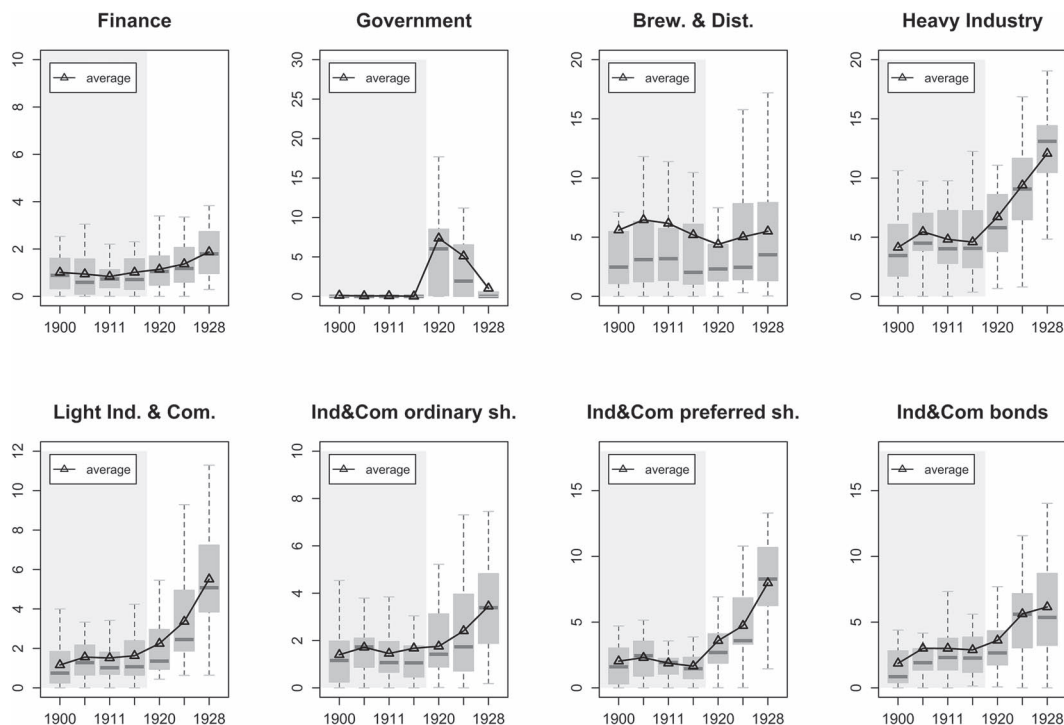


Figure 7. Domestic portfolio investment (percentage of portfolio nominal value). Sources: Our dataset. Notes: Our calculations are based on the reported nominal values in the investment trust annual reports. The chart area before WWI has been shaded to highlight the difference from the 1920s. The categorization into sectors follows the analysis of *Goetzmann and Ukhov (2006)* (see also *Mitchell et al. 2011* and *Sotiropoulos and Rutterford 2019*). The category ‘Ind&Com’ in the last three charts includes both ‘heavy industry’ and ‘light industry & commerce’. UK finance does not include investment trusts: they were incorporated in the UK but 80 percent of their portfolio investment was abroad.

companies.⁵⁰ With the background of the embargo on new foreign issues and the concomitant FX risk, investment trusts were more motivated to seek alternative investment opportunities in the UK industrial and commercial sectors.⁵¹ The wave in domestic new issues was accompanied by another ‘wave’ of amalgamation and rationalization/modernization of the UK industrial sector, which boosted the confidence of investment trust managers in the performance of this asset class.⁵² As we can see in *Figure 7*, UK trusts in our sample increased

⁵⁰ See *Lavington (1921, pp. 183–222)*, *Ripley (1934, pp. 181–9)*, *Morgan and Thomas (1962, pp. 203–216)*, *Michie (1999, pp. 256–286)*.

⁵¹ These new financial conditions and domestic investment options were regularly discussed in the press.

⁵² See *Gluckstein (1926)*, *Ripley (1934, pp. 182–3)*, *Morgan and Thomas (1962, p. 204)*, *Cheffins (2019, pp. 265–7)*, *Freyer (1992, Ch. 6)*; *Hannah (1983)*. This amalgamation and rationalization movement did not pass unnoticed by investment trust directors — see for instance the proceedings of the annual company meeting of the London Prudential Investment Trust in 1926 (Guildhall library, company annual reports, item no. 1912).

their portfolio exposure to all security types issued by domestic industrial and commercial companies but, most importantly, to their preferred shares.

The new industrial and commercial issues of fixed-interest loan stock and debentures, as well as of preferred shares, provided higher coupons and nominal yields than those issued under very different conditions before the war.⁵³ As we can see in [Table 1](#), UK preferred shares offered a 6.2 percent dividend yield between 1921 and 1928, which was equivalent to a 3 percent excess return relative to Consols. Industrial debentures offered the very same yield and excess returns as industrial preferred shares. These were good performance results but not particularly stronger than the performance of other asset classes, such as European bonds or Latin American fixed-income securities.⁵⁴ This perhaps explains the rather moderate increase in portfolio exposure to the domestic sector. Industrial ordinary shares did not perform well in the second half of the decade in relation to industrial fixed-income securities, which may be the reason why the average exposure to these ordinary shares in the investment trust portfolio did not exceed 4 percent in nominal value. The low and negative inflation after 1920 (see [Figure 5](#)) minimized the risk of holding fixed-income securities as opposed to ordinary shares.⁵⁵

Rebalancing portfolios towards new higher-yielding securities was by no means easy for asset managers. Being closed-end funds, investment trusts operated on a relatively low portfolio turnover (at the level of 15 percent;⁵⁶ unless they issued new capital) so the returns in [Table 1](#) might be misleading for pre-war industrial securities in investment trust portfolios that had been bought at much higher market values (lower yields). The high interest rates and preferred share dividend yields offered on new industrial issues after the war led to a relative depreciation of the market value of pre-war fixed-income securities. As highlighted by the Chairman of the Mercantile Investment and General Trust in 1927, selling pre-war-acquired fixed-income securities and generating capital losses would offset the yield gains from investment in post-war debentures or preferred shares (*Financial Times*, 23 February 1927, p. 2). The unwillingness to realize these capital losses may also explain the only gradual trend towards the domestic sector that we see in [Figure 7](#).

The evidence in [Figure 7](#) shows that investment trust managers gradually became more attracted to equities. The average proportion of industrial equities (including both preferred and ordinary shares) rose from an average of 3.7 percent of portfolio nominal value in 1914 to an average of 11.3 percent in 1928. During the same period, investment trusts moved from a portfolio strategy of a pre-war average 60–40 ratio between fixed-interest securities and equity to a 50–50 strategy. This is significantly higher than the average 10 percent in equities held by life assurance companies in the 1920s.⁵⁷ The trusts' shifts to having more invested in equities reflect the view that, in the long run, equities outperformed bonds, which

⁵³ [Morgan and Thomas \(1962, p. 210\)](#) mention that the fixed-income securities (preferred shares and debentures) with high coupons and nominal yields were a 1920s fashion that did not survive in the 1930s.

⁵⁴ These yields were better than US security yields, as we discussed in Section 4. Investment trust directors in their annual speeches seemed quite aware of the opportunities in the UK industrial and commercial sector, but also *explicitly* recognized that domestic investment performance was not as good as other investment options in Europe and Latin America.

⁵⁵ As we see in [Figure 5](#), inflation rates were high right after WWI (22 percent in 1918, 10.1 percent in 1919, and 15.4 percent in 1920) but became negative after 1920.

⁵⁶ Although, there are different ways in which turnover can be measured, this estimate corresponds to the ratio of the lower of sales or purchases to portfolio value (see [Chambers and Esteves 2014](#); [Sotiropoulos et al. 2020](#)).

⁵⁷ See [Baker and Collins \(2003\)](#), [Bogle et al. \(2021\)](#). Of course, one would have expected investment trusts to be more risk seeking than life insurance companies, which had stringent capital constraints (and objectives).

were gaining ground in the 1920s, on the other side of the Atlantic.⁵⁸ However, the negative inflation rates after 1920 in the UK, combined with high nominal yields of preferred shares or bonds meant that these fixed-income investments remained attractive in terms of financial performance as opposed to ordinary shares (which one would expect to suffer in a deflationary environment—as is evident in the second half of the decade in Table 1).⁵⁹ This can explain the conservative 50–50 portfolio composition by investment trusts.

6. Portfolio investment in Europe

UK investors were uninterested in continental Europe before WWI⁶⁰ and UK investment trusts were not an exception. This is evident from Figure 3. Whether right or wrong *ex ante*,⁶¹ the choice to avoid Europe protected investment trust portfolios from the immediate effects of the war on the continent. It was a portfolio strategy justified *ex-post*, adding to the overall success of the trust sector in the 1920s. Indeed, the way in which UK trusts successfully weathered the war was used by British financial analysts as additional evidence of the benefits of international portfolio diversification.⁶²

Figure 8 reports investment in Europe by security type and currency for the trusts in our sample. There is a clear increase in all types of investment in Europe after 1924, but the most striking rise is in the category of European bonds, equally split between government and corporate bonds. Another interesting finding of Figure 8 is the currency composition of European holdings, a considerable proportion of which after 1924 was either in USD or other European currencies. When the embargo on foreign investment was removed in the second half of the 1920s and FX risk was reduced (European economies as well as the UK went back on the gold standard), it was not the USA but Europe that captured the interest of British professional asset managers. An increase in the average investment in Europe from 4 percent of portfolio nominal value in 1924 to 12.3 percent in 1928 (Figures 3 and 8) means that investment trusts were significantly redirecting their attention to European securities.⁶³ About half of the trusts in our sample in 1928 invested more than 10 percent of their portfolios in European securities, a radical departure from the pre-war investment approach.

It would appear that investment trusts perceived the process of the European post-war restoration as an immense financial opportunity.⁶⁴ The problem of inflation (or hyperinflation

⁵⁸ The seminal work of Smith (1924) about US equities had a strong impact in the UK. Smith's argument was about diversified portfolios of common stocks versus bonds. Keynes reviewed Smith's book recommending that a similar empirical study should be undertaken for the UK. This was provided in 1928 by Raynes in a paper to the Institute of Actuaries (see Raynes 1928; Scott 2002). One year earlier, an *Economist* article made a case for equity as suitable for life assurance companies ("Life office investments." *The Economist* 1927, pp. 547–548, 598–599).

⁵⁹ In the 1920s, high-yielding preferred shares were perceived as 'middle party' between debentures (safety) and ordinary shares (performance); see Parkinson (1932, p. 30).

⁶⁰ See Feis (1964), Platt (1986), and Michie (1999).

⁶¹ Edlinger *et al.* (2013) have argued that the 'European preference' of the Paris Bourse before the war was not inefficient from a modern portfolio theory point of view, when using pre-war historical returns to model investors' expectations.

⁶² For instance, see Glasgow (1930) and Rossi (1923).

⁶³ This argument makes sense when we assume an average annual portfolio turnover at the level of 10 to 15 percent (in nominal values; for a discussion see Sotiropoulos *et al.* 2020).

⁶⁴ Almost all the 1920s' proceedings of the investment trust annual meetings that are available in the Guildhall library do mention Europe as an area of financial opportunities because of the restoration process. Financial press, such as the *Financial Review of Reviews* had plenty of articles discussing investment opportunities in

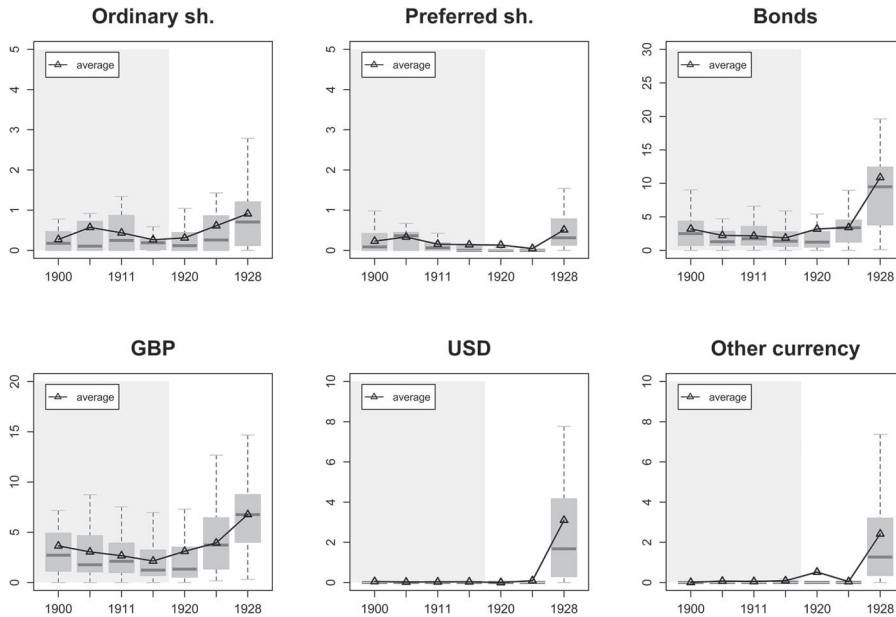


Figure 8. Portfolio investment in Europe (percent of portfolio nominal value). Sources: Our dataset. Notes: Our calculations are based on the reported nominal values in the investment lists included in annual reports. The chart area before WWI has been shaded to highlight the difference from the 1920s. Russia has not been included in Europe.

in some cases), caused by the war, had been tackled in most European economies.⁶⁵ The newly founded League of Nations aimed at rebuilding the fragmented European economy and urged new European countries to establish their own national banks. European economies would eventually commit to the return to financial stability and the fixed exchange rate regime of the gold standard.⁶⁶ The Dawes Loan of 1924 put Germany back on the gold standard, followed by the UK in 1925 and France in 1926. By 1926, most old and new European countries had managed to join the gold standard.⁶⁷ Financial stability, economic prosperity, and international trade had returned to Europe in the ‘five good years’ between 1924 and 1928.⁶⁸ Newly issued European sovereign bonds, especially those issued by the twelve new countries that had been created in Europe after WWI, were met with enthusiasm

Europe, arguing that European securities offered high yields in relation to the underlying “political risk” due to the “stabilizing conditions in Western and Central Europe” (Rossi 1925, p. 26).

⁶⁵ Inflation arose as the immediate effect of the war. While Sweden, the Netherlands, and the UK managed to avoid the problem in the 1920s, the rest of Europe was divided between countries with high inflation (e.g., France, Belgium, Finland, and Italy) and countries with hyperinflation (e.g. Austria, Hungary, Poland, Russia, and Germany); see Feinstein *et al.* (1995).

⁶⁶ See Neal (2015, p. 237) and (Costigliola 1977, p. 913).

⁶⁷ See Neal (2015, pp. 240–1) and Feinstein *et al.* (1995).

⁶⁸ See Lewis (1938). Our inspection of the *Financial Times* and the *Financial Review of Reviews* reveals that the financial press in the UK was full of encouraging comments about the economic outlook for Europe.

in the revitalized capital markets of New York and London.⁶⁹ From the viewpoint of the 1920s, nothing seemed to predict what was to follow in the 1930s. With significantly reduced political and currency risk,⁷⁰ British investment trusts were keen to participate in the economic reconstruction of Europe, also targeting non-GBP securities in the process, as we can see in [Figure 8](#).

A few examples from the financial press of the time are indicative of the new investment mindset for Europe. For instance, Sweden was introduced as a country ‘thoroughly sound in every way,’ having ‘a stable Government and [...] considerable industrial wealth’ ([Marlow 1923](#)). Similarly, Czechoslovakia was promoted as another country worth considering from the point of view of the investor, with ‘valuable mineral resources, and considerable industrial development; it is possessed of a stable and honest government, and its progress has been most striking’ ([Marlow, 1923](#), p. 10). The Hungarian stock exchange was also mentioned as a market that ‘attracted the notice of the foreign capitalists,’ with great potential to list ‘standard stocks quoted on the large European Exchanges’ ([Mercer 1927](#), p. 90).

There is evidence of more general interest in European investment in the UK. European bonds found favour not just in investment trust portfolios but also in the UK financial markets. In his study of British overseas investment at the end of 1930, the study which is closest to our sample period, Kindersley (1930, pp. 199–200) estimated that Europe became the foreign territory with the second-highest nominal outstanding investment (dealt on the various UK stock exchanges) among non-empire territories, with £245 million, after Argentina with £360 million but above the USA with £81 million outstanding. At the end of 1930, domestically traded European securities represented about 20 percent of total outstanding overseas investment in nominal values (*ibid.*). This estimate is not far from the average portfolio share of investment trusts in European securities in 1928 and is evidence of the general shift towards European securities in UK financial markets. At the diplomacy level, the UK’s priority in the 1920s was to integrate the ‘economic fragments of Europe into a commercial and financial community led by London.’⁷¹ And while this strategy engendered a reaction from the USA and was not entirely successful,⁷² it exemplified the general shift in the financial attitude of the UK towards Europe.

[Figure 9](#) shows the distribution of (government and corporate) bond coupons for the investment trust portfolio holdings in our sample in 1920, 1924, and 1928 for different world regions. While all bond coupons increase as we move towards the end of the decade, European bonds offered relatively higher coupons, with the median value reaching 7 percent in 1928 (this is the value used as a comparison level in [Figure 9](#)).⁷³ Our results in [Table 1](#) show also that, in the second half of the decade, European bonds offered very high ‘running’ yields,⁷⁴ which were accompanied by high excess returns and high risk-adjusted returns, outperforming other asset classes. For instance, a typical excess return of a European government bond between 1924 and 1928 was at the level of 8.3 percent. The choice made

⁶⁹ [Neal \(2015, p. 241\)](#).

⁷⁰ As we see in [Figure 8](#), a significant part of European securities were issues in GBP; however, the FX risk was also low for non-GBP securities due to the restoration of the gold standard.

⁷¹ This is a quotation from a speech by David Lloyd George on 3 April 1922 (quoted in [Mills, 1922, p. 10](#)).

⁷² See [Tooze \(2014\)](#) and [Costigliola \(1977\)](#).

⁷³ The distribution of coupons is similar for European corporate and government bonds in the second half of the 1920s. In our analysis we do not differentiate between these two types of bonds.

⁷⁴ As we mentioned above, investment trust managers quite often thought in terms of ‘running’ yields, although the financial community in London was well aware of the yield-to-maturity for bonds; for instance, the IMM reported a bond yield which was close to the yield-to-maturity ([Flandreau and Legentilhomme 2021](#)).

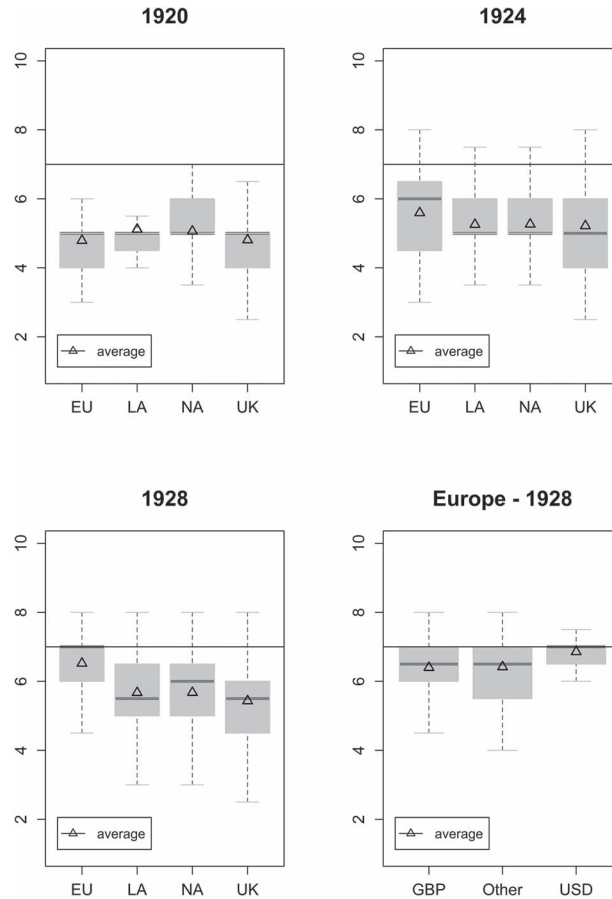


Figure 9. The profile of bond coupons in the portfolios of investment trusts. Sources: Our dataset. Notes: The results are reported in percentages. EU = Europe, NA = North America, and LA = Latin America. The horizontal line shows the median coupon of European holdings in 1928. As explained above, Europe does not include Russia; North America includes Canada and the US, and Latin America includes the rest of America.

by investment trusts to rebalance their portfolios targeting greater exposure to Europe was entirely justified in terms of realized (return) and anticipated performance (yield). Investment trusts seeking non-domestic bonds for their portfolio strategies were able to find better-performing bonds in Europe than domestically or in the USA. There was nothing to shake the confidence of British investment trusts in the financial prospects of the European restoration.

7. Conclusions

In this study, we investigated institutional investors' fund management in the 1920s. Drawing on a sample of UK investment trust portfolios, we explored portfolio composition between 1914 and 1928 and discussed asset allocation and rebalancing given the background of the

unique socio-economic circumstances of the post-WWI period. Our findings reveal three major shifts in the portfolio composition of UK investment trusts. Each one of these shifts was driven by the economic and political conditions of the new world order after WWI, and the corresponding response by investment trust managers.

While USD holdings dominated investment trust portfolios before the war, by the end of the 1920s portfolio exposure in the USA had practically disappeared. The main reason was not so much the embargo on foreign issues by the Bank of England (as the frontrunner of the Treasury), but the GBP/USD exchange rate movement in combination with the conservative investment approach historically followed by UK investment trusts. It proved very profitable for UK trusts to unload their pre-war USD holdings, held at book value while GBP significantly depreciated in relation to USD during the first years after the war. At the same time, any further investment in the USA would have had poor financial results in GBP on the basis of the very realistic (and finally correct) anticipation that the UK would eventually re-join the gold standard at the pre-war rate. In addition, UK investors were operating under the widely held view that the US securities were overvalued offering low yields in relation to other investment options.

The exit from the US market meant that about a third of the average portfolio value in nominal terms had eventually to be redirected to other investment alternatives. The domestic sector was a possible option and there were many reasons to support this option. The embargo on foreign issues continued after the end of the war and the increased FX risk made investment trust managers cautious of foreign securities. At the same time, there was a wave of new domestic industrial issues after the war (with a range of options with respect to security type), which was accompanied by a parallel wave of amalgamation and rationalization of UK industry. However, the lower profitability of UK industrial securities in relation to alternative options put a limit on domestic portfolio exposure. Despite the amalgamation and rationalization 'movement' in UK industry, investment trust managers remained moderately optimistic about domestic investment.

UK investment trust managers bet heavily on the economic prospects of the European post-war restoration. When socio-economic conditions improved in Europe in the second half of the 1920s, European securities (mostly bonds) became the new focus for UK investment trusts. The restoration of the gold standard after 1925 was accompanied by the return of financial stability, economic prosperity, and international trade in Europe and this persisted until 1929. European bonds flooded the UK financial markets and UK investment trust portfolios. These bonds outperformed other contemporary investment options. From the perspective of the mid-1920s, Europe appeared to be the most promising investment region for the application of the 'global distribution of risk' by UK professional asset managers.

Almost all sources before the 1930s praised the solid asset management skills and experience of investment trust directors.⁷⁵ The principle of global diversification had worked quite well even during WWI and asset managers had accumulated great experience navigating major global events and crises since the 1880s, when the investment trust sector initially took off. When these managers encountered the radical reshaping of the world order in the 1920s, they showed great awareness of the fundamental principles of asset allocation and were very effective in restructuring their portfolios according to new and unexpected socio-economic conditions. Our results provide evidence of experience and resourcefulness in

⁷⁵ See, for instance, Parkinson (1932, Ch. 17), Glasgow (1935), Robinson (1930).

portfolio selection; this is the main explanation behind the outstanding financial performance of the UK investment trust sector in the 1920s.

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Data Availability Statement

The data underlying this article are available in Open Research Data Online (ORDO) at <https://ordo.open.ac.uk/>, and can be accessed with the following DOI: [10.21954/ou.rd.21740108](https://doi.org/10.21954/ou.rd.21740108).

Supplementary material

Supplementary material is available at *European Review of Economic History* online.

References

- ACCOMINOTTI, O. (2019). International banking and transmission of the 1931 financial crisis. *Economic History Review* **72**, pp. 260–85.
- ACCOMINOTTI, O. and CHAMBERS, D. (2016). If you're so smart: John Maynard Keynes and currency speculation in the interwar years. *The Journal of Economic History* **76**, pp. 342–86.
- ATKIN, J. (1970). Official regulation of British overseas investment, 1914–1931. *Economic History Review* **23**, pp. 324–35.
- ATKIN, J. (2005). *The Foreign Exchange Market of London: Development since 1900*. London and New York: Routledge.
- AVRAHAMPOUR, Y. (2015). Cult of equity: Actuaries and the transformation of pension fund investing, 1948–1960. *Business History Review* **89**, pp. 281–304.
- BAKER, M. and COLLINS, M. (2003). The asset composition of the British life insurance firms, 1900–1965. *Financial History Review* **10**, pp. 137–64.
- BAKER, M., EADESFORTH, C. and COLLINS, M. (2009). Avoiding toxic assets and ensuring bank stability: English commercial bank investments, 1880–1910. *Business History* **51**, pp. 854–74.
- BENNETT, I.R., BARCLAY, K.J., BLAKELEY, A.G., CRAYTON, F.A., DARVELL, J.N., GILMOUR, I., MCGREGOR, R.J.W. and STENLAKE, R.W. (1984). Life assurance in four European countries. *Transactions of the Faculty of Actuaries* **39**, pp. 170–250.
- BOGLE, D.A., COYLE, C. and TURNER, J. (2021). Capital market development over the long run: The portfolios of UK life insurers over two centuries. *European Review of Economic History* [forthcoming].
- BORDO, M.D., EDELSTEIN, M. and ROCHOFF, H. (1999). Was adherence to the gold standard a “good housekeeping seal of approval during the interwar period?” National Bureau of Economic Research. Available: <http://www.nber.org/papers/w7186> accessed 8 February 2022.
- CAMBELL, J. and SHILLER, R.J. (1988). The dividend–price ratio and expectations of future dividends and discount factors. *Review of Financial Studies* **1**, pp. 195–228.
- CARLO, C. and MARCUZZO, M.C. (2018). John Maynard Keynes: The economist as investor. *Review of Keynesian Economics* **6**, pp. 266–81.

- CHAMBERS, D. and ESTEVES, R. (2014). The first global emerging markets investor: Foreign & Colonial Investment Trust 1880–1913. *Explorations in Economic History* **52**, pp. 1–21.
- CHAMBERS, D. and KABIRI, A. (2016). Keynes and wall street. *Business History Review* **90**, pp. 301–28.
- CHAMBERS, D., DIMSON, E. and FOO, J. (2015). Keynes the stock market investor: A quantitative analysis. *Journal of Financial and Quantitative Analysis* **50**, pp. 843–68.
- CHAMBERS, D., DIMSON, E. and KAFFE, C. (2020). Seventy-five years of investing for future generations. *Financial Analysts Journal* **76**, pp. 5–21.
- CHEFFINS, B.R. (2019). *The Public Company Transformed*. New York: Oxford University Press.
- CORNER, D.C. and BURTON, H. (1968). *Investment and Unit Trusts in Britain and America*. London: Elek Books.
- COSTIGLIOLA, F.C. (1977). Anglo-American financial rivalry in the 1920s. *The Journal of Economic History* **XXXVII**, pp. 911–34.
- CRAFTS, N. (2016). Reducing high public debt ratios: Lessons from UK experience. *Fiscal Studies* **37**, pp. 201–23.
- DIMSDALE, N.H. (1981). British monetary policy and the exchange rate 1920–1938. *Oxford Economic Papers* **33**, pp. 306–49.
- DIMSON, E., MARSH, P. and STAUNTON, M. (2002). *Triumph of the Optimists: 101 Years of Global Investment Returns*. Princeton: Princeton University Press.
- EDELSTEIN, M. (1982). *Overseas Investment in the Age of High Imperialism: The United Kingdom, 1850–1914*. New York: Columbia University Press.
- EDLINGER, C., MERLI, M. and PARENT, A. (2013). An optimal world portfolio on the eve of world war I: Was there a bias to investing in the New World rather than in Europe? *The Journal of Economic History* **73**, pp. 498–530.
- FEINSTEIN, C.H., TEMIN, P. and TONIOLO, G. (1995). International Economic Organization: Banking, Finance, and Trade in Europe Between the Wars. In C.H. FEINSTEIN (ed), *Banking, Currency, and Finance in Europe Between the Wars*. Oxford: Clarendon Press, pp. 9–37.
- FEIS, H. (1964). *Europe, the world's banker 1870–1914: An account of European foreign investment and the connection of world finance with diplomacy before the war*. New Haven: Yale University Press.
- FERDERER, J.P. (2003). Institutional innovation and the creation of liquid financial markets: The case of bankers' acceptances, 1914–1934. *The Journal of Economic History* **63**, pp. 666–94.
- FLANDREAU, M. and LEGENTILHOMME, G. (2021). Cyberpunk Victoria: The credibility of computers and the first digital revolution, 1848–83. *Economic History Review* [forthcoming].
- FREYER, T. (1992). *Regulating Big Business*. Cambridge: Cambridge University Press.
- GARDNER, J. (1924). Dollar securities. Are they worth their present prices? *The Financial Review of Reviews* March–May, pp. 46–51.
- GILBERT, J.C. (1939). *A History of Investment Trusts in Dundee 1873–1938*. London: P. S. King & Son.
- GLASGOW, G. (1930). *The English Investment Trust Companies*. London: Eyre and Spottiswoode.
- GLASGOW, G. (1932). *The Scottish Investment Trust Companies*. London: Eyre and Spottiswoode.
- GLASGOW, G. (1935). *Glasgow's Guide to Investment Trust Companies*. London: Eyre and Spottiswoode.
- GLUCKSTEIN, S.M. (1926). Armstrong Whitworth and Co. A short review of the position. *The Financial Review of Reviews* July, pp. 50–4.
- GOETZMANN, W.N. and UKHOV, A.D. (2006). British investment overseas 1870–1913: A modern portfolio theory approach. *Review of Finance* **10**, pp. 261–300.
- GRINOLD, R.C. and KAHN, R.N. (2020). *Advances in Active Portfolio Management*. New York: McGraw-Hill.
- HANAH, L. (2019). Corporate governance, accounting transparency and stock exchange sizes in Germany, Japan and “Anglo-Saxon” economies, 1870–1950. *Zeitschrift für Unternehmensgeschichte* **64**, pp. 157–86.
- HANNAH, L. (1983). *The Rise of the Corporate Economy*. London: Methuen.
- HANNAH, L. (2018). The London Stock Exchange 1869–1929: New bloody statistics for old? *Economic History Review* **71**, pp. 1349–56.

- KENELEY, M.J. (2012). Development of the institutional investor. *Australian Economic History Review* **52**, pp. 270–92.
- KEYNES, J.M. (1931). *Essays in Persuasion*. London: Macmillan.
- KINDERSLEY, R. (1931). British overseas investments in 1931. *The Economic Journal* **43**, pp. 187–204.
- LAVINGTON, F. (1921). *The English Capital Market*. London: Methuen & Co.
- LENNARD, J. (2020). Uncertainty and the great slump. *Economic History Review* **73**, pp. 844–67.
- LEWIS, C. (1938). *America's Stake in International Investments*. Washington D.C.: Brookings.
- LO, A. (2002). The statistics of Sharpe ratios. *Financial Analysts Journal* **58**, pp. 36–52.
- LOPEZ, J.A. and MITCHENER, K.J. (2021). Uncertainty and hyperinflation: European inflation dynamics after world war I. *The Economic Journal* **131**, pp. 450–75.
- LOWENFELD, H. (1907). *Investment: An Exact Science*. London: The Financial Review of Reviews.
- MARLOW, J. (1923). The financial outlook. *The Financial Review of Reviews* September, pp. 9–17.
- MERCER, A. (1927). Hungary today. *The Financial Review of Reviews* October–December pp. 84–91.
- MICHIE, R.C. (1983). Crisis and opportunity: The formation and operation of the British assets trust, 1897–1914. *Business History* **25**, pp. 125–47.
- MICHIE, R.C. (1999). *The London Stock Exchange: A History*. New York: Oxford University Press.
- MILLS, J.S. (1922). *The Genoa Conference*. London: Hutchinson & co.
- MITCHELL, B., CHAMBERS, D. and CRAFTS, N. (2011). How good was the profitability of British railways, 1870–1912? *Economic History Review* **64**, pp. 798–831.
- MORGAN, V. (1952). *Studies in British Financial Policy, 1914–25*. London: Macmillan & Co.
- MORGAN, V. and THOMAS, W.A. (1962). *The Stock Exchange: Its History and Functions*. London: Elek Books.
- NEAL, L. (2015). *A Concise History of International Finance*. Cambridge: Cambridge University Press.
- O'DONOGHUE, J., GOULDING, L. and ALLEN, G. (2004). Consumer Price inflation since 1750. *ONS Economic Trends* **604**, pp. 38–46.
- O'SULLIVAN, M. (2016). *Dividends of Development, Markets in the History of U. S. Capitalism, 1865–1922*. Oxford: Oxford University Press.
- PARKINSON, H. (1932). *Scientific Investment*. London: Sir Isaac Pitman & Sons.
- PLATT, D.C.M. (1986). *Britain's Investment Overseas on the Eve of the First World War*. London: Macmillan Press.
- RAYNES, H.E. (1928). The place of ordinary stocks and shares (as distinct from fixed interest-bearing securities) in the investment of life assurance funds. *Journal of the Institute of Actuaries* **59**, pp. 21–50.
- RIPLEY, P. (1934). *A Short History of Investment*. London: Sir Isaac Pitman & Sons.
- ROBINSON, L.R. (1930). Investment trusts. *The Journal of Business of the University of Chicago* **3**, pp. 279–316.
- ROSSI, P. (1923). Geographical distribution of capital. *The Financial Review of Reviews* June, pp. 54–60.
- ROSSI, P. (1925). Investment in European Stocks. *The Financial Review of Reviews* April–June, pp. 35–9.
- RUTTERFORD, J. (2004). From dividend yield to discounted cash flow: A history of UK and US equity valuation techniques. *Accounting, Business and Financial History* **14**, pp. 115–49.
- RUTTERFORD, J. (2009). Learning from one another's mistakes: Investment trusts in the UK and the US, 1868–1940. *Financial History Review* **16**, pp. 157–81.
- RUTTERFORD, J. and HANNAH, L. (2016). The Rise of Institutional Investors. In D. CHAMBERS and E. DIMSON (eds), *Financial Market History: Reflections on The Past for Investors Today*. London: CFA Institute Research Foundation, pp. 242–63.
- RUTTERFORD, J. and SOTIROPOULOS, D. (2017). The rise and fall of the small investor in the United States and United Kingdom, 1895 to 1970. *Enterprise and Society* **18**, pp. 485–535.
- SCOTT, P. (2002). Towards the 'cult of the equity'? Insurance companies and the interwar capital market. *Economic History Review* **55**, pp. 78–104.
- SCRATCHLEY, A. (1875). *On Average Investment Trusts and Companies Dealing with Stock Exchange Securities*. London: Shaw and Sons.
- SHARPE, W.F. (2007). *Investors and Markets: Portfolio Choices, Asset Prices, and Investment Advice*. Princeton and Oxford, 2007.

- SOLOMOU, S. (1996). *Themes in Macroeconomic History: The UK Economy, 1919–1939*. New York: Cambridge University Press.
- SOTIROPOULOS, D.P. and RUTTERFORD, J. (2018). Individual investors and portfolio diversification in late Victorian Britain: How diversified were Victorian financial portfolios? *The Journal of Economic History* **78**, pp. 435–71.
- SOTIROPOULOS, D.P. and RUTTERFORD, J. (2019). Financial diversification strategies before world war I: Buy-and-hold versus naïve portfolio selection. *Business History* **61**, pp. 1175–98.
- SOTIROPOULOS, D.P., RUTTERFORD, J. and KEBER, C. (2020). UK investment trust portfolio strategies before the first world war. *Economic History Review* **73**, pp. 785–814.
- SOTIROPOULOS, DP, RUTTERFORD, J. and TORI, D. (2022). Portfolio Asset Allocation of UK Investment Trusts 1914-1928. The Open University. Dataset. <https://doi.org/10.21954/ou.rd.21740108.v1>
- TOOZE, A. (2014). *The Deluge: The Great War and the Remaking of Global Order*. Milton Keynes: Penguin Books.
- VUOLTEENAHO, V. (2002). What drives firm-level stock returns? *Journal of Finance* **57**, pp. 233–64.
- WHORLOW, S. (1926). Foreign stocks. *The Financial Review of Reviews* April–June, pp. 68–73.
- WILKINS, M. (2004). *The History of Foreign Investment in the United States, 1914–1945*. Cambridge (Massachusetts): Harvard University Press.
- WORMELL, J. (2000). *The Management of the National Debt of the United Kingdom, 1900–1932*. Abingdon: Routledge.