Go active or stay passive : investment trust, financial innovation and diversification in Belgium's early days

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Go Active or Stay Passive: Investment Trust, Financial Innovation and Diversification in Belgium's early days

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Response to Reviewers:	

Dear Ms. Frydman,

Thank you for conditionally accepting our paper *Go Active and Stay Passive*.

As requested, we changed (I) the title of the first section to "*Historical perspectives on the Belgian closed-end funds*" and (II) the sentence in the conclusion to "*we highlight two main takeaways from the findings*". Thank you for the time and effort to improve our work and giving it a place in Explorations in Economic History. This positive experience encourages us to send more academic work to this wonderful outlet.

Best,

Gertjan Verdickt

Jan Annaert

Abstract

In 1836, Société Générale created the world's first closed-end equity fund, Mutualité Industrielle. It promised to be a diversification tool targeted towards less-wealthy investors. We confirm that the trust's returns were indeed better than returns on synthetic portfolios such investors had access to. However, it never became a commercial success. This paper presents a possible rational explanation why this innovation was liquidated in 1873. First, we show that the trust offered a performance similar to randomly-selected portfolios. Second, portfolio strategies to which mostly wealthy and sophisticated investors had access were able to outperform the trust. Mutualité Industrielle's failure to offer a sufficiently attractive alternative to investors is consistent with its difficulty to attract sufficient funds to keep the trust in business.

Portfolio choice models point out that diversification reduces, or even eliminates, idiosyncratic risk. However, a large number of investors hold equity underdiversified portfolios (Goetzmann & Kumar, 2008; Sotiropoulos & Rutterford, 2018). Researchers link this equity underdiversification puzzle to skewness preferences (Kumar, 2009; Mitton & Vorkink, 2007), a lack of financial literacy (Gaudecker, 2015), investor overconfidence (Barber & Odean, 2001) or differences in financial constraints (Roche et al., 2013). In contrast to this puzzling fact are investment trusts, which are closed-end funds constituted as a limited liability company. A trust raises capital from investors by issuing shares and, in return, attempt to generate value for the investors by spreading their capital across investments (diversification). This paper is a micro-study of the world's first equity investment trust, *Société des Capitalistes Réunis dans un But de Mutualité Industrielle* (Mutualité Industrielle).

In 1836, the Belgian bank Société Générale created Mutualité Industrielle (Van de Velde, 1943). It was Société Générale's belief that this company would attract new customers, which, in turn would lead to new funds to further invest in new businesses. This financial innovation was later copied in other countries, such as France or the U.K. (Rutterford et al., 2020). To appeal to its investors, Mutualité Industrielle had a few selling points. First, it offered a diversified portfolio. This is important since it was expensive to acquire (and manage) such a portfolio. Second, Société Générale offered secured loans with small margin requirements. This incentivized investors to participate. Finally, the trust's price at the initial public offering (IPO) was similar to other stocks on the Brussels Stock Exchange (BSE). Yet, the trust never became a true commercial success. Chlepner (1943) suggests that people were too cautious about new ventures. In addition, there was some pushback from the general public and the government. For instance, in 1841 the trust was prohibited to explicitly solicit small investors (Brion & Moreau, 1998:128).[1] This indicates that the trust had to rely on wealthy investors. In this article, we attempt to better understand why investors never embraced this trust and rather wanted to hold underdiversified equity portfolios.

This setup is interesting for two reasons. First, relatively few people were able to afford a diversified portfolio (Sotiropoulos & Rutterford, 2018). Assuming Belgian investors exhibited investment behavior similar to their British counterpart, we conjecture they held a small number of stocks. Hence, a trust is a perfect investment opportunity for (less-wealthy) investors to acquire a diversified portfolio. Second, Campbell (2006) points to various market frictions related to household finance decisions (e.g. taxation or borrowing constraints). Such frictions are of little importance in our sample period. First, as indicated above, Société Générale facilitated stock trading by offering a secured loan with small margin requirements. Second, there were virtually no taxes. For instance, there were no taxes on company profits or dividends, and capital gains were always tax-exempt.

[3] Small or less-wealthy investors were still allowed to invest in the trust. Nevertheless, Mutualité Industrielle was discouraged to target these investors.

In order to understand why investors would construct their own portfolios (go active) or invest in investment trusts (stay passive), we test whether Mutualité Industrielle offered diversification benefits. As a benchmark, we create equally-weighted portfolios with four randomly-selected stocks to mimic actual investors. Previous research documents that investors held an average of four stock holdings (Rutterford & Sotiropoulos, 2016b; Sotiropoulos & Rutterford, 2018) and created equally-weighting stock portfolios (i.e. Gathergood et al., 2019; Rutterford & Sotiropoulos, 2016a). These facts serve as a justification to construct small portfolios. We focus on an annual horizon to compare the performance of Mutualité Industrielle with our synthetic portfolios. We are interested in the percentage of portfolios that outperform the trust (based on return, standard deviation, the Sharpe ratio, Alpha and information ratio). This would help to understand whether investors were better off with a trust or an underdiversified equity portfolio.

We create two additional four-stock synthetic portfolios to better resemble Mutualité Industrielle's portfolio, which held a large (small) position in Société Générale (foreign stocks). First, we randomly select three stocks and add one share of Société Générale to the synthetic portfolio. Second, we restrict the random selection to two domestic stocks, one foreign stock, and add one share of Société Générale. By doing so, we take into account potential international diversification benefits. Conventional wisdom says that there are large gains available for investors by increasing their stock universe (e.g. Grauer & Hakansson, 1987). Similar to the main analysis, we estimate the number of synthetic portfolios that are able to outperform the investment trust.

The results are summarized as follows. If investors picked four stocks randomly, the chance of outperforming the trust based on Sharpe ratio hovered around 40%. This suggests that investors were somewhat better off with the trust, if they followed this strategy. When in the two additional scenarios we limit the number of positions that investors can choose from, and thus better mimic the trust, the percentage of portfolios that outperform the Mutualité Industrielle increased to 70% on a risk-return basis. Hence, the results do not provide a decisive case in favor of the trust; making it arguably hard to persuade the investors following these naïve investment strategies. These findings could also highlight the importance of performance as the reason for the trust's eventual demise. In fact, the evidence confirms Prime Minister de Theux de Meylandt's conclusion in 1836 that there was no need for the trust (Brion & Morieux, 1997).

If Mutualité Industrielle was indeed targeted towards less-wealthy investors, it should outperform segments in which such investors could more easily build portfolios themselves (or were potentially more attracted to). We identify two strategies, low-priced stock portfolios and lottery stocks (low-price-high-skewness stocks, as in Kumar, 2009)). In both cases, we show that synthetic portfolios with such characteristics are not able to generate a performance similar to the trust. If it is indeed the case that less-wealthy investors favored these stocks, we conclude that Mutualité Industrielle followed its initial mandate, by offering a better performance than the underdiversified alternatives. In fact, this raises the question why they never became a commercial

success. There are two potential explanations. First, less-wealthy investors in this time period did not exhibit present day's behavior and used other characteristics to guide their investment choices. Campbell and Turner (2011) show that dividend yield was an important metric for British investors in this time period. Second, the government prohibited the trust to explicitly solicit small investors. In addition, these investors may not have had sufficient risk appetite to invest in stocks. The trust, therefore, had to appeal *more* to wealthy investors to survive commercially.

Subsequently, we introduce two strategies that are more suited towards wealthy and sophisticated investors. First, we construct synthetic portfolios consisting of high-priced stocks. Second, we create a portfolio strategy based on high dividend yield and high price momentum sorts (Blitz & van Vliet, 2018). The strategies yield an average performance that far exceeded the trust's. This can be a rational explanation for underdiversification on stock markets and can contribute to our understanding of why the trust became never popular, as wealthy or sophisticated investors would rather have held portfolios similar to the synthetic ones. If Belgian investors traded similarly to their British counterparts, they focused on dividend yield to make investment decisions. If wealthy or sophisticated investors, who were able to pursue such synthetic strategies, ignored the trust for performance reasons, it offers a likely case why the trust got liquidated in 1873. Mutualité Industrielle would have had a harder time selling their fund to investors. Hence, from a performance perspective, it may not be surprising that the trust ceased to exist.

This article contributes to the growing literature on investment trusts (i.e. Chambers & Esteves, 2014; Hutson, 2005; Rutterford, 2009). We provide a demand-side story for the eventual collapse of the world's first closed-end equity trust. Hence, we distinguish ourselves from Chambers and Esteves (2014) or Campbell and Rogers (2019). We examine whether investors should have created their own strategies rather than buying the trust. This paper sets to draw more general conclusions from a study on portfolio diversification.

We add to the literature that focuses on equity underdiversification, such as Berger, Pukthuanthong and Yang (2011), Gaudecker (2015), and Goetzmann and Kumar (2008). More specifically, we contribute to the growing literature of equity underdiversification in the pre-World War I period (e.g. Rutterford & Sotiropoulos, 2016b, 2018; Sotiropoulos & Rutterford, 2018). We differ from the existing literature by showing quantitatively how investors could benefit from equity underdiversification, in a period in which acquiring or managing portfolios was expensive.

Finally, we contribute to the historiography of the BSE. First, we focus on Mutualité Industrielle, an important part of the universal bank Société Générale. We offer a micro-study of this innovation. Second, we match the performance of the trust with synthetic portfolios, in which we analyse more than 1 million possible portfolio combinations. Other studies on the BSE focus on the effect of war on investor behaviour, return predictability or colonial stocks (Annaert et al., 2018; Annaert & Mensah, 2014; Verdickt, 2020; Verdickt et al., 2019).

1. Historical perspectives on the Belgian closed-end funds

Rouwenhorst (2004) traces back the origins of the investment trust to the Netherlands in 1774 with *Eendragt Maakt Magt*. It was a closed-end fund that held a diversified bond portfolio. In turn, the oldest surviving trust is Foreign & Colonial Investment Trust, which was established in the U.K. in 1868. Similarly to *Eendragt Maakt Magt*, one of its main features was a diversification in bonds (Chambers & Esteves, 2014). In contrast to these investment vehicles, Société Générale launched the world's first-ever equity trust in 1836 (Rutterford, 2009; Van de Velde, 1943). In this section, we explore the reason why Belgium became the first country to construct such a financial innovation and what made this company special.

1.1. Brussels Stock Exchange

At the onset of the Belgian industrialization in 1835, many joint-stock companies sprung up. Brussels became one of the largest financial centers in the world. As a result, the BSE became the world's seventh largest stock exchange in terms of market capitalization in the pre-World War I period (Chambers & Dimson, 2016). In fact, since the Belgian economy was not specialized in a specific product, the BSE was more diversified relative to other exchanges. For instance, the London and New York exchange mainly consisted of transportation stocks and banks in this period (Acheson et al., 2015; Goetzmann et al., 2001). In turn, the market capitalization on the BSE had around 40% for transportation, 25% for financial and 20% for industrial joint-stock companies in the sample period.

Before 1873, Belgium was characterized by restrictive legislation.[2] Belgian company laws were based on the French civil (1804) and French commercial code (1807). There were two important restrictions on starting a limited liability company. First, one had to request a royal approval for setting up a limited liability company. Second, the governing body of the BSE had to give a special admission prior to a listing. For instance, railways were not allowed to list if they were under development (Van Nieuwerburgh et al., 2006). Companies would circumvent this issue by requesting funding from Société Générale. The bank provided the funding for (capital intensive) sectors such as railways or industrial firms, which was a profitable endeavor. In sum, the restrictive legislation aided in the bank's development, which became an important financial intermediary in the Belgian economy. Indeed, many of the joint-stock companies in the sample period were backed by Société Générale.

In figure 1, we plot the number of stock listings on the BSE for our sample period. There was a large surge in the number of listings in 1857, which is attributed to the change in government. As of 1857, the liberal party was in government (for 13 years) and spread progressive legislative ideas, such as the liberalization of interest rates (1867) and Company Reform Act (1873).[3] This led to an increased level of competition and more stock listings. Nevertheless, the financial newspaper *Moniteur des Intérêts Materiels* raised concerns in 1866 about

[2] We refer to Van Nieuwerburgh et al. (2006) for a more detailed narrative.
[3] This abolished the requirement for royal approval to set up limited liability companies.

a breach of trust between companies and investors. Similar to Paris and London, there were multiple abuses by joint-stock companies.[4] Hence, the BSE gained the reputation of a casino (Annaert et al., 2012). It suggests that it is likely that Belgian investors took concentrated bets on specific firms, similar to other time periods (e.g. Goetzmann & Kumar, 2008; Sotiropoulos & Rutterford, 2018b).

The increasing importance of Belgium in the world economy had a sizeable effect on foreign capital flows. In our sample period, there were 26 foreign stock listings.[5] The foreign joint-stock companies, active in railroads, mining and banking, originated from a number of European nations and the Ottoman Empire.[6] While Société Générale had the promotion of domestic industries as one of its key goals, it supported the creation of heavy industries abroad. It usually acted as an issuer of bonds or shares, which helped these foreign companies to pay Belgian firms supplying the rails and other equipment needed (Cameron & Bovykin, 2010).

1.2. Mutualité Industrielle

In 1822, King William I of The Netherlands created *Algemeene Nederlandsche Maatschappij ter Begunstiging van de Volksvlijt* referred to as *Société Générale pour Favoriser l'Industrie Nationale* (or Société Générale). Its goal was to promote credit provision, act as emission bank, and to operate as the government cashier in the Southern part of the Dutch kingdom (later known as Belgium). Société Générale quickly became a successful bank that combined commercial banking activities and substantial investment in capital intensive industries, such as mining (Van Overfelt et al., 2009). For instance, the saving deposits increased from BEF 19 million in 1835 to BEF 46 million in 1838. These deposits were then invested in various projects. Société Générale issued paper money, even before the National Bank of Belgium (which was only created in 1850). After the Belgian revolution of 1830 and its preceding crisis, a majority of failing firms converted their debt into equity to fulfill financial obligations towards the bank. This transformed the Société Générale willy-nilly into the world's first universal bank (Chlepner, 1930).

The bank's rapid expansion led to close surveillance from businessmen and politicians (Buyst & Maes, 2007). This scrutiny mainly came from an increase in Société Générale's market dominance. In 1848, Belgian finance minister Frère-Orban found it unacceptable that universal banks used saving deposits to buy shares of firms and was also opposed to the increasing amount of control Société Générale had in these firms. Therefore, to circumvent cross-ownership issues (and to attract customers) the bank created three companies: Mutualité Industrielle, *Société Nationale pour Entreprises Industrielles et Commerciales* and *Société de Commerce de Bruxelles*. The latter two are in today's terminology holding companies. Mutualité Industrielle was forerunner

[4] Moniteur des Intérêts Materiels published several articles (21/1/1866, 18/3/1866 and 15/4/1866) raising concerns about the increasing divergence between investors and joint-stock companies. They pointed to the disappearance of controls before firms requested a stock listing and before brokers started up their business. The newspaper stated that a lack of proper governance made it impossible to avoid scandals.
[5] The inflow of capital increased remarkably after 1870, with the war between France and Germany (for details, see Verdickt, 2020).
[6] For instance, there were six French stock listings, five Luxembourg stock listings, four Spanish stock listings and four German stock listings.

of the modern investment trust. The difference between these holding companies and Mutualité Industrielle was their active participation in underlying firms (Chlepner, 1943). In 1849, *Société de Commerce de Bruxelles* and *Société Nationale pour Entreprises Industrielles et Commerciales* were absorbed by its parent company. In turn, Mutualité Industrielle was liquidated in 1873 since it was not able to fulfil expectations.

1.2.1. Mission statement

Created on October 19th 1836, Mutualité Industrielle was a company with the features of a closed-end fund. It had a fixed number of shares and its goal was to invest in a large number of companies. It was in business for five years prior to its royal approval, which it received in June 1841. The company was created with an authorized capital of BEF 50 million, of which BEF 12 million were issued. Its strategy was to distribute its capital among a large number of stocks, targeted for the smaller investors. In fact, the language in its prospectus was (Van de Velde, 1943):

"The company's purpose is to present to the investors 'a placement of the social capital in a large number of establishments' to have protection against reverses that one of the establishments might experience momentarily."

The prospectus indicated that the trust would act as an active manager, rather than a passive index fund:

"The investments the corporation makes will be constantly adjusted so that its capital is distributed as widely as possible and in proportion to its social capital."

Chlepner (1930) highlights Mutualité Industrielle's focus on less-wealthy investors:

"Société Générale offered customers, who had deposited their money at the savings bank, the possibility to increase their income by taking an interest (with small capital) in the most important industrial associations."

We argue that less-wealthy investors were targeted. First, the trust's stock buying was done on a credit basis with small margin requirements. In addition, loans were secured by the stock itself (Frère, 1938). Second, its low price allowed less-wealthy investors to participate.[7] Incentivizing these investors was important for two reasons. First, until late in the 19th century powerful shareholders would sometimes vote against stock splits to shield themselves from less-wealthy investors, making it hard for these investors to participate.[8] The trust would then be able to provide benefits that were otherwise less accessible. Second, Société Générale could use the funds from new customers to finance more companies without burdening its own balance sheet, by adding the participations to the trust's portfolio (Chlepner, 1943). This shows that there is a relevant supply-

[7] In figure A1, we plot the distribution of nominal stock prices. In figure A2, we plot the average nominal price of all stocks and Mutualité Industrielle.
[8] For instance, the shareholders from *Société Anonyme de Construction et des Ateliers de Willebroeck* were opposed to issuing new stocks with a lower share denomination specifically designed for their employees (Moniteur des Intérêts Materiels, 1894).

side explanation for the trust's existence. Moreover, Durviaux (1947) notes that Société Générale wanted to generate interest in its companies and encourage nascent capital instead of regular bank deposits. Houtman-De Smedt (1997) argues that Société Générale used the trust to improve its liquidity ratio.[9] As we indicated, the financing of new businesses was an essential source of income for the universal bank. This highlights the need for this financial innovation.

Nevertheless, the incorporation of Mutualité Industrielle received large pushback from both the government and general public. There were several lines of criticism. First, both parties were overwhelmed by the size of its capital structure (Chlepner, 1943). Chelpner (1930) notes that, although the idea behind the trust was top notch, it was ahead of its time and had exaggerated ambitions. Second, prime minister de Theux de Meylandt was not convinced by the concept of diversification. He assumed that if a downturn were to occur, Mutualité Industrielle would experience it over its entire portfolio (Brion & Moreau, 1998). He also argued that investors could achieve diversification without the help of the trust. This could partially explain why the government prohibited the fund to explicitly solicit small clients. Finally, when the financial newspaper *L'Economiste Belge* discovered that Mutualité Industrielle's directors received no less than 48 percent of its profits in fees, the trust came under attack (Brion & Moreau, 1998). In sum, the reasons could have played a key role in the lack of interest by the general public. The few shareholders who did invest were very wealthy and well-connected, including several noblemen and even the King of France (Brion & Moreau, 1998).[10]

1.2.2. Historical significance

The historical gravity of *Mutualité Industrielle* should not be minimized. Prior to its creation, closed-end funds had the habit of investing predominately in bonds. For instance, the first trust *Eendragt Maakt Magt* invested mainly in government and colonial plantation bonds (Rouwenhorst, 2003). Even in the 1860s, Dutch investors were mostly interested in bonds (Berghuis, 1967). In Belgium, however, there were only a limited number of bonds trading on its exchanges; most of the bonds were issued by the government.[11] An explanation for this phenomenon is arguably the early industrialization of Belgium. Since Belgian companies were at the forefront of this important transition, there was a demand for alternative financing mechanisms. Société Générale was a prominent player financing new business ventures with balance sheet restrictions. This potentially explains the push towards an equity trust, rather than the creation of a bond equivalent.

[9] See also Kurgan-van Hentenryk, 1997, pp. 134-5: "As long as its issuing activity is largely limited to the securities of patronized companies, the bank can cover a potential liquidity shortage by placing sold securities in a portfolio company controlled by it, bonds redeemed at maturity in the form of corporate securities or in Belgian statutory interest".

[10] The *Moniteur Belge* published the trust' shareholder list in its annexes in 1873. Only 27.7% of all outstanding stocks were held by individual investors. Among those investors, there were numerous earls (*comte*) and barons (*baron*). Charles Liedts, governor of Sociéte Générale at the time, is also listed as one of the individual investors.

[11] Up to 1854, the BSE had only two corporate bond listings compared to more than 40 listed stocks (not reported, based on preliminary data).

It is hard to say that Mutualité Industrielle popularized the concept of "the equity investment trust", as during its lifetime, it had only one competitor *Société des Actions Réunies* (created by the universal bank Banque de Belgique). Nevertheless, the concept was really propagated later. On the eve of World War 1, there were 17 Belgian-based trusts, while in the UK there were more than 20 investment trusts.[12] This shows that Mutualité Industrielle was not an anomaly, but introduced the concept of equity investment trusts perhaps too soon. This raises the question why it was never embraced by the general public at the time. The reasons we outlined above, such as fee structure, would be hard to justify the lack of interest, by itself. Poitras (2010) documents several examples of arbitrage starting from the seventeenth century, which indicates that investors were looking for ways to generate returns. Hence, we argue that the trust's performance should be considered as an important reason for its demise.

1.2.3. Inside the trust

In table 1, we report the trust's portfolio composition from 1861 until 1863. There are a few things that stand out. First, Mutualité Industrielle had a position varying around 52% in Société Générale (*actions pleines*, *part de réserve* and *titres de capital)*[13]. Second, the trust had an overweight in coal mines (*charbonnage*), railroads (*chemins de fer*) and blast furnaces (*haut fourneaux*).[14] This suggests that it was diversified in terms of number stocks, but not diversified in terms of industries. Third, Mutualité Industrielle turned over part of its portfolio annually. This serves as our motivation to focus on an annual frequency in the benchmark portfolios. Fourth, the trust gradually increased its foreign exposure (i.e*. Chemin de fer du Nord de L'Espagne* and *Chemin de Fer d'Anvers a Rotterdam*). Finally, the fund's portfolio did not exclusively consist of equity. It had a small weight in corporate bonds. Since there were only a limited number of bonds listed on the BSE, the relatively smaller weight in these securities should not come as a surprise.[15]

There were two changes in its dividend policy. For the first four years, Mutualité Industrielle did not distribute any dividends. Between 1842 and 1856, the trust paid dividends once a year, with the exception of 1849 and 1850, which were key years for Société Générale[16]. Its average dividend yield over this period equaled 4.24%. Starting from 1856, Mutualité Industrielle paid dividends twice a year, in January and February. The average annual dividend yield increased to 6.02%. A large part of the dividends was paid from the dividends it received from other stocks and the interest on bonds, together representing 80.97% of its revenues in 1863. The other part of revenues stemmed from the trust's trading activities.

[12] These investment trust had an average equity weight of 40% of their portfolio value (Rutterford et al, 2020).
[13] The creation of the three stock types was the result of the 1850's general meeting. Shareholders with a*ctions pleines* received 5% payable in priority of the company's profit (or part of the reserves if it was necessary). Shareholders with *part de reserve* received the surplus profits as their dividend.
[14] According to Elewyck (1913) Mutualité Industrielle's position in Société Générale was relatively larger in the years before 1861.
[15] Since we lack information on corporate bond returns, we cannot take them into account in our portfolio strategies below.
[16] In 1850, the National Bank of Belgium was created. Hence, Société Générale lost its function as a national bank (Buyst & Maes, 2007).

2. Data

We rely on the database of *StudieCentrum voor Onderneming en Beurs* (SCOB) at the University of Antwerp. The database has complete information on the end-of-month stock prices, the number of shares outstanding, dividend information and capital operations on all the stocks that were ever listed on the BSE. Since dividends made up a large part of realized returns in the 19th century, these data enable us to construct reliable equally-weighted return indices. We focus on common stocks and ignore all securities with mixed characteristics. We do not exclude illiquid stocks or micro-caps because these were also available to investors. More importantly, we include stocks that subsequently delist. Since the SCOB database contains information on the reasons for delisting, we adjust return calculations accordingly.

Similar efforts have been made to collect historical return data for other countries, with a special interest to the U.S. (e.g. Goetzmann et al., 2001). Despite these efforts, the construction of reliable historical time series is hampered by data flaws, such as survivorship bias, incomplete and inconsistent data. The SCOB database is not subject to these data flaws, as the official archives of the BSE are its main source, and additional sources have been used for cross-checking and enhancing consistency. In addition, for this paper, we use information from the State Archives of Belgium and *Moniteur des Intérêts Materiels*.

Although the trust got liquidated on December 8th 1873, its shares still traded until 1877. The liquidation was different from a normal bankruptcy in that the trust became a department of Société Générale rather than a separate company. Most of the trust's issued securities remained with Société Générale. Nevertheless, as of 1874, Mutualité Industrielle started distributing liquidation proceeds to its shareholders. For this reason, we do not focus on the period after 1873.

2.1. Brussels Stock Exchange

If we put the BSE in an historical perspective relative other major exchanges, there are a few things that stand out. First, the equity premium on the BSE, defined as the difference between the market return and the risk-free rate, was small relative to other countries or time periods (table 1). The average annual equally-weighted returns totaled 6.53%, while the commercial paper rate averaged around 3.36%. An equity premium of 3.17% is considerably lower than documented for France, the U.K. or U.S. (Acheson et al., 2015; Annaert et al., 2012; Goetzmann et al., 2001).[17] This suggests that the number of stocks that outperforms the risk-free rate is lower compared to other markets (Bessembinder, 2018). Hence, diversification will be of high importance to those investors who wanted to earn a positive risk premium. One solution to this issue is to invest in an investment trust, since it offers a cheap diversification option.

[17] In fact, the equity premium in other countries is based on value-weighted returns, which equaled 2.17% for the BSE for our sample period.

TABLE 1 ABOUT HERE

Second, the average liquidity of the BSE was remarkably high. As in Campbell et al. (2017), we define liquidity as 1 – the ratio of the number of months a specific stock had zero returns on the number of months that the stock was listed, which is averaged across stocks per year. In table 1, we report that the average liquidity was 0.70. This means that the average stock traded in at least eight months in a given year

2.2. Mutualité Industrielle

Mutualité Industrielle had an average return that was slightly higher than the market portfolio (table 1). The trust's standard deviation was also higher; resulting in a Sharpe ratio (0.18), which was in line with the market portfolio. In fact, Mutualité Industrielle has a market exposure of 0.99 (table A1). This suggests that investors could have bought one share of the trust to get a similar exposure to the entire BSE.[18]

FIGURE 2 ABOUT HERE

In figure 2, we plot the cumulative performance of the trust and the market portfolio.[19] This figure shows the difficulties Mutualité Industrielle experienced in the crisis of 1840 (Buyst & Maes, 2007). In the first 20 years, the trust had a lower return and recovered around the time the National Bank of Belgium was established in 1850.

If we compare its dividend yield and liquidity to the BSE, the picture for Mutualité Industrielle becomes brighter. The average liquidity of Mutualité Industrielle (0.78) was higher than the BSE (0.70), in particular in the post-1856 period (respectively 0.93 and 0.78, not reported). This suggests that trading the trust's stock should not have been of concern to the investors. In terms of dividend yield, which is computed as the rolling-sum of dividends in the prior 12 months divided by the price per share, Mutualité Industrielle (5.06%) had a higher yield than the market (3.85%).

3. Methodology and results

This paper investigates why Mutualité Industrielle never became a commercial success. We link this question to the puzzling fact of equity underdiversification, since it has been documented that contemporaneous British investors held a rather underdiversified portfolio (Rutterford & Sotiropoulos, 2016b).

3.1. Methodology

Our methodology is straightforward. In January 1837, we choose four stocks randomly without replacement. We calculate the annual equally-weighted returns for this portfolio. This choice stems from the evidence that

[18] The correlation between the returns of Mutualité Industrielle and Société Générale was 0.57.
[19] We add the performance of Mutualité Industrielle's only competitor to provide evidence that our qualitative conclusions can be generalized.

the average investor constructed an equally-weighted portfolio in the pre-World War I period (Rutterford & Sotiropoulos, 2016a). After one year, we again select four stock holdings. The procedure ends in 1873, the year Mutualité Industrielle was liquidated. This is repeated 1 million times to capture a representative set of possible strategies that are both independent and similar to that of the trust.

We construct portfolios with four stocks to reduce the effects of market frictions (transaction costs), to mimic investor behavior in the pre-World War I period (Sotiropoulos & Rutterford, 2018b), and to limit the amount of money that had to be spent to acquire (manage) a synthetic portfolio. The question then becomes whether investors were better off with such a portfolio (go active) than with the trust (stay passive).

To evaluate outperformance, we introduce a series of performance metrics. We calculate the average return and the standard deviation for randomly-selected portfolio strategies, over the entire 37 years. We then take the averages across simulations of these measures. Furthermore, we estimate three additional measures for the performance comparison: Sharpe ratio, Alpha and information ratio. A Sharpe ratio is the excess portfolio return over its standard deviation. As risk-free rate, we use the money market rate (see Annaert et al., 2012).

Alpha is estimated as the intercept of a regression model with excess returns of randomly-selected portfolios as dependent variable and the excess return on the market index, *SMB*, *HML*, *UMD* and *VOL* as independent variables. *SMB, HML, UMD* and *VOL* refer to risk premia for respectively size, value, momentum and volatility. Risk premia are the return on a long-short portfolio conditional on the relevant characteristic (i.e. Annaert & Mensah, 2014). If the regression intercept (Alpha) is positive and statistically significantly different from zero, we argue that this portfolio adds value. *T*-statistics are calculated with Newey-West error adjustments (with 12 lags) to account for heteroskedasticity and autocorrelation.

The information ratio is defined an risk-adjusted abnormal return or “risk-weighted Alpha”. We estimate this as the ratio of Alpha and the average of regression residuals. Therefore, it is often used as a measure of skill in the mutual fund literature (i.e. Frazzini et al., 2018).

Since we estimate the performance measures across all simulations, we obtain a distribution for each of the statistics. We calculate where the Mutualité Industrielle’s measures fall in the simulated distributions. In this paper, we report the percentage of strategies that outperform the trust based on these measures. However, in terms of standard deviation, we calculate the percentage of portfolio strategies that have lower standard deviations than the trust. The trust’s Alpha is equal to 2.13%, which is economically large but not statistically significant. Similarly, the information ratio (0.11) is similar to the average information ratio of today’s mutual funds (see Frazzini et al., 2018). Together with the other metrics, this is our benchmark used to evaluate the synthetic portfolios.

3.2. Main results

In a first phase, we distinguish between three specific scenarios for our four-stock portfolios. First, we assume that investors pick four stocks randomly. Second, we constraint the selection choice to three stocks and add one share of Société Générale. Finally, we pick two stocks randomly, one share of Société Générale and select one foreign stock randomly. The latter scenario arguably matches the portfolio of Mutualité Industrielle best. Nevertheless, these scenarios provide additional insight. They contain four stocks but differ in one dimension, either by adding foreign exposure or shares of Société Générale.

Table 3 reports the results. Panel 1 represents the portfolios with four stocks chosen randomly. The portfolios generated on average an annualized return of 8.36% and a standard deviation of 23.34%. We document that more than 60% of synthetic strategies were able to beat the trust in terms of average returns. When we scale portfolio returns with risk, we document an average Sharpe ratio of 0.21. This was also above the trust (0.18). Around 56% of synthetic portfolios are able to offer a better risk-reward trade-off than Mutualité Industrielle. When we focus on the regression statistics, a slightly different picture emerges. For instance, fewer than 50% of the synthetic portfolios have a higher Alpha or information ratio than the trust. This suggests that the trust offered higher average skills relative to random portfolios, although the results are not very strong. Conversely, it is certainly difficult to argue that Mutualité Industrielle provided *worse* results than the random strategies.

TABLE 3 ABOUT HERE

Panel 2 and 3 represents four-stock portfolios with additional constraints. In panel 2, portfolios include one share of Société Générale. They yielded on average an annualized return of 8.73% and a standard deviation of 21.53%. Given that the standard deviation on annualized returns for these portfolios are smaller than their pure randomly counterparts, we document a higher average Sharpe ratio (0.25 and 0.21, respectively). If we compare this to the trust, close to 70% of the portfolios yield a better risk-reward profile. On the other hand, fewer than 50% of the synthetic portfolios were able to offer a higher Alpha than Mutualité Industrielle.

In panel 3, investors were required to choose one share of Société Générale and one foreign share. We show that such a portfolio yielded an average annualized return of 9.41% with a standard deviation of 25.49%. This represents an outperformance relative to the trust of respectively 68.09% and 59.95%. If we take regression coefficients into account, the outperformance based on Alpha varied around 57%.[20]

[20] The outperformance based on Sharpe ratio increases with the number of stock holdings in the synthetic portfolios. We argue that wealthy investors, who were able to buy a large portfolio, were on average better off creating their own portfolio than investing in the investment trust. Consistent with de Theux' remark, investors did not need Mutualité Industrielle to achieve a profitable diversified portfolio.

There are two takeaways from the findings. First, we argue there is no strong evidence to favor the trust over underdiversified portfolios. There is variation in the outperformance percentages. In panel 1, for instance, (I) there were more than 60% of synthetic portfolios that performed better than the trust based on returns, and (II) fewer than 50% of the synthetic portfolios that underperform based on Alpha. This would make a case in favor of Mutualité Industrielle hard to defend from a performance perspective. Second, there are no major gains from international diversification, at least not in the crude way we introduced it. If we compare panel 2 and 3, where the only difference is the selection of one foreign stock, we show that the average Sharpe ratios are equal. In fact, the number of portfolios that beat the trust only increased by about 1% (69.65% and 68.53%, respectively). This conclusion is in line with contemporary findings for France (Le Bris, 2013).

4. Further evidence

When we compare portfolios that were constructed purely randomly (or with crude restrictions) to the trust, we do not document strong evidence in favor of underdiversification. In this section, we focus on two possible trading strategies that less-wealthy or more sophisticated investors could have followed.

4.1. Price anchoring

In the first phase, we focus on nominal prices. We choose this metric since it is easily observable, comparable, and important for less-wealthy investors. Less-wealthy investors were arguably only able to pick among those stocks with a relatively low nominal price. Hence, if the trust was truly targeted towards these investors, they would aim to outperform the average low-price portfolio. In addition, we test whether Mutualité Industrielle was able to outperform the average high-price portfolio, which is a segment that was available to the wealthy investors only. If this was the case, this would be a strong argument against underdiversification.

4.1.1. Methodology

Every January, we sort stocks based on nominal prices.[21] We split our sample into the 50% highest and lowest stocks based on this characteristic and re-calculate performance measures for the period 1837-73. Similar to the methodology defined above, we select four stocks randomly, only now we focus either on the upper (high price) or the lower (low price) portion of the sample.

4.1.2. Main results

If investor sorted stocks based on nominal price, we document a high dispersion in the results. First, the low-price portfolios have an average annualized return of 7.03%, where only 35% of portfolios outperformed the trust. The average standard deviation of synthetic portfolios is 40.20%, which represents an outperformance

[21]We do not have information at the stock level on whether or not stocks were paid in full. However, there are numerous examples of joint-stock companies that only issued fully-paid stocks (e.g. Société Agricole de la Ferté). Therefore, we run two additional analyses. First, we include only stocks that were listed for at least five years (cfr. table A8). We assume that the large majority of these stocks were fully paid. Second, we exclude stocks that had a nominal price below 50 BEF, 75 BEF or 100 BEF to exclude the effect of penny stocks (cfr. table A9). The qualitative conclusions hold.

of only 1% across all simulations relative to the trust. Overall, this results in a low average Sharpe ratio (0.10). In other words, the trust was able generate a superior performance to low-priced stock portfolios, based on these metrics. Even when we focus on regression coefficients, the qualitative conclusions hold. The trust had a better average performance than the low-price synthetic portfolios.

Mutualité Industrielle was not designed as a vehicle for extremely wealthy investors. They wanted to mobilize less-wealthy investors (Chlepner, 1930). The evidence shows that the trust outperformed a segment in which the investors could compete in. If less-wealthy investors had to be persuaded to go passive rather than active, Mutualité Industrielle had to outperform the portfolios that these investors were going to invest in, at a bare minimum. In fact, this conclusion links well to the Foreign and Colonial Investment Trust, which was also not tailored towards extremely wealthy investors (Chambers & Esteves, 2014). If these less-wealthy investors did not want to invest, the trust would have to appeal to more wealthy investors. The question becomes whether they were able to offer a reasonable alternative for wealthy investors.

TABLE 4 ABOUT HERE

In turn, we construct synthetic portfolios with high-price stocks. In table 4, we document that such portfolios had a mean annualized return of 9.71%; an outperformance of around 55% of portfolios. More interestingly, the standard deviation of these high-price portfolios (12.90%) is more than 3 times lower than their low-price counterparts and 40% lower than the trust (18.33%). This results in a risk-reward ratio of 0.49, which is more than twice the trust's metric (0.18). Given the ratio's low standard errors (0.07), there were no portfolios that underperform Mutualité Industrielle on this measure. Similarly, when we focus on the regression measures, we find an average Alpha of 3.46% (with an average *t*-statistic of 3.28) for synthetic portfolios. This points to the value creation of high-price portfolios, even when we take risk into account. In sum, these results suggest that the wealthy investors would have had a better performance with the synthetic portfolios, at least if they followed a similar strategy.

Since the performance of high-price synthetic portfolio is overwhelmingly positive, this can be an explanation why investors held underdiversified portfolio. It would not be rational to buy the trust (or management fees), if investors can beat that trust through a simple portfolio sort. Mutualité Industrielle, therefore, was not able to provide the return opportunities wealthy investors had access to. The evidence of this section is consistent with the fact that Mutualité Industrielle lived up to its mandate, by providing the less-wealthy investors stock market participation with a performance that is similar to what the investors could have earned themselves. However, compared to strategies that were more likely suitable to wealthy investors, the trust's performance is lackluster. This may have contributed to the trust's lack of success and its ultimate liquidation in 1873.

4.2. Investor sophistication

It is reasonable to assume that investors not only differentiate among each other in terms of financial wealth, they also differentiate in the level of financial literacy. For instance, Kumar (2009) documents in today's stock market that less educated investors invest relatively more in lottery stocks. Second, Blitz and Van Vliet (2018) show that investors who choose their stocks based on several criteria, such as dividend yield and momentum, have abnormal returns. In fact, Campbell and Turner (2011) argued that British investors in our sample period used dividend yield as a proxy of corporate governance. In this section, we replicate our strategies to capture changes in investor sophistication. Although we may potentially overestimate the knowledge of investors in our sample period, the strategies arguably require little economic theory. Investors only had to look in several newspapers to see which stocks performed well (positive price momentum) or had a higher payout (dividend yield) relative to other stocks.

4.2.1. Methodology

We follow our main selection-methodology with one additional restriction. For unsophisticated investors, we first sort stocks based on sample skewness (calculated using the past 24 months of return data). We limit the universe to the 50% number of stocks based on the highest skewness. Subsequently, we keep only the stocks in the bottom half based on nominal price and randomly select four stocks. Kumar (2009) refers to stocks with a high skewness and low price as 'lottery stocks'. He argues that investors with lower levels of financial literacy (gamblers) are more likely to invest in such stocks. We do not require that investors knew the concept "skewness" or how to model this financial strategy, but rely on the presumption that the basic behavioral features underlying this strategy (e.g. a focus on low stock price and extreme price swings) were present in our sample period. In fact, Rutterford and Maltby (2006) show that is a valid assumption; in the U.K., there were a number of "speculators" buying and selling stocks for (quick) capital gains.

For sophisticated investors, we double-sort stocks based on dividend yield and momentum. First, we split the sample of the dividend-paying stocks in half based on past year's dividend yield. From the high dividend yield sort, we select the 50% number of stocks with highest momentum. We define momentum as the compound return between May and November (e.g. Annaert & Mensah, 2014). With the two portfolio sorts, we follow a similar structure as in the key analysis. In general, we argue that this strategy could only have been applied by investors with a high level of financial literacy. However, British evidence shows that investors focused on dividend yield as an important measure for investors (Campbell & Turner, 2011). Therefore, the results could be generalized towards the aggregate Belgian market.[22]

[22] We show that the qualitative conclusions are robust when we focus only on dividend yield.

4.2.2. Main results

Table 5 reports the results. First, we focus on lottery stocks. The synthetic portfolios yield an average return of 9.43%, which corresponds an outperformance percentage of 56.83%. When we take risk into account, the picture becomes less appealing. The volatility of lottery stock portfolios is equal to 45.97%, which is 2.5 times the standard deviation of the trust. The higher average return, however, did not offset the higher volatility. We find that only 19.14% of synthetic portfolios are able to outperform Mutualité Industrielle on the basis of Sharpe ratio. The results from regression statistics paint a similar picture. When we focus on Alpha, there are fewer than 50% of portfolios that have a better performance than the trust.

All things considered, the results in table 5 does not add evidence to the case in favor of underdiversification. The average risk-reward profile of lottery stocks was not favorable. This conclusion is in line with more recent results (Kumar, 2009). If there was an overlap between less-wealthy investors and unsophisticated investors, we argue that Mutualité Industrielle (stay passive) was a better overall option for the investors than following own strategies (go active).

TABLE 5 AROUND HERE

Second, we focus on the combination "high yield – high momentum". The average portfolio yields an average annualized return of 14.39%. Only 0.27% of the simulated portfolios are not able to offer a higher average return compared to the trust. Given that the average standard deviation of the synthetic portfolios is similar to the trust's (18.13% and 18.33% respectively), almost all portfolios have a Sharpe ratio that trumped Mutualité Industrielle's risk-reward profile. This indicates that the trust did not have a solid track record to convince investors who were focused on this strategy.

When we take the regression statistics into account, the case against the trust becomes even more apparent. The average Alpha across random portfolios totals 5.43% (with average *t*-statistic of 3.79), which corresponds to an outperformance by 91.63% of the portfolios. This means that the abnormal performance the portfolios generated is statistically significantly different from zero. This could be a rational explanation why some investors held underdiversified portfolio. Investors who focused on the combination "high dividend yield and momentum" had a probability above 90% of outperforming the trust on a return or risk-adjusted basis. If such well-informed investors are the most important in terms of assets under management, it may not be surprising that Mutualité Industrielle never became a commercial success. In fact, it echoes Prime Minister de Theux de Meylandt questioning the existential need for an investment trust since investors could have acquired a diversified portfolio themselves (Brion & Moreau, 1998:77).

5. Robustness

The evidence presented in the previous sections are subject to a number of assumptions. More specifically, we assume that the investors choose *four stocks* randomly, create *equally-weighted* portfolios, resample the portfolio annually *without taking its previous performance into account* or *compare* these synthetic portfolios only with Mutualité Industrielle. In this section, we review each assumption individually.

5.1. Competitors

In 1836, immediately after the creation of Mutualité Industrielle, Banque de Belgique launched a competitor, Société des Actions Réunies. The trust had the additional restriction that it could only invest in the securities issued by corporations patronized by Banque de Belgique (Chlepner, 1930). Similar to Mutualité Industrielle, few shares were absorbed by the general public and it eventually got liquidated in 1873, although there was still trading possible up to 1877.

In table A2, we report that the summary statistics from Société des Actions Réunies are in line with Mutualité Industrielle. Its average annualized return equals 8.73% with a standard deviation of 23.62%, resulting in a Sharpe ratio of 0.23. For comparison reasons, we plot the cumulative performance of these trusts in figure A2. We replicate all analyses in the previous sections for Société des Actions Réunies and report the evidence in table A3. We conclude that the qualitative conclusions hold: wealthy and sophisticated investors are better off with their own portfolio strategies (go active) rather than investing in either trust (stay passive). In turn, less-wealthy investors cannot present strong evidence against investing in one of the trusts. But if wealthy investors were dominant on the BSE, this evidence may contribute to explanations as to why the investment trusts had a difficult time attracting funding and were eventually liquidated.

5.2. Different number of stocks

Throughout the paper, we choose four stock holdings in our synthetic portfolios. Sotiropoulus and Rutterford (2018), in turn, show that the average number of holdings across growth wealth quartiles varies substantially, in the U.K. for the period 1870 – 1902. Since we lack similar statistics for Belgium, we assume that this pattern was similar for Belgian investors in our sample period. The U.K. data shows that only from quartile 3, investors had on average 3.6 holdings in their portfolio. Therefore, we test the robustness of the qualitative conclusions by changing the number of randomly-selected stocks step-wise from two to nine. We report the results in table A4.

In sum, we do not find strong evidence in favor of buying Mutualité Industrielle. The outperformance based on the Sharpe ratio increased from 44.96% (for two stocks) to 74.69% (for ten stocks). This suggests that wealthy investors, who were able to buy more stock holdings, on average had a better risk-reward trade-off than the trust. Even if we focus on Alpha, which could be the measure of investment skill, around 45% of the

synthetic portfolios have an Alpha that is higher than Mutualité Industrielle. In line with the previous results, this is not strong evidence in favor of the investment trust.

5.3. Weighting schemes

We introduce two additional weighting options, value-weighting and an adjusted price-weighting scheme. In a value-weighted portfolio the weight of stocks is dependent on its relative market capitalization. In the price-weighting case, we buy one share of the stock regardless of its market capitalization. With different weighting options, we revisit the main analysis, in which we choose four stocks randomly.

We report the results in table A5. We document that the evidence of value-weighting investors is in line with the key conclusion of this paper, the underdiversified portfolio does not seem a good alternative to Mutualité Industrielle on average. However, if we assume that investors constructed a portfolio by buying one share of each joint-stock company, the findings indicate that they had on average a high probability of outperforming the trust. In line with the findings from wealthy and sophisticated investors, this is a rational explanation why some investors would arguably not be interested in the investment trust.

5.4. Dynamic portfolio selection

In the main analysis, investors are able to rebalance portfolios each year. In fact, we do not take intermediate losses and gains into account. If investors lose money in a given year, they may not be able (or willing to) buy four stocks in the subsequent year. As a robustness test, we make the method dynamic, that is, if the portfolio return is 20% in a specific year, the investor is able to purchase one additional stock in the next year. Similarly, if the portfolio return is -20% in a specific year, the investor can choose one stock less in the subsequent year. Interestingly, the average number of stock holdings per strategy does not change remarkably (figure A2). We report the results in table A6. In fact, the main conclusion holds: we do not find strong evidence in favor of Mutualité Industrielle.

6. Conclusion

In 1836, Société Générale introduced the world's first closed-end equity trust, Mutualité Industrielle. It set out to mobilize less-wealthy investors to the BSE and to use their funds to finance new businesses. The trust was interesting on several levels. Not only was it the first trust with predominantly equity in its portfolio, it offered a diversified portfolio at a relatively cheap price. Société Générale provided loans with small margin requirements and secured loans by the stock itself. The trust, however, never became a commercial success. This could be, at least partially, explained by the fact that the government discouraged the trust to promote itself to small investors. This means that the trust had to rely more on wealthy investors. In this article, we explore why it failed to generate enthusiasm among these investors.

We construct synthetic portfolios of four randomly-selected stocks to mimic investor behaviour. We compare these portfolios with the performance of Mutualité Industrielle, based on returns, standard deviation, Sharpe ratio, abnormal performance (Alpha) and information ratio. Since we lack data on investor holdings, we make some assumptions. We differentiate between three scenarios. First, when investors choose stocks randomly, the average performance of the trust was similar to synthetic portfolios. This arguably would make the trust's marketing to these investors more difficult. Second, when investors sort stocks on nominal price, high-price (low-price) portfolios outperform (underperform) than Mutualité Industrielle. If investors focus solely on the stock price, potentially as a sign of quality, the trust would have hard time selling itself to high-price investors. Finally, we proxy for investor sophistication with two strategies. We construct synthetic portfolios (I) with low price and high skewness and (II) high dividend yield and price momentum. We find that the latter strategy is able to easily outperform the trust, while investors in the former strategy were better off with the trust. If Belgian investors followed their British contemporaries, dividend yield was a key measure for stock selection purposes. Hence, the evidence based on dividend yield is important to understand the demise of Mutualité Industrielle.

We highlight two main takeaways from the findings. First, if less-wealthy investors indeed favoured low-price or lottery stocks, we conclude that Mutualité Industrielle would have been a good investment alternative for them. The trust was able to offer a performance similar to strategies in market segments where they were able to operate. Unfortunately, the trust was apparently not able to effectively convince these investors, either because their risk appetite was too low and/or the restrictions the trust faced to actively solicit them. The trust's survival therefore depended on its success to attract sufficient capital from larger investors. However, our second takeaway provides a rational explanation why certain investors would prefer to hold underdiversified equity portfolios (go active) relative to buying a trust (stay passive). The trust was not able to match the performance these investors obtained from a strategy they had access to, but the less-wealthy investors arguably not. If, as a consequence, the trust was not able to generate enthusiasm among these larger investors, this may have been an important reason why it was liquidated in 1873.

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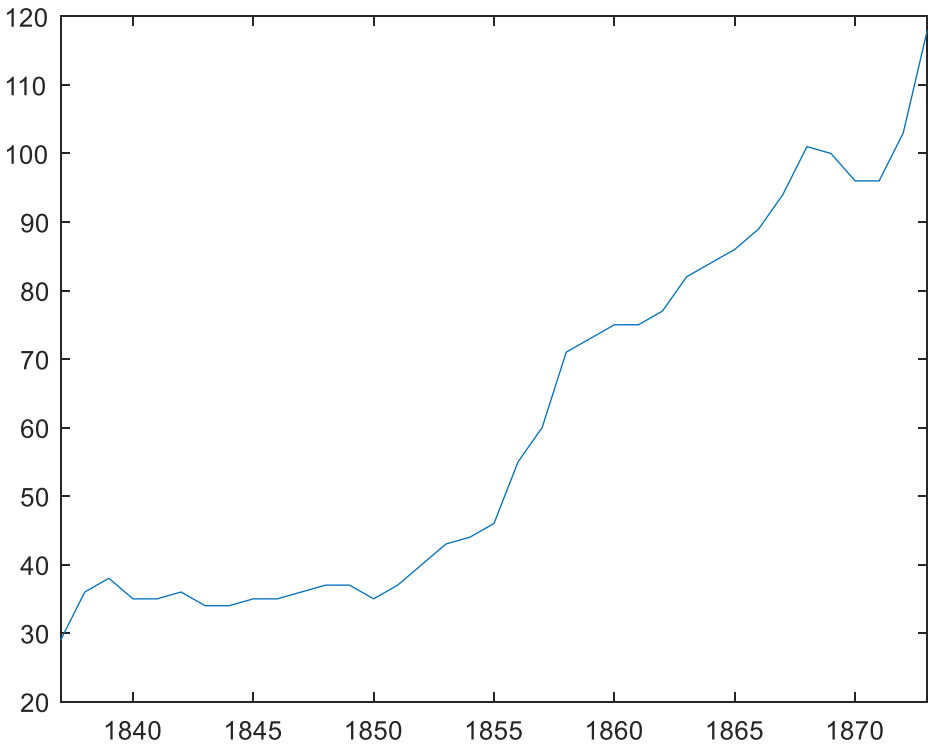
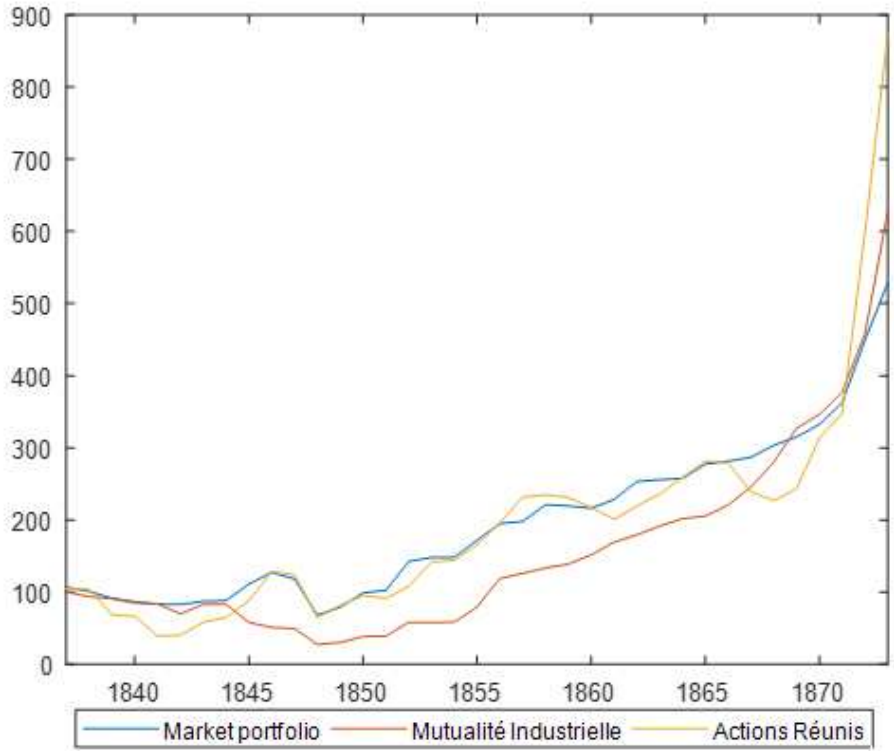
Figure 1: Number of stock listings



This figure plots all Belgian common stocks listed on the Brussels stock exchange 1837–1877.

Figure 2: Investment trust performance



This figure plots annualized cumulative returns of Belgian stocks equally-weighted (*blue*), Mutualité Industrielle (*orange*), its main competitor *Société des Actions Réunis,* referred *to* as Actions Réunis (*yellow*). The time period is 1837-1873.

Table

Table 1: Portfolio composition

	1861				1862				1862			
	Company	**Number**	**Value**	**Weight**	**Company**	**Number**	**Value**	**Weight**	**Company**	**Number**	**Value**	**Weight**
	Société Générale : actions pleines	112	1,900	1.25%	Société Générale : actions pleines	112	1,900	1.32%	Société Générale : actions pleines	101	1,900	1.27%
	Société Générale : parts de réserve	12,143	800	56.87%	Société Générale : parts de réserve	10,451	800	51.96%	Société Générale : parts de réserve	9,778	800	51.57%
									Société Générale : titres de capital	100	1,132	0.75%
Coal mines, blast furnaces and factories	Couchant du Flénu	1,533	440	3.95%	Couchant du Flénu	1,570	330	3.22%	Couchant du Flénu	578	260	0.99%
	Crachet et Picquery	383	620	1.39%	Crachet et Picquery	383	550	1.31%	Crachet et Picquery	1,383	490	4.47%
	Haut-Flénu	330	540	1.04%	Haut-Flénu	330	500	1.03%	Haut-Flénu	330	460	1.00%
	Boussu-Sainte-Croix-Sainte-Claire	400	780	1.83%	Boussu-Sainte-Croix-Sainte-Claire	440	640	1.75%	Boussu-Sainte-Croix-Sainte-Claire	400	750	1.98%
	Monceau-Fontaine	200	1,040	1.22%	Monceau-Fontaine	200	1,340	1.67%	Monceau-Fontaine	200	1,240	1.64%
	Réunis de Charleroy	1,727	440	4.45%	Réunis de Charleroy	1,726	395	4.24%	Réunis de Charleroy	1,726	400	4.55%
	Longterne	379	140	0.31%	Longterne	379	50	0.12%	Longterne	379	50	0.12%
	Levant de Flénu	40	3,100	0.73%	Levant de Flénu	40	3,100	0.77%	Levant de Flénu	56	2,575	0.95%
					Produits au Flénu	201	3,150	3.93%	Produits au Flénu	201	2,700	3.58%
	Val-Benoit	930	320	1.74%	Val-Benoit	1,000	320	1.99%	Val-Benoit	1,045	310	2.14%
					Carabinier	238	500	0.74%	Carabinier	261	300	0.52%
	Couillet	3,571	340	7.11%	Couillet	3,571	340	7.54%	Couillet	3,571	325	7.65%
	Châtelineau	2,872	340	5.72%	Châtelineau	2,872	340	6.07%	Châtelineau	2,872	282.50	5.35%
	Sclessin	2,640	300	4.64%	Sclessin	2,640	320	5.25%	Sclessin	2.640	305	0.01%
Railways	Haut et du Bas-Flénu	90	1,620	0.85%	Haut et du Bas-Flénu	90	1,615	0.90%	Haut et du Bas-Flénu	92	1,640	0.99%
	L'Est-Belge	116	460	0.31%	L'Est-Belge	271	445	0.75%	L'Est-Belge	271	375	0.67%
	Dendre-et-Waes	228	480	0.64%	Dendre-et-Waes	130	515	0.42%	Dendre-et-Waes	272	540	0.97%
					Anvers à Rotterdam	200	195	0.24%				
	Nord de L'Espagne	200	400	0.47%								
									Mons à Haumont	100	783	0.52%
Manufacturing and canals	Manufactures de glaces, …	18	340	0.04%	Manufactures de glaces, …	18	325	0.04%	Manufactures de glaces, …	18	340	0.04%
	Phénix	40	1,000	0.23%	Phénix	40	1,200	0.30%	Phénix	40	1,200	0.32%
	Horticulture	8	940	0.04%								
	La Sambre Française canalisée	202	1,300	1.54%	La Sambre Française canalisée	202	1,400	1.76%	La Sambre Française canalisée	202	1,400	1.86%
	Canal de jonction de la Sambre à l'Oise	354	840	1.74%	Canal de jonction de la Sambre a l'Oise	354	920	2.02%	Canal de jonction de la Sambre à l'Oise	354	925	2.16%
	Embranchement du Canal de Charleroy	160	680	0.64%	Embranchement du Canal de Charleroy	160	680	0.68%	Embranchement du Canal de Charleroy	160	675	0.71%
Bonds	Charbonnages réunis de Charleroy	380	300	0.67%					Chemin de fer Méridionaux	41	218.75	0.06%
	Hauts Fournices, Usines et …. de Sclessin	36	1,250	0.26%					Chemin de fer d'Anvers à Rotterdam	348	289	0.66%
	Chemin de fer du Nord de la Belgique	200	280	0.33%					Chemin de fer du Nord de l'Espagne	600	252	1.00%
									Chemin de fer du Nord de la Belgique	765	293	1.48%
									Vieille-Montagne	13	480	0.04%
									Des emprunt belge		99.35%	
									Bons du trésor public français			
	Total book value of the portfolio		BEF 17,080,540		Total book value of the portfolio		BEF 16,092,265		Total book value of the portfolio		BEF 15,167,651	

The portfolio composition from Mutualité Industrielle. Number refers to the number of stocks. Value is defined as the book value per share. Source: Moniteur des interéts matériels.

Table 2: Summary statistics

	Return	Std.	Sharpe ratio	Dividend yield	Liquidity
Equally-weighted market index	6.53%	15.21%	0.21	3.85%	0.70
Mutualité Industrielle	6.72%	18.33%	0.18	5.05%	0.78
Risk-free rate	3.36%	0.00%	/	/	1.00

Table 2 reports summary statistics of the equally-weighted market index, the investment trust and risk-free rate. We report average annualized simple returns of all securities, standard deviations (Std.), annualized Sharpe ratios (defined as portfolio return over the risk-free rate divided by the portfolio standard deviation), annual dividend yield (defined as the rolling-sum of the dividends paid out in the past-12 months) and average liquidity (defined as 1 – the ratio of the number of zero returns divided by the number of months the stock was listed) across all stocks. *Société des Capitalistes Réunis dans un But de Mutualité Industrielle* is referred to as Mutualité Industrielle. We use the period 1837-73.

Table 3: Diversification opportunities

	(1)			(2)			(3)		
Panel A: Return coefficients									
	Return	Std.	Sharpe	Return	Std.	Sharpe	Return	Std.	Sharpe
Mean	8.36%	23.34%	0.21	8.73%	21.53%	0.25	9.41%	25.49%	0.25
Std. error	4.35%	12.13%	0.17	3.76%	11.38%	0.15	4.75%	18.41%	0.13
Mutualité Industrielle: Statistics	6.72%	18.33%	0.18	6.72%	18.33%	0.18	6.72%	18.33%	0.18
Portfolios outperforming (in %)	61.25%	43.96%	56.25%	68.48%	54.75%	68.53%	68.09%	59.95%	69.65%
Panel B: Regression coefficients									
	Alpha	*T*-statistic	IR	Alpha	*T*-statistic	IR	Alpha	*T*-statistic	IR
Mean	2.49%	0.63	0.11	2.98%	1.15	0.19	4.47%	1.29	0.21
Std. error	2.82%	1.73	0.27	4.81%	1.86	0.28	2.68%	1.80	0.26
Mutualité Industrielle: Statistics	2.13%	1.05	0.11	2.13%	1.05	0.11	2.13%	1.05	0.11
Portfolios outperforming (in %)	42.33%	44.64%	39.13%	48.73%	55.55%	49.64%	53.73%	61.75%	57.22%

This table reports summary statistics of synthetic portfolios. In column 1, we randomly select four stocks without replacement. In column 2, we randomly select three stocks without replacement and add one share of Société Générale. In column 3, we randomly select two stocks without replacement, add one stock without replacement from the foreign universe, and add one share of Société Générale. This selection is performed each January, from 1837 to 1873, and repeated 1 million times. In Panel A, we report annual equally-weighted returns (Mean), standard deviation (Std.) and Sharpe ratio (Sharpe) defined as the excess portfolio return over the portfolio's standard deviation. We report the standard errors (Std. error) of all the measures. In Panel B, we report the Alpha, *T*-statistic and Information Ratio (IR) from the five-factor model (the market index, SMB, HML, UMD and VOL). Alpha is the average intercept across all simulations. *T*-statistics is the average *t*-statistic of regression intercepts, calculated with Newey-West standard errors (with 12 lags). Information ratio is the average information ratio, calculated as the ratio of alpha and regression residuals. We compare the distribution of the measures with the performance measures (Statistics) from Portfolios outperforming (in %), and report the percentage of strategies that have higher (lower) returns, Sharpe ratios, alphas, *t*-statistics and information ratios (standard deviation) than the investment trust.

We create factors as in Annaert and Mensah (2014). Each January, we split the sample in two groups based on market capitalization. For value (HML), we sort all dividend-paying stocks into three groups based on dividend yield. The extreme portfolio contains 30% of the number of shares (High and Low). We intersect the sorts to obtain six portfolios (S/L, S/M, S/H, B/L, B/M, B/H - where the first letter stands for Big or Small). We construct value-weighted portfolios and subtract stock returns from high and low portfolio to cancel out systematic market movements. Volatility (VOL), Size (SMB) and Momentum (UMD) are calculated in a similar spirit. However, Momentum refers to the performance of returns from May to November in the previous year and Volatility refers to the past-12 month's standard deviation of stock returns. Beta is defined as an excess return of the value-weighted market index.

* = Significant at the 10 percent level.
** = Significant at the 5 percent level.
*** = Significant at the 1 percent level.

Table 4: Price anchoring

	Low share denomination			High share denomination		
Panel A: Return statistics						
	Return	Std.	Sharpe	Return	Std.	Sharpe
Mean	7.03%	40.20%	0.10	9.71%	12.90%	0.49
Std. error	3.65%	11.15%	0.04	1.02%	1.76%	0.07
Mutualité Industrielle: Statistics	6.72%	18.33%	0.18	6.72%	18.33%	0.18
Portfolios outperforming (in %)	35.01%	0.20%	4.77%	57.99%	98.88%	100%
Panel B: Regression coefficients						
	Alpha	*T*-statistic	IR	Alpha	*T*-statistic	IR
Mean	1.78%	0.22	0.00	3.46%	3.28***	0.46
Std. error	2.87%	1.97	0.29	2.74%	2.94	0.37
Mutualité Industrielle: Statistics	2.13%	1.05	0.11	2.13%	1.05	0.11
Portfolios outperforming (in %)	36.30%	32.95%	29.39%	68.20%	80.69%	77.28%

This table reports the summary statistics of synthetic portfolios. Each January, we sort stocks based on their nominal prices. In column 1, we select four stocks from the bottom 50% number of stocks based on nominal price. In column 2, we select four stocks from the top 50% number of stocks based on nominal price. This selection is performed each January, from 1837 to 1873, and repeated 1 million times. In Panel A. we report annual equally-weighted returns (Mean), standard deviation (Std.) and Sharpe ratio (Sharpe) defined as the excess portfolio return over the portfolio's standard deviation. We report the standard errors (Std. error) of all the measures. In Panel B, we report the Alpha, *T*-statistic and Information Ratio (IR) from the five-factor model (market index, SMB, HML, UMD and VOL). Alpha is the average intercept across all simulations. *T*-statistics is the average *t*-statistic of regression intercepts, calculated with Newey-West standard errors (with 12 lags). Information ratio is the average information ratio, calculated as the ratio of alpha and regression residuals. We compare the distribution of the measures with performance measures (Statistics) from Portfolios outperforming (in %), and report the percentage of strategies that have higher (lower) returns, Sharpe ratio, alpha, *t*-statistic and information ratio (standard deviation) than the investment trust.

We create factors as in Annaert and Mensah (2014). Each January, we split the sample in two groups based on market capitalization. For value (HML), we sort all dividend-paying stocks into three groups based on dividend yield. The extreme portfolio contains 30% of the number of shares (High and Low). We intersect the sorts to obtain six portfolios (S/L, S/M, S/H, B/L, B/M, B/H - where the first letter stands for Big or Small). We construct value-weighted portfolios and subtract stock returns from high and low portfolio to cancel out systematic market movements. Volatility (VOL), Size (SMB) and Momentum (UMD) are calculated in a similar spirit. However, Momentum refers to the performance of returns from May to November in the previous year and Volatility refers to the past-12 month's standard deviation of stock returns. Beta is defined as an excess return of the value-weighted market index.

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Table 5: Investor sophistication

	Low price – High skewness			High yield – high momentum		
Panel A: Return statistics						
	Return	Std.	Sharpe	Return	Std.	Sharpe
Mean	9.43%	45.97%	0.10	14.39%	18.13%	0.61
Std. error	6.87%	32.20%	0.12	3.11%	1.63%	0.15
Mutualité Industrielle: Statistics	6.72%	18.33%	0.18	6.72%	18.33%	0.18
Portfolios outperforming (in %)	56.83%	6.67%	19.14%	99.73%	56.19%	99.88%
Panel B: Regression coefficients						
	Alpha	*T*-statistic	IR	Alpha	*T*-statistic	IR
Mean	1.90%	0.88	0.02	5.43%	3.79***	0.56
Std. error	0.11%	1.11	0.20	2.37%	1.81	0.24
Mutualité Industrielle: Statistics	2.13%	1.05	0.11	2.13%	1.05	0.11
Portfolios outperforming (in %)	44.10%	53.28%	20.60%	91.63%	97.28%	93.75%

The table reports the summary statistics of double-sorted synthetic portfolios. In column 1, we select the bottom 50% based on nominal price from the top 50% based on the past 12-month sample skewness from all stocks. In column 2, we select the top 50% based on past momentum from the top 50% based on dividend yield from all dividend-paying stocks. Momentum was calculated as the compound return between May of November of the previous year. This selection is performed each January, from 1837 to 1873, and repeated 1 million times. In Panel A. we report annual equally-weighted returns (Mean), standard deviation (Std.) and Sharpe ratio (Sharpe) defined as the excess portfolio return over the portfolio's standard deviation. We report the standard errors (Std. error) of all the measures. In Panel B, we report the Alpha, *T*-statistic and Information Ratio (IR) from the five-factor model (the market index, SMB, HML, UMD and VOL). Alpha is the average intercept across all simulations. *T*-statistics is the average *t*-statistic of regression intercepts, calculated with Newey-West standard errors (with 12 lags). Information ratio is the average information ratio, calculated as the ratio of alpha and regression residuals. We compare the distribution of the measures with the performance measures (Statistics) from Portfolios outperforming (in %), and report the percentage of strategies that have higher (lower) return, Sharpe ratio, alpha, *t*-statistic and information ratio (standard deviation) than the investment trust.

We create factors as in Annaert and Mensah (2014). Each January, we split the sample in two groups based on market capitalization. For value (HML), we sort all dividend-paying stocks into three groups based on dividend yield. The extreme portfolio contains 30% of the number of shares (High and Low). We intersect the sorts to obtain six portfolios (S/L, S/M, S/H, B/L, B/M, B/H - where the first letter stands for Big or Small). We construct value-weighted portfolios and subtract stock returns from high and low portfolio to cancel out systematic market movements. Volatility (VOL), Size (SMB) and Momentum (UMD) are calculated in a similar spirit. However, Momentum refers to the performance of returns from May to November in the previous year and Volatility refers to the past-12 month's standard deviation of stock returns. Beta is defined as an excess return of the value-weighted market index.

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