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Passive Ownership and Long-Term Orientation around the World

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Abstract

The recent growth of passive investors led to concerns regarding their economic impact. This thesis investigates the influence of passive investors on the long-term orientation of their portfolio firms by using global panel data of publicly listed firms from 2000 to 2019. To tackle endogeneity concerns an instrument variable approach with MSCI All Country World Index membership as the instrument is applied. I find that exogenous increases in passive ownership enhance long-term investment in tangible assets, human capital, and organizational capital. While my results suggest that capital expenditures, number of employees, staff cost, and selling, general & administrative expenses are positively connected with higher passive ownership, I find no evidence for an effect on research & development expenses and average staff costs. In additional analyses I find the effect of passive investors to be time-variant and dependent of a firm's country of origin. My findings suggest that passive investors globally foster long-term orientation in their portfolio firms.

Keywords: Passive investors; Index funds; Long-term orientation; Innovation; Instrumental variables estimation.

1. Introduction

Over the last decades the rise of passive investment vehicles has been one of the major developments in capital markets.[1] Passive investors gained widely popularity due to the low fee structure, high diversification, and competitive performance of their products. This led to increasing cash inflows and a gain in market share compared to actively managed investments.[2] The assets under management (AUM) of index mutual funds and index Exchange Traded Funds (ETFs) sponsored by US-registered investment companies have grown from $0.4 trillion in 2000 to $9.9 trillion in 2020. Meanwhile, their market share in the long-term funds market increased by 31%[3], leading to a decline in the market share of actively managed mutual funds and actively managed ETFs.[4] In general this seems to be a worldwide phenomenon.[5]

The asset base of passive investors is extremely large and diversified. Doubts have been arisen of whether passive investors are able to monitor and engage in their portfolio companies in an appropriate manner. A lack of monitoring and engagement could weaken corporate governance and the long-term performance of the portfolio companies.[6] This leads to concerns and a demand for regulation.[7] While the passive investors' recent gain in power has implications for the whole economy, there is not much research yet regarding their impact on long-term orientation.[8] Such investigations are crucial for researchers and policymakers. Given the mixed results of the little existing literature there is a need for further examination.[9] This gets even more apparent with respect to their expected on-going growth.[10] Therefore, the research in the field of passive investors and long-term ori-

[1] See Fisch, Hamdani, & Solomon, 2020, p. 17; Tian & Yang, 2021, p. 3.

[2] See Crane & Crotty, 2018, p. 62; Fichtner, Heemskerk, & Garcia-Bernardo, 2017, pp. 302-303; Fisch et al., 2020, p. 19; Investment Company Institute, 2021, pp. 85, 109, 220, 252; Strampelli, 2018, p. 810.

[3] From 9% in 2000 to 40% in 2020.

[4] See Investment Company Institute, 2021, pp. 48-49, 220, 251.

[5] See Anadu, Kruttli, McCabe, & Osambela, 2020, p. 24; Johnson, 2020; Strampelli, 2018, pp. 810-811.

[6] See Appel, Gormley, & Keim, 2016, p. 112; Bebchuk & Hirst, 2019, p. 2033; Schmidt & Fahlenbrach, 2017, pp. 285-286.

[7] See Fisch et al., 2020, pp. 17, 20; Tian & Yang, 2021, p. 3.

[8] See Bebchuk & Hirst, 2019, p. 2033; Dong & Eugster, 2017, p. 3; Tian & Yang, 2021, pp. 3, 6.

[9] See Appel et al., 2016; Cremers, Pareek, & Sautner, 2020; B. B. Francis, Maharjan, & Teng, 2020; Fu, Pan, & Wu, 2021; Liu, Shen, Wang, & Wang, 2019; Qin & Wang, 2018; Tian & Yang, 2021.

[10] See Bebchuk & Hirst, 2019, pp. 2033, 2041; B. B. Francis et al., 2020, p. 60.

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entation is of specific interest.

This thesis contributes to literature in several ways. The used sample consists of very recent and worldwide data. This allows to examine the global effects of passive investors during the time they have grown most. Also, the influence of passive investors on non-standard long-term orientation facets such as human and organizational capital will be investigated. Regarding the used identification strategy this thesis delivers insights on the appropriateness of the MSCI All Countries World Index (MSCI ACWI) as an instrument for passive ownership.

At first, the theoretical foundations of passive investors and long-term orientation will be introduced. This is followed by a literature review regarding passive investors and long-term orientation. Based on the theoretical foundations and the literature review the hypotheses will be developed. The focus of this thesis lays on the empirical part. In the empirical part the effect of passive investors on the long-term orientation of their portfolio companies will be examined. To obtain baseline results I will start with standard ordinary least squares (OLS) regressions. Endogeneity concerns will be addressed by introducing an instrumental variable (IV) approach, with MSCI ACWI membership as the instrument for passive ownership. To check the robustness of the results several sensitivity tests will be run. The thesis ends with the discussion of the findings and a conclusion.

2. Theoretical foundation

In the following, the underlying theory and concepts needed for the understanding of this thesis will be contemplated. First, the term 'passive investor' will be defined. A detailed consideration of the institutional background in which passive investors operate and their instruments and incentives to excess influence on their portfolio companies will take place. Second, the term 'long-term orientation' will be defined and occurring conflicts of interest for investors and the portfolio companies' management will be considered. Furthermore, long-term orientation proxies used by the literature will be collected. On this basis the long-term orientation proxies which will be used in the empirical part of this thesis are determined. Third, literature documenting the influence of passive investors on portfolio companies will be reviewed. This review is split into the general effects of passive ownership and its specific effects on long-term orientation.

2.1. Passive investors

While active investors try to outperform the market by stock selection, passive investors aim to mimic the return of an underlying market index or investment style.[11] The most common passive strategy is to track an index. The tacking error is minimized by buying and holding the stocks - or a representative sample of the stocks - of an index. Stocks are only bought if they get assigned to the underlying index and they are held until the company is discarded from the index. Due to the low portfolio turnover and reduced effort for stock selection, an indexing strategy leads to lower expenses compared to an active investment strategy.[12] The low cost diversification and the increasing awareness of retail investors of the relative underperformance of active funds led to a rise in popularity of passive investment strategies.[13]

The two best known passive investment vehicles are index mutual funds and index ETFs. Both share the same underlying passive indexing strategy, but while investors buy and sell shares of their mutual fund directly from the fund for the end-of-day net asset value, ETFs are traded over the day on stock exchanges for an actual market price.[14]

The term 'passive investors' is ambiguous.[15] While it usually refers to passive institutional investors it could also refer to retail investors with a buy-and-hold strategy. In this thesis 'passive investors' refers to passive institutional investors that follow an index strategy. Therefore, passive ownership is the fraction of stocks held by institutional investors as part of their index mutual funds or index ETFs.

In the literature different measures are used to proxy for passive ownership. Bushee (1998, 2001) classified passive investors on the institutional level. He created three groups: transient investors (high portfolio turnover & highly diversified), dedicated investors (low portfolio turnover & less diversified) and quasi-indexers (low portfolio turnover & highly diversified).[16] This method of classification is commonly applied by other researchers who use quasi-indexer ownership to proxy for passive ownership.[17, 18] Other researchers are arguing against the use of quasi-indexer ownership as a proxy for passive ownership. They criticize the aggregation on the institutional level instead of the individual fund level. This is problematic because also the active funds of an investment company with mostly passive funds would be classified as passive. Also, there seem to be obvious misclassifications of active investors as quasi-indexers, and conversely.[19]

Another passive ownership proxy which is commonly used in robustness tests is ownership by the three largest passive investment firms: BlackRock, Vanguard and State Street - the 'Big Three'.[20]

[11] See Appel et al., 2016, p. 112; Fichtner et al., 2017, p. 299.

[12] See Dong & Eugster, 2017, p. 3; Fichtner et al., 2017, pp. 299-300; Grove, Clouse, & King, 2020, p. 8.

[13] See Appel et al., 2016, p. 112; Fisch et al., 2020, p. 19.

[14] See Fisch et al., 2020, p. 19; Robertson, 2019, pp. 833-834.

[15] See Fisch et al., 2020, p. 19.

[16] See Bushee, 1998, pp. 310-311; Bushee, 2001, p. 214.

[17] See Chen, Dong, & Lin, 2020, p. 496; Cremers et al., 2020, p. 4542; B. B. Francis et al., 2020, p. 39; Liu et al., 2019, p. 8; Tian & Yang, 2021, p. 10.

[18] See Appel et al., 2016, p. 114; Appel, Gormley, & Keim, 2019, p. 2759. They run sensitivity tests with quasi-indexers as an alternative definition of passive investors. See also Schmidt & Fahlenbrach, 2017, p. 301. In sensitivity tests they use a modified version as an alternative proxy for passive ownership.

[19] See Boone & White, 2015, p. 5; Gilje, Gormley, & Levit, 2020, p. 163; Schmidt & Fahlenbrach, 2017, p. 289.

[20] See Appel et al., 2016, p. 132; Dong & Eugster, 2017, pp. 18-19;

A more precise way of estimating passive ownership is by directly using the holdings on the fund level. A common way is to use the Center for Research in Security Prices (CRSP) Mutual Fund Database which assigns specific flags for index funds in combination with Thomson Reuters S12 mutual fund data. Funds are classified as passive if the index-flag or the fund name is indicating a passive strategy.[21] Even though this is a precise approach of estimating passive ownership it has its flaws. First, not all passive holdings stem from index funds. Funds with a passive strategy that do not track an index will not be classified as passive by this approach. Also, passively held stakes, which are not part of a fund, are not considered. Second, in the Thomson Reuters S12 mutual fund database institutions like banks or pension funds are not included. Those can also implement a passive index strategy.[22]

2.1.1. Institutional background

To understand passive investors' instruments and incentives to influence their portfolio companies it's crucial to be aware of the environment in which they are operating.[23]

An investment fund is created by the fund sponsor, which is usually a financial company. The fund sponsor typically offers several different funds of which some are active, and some are passive. The investment strategy determines the targeted group of assets. For an index fund, the investment strategy determines the underlying index. A fund is managed by the fund manager. After the creation different investors buy shares of the fund with their money. The fund manager invests the accumulated money into stocks of companies which fit the investment strategy of the fund. The fund manager represents the investors of the fund as the shareholder of the portfolio companies. She is responsible for monitoring and the execution of shareholder rights. It is her fiduciary duty to maximize shareholder value and thereby the return of the fund investors. The fund sponsors often have specific committees which centralize key decisions regarding execution of the shareholder rights. They also often use the recommendations of special advisory firms e.g., Institutional Shareholder Services for decisions on the portfolio companies' governance. For the management of the fund and to cover general expenses, the fund investors must pay a fee to the fund sponsor. The fee is usually calculated as a percentage of the AUM. For active funds, those fees are rather high because of the fund managers' effort for the selection of stocks, which he assumes to be undervalued. For index funds, the fees are rather low, because the stock selection is predetermined with only small opportunity for the fund manager to exert influence.[24]

It should be noted that the incentives of the fund manager and the fund investors are not necessarily congruent.[25] Many economies have codes and principles aiming to protect fund investors of opportunistic behaviour by the fund manager due to moral hazard.[26] An example is the EU corporate governance framework.[27]

Within the index fund universe, it's notable that the 'Big Three' are the dominant investment sponsors. Due to economics of scale, reputation, and the standardized product, it's difficult for new entrants to enter the index fund market. Therefore the dominance of the 'Big Three' is expected to persist.[28] Also, their economic significance is expected to allow them to gain influence on politics and lawmaking.[29]

2.1.2. Instruments to influence portfolio companies

In general investors have two ways to influence a corporates' management: voice and exit. Voice represents their ability to use their voting rights at shareholder meetings and to engage privately with the corporates' management or board members. By voting investors can influence governance topics like the election of directors, mergers, or executive compensation. By engagement they can exert influence by submitting own shareholder proposals, by private negotiations, or by nomination of directors. Exit represents the shareholders' threat of selling their shares, leading to a lower share price. This pressures a corporates' management directly via a loss of value of their own stocks and stock options of the company and indirectly by threatening their position due to other shareholders losing money. For passive investors, the threat of exit is not feasible. Exiting a company for other reasons than a change in index membership would mean a higher tracking error. They have to hold their shares, whether they like or dislike the managements actions.[30] It should be noted that voice and exit are complementary. The usefulness of voice by passive investors could be reduced due to the limited exit threats. Managers know that the index funds can't exit easily, which leaves the passive investors in a weaker position in situations like private negotiations.[31] While most scholars agree that exit is not a feasible option, there are mixed opinions for voice. Heath et al. (2018) find that passive investors are more likely than active investors to side with management in voting situations. Also, they

B. B. Francis et al., 2020, p. 59.

[21] See Appel et al., 2016, pp. 115-116; Appel et al., 2019, pp. 2726, 2758-2759; Chen et al., 2020, p. 496; Dong & Eugster, 2017, p. 14; B. B. Francis et al., 2020, p. 39; Glossner, 2019, p. 10; Heath, Macciocchi, Michaely, & Ringgenberg, 2018, p. 9; Hou & Zhang, 2016, pp. 15-16; Palia & Sokolinski, 2019, p. 9; Qin & Wang, 2018, p. 9.

[22] See Appel et al., 2016, p. 131; Appel et al., 2019, p. 2759; Dong & Eugster, 2017, p. 14.

[23] It must be noted that the following description of the mutual fund environment is simplified. Also, the environment in which ETFs operate differs from the one described here. Nevertheless, the basic principles of fund sponsor, fund manager, fee structure and delegated shareholder rights are similar.

[24] See Bebchuk & Hirst, 2019, pp. 2036, 2043-2046, 2049-2050, 2078; Fisch et al., 2020, pp. 22-23, 27-28, 32, 44-46, 51, Strampelli, 2018, p. 821.

[25] See chapter 2.1.3.

[26] See Bebchuk & Hirst, 2019, p. 2045.

[27] See Strampelli, 2018, pp. 806-809.

[28] See Bebchuk & Hirst, 2019, p. 2044.

[29] See Fisch et al., 2020, p. 55.

[30] See Appel et al., 2016, p. 115; Bebchuk & Hirst, 2019, pp. 2045-2046; Qin & Wang, 2018, pp. 1-3.

[31] See Fichtner et al., 2017, p. 307; Qin & Wang, 2018, p. 3.

are less likely to engage with the management.[32] This is in line with Schmidt and Fahlenbrach (2017) assumption that the costs and personnel effort of the voice channel are too high for passive investors, given their low-cost structure and large number of portfolio companies.[33] Opposing, Appel et al. (2016) find that a higher level of passive ownership decreases the support for management proposals and increases the support for governance-related shareholder proposals.[34] Also, Fisch et al. (2020) state that passive investors are increasingly voting against management and are focussing on private engagement.[35] Iliev and Lowry (2015) find that index funds are relatively active voters in firms they have significant stakes in.[36]

2.1.3. Evaluation of incentives to foster long-term orientation

To understand the influence of passive investors on long-term orientation, it's important to consider their goals and the incentives they have to foster long-term thinking. The fundamental goal of passive investors is to maximize their own income. Because their income depends on fees based on their AUM, they aim at maximizing the AUM of their funds. At the fund level, their goal is to reduce tracking error. A low tracking error attracts investors, which leads to higher AUM for this fund and ultimately increases the fees the fund sponsor receives. It must be noted that a passive fund competes not only against other passive funds for investors' money, but also against all kind of other investment opportunities on a price and performance level.[37]

After exhibiting the goals of passive investors, an investigation of their incentives to enhance long-term orientation can take place.[38] The underlying assumption is that long-term oriented measures aim to increase the firm value in the long run.[39] Enhancing long-term orientation can be beneficial because:

- Limited exit / Long investment horizon: Passive funds do not only compete against other passive funds but also against active funds. While active funds can exit underperforming companies, passive funds are stuck with them in the long-term. They have incentives to limit this advantage of active funds by enhancing the long-term orientation of their low-performing portfolio companies.[40] In general passive investors have a long investment horizon. Therefore, they rather focus on long-term than short-term value creation.[41]
- Fiduciary duty: Passive investors have a fiduciary duty to manage the assets of their investors in their best interest.[42] Hereby, measures that focus on the companies' long-term value creation are beneficial for the investors. Regulatory pressure is increasingly forcing the investment sponsors to pursue their fiduciary duty.[43]
- Higher fee income: Passive investors directly benefit from long-term value enhancing measures. An increase in the value of their portfolio companies also increases their AUM, which leads to a higher fee income.[44] It must be noted that this effect is rather small.[45]
- Economies of scale: Many passive investors centralize their stewardship decisions. When voting on the fund family level they can use their size and breadth of holdings to engage more efficiently. Their large ownership stakes help in voting or pressure situations. Especially market wide initiatives which are applicable to all portfolio companies can help to improve the portfolio companies' long-term orientation efficiently without the necessity of firm-specific knowledge.[46]
- Harvesting benefits for many funds: A passive investor might have several funds with stakes in the same company. By pushing long-term thinking in a portfolio company all of their funds owning stakes will capture the benefits.[47]
- Reputation: Passive investors have incentives to be perceived as responsible investors by their investors and the public. Building a reputation as being a long-term oriented investor could be attractive to customers.[48]

From an incentive-based view there are also reasons for passive investors not to foster the long-term orientation of their portfolio companies:

- Other goals: The goal of a passive investor on the fund-level is to mimic the index return as closely as possible in order to reduce tracking error, and not to increase the index return itself.[49]
- Costs and effort: Monitoring and engagement in the passive investors' large portfolios is associated with high cost and personnel efforts.[50]
- Free-rider problem: If passive investors enhance the long-term orientation of their portfolio companies, all

[32] See Heath et al., 2018, pp. 6-7.
[33] See Schmidt & Fahlenbrach, 2017, pp. 286-287.
[34] See Appel et al., 2016, pp. 127-128, 134.
[35] See Fisch et al., 2020, pp. 48-49.
[36] See Iliev & Lowry, 2015, p. 466.
[37] See Fisch et al., 2020, pp. 18, 23, 28, 31-32.
[38] It must be noted that some of the incentives discussed in this chapter do not exclusively work for passive investors. They might also relate to institutional investors in general.
[39] See Lumpkin, Brigham, & Moss, 2010, p. 245.
[40] See Appel et al., 2016, p. 113; Heath et al., 2018, p. 1; Liu et al., 2019, p. 3.
[41] See Fichtner et al., 2017, p. 309.
[42] See Fisch et al., 2020, p. 36.
[43] See Strampelli, 2018, pp. 816-817, 821.
[44] See Appel et al., 2016, p. 113.
[45] See Bebchuk & Hirst, 2019, pp. 2037, 2053.
[46] See Fisch et al., 2020, pp. 18, 26, 35, 37-39, 42-45, 49.
[47] See Fisch et al., 2020, pp. 35, 42, 49.
[48] See Strampelli, 2018, pp. 816, 821.
[49] See Appel et al., 2016, p. 113; Fichtner et al., 2017, p. 307.
[50] See Appel et al., 2016, p. 113; Cremers et al., 2020, p. 4542; Fisch et al., 2020, pp. 21, 43; Heath et al., 2018, p. 1; Schmidt & Fahlenbrach, 2017, p. 300.

other shareholders of those companies will also benefit without bearing any costs. Especially compared to funds tracking the same index they lose advantage, because they compete on a cost basis, not a performance basis.[51]

- Business ties: Corporate retirement plans are major customers of passive investors. If a fund manager decides to actively oppose a short-term oriented manager and interfere into the portfolio companies' business, they risk antipathy by the company's management. This could affect the company's decision on which investment firm to give their retirement plan to.[52, 53]

- Cross-ownership: It's likely that a passive investor owns competitors, suppliers, or customers of each other. Long-term value increasing measures for one portfolio company might impact other companies they own negatively.[54]

- Drawbacks for other products: Even mostly passive investors might offer several other investment products, which can lead to a conflict of interest. For a specific company, they can have a long position in an index fund and a short position in a hedge fund. They might decide to vote against long-term value enhancing measures to allow their more profitable products to perform better.[55]

- Schedule 13D: Fund sponsors that hold more than 5% of a company need to file schedule 13D or schedule 13G. Hereby, schedule 13D is associated with more costs and effort, but is needed if there is the intention to influence the company. Investors filing the schedule 13G must not exert too much direct influence on their portfolio companies, otherwise they risk legal consequences.[56]

- Political backlash: The large passive investors always run the risk of being perceived as too powerful by public and politics. This is demonstrated by the 'Big Three' regularly trying to downplay their power. Ambitious engagement in their portfolio companies could lead to a re-evaluation of their role by the public and legislators. The consequence could be the introduction of laws and restrictions. Therefore, the fear of political backlash might limit their incentives to engage.[57] I expect that for long-term oriented measures the risk of political backlash is probably lower.

The incentives of passive investors whether to push long-term oriented thinking in their portfolio companies are ambiguous. This strengthens the need for empirical research regarding passive investors and their influence on the long-term orientation of their portfolio companies.

2.2. Long-term orientation

In the following, the term 'long-term orientation' will be defined and explained. Then, incentives for corporate managers to underinvest in projects that enhance long-term value will be considered. Finally, proxies for long-term orientation which are used in literature are collected.

Lumpkin et al. (2010) define long-term orientation as "the tendency to prioritize the long-range implications and impact of decisions and actions that come to fruition after an extended time period".[58] Therefore, the aim of long-term orientation is to behave and decide in a way that maximizes value in the long run. This focus on the long-term might affect the short-term negatively.[59] Investments like capital expenditures (CAPEX) and research and development (R&D) expenses are practical examples of long-term oriented behavior. Expenditures must be made upfront, while the benefit is expected to come at a later point in time. In the short-term the upfront expenditures might result in the missing of earning targets. In the long-run the investments will help the business to stay competitive and to facilitate growth.[60]

Investing in a long-term value enhancing project is rational and beneficial for the shareholders.[61, 62] Nevertheless, corporate managers' incentives differ from those of the shareholders. Managers seem to prefer short-term earnings over long-term perspective. Due to different objectives, their discounting rate is lower than the discounting rate of the shareholders, leading to a preference for short-term profits.[63] This gets even more apparent considering that executives' tenure is often only a few years. While bearing the costs and effort in the present, they might not be able to harvest the future benefits of the long-term oriented projects.[64] A survey by Graham, Harvey, and Rajgopal (2005) strengthens this theory. They found that a large percentage of corporate managers would decrease R&D expenses or even give up or delay a positive net present value (NPV) project, if the alterna-

[51] See Fisch et al., 2020, p. 21; Heath et al., 2018, p. 1; Schmidt & Fahlenbrach, 2017, p. 287.

[52] Even if the management does not directly choose the retirement plan sponsor, they might influence the responsible committee.

[53] See Appel et al., 2019, pp. 2721-2722; Bebchuk & Hirst, 2019, pp. 2062-2064; Fisch et al., 2020, p. 65.

[54] See Fichtner et al., 2017, pp. 319-320; Fisch et al., 2020, p. 68; Strampelli, 2018, pp. 827-828.

[55] See Fichtner et al., 2017, p. 307; Fisch et al., 2020, pp. 66-67.

[56] See Bebchuk & Hirst, 2019, pp. 2065-2066; Brav, Jiang, Ma, & Tian, 2018, p. 258; Morley, 2019, pp. 1423-1430; Schoenfeld, 2017, p. 24.

[57] See Bebchuk & Hirst, 2019, pp. 2066-2069, 2073-2074.

[58] Lumpkin et al., 2010, p. 245.

[59] See Brauer, 2013, pp. 386-387.

[60] See Flammer & Bansal, 2017, p. 1830, Lee & O'Neill, 2003, p. 214, Lerner & Wulf, 2007, p. 634.

[61] It should be noted that this statement holds in general. There could also be situations in which it's rational to reject a long-term value enhancing project e.g., due to prioritizing during capacity shortages.

[62] See David, Hitt, & Gimeno, 2001, p. 144; Flammer & Bansal, 2017, p. 1830.

[63] See D. Ferreira, Manso, & Silva, 2014, p. 259; Flammer & Bansal, 2017, p. 1830.

[64] See Brauer, 2013, p. 387.

tive is to miss short-term earnings targets.[65] From an agency point of view there is a clear conflict of interest between the manager and the shareholders. The lazy manager hypothesis and the career concern model are two models trying to explain the managers behavior. According to the lazy manager hypothesis the manager prefers to avoid effort. Naturally, long-term innovation projects require a lot of effort, which is not in the interest of the manager.[66] According to the career concern model the manager acts in a way that secures her career. Long-term innovation projects are characterized by a long duration and high risk. Managers are often evaluated by short-term earnings targets which conflicts with the execution of long-term projects. Additionally, due to the high probability of project failure their job security might be at risk, while shareholders are diversified by owning stocks of several companies.[67] A lack of technical skills to evaluate a project or preferring projects which are easy to communicate to shareholders[68] might be additional barriers for managers, especially regarding long-term innovation projects.[69] There is a clear conflict of interest which the shareholders must be aware of. Especially passive investors with their long investment horizon and their large stakes should monitor the management closely and be willing to enforce long-term oriented thinking.

In the literature the used proxies of long-term orientation are usually focussing on investment activities. For investment and innovation input, measures based on CAPEX and R&D are often used.[70] Innovation output is usually measured by patent counts or citation counts.[71] Tian and Yang (2021) look further into the strategy of the innovation activities by using number and length of patent claims to differentiate between innovative exploitation and exploration. Hereby, fewer claims and a shorter length indicate exploration of new knowledge. Exploitation denotes to the further development of already existing knowledge.[72]

There are also alternative measures of long-term orientation. Flammer and Bansal (2017) create a long-term index by analyzing firms' 10-K filings regarding words associated with long-term and short-term orientation. They then use the ratio of long-term to short-term words. Additionally, they use shareholder proposals supporting long-term incentives for executive compensation as a proxy for long-term orientation.[73] Bena et al. (2017) use employment-based measures to take the long-term investment into human capital into account. They use number of employees, staff costs, and average staff costs. With average staff costs allowing them to proxy for the skill-level of the employees. They also assess the investment in organizational capital by a measure based on selling, general, and administrative (SG&A) expenses.[74] Some authors suggest that corporate social responsibility (CSR) is also associated with an improve of a firm's long-term perspective by reduction of risks and reputational benefits.[75]

2.3. Documented effects of passive ownership on portfolio companies

While most existing literature that examines the effect of ownership structure on long-term orientation focuses on institutional investors, there is not much research yet concentrating specifically on passive investors.[76] For institutional investors, there is evidence that a higher level of institutional ownership in connected with more innovation activities.[77] In the following, existing literature studying the influence of passive investors on their portfolio companies will be reviewed. A detailed summary of the literature review can be found in Appendix 1.

2.3.1. General effects

Even though this thesis focuses on passive investors' effect on long-term orientation, it's important to understand their influence on other corporate facets. Therefore, a selection of existing studies will be collected with a brief description of their main results.

Appel et al. (2016) find that higher ownership by passive investors is associated with less CEO power, more shareholder-friendly governance decisions and better long-term performance, measured by return on assets (ROA) and Tobin's Q.[78] Schmidt and Fahlenbrach (2017) results are opposing to Appel et al. (2016). They indicate that passive investors put low effort into monitoring the management and rather shift power to the CEO.[79] Scholars consider those opposing results and hypothesize that passive investors use their influence rather on low-cost than high-cost governance activities. Additionally, differences in the methodology might affect the results.[80] The results of Heath et al. (2018) also indicate that passive investors shift power to the management. This is in line with the theory of passive investors

[65] See Graham et al., 2005, pp. 65-67.
[66] See Aghion, Reenen, & Zingales, 2013, pp. 277-278.
[67] See Aghion et al., 2013, pp. 277-278; Brossard, Lavigne, & Sakinç, 2013, pp. 1034-1035; Holmstrom, 1989, p. 309.
[68] Complicated long-term oriented projects might not be assessed correctly by the shareholders due to a lack of knowledge. There is also a disclosure problem. If the manager publishes a lot of information, it helps the shareholders to understand and evaluate the project, but it can also be used by competitors.
[69] See Brossard et al., 2013, pp. 1034-1035; D. Ferreira et al., 2014, pp. 259, 288.
[70] See Bena, Ferreira, Matos, & Pires, 2017, p. 125; Flammer & Bansal, 2017, p. 1834; B. B. Francis et al., 2020, p. 37; Luong, Moshirian, Nguyen, Tian, & Zhang, 2017, pp. 1451-1452; Tian & Yang, 2021, pp. 4-5.
[71] See Bena et al., 2017, pp. 126-128; Luong et al., 2017, pp. 1451-1452, 1456-1457; Tian & Yang, 2021, pp. 4-5.
[72] See Tian & Yang, 2021, pp. 4-5.
[73] See Flammer & Bansal, 2017, p. 1835.
[74] See Bena et al., 2017, p. 126.
[75] See Kim, Kim, Kim, & Park, 2019, p. 4.
[76] See Dong & Eugster, 2017, p. 3; Tian & Yang, 2021, pp. 3, 6.
[77] See Aghion et al., 2013, pp. 297-299; Bushee, 1998, pp. 319-322.
[78] See Appel et al., 2016, pp. 114, 124-129, 134.
[79] See Schmidt & Fahlenbrach, 2017, pp. 286, 293-300.
[80] See Appel et al., 2016, pp. 114, 130; Schmidt & Fahlenbrach, 2017, p. 287; Strampelli, 2018, pp. 822-823.

being passive owners.[81] Liu et al. (2019) find that quasi-indexers seem to increase CEO power and the value and number of stock options granted to non-executive employees.[82] Non-executive stock options have been found to be positively associated with higher innovation output.[83] Therefore, Liu et al. (2019) results indicate that passive investors might positively influence long-term orientation by fostering their employees' incentives regarding innovation. Qin and Wang (2018) find decreasing effects on firm value, operating performance, and managers' pay-for-performance sensitivity. Their results differ from existing literature. They assume this is due to their sample consisting of larger firms.[84] Regarding CSR there are mixed results. While Chen et al. (2020) find that higher ownership by passive investors leads to an improve in CSR activities, Glossner (2019) find no effects and Hou and Zhang (2016) find decreasing effects.[85] Palia and Sokolinski (2019) find an increase in the stock supply to short-sellers and in short interest, while the lending fees decrease. Therefore a rise in passive ownership seems not to affect price efficiency negatively, as suggested by other researchers.[86] Appel et al. (2019) examine the effects of passive investors on activist behavior. Their results suggest that an increase in passive ownership leads to activists being more successful in removing takeover defences and achieving board representation or the sale of the company. Higher passive ownership seems to alleviate barriers for activists for more costly forms of engagement.[87] Their results express the importance of other investor types adapting to the rise in passive ownership. There is also evidence that passive investors positively influence earnings quality, timeliness and preciseness of earnings forecasts, voluntary management disclosure, and audit quality.[88]

2.3.2. Effects on long-term orientation

In this chapter empirical evidence of passive investors' effect on long-term orientation will be reviewed. For each study, the results and important methodological aspects will be described.

Several studies find a positive relation between passive ownership and long-term orientation: B. B. Francis et al. (2020) apply an IV approach based on Russell 1000/2000 affiliation and find that CAPEX and R&D are positively affected by an exogenous increase in passive ownership. Their first stage shows a positive association between Russell 2000 membership and passive ownership. Their results are robust to the passive ownership definition used by Appel et al. (2016)[89] and to ownership of the 'Big Three'.[90, 91] Fu et al. (2021) find a positive effect on innovation input and output, for their sample of Chinese listed companies. They apply panel regressions. Their results indicate that passive investors increase R&D expenses and future granted patents. To address endogeneity concerns due to omitted variables and selection bias, they perform additional tests. To control for omitted variables, they build models with year and firm fixed effects, and to avoid selection bias they use the logarithm of the increments of their innovation and passive ownership variables. With a sample period from 2007 to 2017 they use very recent data.[92, 93] Liu et al. (2019) find a positive effect on innovation input and output. They apply an IV approach with Russell 2000 membership as the instrument for passive ownership. In their first stage they find that index assignment to the Russell 2000 is associated with higher levels of passive ownership. Their second stage suggest that an exogenous rise in passive ownership increases R&D expenses, number of patents, total citations, and number of citations per patent. They hypothesize that passive investors rather shift power to the management than using the two classic channels: voice or exit. This allows managers to efficiently promote innovation.[94, 95] Tian and Yang (2021) also find a positive effect on innovation input and output. Their study follows an IV approach based on Russell 1000/2000 affiliation. Their first stage suggests a positive association between Russell 2000 membership and passive ownership. They find that R&D expenses, number of patents, and number of citations received per patent are positively connected to exogenous increases in passive ownership. They also analyze passive investors' effect on innovation strategy and find that the number and length of patent claims is positively affected by higher passive ownership. This indicates that the portfolio companies are more likely to research in already mature fields than exploring new ones. Passive investors do not seem to incentivise executives for risky explorative research, but rather make them even more risk-averse by increasing their replacement risk. This might explain their preference for knowledge exploitation over exploration. Tian and Yang assume that their results appear due to passive investors being active in monitoring their portfolio companies.[96, 97]

There are also studies finding no effect of passive investors on long-term orientation: Appel et al. (2016) also apply an IV approach based on Russell 1000/2000 affiliation. Their first stage shows that passive ownership is pos-

[81] See Heath et al., 2018, pp. 6, 18.
[82] See Liu et al., 2019, pp. 18-21.
[83] See Chang, Fu, Low, & Zhang, 2015, p. 15.
[84] See Qin & Wang, 2018, pp. 4, 8, 15-17, 22-26.
[85] See Chen et al., 2020, p. 496; Glossner, 2019, p. 21; Hou & Zhang, 2016, pp. 7, 23.
[86] See Palia & Sokolinski, 2019, pp. 27-29, 31.
[87] See Appel et al., 2019, pp. 2740, 2743-2749, 2760.
[88] See Boone & White, 2015, pp. 16-17, 19; Dong & Eugster, 2017, pp. 22-24; B. B. Francis et al., 2020, pp. 49-54.
[89] See chapter 2.1.
[90] Sample period: 1998-2006; Passive investor definition: Quasi-indexer [Bushee (2001)].
[91] See B. B. Francis et al., 2020, pp. 37, 39, 48, 54-55, 59.
[92] Sample period: 2007-2017; Passive investor definition: Fund name contains the string 'index'.
[93] See Fu et al., 2021, pp. 525, 530, 533-534, 540-542.
[94] Sample period: 1995-2006; Passive investor definition: Quasi-indexer [Bushee (2001)].
[95] See Liu et al., 2019, pp. 4-6, 8, 15-16, 18-19.
[96] Sample period: 1984-2006; Passive investor definition: Quasi-indexer [Bushee (2001)].
[97] See Tian & Yang, 2021, pp. 4-5, 7-8, 10, 12-32, 38.

itively associated with Russell 2000 membership. They find no change in CAPEX or R&D expenses following an exogenous increase in passive ownership. Their results are robust to the quasi-indexer definition by Bushee (2001)[98] and to ownership of the 'Big Three'. They assume that passive investors focus on low-cost monitoring.[99, 100] Cremers et al. (2020) find that a large[101] increase in passive ownership seems not to affect innovation input measured by R&D expenses. They use difference-in-differences regressions for stocks added to the Russell 2000. They also find that after a stock is included into the Russell 2000 passive ownership increases significantly.[102, 103]

Finally, there is also empirical evidence of a negative influence of passive investors on long-term orientation: A study by Qin and Wang (2018) suggests that R&D, CAPEX, and five-year capitalized R&D decrease with higher levels of passive ownership. They explain the differences to existing research by their sample choice. Their sample consists of S&P 500 constituents and comparable non-S&P 500 firms. S&P 500 constituents are in general larger and might behave differently than firms at the Russell 1000/2000 threshold, which is often used in the literature. It must be noted that they argue against potential endogeneity concerns and use pooled regressions. They assume that passive investors have neither the incentives, nor the flexibility to select their portfolio companies based on their long-term orientation. Also, if passive investors prefer long-term oriented firms, then the results must be positively biased. Therefore, they expect endogeneity not to drive their results.[104, 105]

There is no clear consensus in the literature of how passive investors affect long-term orientation. Nevertheless, more studies are indicating a positive connection. Especially for innovation output, literature suggests a positive influence.

3. Hypothesis creation

The research question of this thesis is how passive investors influence the long-term orientation of their portfolio companies. To examine this question the hypotheses will be created.

To tackle endogeneity concerns an IV approach is applied. Hereby, passive ownership is instrumented by MSCI ACWI affiliation. To fulfil an instrument's relevance condition there must be a clear association between MSCI ACWI membership and passive ownership.[106] It seems reasonable that index mutual funds and ETFs that track the MSCI ACWI will add new constituents of the index to their portfolio to minimize tracking error. This should lead to systematically higher passive ownership of MSCI ACWI constituents compared to non-constituents.[107] A similar effect has already been documented for the Russell 1000/2000 setting, which is commonly used for IV estimations in the 'passive investors' literature.[108] The MSCI ACWI environment is not directly comparable to the one of the Russell 1000/2000, but the theoretical reasoning regarding index inclusion and passive ownership match. Therefore, I expect MSCI ACWI inclusion to be associated with an increase in passive ownership.

> Hypothesis 1: Affiliation to the MSCI ACWI leads to an increase in passive ownership.

In chapter 2.1.3 the incentives of passive investors to foster long-term orientation have been examined. From a theoretical point of view there is no definite answer which incentives outweigh. Nevertheless, the passive investors' public emphasizing of their fiduciary duty and the urgency of long-term orientation indicates that they focus on the long-term orientation of their portfolio companies.[109] The literature review in chapter 2.3.2 supports this assumption. Especially innovation output seems so be positively affected by an increase in passive ownership. But also for investment input there is a clear tendency towards a positive relationship. Considering the theory and empirical findings, it seems reasonable that their positive effect on investment expenditures also holds for a global sample.

> Hypothesis 2: An increase in passive ownership leads to higher investment expenditures in tangible and intangible assets.

Brauer (2013) argues that not only innovation-related investment but also an appropriate human resource management and business portfolio management are part of the long-term orientation of a firm.[110] In accordance with the majority of literature suggesting that passive investors have a positive effect on investments in innovation, it seems plausible that they also encourage investments in human and organizational capital. As discussed in chapter 2.1.3, there could be a reputational component which incentivises passive investors to promote investments into the employees.[111] Also, Liu et al. (2019) finding that passive ownership increases the

[98] See chapter 2.1.
[99] Sample period: 1998-2006; Passive investor definition: index fund-flag (CRSP Mutual Fund Database) or by fund name.
[100] See Appel et al., 2016, pp. 114-116, 121-122, 130-133.
[101] Hereby 'large' means that the two-year increase in quasi-indexer ownership is above the sample median.
[102] Sample period: 1990-2016; Passive investor definition: Quasi-indexer [Bushee (1998)].
[103] See Cremers et al., 2020, pp. 4539, 4542-4543, 4549.
[104] Sample period: 2001-2015; Passive investor definition: index fund-, enhanced index fund- or ETF-flag (CRSP Mutual Fund Database).
[105] See Qin & Wang, 2018, pp. 4-6, 8-9, 19-21.
[106] See Roberts & Whited, 2013, pp. 511-512.
[107] See Appel et al., 2016, p. 113.
[108] See Appel et al., 2016, pp. 121-122; Boone & White, 2015, p. 16; Cremers et al., 2020, pp. 4541-4542; Dong & Eugster, 2017, pp. 20-21; B. B. Francis et al., 2020, pp. 47-48; Glossner, 2019, pp. 15-16; Hou & Zhang, 2016, pp. 6-7; Palia & Sokolinski, 2019, pp. 26-27; Schmidt & Fahlenbrach, 2017, pp. 292-293; Tian & Yang, 2021, pp. 14-17.
[109] See Fink, 2014; Fink, 2015; Fink, 2016; Fink, 2017.
[110] See Brauer, 2013, pp. 389-391.
[111] See Strampelli, 2018, pp. 816, 821.

number and value of non-executive stock options indicates a focus on human capital topics.[112]

> Hypothesis 3: An increase in passive ownership leads to higher human capital and organizational investments.

4. Empirical part

The following empirical analysis examines the effect of passive investors on firms' measures of long-term orientation. Hereby, the hypotheses from chapter 3 will be tested.

In the context of passive ownership and corporate behavior it's important to pay attention to potential endogeneity, which can limit inference. Endogeneity appears because of omitted or unobservable explanatory variables. If those variables are correlated with both, the long-term orientation measure and passive ownership, inference is not possible, because passive ownership would be correlated with the error term of the regression. This is called an omitted variable bias. Simultaneity can also lead to endogeneity concerns. Simultaneity occurs when the direction of the causality is unclear. Also measurement errors can lead to endogeneity.[113]

In my analysis omitted variables are likely a concern, because even though I can include a set of control variables, it's impossible to control for all confounding factors. Also, simultaneity seems thinkable. Simultaneity arises when passive investors favor firms which are expected to be long-term oriented. One could argue that when using index fund holdings, the preferences of passive investors should not matter, because they must buy the constituents of the tracked index. In practice passive index investors are able to deviate to some extend from their underlying index. Especially for some types of ETFs, Cheng, Massa, and Zhang (2019) found a strong stock selection ability. Also, through the initial selection of the underlying index a passive investor can influence its portfolio companies. Another way of influencing the portfolio companies is to influence the index provider to adjust their criteria for index additions and exclusions.[114]

In general, this thesis follows Bena et al. (2017) methodology, who use an IV approach with MSCI ACWI membership as the instrument in the context of foreign investors and innovation. They include firm fixed effects, which allows them to focus on within-firm changes regarding MSCI ACWI membership.[115] I transfer this approach to the research question of this thesis and use the MSCI ACWI to instrument for passive ownership, instead of foreign ownership. Therefore, the IV approach allows to capture the 'good' exogenous variation in passive ownership that appears due to MSCI ACWI inclusion of a firm.[116] A detailed discussion of the suitability of the used instrument will be carried out in chapter 4.2.2.

Despite the endogeneity concerns the analysis starts with a standard OLS regression to get baseline results:

$$OLS: \ LTO_{it} = \beta_1 PO_{it-1} + \sum_{j=2}^{J} \beta_j X_{jit-1} + \xi_i + \eta_t + \epsilon_{it} \quad (1)$$

To address potential endogeneity, the two-stage least squares regressions (2SLS) will be conducted:

$$Stage\,1: \ \widehat{PO}_{it} = \gamma_1 MSCI_{it} + \sum_{j=2}^{J} \gamma_j X_{jit} + \xi_i + \eta_t + \omega_{it} \quad (2)$$

$$Stage\,2: \ LTO_{it} = \beta_1 \widehat{PO}_{it-1} + \sum_{j=2}^{J} \beta_j X_{jit-1} + \xi_i + \eta_t + \epsilon_{it} \quad (3)$$

The dependent variable LTO_{it} refers to the long-term orientation measure of company i in year t. All the explanatory variables are lagged by one year. PO_{it} is the fraction of passive holdings of company i in year t. X_{jit} are the J-1 control variables of company i in year t, and ϵ_{it} and ω_{it} are the residuals for the observations. In the 2SLS regression, $\widehat{PO}_{it}$ is the passive ownership estimate for each company in each year. This estimation is calculated in the first stage by using $MSCI_{it}$, which is a dummy that equals one if company i is member of the MSCI ACWI in year t[117] and zero otherwise, and the set of control variables. Also, year and firm fixed effects are included. The year fixed effects η_t capture the general rise in passive ownership, to avoid time trends driving the results.[118] The firm fixed effects ξ_i mitigate omitted variable bias concerns and allow to focus on within-firm changes regarding MSCI membership.[119] These regression models are used to estimate the coefficients of interest: β_1 and γ_1.

4.1. Data description

The final sample consists of 296,843 firm-year observations covering 34,065 companies from 52 countries between 2000 and 2019. The sample is constructed to capture about 99% of the yearly aggregated market capitalization of each country which is covered in the MSCI ACWI.[120] This chapter describes the data sources, variables, and sample construction. It concludes with the summary statistics of the final sample.

[112] See Liu et al., 2019, pp. 20-22.
[113] See Appel et al., 2016, pp. 113, 117; Bena et al., 2017, pp. 128-129; Roberts & Whited, 2013, pp. 498-504; Tian & Yang, 2021, p. 4.
[114] See Boone & White, 2015, p. 5; Cheng et al., 2019, pp. 297-298; Fisch et al., 2020, pp. 21, 51; Tian & Yang, 2021, pp. 7-8.
[115] See Bena et al., 2017, pp. 123-124, 128-130.
[116] See Appel et al., 2016, p. 121; Bena et al., 2017, p. 129; Roberts & Whited, 2013, pp. 498-504, 513.
[117] The month of a company's fiscal year end is used to determine their MSCI ACWI membership status for a given year.
[118] See Appel et al., 2016, p. 121; B. B. Francis et al., 2020, p. 46.
[119] See Bena et al., 2017, pp. 123-124, 130.
[120] Financial firms get excluded.

4.1.1. Data sources

The sample is constructed by merging different data sets:

- A list of companies which cover 99% of the aggregated market capitalization for each MSCI ACWI country [yearly].
- Passive ownership data [quarterly].
- MSCI World Index (MSCI WI) constituent lists [monthly].
- MSCI Emerging Markets (MSCI EM) constituent lists [monthly].
- Financial statement data [yearly].
- Foreign sales data [yearly].
- Stock price data [yearly].

The 99% company list, passive ownership data, and MSCI WI and MSCI EM constituents are provided by the Chair of Financial Management and Capital Markets of the Technical University Munich. The financial statement, foreign sales, and stock price data are drawn from Worldscope via Wharton Research Data Services (WRDS).

4.1.2. Variables

A list of all used variables including their definitions and sources can be found in Appendix 2. Following FactSet's recommendation, passive ownership is proxied by using ownership of funds that follow an index strategy. Therefore, PO is the fraction of index fund holdings of the total market capitalization of a firm. In robustness tests two alternative definitions will be analyzed: PO_p13F and PO_BT. PO_p13F covers index fund holdings plus an approximation of passively held direct holdings.[121] PO_BT is the fraction of passive fund holdings of the 'Big Three'. The used instrument is MSCI ACWI membership. $MSCI$ is a dummy variable that takes the value one, if a company is constituent of the MSCI ACWI at the month of their fiscal year end in a given year, and zero otherwise. In the following the dependent variables proxying long-term orientation and the control variables will be introduced.

Dependent variables: Proxies for long-term orientation

For the definition of the long-term orientation proxies, I follow Bena et al. (2017).[122] Most dependent variables described in this chapter are scaled by either total assets, net sales, or number of employees. The exact calculations can be found in Appendix 2. The focus of this thesis lays on investment input for two reasons. First, for investment output variables such as patent- or citation-based measures it's hard to acquire data, especially for a worldwide sample. Collecting, processing, and implementing data for those variables would exceed the scope of this thesis. Second, investment input usually aims to create value in the long-run.[123] Therefore, I assume the willingness to invest is a sufficient sign of long-term orientation, independently of its outcomes.

For long-term investment in tangible and intangible assets $CAPEX + R\&D$ is used. For a more specific analysis regarding tangible and intangible assets, also the separated parts are analyzed: $CAPEX$ and $R\&D$.[124] In addition, I develop further $CAPEX + R\&D$, by calculating the future three-year average: $CAPEX + R\&D$ $(3yr\ avg.)$. This allows to capture more sustained effects. To account for other long-term orientation facets, I also test for human resources and organizational measures as suggested by Brauer (2013) and Bena et al. (2017).[125] Long-term investment in human capital will be proxied by three measures. The logarithm of the number of employees $\log(EMPLOYEES)$ measures the degree of employment. $STAFF\_COST$ measures the proportion of staff costs compared to net sales. $\log(AVG\_STAFF\_COST)$ is the logarithm of the staff costs per employee and serves as an indicator for the relevance of high-skilled jobs and high-qualified employees. For long-term investment in organizational capital $SG\&A$ will be used.[126]

Control variables

To take confounding factors into account, a set of control variables will be included in the regressions. Commonly used control variables in the corporate innovation literature are based on size, age, profitability, growth opportunities, capital structure, asset tangibility, and cash. Those factors are expected to influence the innovation activities of a company.[127] I use those control variables and include additional ones, which I also expect to influence both, investment behavior and passive ownership. Most control variables described in this chapter are scaled by either total assets or net sales. The exact calculations can be found in Appendix 2.

I control for the standard factors like size ($SALES$), firm age (AGE)[128], profitability (ROA), growth opportunities ($TOBIN\ Q$), capital structure ($LEVERAGE$), and asset tangibility ($TANGIBILITY$).[129] Additionally, the fraction of foreign sales is included ($FOREIGN$) because export-oriented firms might be more innovative.[130] Cash holdings ($CASH$) and free cash flow (FCF) are controlled for because liquidity could foster investment activities.[131] Insider ownership ($INSIDER$) is included, because with higher insider holdings the managers' incentives to carry out long-

[121] The underlying assumption is that an investment company's unknown passively-managed ratio of their direct holdings is similar to the one of their fund holdings.

[122] See Bena et al., 2017, p. 144.

[123] See Lee & O'Neill, 2003, p. 214, Lerner & Wulf, 2007, p. 634.

[124] See Bena et al., 2017, p. 125.

[125] See Bena et al., 2017, p. 126; Brauer, 2013, pp. 389-392.

[126] See Bena et al., 2017, p. 126.

[127] See Bena et al., 2017, p. 128; Liu et al., 2019, p. 9; Luong et al., 2017, p. 1458; Tian & Yang, 2021, p. 12.

[128] I use date of incorporation instead of date of founding, because of much better data availability in Worldscope.

[129] See Bena et al., 2017, p. 128; Liu et al., 2019, p. 9; Luong et al., 2017, p. 1458; Tian & Yang, 2021, p. 12.

[130] See Bena et al., 2017, p. 128; Luong et al., 2017, p. 1458.

[131] See Bena et al., 2017, p. 128.

term investments might change.[132] For the regressions with CAPEX- or R&D-based dependent variables, I follow Bena et al. (2017) and add the logarithm of the capital-to-labor ratio ($CAPITAL/LABOR$).[133] In the regressions with a R&D-based dependent variable a dummy variable $D(R\&D)$ which marks all entries with missing values for R&D is included.[134] Finally, the logarithm of the float-adjusted market capitalization at the end of the fiscal year ($FLOAT$) is added, to take the variable that affects index addition and deletion into account.[135]

There will be two models for every dependent variable. Structure-wise one model follows Bena et al. (2017). In the other model additional control variables will be added. In Figure 1 the different configurations are shown.

4.1.3. Sample construction and data pre-processing

Getting the data: The sample construction starts with the data set that contains all firms covering the 99% aggregated market capitalization per country and year (in the following: '99% company data'). As in related research, financial firms are excluded because the higher regulation in the financial sector might affect the results. Also, they are not directly comparable to other firms regarding firm characteristics and investment behavior.[136] First, all entries in the 99% company data with an empty value for the Worldscope Permanent ID (WS-ID) are deleted, because the WS-IDs are required for merging. By removing duplicates, a list of WS-IDs is created. Those are all companies[137] which have been in the 99% aggregated market capitalization of their country for at least one year during the sample period. For this list of WS-IDs the associated financial statement, stock price, and foreign sales data from 2000 to 2019 is retrieved from Worldscope via WRDS.

Merging: The financial statement data and the 99% company data get merged by WS-ID and year. The resulting data set consists of all companies that have at least been once in the 99% of aggregated market capitalization of their country and their financial statement data for every year from 2000 to 2019. Empty values for the 99% company data part serve as a flag that a company was not in the 99% in a specific year. Now the data set gets merged with the passive ownership data by their FactSet-ID and date. Hereby, for every company the most actual passive ownership data that is available at their financial year end is used. Then, for every firm-year observation a flag for MSCI WI or MSCI EM membership is added. This flag takes the value one if a company is member of the MSCI WI or MSCI EM in the month of their fiscal year end, and zero otherwise. Finally, the foreign sales and stock price data are merged with the data set by WS-ID and year.

Pre-processing: First, implausible values are set to not available (NA).[138] Then, a dummy variable for the firm-year observations with missing values for R&D expenses is added. The R&D expenses of those observations are set to zero.[139] Afterwards, the exchange rate at the time of the fiscal year end is calculated by dividing Net Sales [USD] by Net Sales [Local Currency (LC)].[140] This calculated exchange rate will be used for the calculation of control variables, which are neither in USD nor without currency. Then, the dependent and independent variables are calculated as described in chapter 4.1.2. The independent variables[141] get lagged by one year, so the long-term orientation variables can be regressed by characteristics from one period earlier. This takes into account that the passive investors' effect on long-term orientation takes some time.[142] Afterwards, all firm-year observations in which a company was not in the origin countries 99% for a year are excluded. Finally, following similar literature all continuous variables are winsorized to their 1% and 99% quantiles in order to limit the effect of outliers.[143]

4.1.4. Summary statistics and multicollinearity analysis

Table 1 shows the basic summary statistics of the final sample. Table 14 in Appendix 3 contains more detailed statistics regarding countries and years. All following statistics stem from those two tables. Passive investors hold on average a 2.0% stake of the sample firms. At the country level, firms from the United States (6.6%), Ireland (3.9%), and Brazil/Switzerland (1.9%) show the highest levels of average passive ownership. From 2000 to 2018 the yearly mean of passive ownership grew from 0.5% to 3.7%, with the United States showing the highest growth (13.0%). The United States are also the most represented country in the sample regarding the number of individual firms with 6,177 of 34,065 firms (18.1%). On average 11.3% of the sample companies belong to the MSCI ACWI. For the investment input measures, the means of the CAPEX+R&D, CAPEX and R&D to-asset-ratios are 0.074, 0.054 and 0.018, respectively. The average CAPEX-to-asset-ratio is highest for Hungary (9.7%). Also, it's similar for US (5.3%) and non-US companies (5.5%). From 2001 to 2019 the yearly average CAPEX-to-asset-ratio decreased from 5.9% to 4.4%, with Brazil showing the largest decline (-5.3%) and Argentina showing the largest growth (+3.2%). The total CAPEX of the sample amount to $35,101.8 billion. Comparing the CAPEX in 2001 to 2019 there is a 106% growth.[144] Regarding the

[132] See Bena et al., 2017, p. 128; Luong et al., 2017, p. 1458.
[133] See Bena et al., 2017, p. 128.
[134] See Cremers et al., 2020, p. 4540.
[135] See Appel et al., 2016, pp. 120-121; Cremers et al., 2020, p. 4539; B. B. Francis et al., 2020, p. 48.
[136] See Bena et al., 2017, p. 125; Qin & Wang, 2018, pp. 15, 19-20.
[137] Excluding financial companies and entries with no WS-ID.
[138] This applies to negative values in WC7240 (Net Sales [USD]), WC1001 (Net Sales [LC]), WC3501 (Common Equity), WC8002 (Market Capitalization) and WC2501 (Property, Plant, and Equipment (PP&E)).
[139] See Bena et al., 2017, p. 125; Cremers et al., 2020, p. 4540.
[140] In Worldscope variables for the exchange rates that have been used for the financial statement conversion exist (WC18214 and WC18215). Those variables are not used due to poor data availability.
[141] Including the MSCI ACWI flag and the passive ownership variables.
[142] See Bena et al., 2017, p. 129; Dong & Eugster, 2017, pp. 16-17.
[143] See Aguilera, Desender, Lamy, & Lee, 2017, p. 201; Bena et al., 2017, p. 129; Dong & Eugster, 2017, p. 19; Tian & Yang, 2021, p. 12.
[144] From $1,086.0 billion in 2001 to $2,241.8 billion in 2019.

Figure 1: Model overviews.

Dependent variables:	Investment input measures*		Human capital and organizational measures**	
Independent Variables:	Model:		Model:	
	Full	Bena	Full	Bena
PO / MSCI	x	x	x	x
log(SALES)	x	x	x	x
TOBIN Q	x	x	x	x
LEVERAGE	x	x	x	x
TANGIBILITY	x	x	x	x
CASH	x	x	x	x
FCF	x	x	x	x
INSIDER	x	x	x	x
FOREIGN	x	x	x	x
log(CAPITAL/LABOR)	x	x		
log(AGE)	x		x	
ROA	x		x	
log(FLOAT)	x		x	
D(R&D)	x***			

* Includes: CAPEX+R&D / CAPEX+R&D (3yr avg.) / CAPEX / R&D

** Includes: log(EMPLOYEES) / STAFF_COST / log(AVG_STAFF_COST) / SG&A

*** Only for the R&D-based dependent variables

R&D to-asset-ratio the United States have the highest mean (4.5%). The average for non-US companies (1.3%) is considerably lower. From 2001 to 2019 the yearly mean R&D to-asset-ratio did stay constant (2.1%), with South Korea showing the largest increase (+2.1%) and Canada showing the largest decrease (-1.4%). The total R&D expenses of the sample amount to $6,607.6 billion. Comparing the R&D expenses in 2001 to 2019 there is a 142% growth.[145]

For a reasonable inference, one must consider the degree of multicollinearity. Multicollinearity arises if at least two of the independent variables are heavily correlated. This leads to larger variances of the regression coefficients and therefore to lower significances. If the degree of multicollinearity is high, reasonable inference of the regression coefficients is not possible. The Pearson correlation coefficient can be used to check for correlation between two numeric variables. Absolute values larger than 0.8 are considered as critical. To measure correlation between several variables the variance inflation factor (VIF)[146] can be calculated. The values 5, 10, or 20 are usually considered as critical thresholds.[147] The Pearson correlation coefficients of the sample can be found in Appendix 4 Panel A. The largest correlation coefficient is 0.74 between SALES and FLOAT. Therefore, no correlation coefficient has an absolute value larger than 0.8 and correlation between two variables seems not to be a problem. The VIFs of the independent variables can be found in Panel B. The largest VIF is 2.61 of the variable FLOAT. This is below the critical threshold of five. Therefore, multicollinearity seems to be no concern in the sample.

4.2. MSCI ACWI as the identification strategy

As discussed in chapter 4, I have to account for endogeneity concerns in the analysis. Exogenous variation in passive ownership due to changes in MSCI ACWI membership is used to tackle endogeneity and therefore to allow inference. In the following, the literature using the MSCI ACWI as an identification strategy is examined and the appropriateness of the MSCI ACWI as an instrument in the context of passive investors and long-term orientation is considered. Beforehand, it's important to understand how the underlying instrument and its mechanisms regarding constituents' selection and reconstitution work.

MSCI Inc. is one of the leading index providers. Their portfolio consists of various types of indices.[148] The MSCI

[145] From $212.2 billion in 2001 to $317.9 billion in 2019.

[146] The VIF is defined as: $VIF_n = \frac{1}{1-R_n^2}$; with R_n^2 being the coefficient of determination of a regression with n as the dependent variable and all other N - 1 variables as independent variables.

[147] See Dreger, Kosfeld, & Eckey, 2014, pp. 69-76; Gujarati & Porter, 2009, pp. 327-328, 338, 340; Midi, Sarkar, & Rana, 2010, pp. 255-256, 258-259; Sheather, 2009, pp. 202-203; Shrestha, 2020, pp. 40-41.

[148] See Hau, Massa, & Peress, 2010, pp. 1687-1688; MSCI Inc., 2021c, p. 12.

Table 1: Summary Statistics.

Basic summary statistics for all variables used in the main regression analyses. Variables are defined and constructed as described in chapter 4.1.2 and 4.1.3. All non-binary variables are winsorized to their 1% and 99% quantiles.

Statistic	N	Mean	Median	St. Dev.	Min	Max
PO	222,196	0.020	0.003	0.037	0.000	0.196
PO_p13F	222,212	0.029	0.004	0.055	0.000	0.260
PO_BT	222,169	0.013	0.0003	0.027	0.000	0.146
MSCI	285,264	0.113	0.000	0.317	0.000	1.000
CAPEX+R&D	293,863	0.074	0.051	0.076	0.0002	0.428
CAPEX+R&D (3yr avg.)	244,222	0.073	0.054	0.068	0.001	0.384
CAPEX	293,863	0.054	0.035	0.059	0.0001	0.328
R&D	296,195	0.018	0.000	0.045	0.000	0.286
EMPLOYEES	248,125	7,120	1,602	17,512	14	123,149
STAFF_COST	175,755	0.177	0.108	0.263	0.004	2.147
AVG_STAFF_COST [$K]	140,924	37.232	22.537	43.070	0.846	281.593
SG&A	258,358	0.321	0.165	0.746	0.015	6.465
SALES [$M]	284,522	1,712.4	284.1	4,736.5	0.000	34,360.9
AGE	253,790	28.3	20.0	24.5	0.0	110.0
ROA	282,004	0.091	0.095	0.123	−0.525	0.404
TOBIN Q	266,113	1.887	1.356	1.590	0.533	10.463
LEVERAGE	283,936	0.218	0.190	0.190	0.000	0.804
TANGIBILITY	283,685	0.310	0.270	0.228	0.002	0.899
CASH	284,112	0.184	0.125	0.181	0.001	0.867
FCF	272,036	0.002	0.025	0.143	−0.767	0.281
CAPITAL/LABOR [$K]	234,446	276.1	58.1	863.8	1.8	6,692.4
INSIDER	225,725	0.411	0.415	0.265	0.000	0.963
FOREIGN	203,895	0.248	0.086	0.349	0.000	1.653
FLOAT [$M]	219,145	1,559.7	219.5	4,669.6	4.4	34,792.8
D(R&D)	296,843	0.492	0.000	0.500	0.000	1.000

ACWI is one of their flagship indices. It focuses on large- and mid-cap equities from 23 developed and 27 emerging markets. It's a combination of their MSCI WI (developed markets) and their MSCI EM Index (emerging markets).[149] Figure 2 shows the structure and composition of the MSCI ACWI.

The MSCI ACWI aims to represent the global equity market in an appropriate, fair, and investable manner. In theory a full market index that consists of all stocks would replicate the market perfectly. Due to liquidity constraints and high turnover costs, this is practically not feasible.[151] Therefore, the index covers about 85% of all global investable equities. As of October 2021, there are 2,979 constituents in total. On the country level, US-based equities are the dominating constituents with more than half of the total market capitalization of the MSCI ACWI. On the sector level, information technology is the most represented sector with a share of 22.33%.[152] The construction of their indices is based on the 'MSCI global investable market indexes' methodology, which focuses on liquidity and replicability. This methodology is published by MSCI to diminish concerns regarding transparency and independence.[153] The index construction is very complex. On the top-line it consists of the following steps:

- "Defining the Equity Universe for each Market.
- Determining the Market Investable Equity Universe for each Market.
- Determining market capitalization size-segments for each Market.
- Applying Index Continuity Rules for the Standard Index.
- Classifying securities under the Global Industry Classification Standard (GICS).
- Using a building block approach, Regional and Composite Indexes can be created from the individual Market Indexes for each size-segment. ..."[154]

[149] See MSCI Inc., 2021b.
[150] Taken from MSCI Inc., 2021b.
[151] See Hau et al., 2010, p. 1688, MSCI Inc., 2021a, pp. 1-3.
[152] See MSCI Inc., 2021a, pp. 1-3.
[153] See Hau et al., 2010, p. 1688, MSCI Inc., 2021a, p. 3.
[154] MSCI Inc., 2021c, p. 14.

Figure 2: Structure and composition of the MSCI ACWI.[150]

Simplified, the index construction for the MSCI ACWI is based on covering about 85% of the float-adjusted market capitalization in each country's investable equity universe. The float-adjusted market capitalization is the market capitalization of the actual available shares. For example, shares held by governments, companies, board members, or employees are classified as non-available shares. For each country, the stocks are sorted in descending order by their float-adjusted market capitalization. Then, they are added until 85% coverage of aggregated float-adjusted market capitalization for a country is reached.[155] For an appropriate representation of the equity market, MSCI must account for developments and changes in the equity universe. They do so by reviewing the index regularly and if necessary, they include or exclude constituents. These reviews take place quarterly (February, May, August, and November) with a comprehensive rebalancing carried out semi-annually (May and November). Hereby, the reviews in February and August are less extensive and it must be weighted if the timely adaption or a lower index turnover is more important. For event-driven changes (e.g., acquisitions), the adjustment takes place directly. MSCI has to announce the results of the quarterly and semi-annually reviews at least two weeks upfront.[156]

4.2.1. MSCI ACWI in the literature

A non-comprehensive review of existing literature that uses the MSCI ACWI as an identification strategy can be found in Appendix 5. To my best knowledge there is no literature yet which uses the MSCI ACWI as an instrument for passive ownership. While it's mostly applied in an IV approach, there is also literature that uses MSCI ACWI additions in a Difference-in-Differences analysis. Within an IV approach, it's mostly applied to instrument for foreign institutional ownership. Nevertheless, there are also studies in which it's used to instrument for institutional investors and price informativeness. The instrument itself is usually a dummy for MSCI ACWI membership in a given year. Most studies include either firm or industry fixed effects and combine them with year and/or country fixed effects. Often different models with varying combinations are created. Literature applying the MSCI ACWI as an identification strategy often investigates a worldwide sample, but some use it also for individual countries.[157] Bena et al. (2017), Luong et al. (2017), and Shin and Park (2020) study foreign ownership and long-term orientation. In their IV approaches they use MSCI ACWI membership to instrument for foreign owner-

[155] See Bena et al., 2017, pp. 124, 129-130; Hau et al., 2010, p. 1691; MSCI Inc., 2021c, pp. 26-28.

[156] See Bena et al., 2017, pp. 124, 129-130; Hau et al., 2010, pp. 1688-1689; MSCI Inc., 2021a, pp. 1-3; MSCI Inc., 2021c, pp. 38-81.

[157] See Aggarwal, Erel, Ferreira, & Matos, 2011, pp. 174-176; Aguilera et al., 2017, pp. 201, 214-215; Bena et al., 2017, pp. 124, 128-132; Dyck, Lins, Roth, & Wagner, 2019, pp. 701-702, OB3-OB4; M. A. Ferreira & Matos, 2008, pp. 517, 520-521, 531; Kacperczyk, Sundaresan, & Wang, 2021, pp. 1319, 1334-1338; Luong et al., 2017, pp. 1452-1453, 1470-1471; Shin & Park, 2020, p. 9; Pereira da Silva, 2018, pp. 4, 21.

ship. They argue that the MSCI indices belong to the most common benchmarks by foreign institutional investors and therefore foreign investors adapt to index reconstitutions. Regarding long-term orientation they argue that index inclusion is based on mainly mechanical rules. Therefore it should not directly affect long-term orientation, especially after controlling for index-inclusion relevant variables.[158] Their argumentation regarding the instrument's suitability in the long-term orientation context is transferable to this thesis. Bena et al. (2017) utilize the MSCI ACWI in an additional way as an instrument. In a robustness test they limit their sample to the 10% bandwidth of the number of companies around the country-year threshold for index inclusion. This approach allows a similar environment as the Russell 1000/2000 cut-off which is often used in the literature. This leads to the sample consisting of more similar firms and quasi-random index inclusion, allowing better comparability between included and non-included companies. Their results are similar to those of their full sample.[159]

4.2.2. Requirements & suitability

A suitable instrument must satisfy two conditions: The relevance condition and the exclusion restriction.[160] The relevance condition requires the instrument to have an effect on the endogenous instrumented variable after controlling for all other exogenous variables. The satisfaction of this condition is testable. Looking at the first stage of the 2SLS regression in chapter 4, a γ_1 which is significantly different from zero satisfies the relevance condition. To test the relevance condition, one should use the F-statistic, which is the squared t-statistic in the single-instrument case. Hereby, a F-statistic above 10 in the first stage indicates a strong instrument. Meanwhile, the exclusion restriction requires the covariance of the instrument and the error-term of the OLS regression to be zero: $cov(MSCI, \epsilon) = 0$. If the exclusion restriction holds, the only influence the instrument has on the dependent variable is through its effect on the instrumented variable. The exclusion restriction cannot be tested. Therefore it should be conclusively argued why the exclusion restriction is expected to hold.[161] In this thesis, membership to the MSCI ACWI is used to instrument for passive ownership. I expect the relevance condition to hold, because passive institutional investors need to comply with changes in the index to minimize tracking error.[162] Existing research already documented that MSCI ACWI membership is affecting foreign ownership due to foreign investors heavily benchmarking the MSCI ACWI.[163] Compared to foreign ownership, the effect on passive ownership should be even stronger, because the business model of passive investors forces them to minimize tracking error. In chapter 4.3.2 this assumption gets confirmed. The results of the first stages suggest a positive association between MSCI ACWI inclusion and passive ownership. With a F-Statistic above 10, MSCI ACWI membership seems to be a strong instrument in the passive investor context. I also expect the exclusion condition to hold. Additions and exclusions to the index follow a mainly[164] mechanical rule based on float-adjusted market capitalization. Therefore, I do not see how index membership should influence long-term orientation directly, especially after controlling for the variable affecting index membership and index weights: Float-adjusted market capitalization.[165] Additionally, Bena et al. (2017) argue that the MSCI ACWI represents a major part of a country's investable equities, meaning stocks are added as soon as they become a relevant part of the investable equity universe and not because of firm-specific factors such as expected long-term orientation.[166]

4.3. Results

In the following, the results of the regression analyses are presented. This includes the results of the baseline OLS regressions, the two stages of the 2SLS regressions, and several robustness tests. In Table 2 the results of the main analyses are summarized. The detailed regression tables can be found in Appendix 6, 7, and 8. All coefficient interpretations in the following chapters are 'ceteris paribus' interpretations.

4.3.1. Baseline regressions

The main results of the OLS regressions are shown in the sections 'OLS: Full Model' and 'OLS: Bena Model' of Table 2. The detailed regression tables that include the coefficients of the control variables are shown in Appendix 6. In general, the results support the hypothesis that passive investors have a positive impact on the long-term orientation of their portfolio firms. This is in line with the majority of literature discussed in chapter 2.3.2. Column (1) of Table 2 suggests a positive and significant association between passive ownership and combined CAPEX and R&D investment for both tested models. A 1% increase in passive ownership is associated with a 0.00055 and 0.00058 increase in scaled-to-asset investment in tangible and intangible assets, which is 0.74% and 0.78% of its sample mean. The results for the future three-year average of combined CAPEX and R&D expenses in column (2) are similar. A 1% increase in passive ownership is related to a 0.00054 and 0.00056 increase of the future three-year average of investment in tangible and intangible assets, which is 0.74% to 0.77% of its sample mean. In column (3) and (4) CAPEX and R&D expenses are analyzed individually.

[158] See Bena et al., 2017, pp. 128-130; Luong et al., 2017, pp. 1452-1453, 1470-1471; Shin & Park, 2020, p. 9.
[159] See Bena et al., 2017, pp. 124, 132.
[160] See Roberts & Whited, 2013, p. 511-512.
[161] See Bena et al., 2017, pp. 130-131; Cameron & Miller, 2015, p. 352; Roberts & Whited, 2013, pp. 511-515.
[162] See Bebchuk & Hirst, 2019, pp. 2043-2044; Schmidt & Fahlenbrach, 2017, p. 286; Tian & Yang, 2021, p. 4.
[163] See Bena et al., 2017, pp. 130-131; Luong et al., 2017, pp. 1470-1471; Shin & Park, 2020, p. 9.
[164] As discussed in chapter 4.2 the construction and rebalancing of MSCI indices is a complex process. Nevertheless, float-adjusted market capitalization can be seen as the fundamental criterion.
[165] See Bena et al., 2017, p. 130; B. B. Francis et al., 2020, pp. 36, 48; Schmidt & Fahlenbrach, 2017, p. 292; Shin & Park, 2020, p. 9.
[166] See Bena et al., 2017, p. 130.

Table 2: Summary of results: OLS and IV regressions.

For both regression types, two models as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 6, 7, and 8. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OLS: Full Model								
PO	0.055***	0.054***	0.042*	0.014**	0.749**	0.030	-1.971**	0.026
	(0.018)	(0.017)	(0.022)	(0.006)	(0.277)	(0.072)	(0.711)	(0.112)
Observations	124,616	99,895	124,616	124,753	123,922	90,631	74,127	128,290
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Full Model								
PO(fit)	-0.054	-0.086	-0.058	0.008	5.402***	0.867**	1.060	1.450**
	(0.084)	(0.077)	(0.059)	(0.046)	(1.342)	(0.378)	(2.820)	(0.546)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	124,616	99,895	124,616	124,753	123,922	90,631	74,127	128,290
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

The magnitudes and significances of the coefficients indicate that the positive effect of passive ownership on long-term investment is rather driven by CAPEX than R&D. In column (3) both models have a positive and significant coefficient for passive ownership. A 1% increase in passive ownership is associated with an increase of 0.00042 and 0.00055 in scaled-to-assets CAPEX, which represents 0.78% and 1.02% of its sample mean. For scaled-to-assets R&D expenses, the results of both models in column (4) are different. While passive ownership is positively related with scaled-to-assets R&D expenses in the full-specification, for the model based on only Bena et al. (2017) control variables there seems to be no relation. In columns (5), (6), and (7) the results for the human capital-based measures are displayed. For the number of employees in column (5), the coefficient of passive ownership is positive and significant for both models. A 1% change in passive ownership is associated with an increase in employment by 0.75% and 1.29%, respectively. For scaled-to-sales staff costs in column (6), there is no evidence for an effect of passive investors. Column (7) and (8) show the results for average staff costs and scaled-to-sales SG&A expenses as the dependent variables. The coefficients for passive ownership on the logarithm of average staff costs are negative and significant for both models. A 1% increase in passive ownership is related to a decrease in the average staff costs per employee by 1.97% and 1.60%, respectively. This indicates that passive investors foster low-qualification jobs and lower wages.[167] The decreasing wage level might relate to the increasing employee number, if the new employees' wage is below the firm's average. For investment in organizational capital in column (8), no effects of passive investors can be identified.

The results of the OLS regressions suggest that passive investors influence certain long-term orientation facets. While their effects on investment input and number of employees seem to be positive, the average wage level is affected negatively. For staff costs and investment in organizational capital, no effect can be identified.

[167] See Bena et al., 2017, p. 126.

4.3.2. Two stage least squares regressions

Due to endogeneity concerns, the inference of the OLS results from chapter 4.3.1 may not hold. To address these concerns, an IV approach as described in chapter 4 is implemented. The first stages of the 2SLS regressions support the appropriateness of the MSCI ACWI as an instrument for passive ownership. This is in consonance with hypothesis 1 of this thesis. The second stages show that endogeneity affects the results of the baseline regressions. The results of the second stages strengthen hypothesis 3 of this thesis, regarding passive investors' positive impact on human and organizational capital. Hypothesis 2 is only partially supported.

First stages

Appendix 7 shows the first stages of the 2SLS regressions. Based on the first stages, hypothesis 1 of this thesis can be tested. For every model the regression coefficient of passive ownership is positive and significant. The coefficients range from 0.011 to 0.013. This suggests that passive investors increase their holdings in firms, after they get included to the MSCI ACWI, by 1.1% to 1.3%. This effect is economically significant, considering this implies a 55% to 65% change compared to the sample mean of passive ownership (2.0%). The F-statistics of all models are far above the threshold of 10, which is used by literature to determine weak instruments.[168] Therefore, MSCI ACWI membership seems to be a strong instrument for passive ownership. The results of the first stages verify the relevance condition of the MSCI ACWI as an instrument for passive ownership. They support hypothesis 1 of this thesis regarding the positive effect of MSCI ACWI affiliation on passive ownership.

Second stages

The sections 'IV: Full Model' and 'IV: Bena Model' of Table 2 show the results for the second stages of the 2SLS regressions. The results suggest that the outcome of the baseline regressions from chapter 4.3.1 were subject to endogeneity. Therefore, plausible inference of the baseline results is not possible.[169] After instrumenting passive ownership by MSCI ACWI membership, the results for the investment input measures as the dependent variables seem to generally lose their significance. Meanwhile, the results for the human and organizational capital measures gained significance. The described effects of passive ownership in this chapter stem from exogenous variation. Columns (1) and (2) show that the passive ownership coefficients for both combined measures of CAPEX and R&D lost their significance for all models. Passive investors seem not to affect the combined long-term investment in tangible and intangible assets. The results of the individual components in columns (3) and (4) also change. For R&D, both models are insignificant. Therefore, I find no evidence that passive investors foster investment in R&D activities. For CAPEX the model with the Bena-specification of control variables is still positive and significant. A 1% increase in passive ownership is associated with an increase in scaled-to-assets CAPEX by 0.00126, which is 2.33% of its sample mean. It must be noted that this effect could be driven by omitting control variables, because for the model with the full-specification, the coefficient for passive ownership lost significance, while ROA and FLOAT are strongly significant. In general, the measures for investment in tangible and intangible assets seem to have lost its significance, after instrumenting for passive ownership by MSCI ACWI membership. This indicates that reverse causation is a problem in the 'passive investor' context and therefore passive investors tend to prefer firms with better investment input expectations. Other explanations for the occurrence of endogeneity could be omitted variables or measurement errors.[170] The human capital-based measures and the organizational capital measure behave similarly. In columns (5) and (6) the results for the number of employees and scaled-to-sales staff costs are displayed. The passive ownership coefficients regarding the logarithm of the number of employees are still positive and significant for both models. Interestingly, the magnitude of the coefficients is now considerably higher compared to the baseline results. A 1% increase in passive ownership is related to a 5.4% and 15.6% increase in the number of employees. This indicates that passive investors heavily increase the number of employees in their portfolio companies. For the scaled-to-sales staff costs, the coefficients are now positive and significant. A 1% increase in passive ownership is associated with an increase in scaled-to-sales staff costs by 0.00867 and 0.00626, which is 4.90% and 3.54% of its sample mean. In columns (7) and (8) the results for the average staff costs and scaled-to-sales SG&A expenses can be seen. For the logarithm of average staff costs, both models changed signs and lost their significance for the passive ownership coefficients. Therefore, unlike the baseline regressions suggested the 2SLS regressions deliver no evidence that passive investors foster low-skilled jobs. Regarding SG&A expenses, the results indicate that passive investors promote investment into organizational capital. Compared to the baseline regressions the passive ownership coefficients for both models are significant. A 1% increase in passive ownership is associated with an increase in scaled-to-sales SG&A expenses by 0.01450 and 0.01361, which is 4.52% and 4.24% of its sample mean.

The results of the second stages of the 2SLS regressions support hypothesis 3 of this thesis. Passive investors seem to encourage investment in human and organizational capital. There is only slight evidence that they foster CAPEX, and no evidence for R&D activities. This is contrary to the findings of the majority of the literature. Those differences might stem from the used sample, which consists of more recent data and more diverse firms (size-wise and country-wise) than the often-used Russell 1000/2000 setting. The results also express the urgency to account for endogeneity in the 'passive investors' research.

[168] See Bena et al., 2017, pp. 130-131.

[169] See Roberts & Whited, 2013, p. 494.

[170] See Roberts & Whited, 2013, pp. 498-504.

4.3.3. Robustness tests

The following analyses will be performed to investigate the robustness of the main results from chapter 4.3. Those robustness test address: the results' comparability between long-term orientation measures, country and market type analyses, size groups, alternative passive ownership definitions, a bandwidth analysis, alternative lagging periods, and additional control variables. Due to reasons of comprehensibility, most analyses are built following the Bena-specification for the OLS and IV regressions. In the chapters themselves summary tables will be presented. Detailed regression tables including the coefficients for all control variables can be found in the appendix. Unless otherwise stated the following coefficient interpretations focus on the IV estimations. Therefore, the described effects of passive ownership stem from exogenous variation.

Analysis with same amount of observations

In chapter 4.3, the effect of passive ownership on different long-term orientation measures have been tested. In Table 2, the number of observations of the models differ depending on the included control variables and the long-term orientation measure. To lose as little data as possible, only the observations which have missing values in variables that are used in a model have been excluded. For a comparison of the effect of passive ownership between the different long-term orientation measures, a uniformly sample is needed. Therefore, I will use the sample data and exclude all observations which have missing values in the dependent or independent variables. This allows to repeat the regressions with the same number of observations for all models and long-term orientation measures. The reduced sample consists of 46.363 observations. The detailed regression tables including the coefficients for all control variables can be found in Appendix 9. Table 3 presents the consolidated results.

In the OLS models the coefficients of passive ownership for the four investment input measures in columns (1) to (4) lose their significance. For the human and organizational capital measures in columns (5) to (8), the results are robust to the ones of the total sample. For the IV models, the positive and significant coefficient of passive ownership for the CAPEX model following the Bena-specification is lost. Also, for the staff cost model both IV models lost significance for passive ownership. The positive effect of passive ownership on the number of employees still holds for both models. Also, the effect of passive investors on firms' scaled-to-sales SG&A expenses is still robust for the smaller sample.

The generally decreased levels of significance might be explained by the lower number of observations, which leads to larger standard errors.[171] In summary, the effect of passive ownership is most robust for the results of the human and organizational capital measures. This supports the IV results from the main analysis that suggest that passive investors rather impact human and organizational capital measures of long-term orientation, than investment in tangible and intangible assets. It should also be noted that the results of the IV regressions seem to be more robust regarding the reduced sample compared to those of the OLS regressions.

Analysis by country

Empirical evidence suggests that long-term orientation facets like innovation are strongly dependent on a country's culture and its equity market development.[172] Therefore, this section aims to understand whether the main results from chapter 4.3 are driven by specific countries. Because US stocks represent a major part of the total sample, separate analyses for US and non-US firms will be conducted. For globally important markets such as Germany, China, Japan, and Great Britain, additional analyses will be performed. Because existing research mainly focuses on US firms, this section might help to explain the differences of the main results compared to literature.

Table 4 shows that the main results are clearly not driven by US stocks. Surprisingly, for US stocks the MSCI ACWI seems not to be an appropriate instrument for passive ownership. This might be explained by a better predictive ability of the mostly US-based investment sponsors. In their home market they could be able to better predict future constituents and therefore act in advance to minimize transaction costs. It should be noted that the low observation numbers for the wage-based measures in columns (6) and (7) are not surprising, because wage data is less likely to be reported in the US.[173] For non-US stocks the MSCI ACWI fulfils the relevance condition. The results indicate that passive investors strongly influence their non-US portfolio companies regarding human and organizational capital. Compared to the results from the main analysis instead of CAPEX the combined investment input seems to increase with higher levels of passive ownership. At least for non-US companies the results support all three hypotheses of this thesis. For the sample limited to German firms, I find that only scaled-to-sales staff costs are affected by passive ownership. The coefficient's sign is now negative compared to the positive sign from the main analysis. This suggests that German firms reduce staff costs if passive ownership increases. This might weaken long-term orientation. For Chinese firms, a positive effect of passive ownership on investment input can be identified. Also, the number of employees and their average wage increases with higher levels of passive ownership. Japanese firms seem to be less influenced by passive investors. Only the scaled-to-sales staff costs are positively affected by higher passive ownership. For Great Britain, the investment input measures and number of employees are positively affected by passive investors.

The impact of passive investors differs depending on the firms' countries of origin. This might be explained by regulatory or cultural differences. Overall, the results indicate a positive effect of passive investors on the long-term orienta-

[171] See Foster, Stine, & Waterman, 1998, p. 91.

[172] See Acharya & Subramanian, 2009, p. 4986; Brown, Martinsson, & Petersen, 2013, p. 1542; Hsu, Tian, & Xu, 2014, p. 133.

[173] See Bena et al., 2017, p. 140.

Table 3: Summary of results: Same amount of observations.

For both regression types, two models as defined in chapter 4.1.2 are built. For all variables used in those models, the observations with NAs have been excluded. This allows to analyze the same number of observations in all models. Detailed regression tables can be found in Appendix 9. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reminder: Main analysis								
OLS: Full Model								
PO	0.055***	0.054***	0.042*	0.014**	0.749**	0.030	-1.971**	0.026
	(0.018)	(0.017)	(0.022)	(0.006)	(0.277)	(0.072)	(0.711)	(0.112)
Observations	124,616	99,895	124,616	124,753	123,922	90,631	74,127	128,290
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Full Model								
PO(fit)	-0.054	-0.086	-0.058	0.008	5.402***	0.867**	1.060	1.450**
	(0.084)	(0.077)	(0.059)	(0.046)	(1.342)	(0.378)	(2.820)	(0.546)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	124,616	99,895	124,616	124,753	123,922	90,631	74,127	128,290
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
Same amount of observations								
OLS: Full Model								
PO	0.023	-0.003	0.031	-0.007	1.294***	0.102	-1.251*	0.140
	(0.035)	(0.026)	(0.031)	(0.009)	(0.439)	(0.067)	(0.629)	(0.162)
OLS: Bena Model								
PO	0.031	-0.002	0.047	-0.018*	1.377***	0.098	-1.271*	0.162
	(0.037)	(0.027)	(0.034)	(0.009)	(0.454)	(0.067)	(0.644)	(0.160)
IV: Full Model								
PO(fit)	0.021	-0.074	-0.055	0.061	2.717**	0.388	-1.842	1.511**
	(0.169)	(0.165)	(0.147)	(0.055)	(1.014)	(0.304)	(3.123)	(0.535)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IV: Bena Model								
PO(fit)	0.142	-0.041	0.094	0.023	6.326***	0.644	-1.114	2.495**
	(0.167)	(0.167)	(0.150)	(0.054)	(1.402)	(0.392)	(3.088)	(0.899)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46,363	46,363	46,363	46,363	46,363	46,363	46,363	46,363
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

tion of their portfolio companies.

Table 4: Summary of results: Individual countries.

This table shows the results for different analyses based on the country-level. All OLS and IV regressions are built following the Bena et al. (2017) model as defined in chapter 4.1.2. Detailed regression tables can be found in Appendix 10. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level (for 'Non-US') and the year level (for individual countries) and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Non-US								
OLS: Bena Model								
PO	0.050*	0.019	0.054*	-0.008	1.605***	-0.045	-1.868**	-0.099
	(0.026)	(0.024)	(0.028)	(0.011)	(0.489)	(0.090)	(0.731)	(0.138)
Observations	102,952	81,082	102,952	103,110	102,515	98,110	80,771	105,599
IV: Bena Model								
PO(fit)	0.190*	-0.026	0.147	0.045	17.224***	0.606**	3.620	1.490***
	(0.095)	(0.092)	(0.092)	(0.033)	(3.460)	(0.252)	(2.624)	(0.505)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	102,952	81,082	102,952	103,110	102,515	98,110	80,771	105,599
US								
IV: Bena Model								
PO(fit)	-2.723	-4.012	-0.182	-2.663	86.951***	16.119	1.146	8.278
	(2.140)	(4.083)	(0.956)	(2.039)	(27.346)	(11.651)	(10.414)	(4.831)
Instr. strong?	No	No	No	No	No	No	No	No
Observations	34,957	28,638	34,957	34,989	35,376	2,673	2,585	34,886
DE								
IV: Bena Model								
PO(fit)	0.104	-0.148	-0.014	0.068	3.013	-0.599**	-0.090	-0.043
	(0.215)	(0.157)	(0.209)	(0.138)	(2.251)	(0.211)	(1.272)	(0.505)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,005	2,484	3,005	3,009	3,011	2,821	2,809	2,818
CN								
IV: Bena Model								
PO(fit)	0.680***	0.212	0.548**	0.134**	13.541**	0.506	9.015***	0.268
	(0.235)	(0.184)	(0.229)	(0.050)	(5.887)	(0.317)	(2.578)	(0.560)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,651	12,360	18,651	18,658	18,683	17,973	17,793	18,727
JP								
IV: Bena Model								
PO(fit)	0.029	-0.003	0.083	-0.055	10.500	0.529*	1.903	0.349
	(0.210)	(0.158)	(0.139)	(0.096)	(6.317)	(0.285)	(1.355)	(0.451)
Instr. strong?	No	No	No	No	No	Yes	Yes	No
Observations	23,332	18,923	23,332	23,338	23,247	10,731	10,620	23,117
GB								
IV: Bena Model								
PO(fit)	0.351*	0.375**	0.195	0.144**	19.257***	0.717	2.945	1.549
	(0.172)	(0.130)	(0.161)	(0.054)	(5.365)	(0.450)	(1.848)	(1.485)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,230	5,758	7,230	7,246	7,347	6,932	6,868	5,816
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Analysis by market type

In chapter 4.3.3 separate analyses for the most important countries have been performed. Now analyses on the market type level will be conducted. This allows to check two things. First, if the passive investors' impact on long-term orientation depends on the market type of the firms. My underlying rationale is that in developed markets the channels of engagement might also be more developed, allowing easier exertion of influence. Second, if the individual parts of the MSCI ACWI - the MSCI WI and MSCI EM - also suit as an instrument for passive ownership. This can be tested in the first stages of the IV regressions.

Table 5 presents the results of the analysis regarding the market types. As expected, the instrument is suitable for both, developed and emerging markets. This means that the MSCI WI and the MSCI EM suit as instruments for passive ownership for their specific market types. For both market types, passive investors seem to positively affect long-term orientation. Their positive effect on the number of employees and SG&A expenses is similar for developed and emerging markets. Differences occur in the type of investment input and wage-based measures. While for developed markets passive investors enhance CAPEX and average staff costs, for emerging markets they seem to focus on R&D and total staff costs.

Passive investors enhance long-term orientation in both, developed and emerging markets. As in the main analysis the most significant effects are identified for the human and organizational capital measures. Additionally, this analysis delivers evidence that the MSCI WI and MSCI EM are appropriate instruments for passive ownership.

Analysis by size

To discover if the portfolio companies' size affects the main results, separate analyses for two size groups will be conducted. The threshold of the sample split is determined by the rounded median market capitalization of the sample ($694 million). For better comparability of the two size groups, the median is calculated after omitting all missing values.[174] The companies' size could affect firm characteristics like management power. Therefore, I expect that there will be differences between the size groups.

The results of the IV regressions in Table 6 show differences regarding the size groups. The passive investors' effect on the number of employees seems to be driven by companies larger than the sample median. Meanwhile, their effects on scaled-to-sales SG&A expenses seem to stem from companies, which are smaller than the sample median. Regarding investment input, average wage level, and staff costs no influence of passive investors can be identified. As in chapter 4.3.3 the overall significance level might be lower due to the reduced sample size.

Analysis by time

Because of the extreme growth of passive investors, it seems reasonable that the magnitudes and significances of their effects on firms' long-term orientation have increased over time.[175] Their growing power and public pressure might foster their engagement. I hypothesize that the influence of passive investors is time-variant and became stronger in the recent past.

Table 7 shows that the effect of passive investors on firms' long-term orientation is varying over time. At the beginning of the sample period, they focused on investment in organizational capital by enhancing scaled-to-sales SG&A expenses. Later their impact shifted towards investment in human capital and investment in tangible and intangible assets. The positive and significant coefficients of passive ownership for the investment input models in columns (1) and (3) indicate that recently passive investors began to focus on enhancing investment input of their portfolio companies. It's also notable that the magnitude of the effects on the human capital-based measures in columns (5) and (7) increased recently. The findings of this robustness test support my assumption that the effect of passive investors on long-term orientation increased with their growth.

Alternative definitions of passive ownership

As described in chapter 2.1 the 'passive investors' literature uses different measures to proxy for passive ownership. In previous regressions PO was used. PO contains all holdings of funds that follow an index strategy. The main results might depend on the choice of the passive ownership proxy. Therefore, I test the two additional variables of passive ownership described in chapter 4.1.2. First, PO_p13F, which contains not only all index fund holdings, but also an investment sponsors' proportion of non-fund holdings that are expected to be passively held. Second, PO_BT, which only contains the index fund holdings of the 'Big Three'. In comparable literature researchers commonly examined the sensitivity of their analysis to alternative definitions of passive ownership. Their findings are usually robust to alternative definitions.[176] Therefore, I expect my results to be also robust to alternative measures of passive ownership.

Table 8 shows that the results for PO_p13F and PO_BT are robust to the passive ownership measure used in the main analysis. Interestingly, the magnitudes of the coefficients for the 'Big Three' passive ownership measure are consistently higher compared to those of the main analysis. This indicates that especially the 'Big Three' focus on enhancing the long-term orientation of their portfolio companies. This would be in line with their public emphasizing of long-term orientation and their role as engaged stewards.[177]

Analysis with bandwidths

[174] Compared to chapter 4.3.3 the number of total observations is smaller, because the market capitalization variable, which is used for the split leads to 13 additional missing values.

[175] See Dong & Eugster, 2017, pp. 26-27.

[176] See Appel et al., 2016, pp. 132-133; Dong & Eugster, 2017, p. 26; B. B. Francis et al., 2020, p. 59.

[177] See Fink, 2014; Fink, 2015; Fink, 2016; Fink, 2017.

Table 5: Summary of results: Market type.

This table shows the results of separate analyses for developed and emerging markets. For the OLS and IV regressions, the models were built using the Bena-specification as defined in chapter 4.1.2. Detailed regression tables can be found in Appendix 11. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reminder: Main analysis								
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
DM								
OLS: Bena Model								
PO	0.035**	0.041**	0.018	0.014**	1.174***	0.005	-0.252	0.089
	(0.014)	(0.014)	(0.015)	(0.005)	(0.237)	(0.141)	(0.905)	(0.143)
Observations	96,864	78,841	96,864	96,991	97,814	49,893	45,816	91,954
IV: Bena Model								
PO(fit)	0.088	0.004	0.141*	-0.059	17.436***	0.514	2.637*	1.308**
	(0.122)	(0.113)	(0.069)	(0.080)	(2.385)	(0.326)	(1.426)	(0.538)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	96,864	78,841	96,864	96,991	97,814	49,893	45,816	91,954
EM								
OLS: Bena Model								
PO	0.034	-0.006	0.034	0.003	2.798**	0.146*	-0.356	0.263
	(0.043)	(0.053)	(0.046)	(0.011)	(1.323)	(0.083)	(0.681)	(0.247)
Observations	41,045	30,879	41,045	41,108	40,077	50,890	37,540	48,531
IV: Bena Model								
PO(fit)	0.123	-0.269	0.047	0.088**	11.925***	0.780**	3.677	2.095**
	(0.197)	(0.183)	(0.182)	(0.035)	(2.083)	(0.367)	(4.028)	(0.740)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,045	30,879	41,045	41,108	40,077	50,890	37,540	48,531
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:*p<0.1; **p<0.05; ***p<0.01

Existing 'passive investors' literature often uses the Russell 1000/2000 setting. In this setting the sample is limited to a bandwidth of firms around the threshold of the two indices. This allows researchers to examine firms that have similar characteristics, but whose index assignment can be assumed to be random.[178] In this thesis the MSCI ACWI is used as the identification strategy. To adapt the bandwidth analysis, I calculate for every country-year combination the threshold of index assignment. I define the threshold as the floating market capitalization of the last included stock for each country and each year.[179] For every country-year combinations'

[178] See Glossner, 2019, pp. 1-2.

[179] Hereby, I use the lagged floating market capitalization and lagged index membership. This allows me to make sure that a dependent variable in t is only explained by independent variables from t-1 for the years a firm has in fact been close to the index threshold in t-1.

Table 6: Summary of results: Firm size.

This table shows the results of the analysis by size group. The size threshold is defined as the sample median of market capitalization. For the calculation of the sample median, the sample excluding NAs as in chapter 4.3.3 is used. The rounded sample median is $694 million. Firm-year observations with a lower market capitalization in year t get assigned to the small group, while firm-year observations with a higher market capitalization get assigned to the large group. For both groups, the OLS and IV regressions following the Bena model as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 12. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reminder: Main analysis								
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
Mkt. cap. < Median								
OLS: Bena Model								
PO	0.040	-0.025	0.019	0.016	1.422***	0.083	-0.834	0.218
	(0.073)	(0.041)	(0.064)	(0.018)	(0.382)	(0.192)	(0.751)	(0.335)
Observations	23,177	23,177	23,177	23,177	23,177	23,177	23,177	23,177
IV: Bena Model								
PO(fit)	0.706	-0.170	0.228	0.339	0.771	2.162	1.660	6.140*
	(0.668)	(0.465)	(0.452)	(0.339)	(8.714)	(1.567)	(9.988)	(3.394)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,177	23,177	23,177	23,177	23,177	23,177	23,177	23,177
Mkt. cap. >= Median								
OLS: Bena Model								
PO	0.081*	0.055*	0.086**	-0.011	0.442	0.081**	-0.856	0.198
	(0.039)	(0.029)	(0.040)	(0.012)	(0.389)	(0.038)	(0.499)	(0.188)
Observations	23,173	23,173	23,173	23,173	23,173	23,173	23,173	23,173
IV: Bena Model								
PO(fit)	0.201	0.025	0.162	0.019	5.192***	0.145	-1.235	0.817
	(0.190)	(0.178)	(0.172)	(0.040)	(1.448)	(0.233)	(3.061)	(0.507)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,173	23,173	23,173	23,173	23,173	23,173	23,173	23,173
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

threshold the next 10% of firms which have a higher floating market capitalization and the next 10% that have a lower are added. Because the firms around the threshold are expected to be similar, industry and country fixed effects are included instead of firm fixed effects. This approach is similar to the one Bena et al. (2017) apply in their robustness tests. In their main analysis they also use the MSCI ACWI as an instrument with year and firm fixed effects and then perform a robustness check based on the 10% bandwidths with year, country, and industry fixed effects. Their results are not sensitive to

Table 7: Summary of results: Different time periods.

The analysis is conducted for three subsamples: 1. 2000-2006; 2. 2007-2013; 3. 2014-2019. For those three subsamples, the OLS and IV regressions following the model of Bena et al. (2017) as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 13. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reminder: Main analysis								
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
2000-2006								
OLS: Bena Model								
PO	-0.035	0.032	-0.014	-0.013	1.452*	0.245	-0.064	-0.035
	(0.044)	(0.034)	(0.037)	(0.014)	(0.720)	(0.171)	(0.965)	(0.242)
Observations	31,458	28,951	31,458	31,516	31,562	12,997	12,197	28,466
IV: Bena Model								
PO(fit)	-0.243	-0.211	-0.064	-0.162	10.704	2.373	1.049	3.619***
	(0.562)	(0.244)	(0.436)	(0.134)	(5.655)	(1.502)	(6.210)	(0.728)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31,458	28,951	31,458	31,516	31,562	12,997	12,197	28,466
2007-2013								
OLS: Bena Model								
PO	0.071*	0.094***	0.068*	0.010	1.286***	-0.120	0.971	0.188
	(0.030)	(0.024)	(0.028)	(0.005)	(0.289)	(0.149)	(0.670)	(0.183)
Observations	46,860	44,118	46,860	46,943	46,859	29,591	24,357	45,045
IV: Bena Model								
PO(fit)	0.181	0.017	0.148	0.038	11.059**	-0.005	3.916**	0.183
	(0.182)	(0.137)	(0.179)	(0.040)	(3.024)	(0.382)	(1.319)	(0.579)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46,860	44,118	46,860	46,943	46,859	29,591	24,357	45,045
2014-2019								
OLS: Bena Model								
PO	0.044**	0.024	0.044*	-0.004	1.456***	0.053	-1.734	-0.191*
	(0.014)	(0.011)	(0.017)	(0.002)	(0.223)	(0.064)	(0.866)	(0.092)
Observations	59,591	36,651	59,591	59,640	59,470	58,195	46,802	66,974
IV: Bena Model								
PO(fit)	0.488**	0.102	0.500**	-0.003	13.733**	0.515	6.566*	1.436
	(0.169)	(0.113)	(0.169)	(0.036)	(3.652)	(0.520)	(2.842)	(1.057)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	59,591	36,651	59,591	59,640	59,470	58,195	46,802	66,974
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:*p<0.1; **p<0.05; ***p<0.01

Table 8: Summary of results: Alternative passive ownership definitions.

This table shows the results for alternative measures of passive ownership. PO_13k contains not only passive fund holdings but also an index fund sponsors out-of-fund holdings which are expected to be held passively. PO_BT contains only the passive fund holdings of BlackRock, Vanguard, and State Street. For both alternative definitions, the OLS and IV regressions following the Bena model as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 14. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reminder: Main analysis								
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
PO_13k								
OLS: Bena Model								
PO	0.045***	0.044***	0.040**	0.004	1.280***	-0.007	-1.326**	-0.048
	(0.015)	(0.012)	(0.018)	(0.006)	(0.134)	(0.073)	(0.613)	(0.089)
Observations	137,912	109,723	137,912	138,102	137,895	100,786	83,359	140,488
IV: Bena Model								
PO(fit)	0.068	-0.037	0.096**	-0.028	11.544***	0.591**	3.145	1.016***
	(0.072)	(0.050)	(0.045)	(0.042)	(1.744)	(0.230)	(2.336)	(0.289)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,912	109,723	137,912	138,102	137,895	100,786	83,359	140,488
PO_BT								
OLS: Bena Model								
PO	0.075**	0.080***	0.067*	0.004	1.617***	0.048	-2.355*	-0.043
	(0.028)	(0.025)	(0.034)	(0.011)	(0.247)	(0.133)	(1.203)	(0.163)
Observations	137,896	109,708	137,896	138,086	137,877	100,770	83,343	140,475
IV: Bena Model								
PO(fit)	0.121	-0.065	0.169**	-0.049	20.542***	0.841**	4.526	1.774***
	(0.115)	(0.094)	(0.069)	(0.080)	(1.943)	(0.321)	(3.336)	(0.509)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,896	109,708	137,896	138,086	137,877	100,770	83,343	140,475
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

this bandwidth approach.[180] Therefore, I also expect similar results compared to the main analysis.

Table 9 shows that the results are mostly similar to the main analysis. The only exceptions are the positive and significant passive ownership coefficients for scaled-to-assets R&D in column (4) and average staff costs in column (7). Also, within the bandwidth no association between passive ownership and scaled-to-assets CAPEX can be identified. It is noteworthy that the magnitudes of the passive ownership coefficients are considerably larger compared to those of the main analysis.

Because firm fixed effects have been excluded, the results

[180] See Bena et al., 2017, pp. 132, 134.

Table 9: Summary of results: Bandwidth analysis.

This table shows the results for the bandwidth analysis. For each year and each country, the floating market capitalization of the last included stock in the MSCI ACWI is used as the threshold. Based on this threshold for each year and each country the 10% of the stocks that are smaller and the 10% of the stocks that are larger than that threshold are used for the bandwidth analysis. This allows to analyze stocks with similar characteristics. For the OLS and IV regressions, the models following the Bena-specification as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 15. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reminder: Main analysis								
OLS: Bena Model								
PO	0.058***	0.056***	0.055**	0.001	1.288***	-0.007	-1.602**	-0.029
	(0.019)	(0.016)	(0.023)	(0.007)	(0.184)	(0.078)	(0.719)	(0.124)
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
IV: Bena Model								
PO(fit)	0.090	-0.050	0.126**	-0.037	15.571***	0.626**	3.362	1.361***
	(0.087)	(0.070)	(0.054)	(0.060)	(1.949)	(0.245)	(2.483)	(0.391)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,909	109,720	137,909	138,099	137,891	100,783	83,356	140,485
10% bandwidth								
OLS: Bena Model								
PO	0.035**	0.020	0.008	0.020*	4.680***	0.388***	-1.622***	0.806***
	(0.012)	(0.015)	(0.010)	(0.011)	(0.581)	(0.106)	(0.353)	(0.179)
Observations	36,951	30,033	36,951	36,992	36,652	27,187	22,565	37,514
IV: Bena Model								
PO(fit)	0.238	0.296	-0.231	0.448*	54.186***	3.097***	7.655***	13.073***
	(0.187)	(0.171)	(0.138)	(0.221)	(18.697)	(0.841)	(1.596)	(3.214)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36,951	30,033	36,951	36,992	36,652	27,187	22,565	37,514
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:*p<0.1; **p<0.05; ***p<0.01

of this robustness test might be able to show the more sustained effects of an increase in passive ownership. Instead of focussing solely on index switchers, the exclusion of firm fixed effects allows the regressions to consider all firms. This allows to capture a broader and more sustained variation in passive ownership.[181]

Analysis with alternative lagging periods

In all previous regressions the long-term orientation measures in year t were explained by lagged passive ownership, MSCI ACWI membership, and control variables from the year t-1. One could argue that changes in the ownership structure take more time to show effect. The inclusion of the CAPEX+R&D (3yr avg.) variable already considered those concerns to some extent. Compared to CAPEX+R&D the results have been similar. Therefore, I do not expect large effects to take place much later than one period after a change in passive ownership. Nevertheless, I want to check, if using alternative lagging periods significantly changes the results. The conducted regressions are based on lagging periods of two, three, and five years.

Table 10 indicates that the long-term effects of passive ownership rather diminish investment input. Meanwhile, human and organizational capital investment seems to remain positively affected. Especially for number of employees the coefficient for passive ownership is positive and significant for all tested lagging periods.

Interpreting this analysis, it must be considered that between the index inclusions in years t-2, t-3, and t-5 and the value of the dependent variables in year t unobserved

[181] See Appel, Gormley, & Keim, 2020, pp. 26-27.

Table 10: Summary of results: Alternative lagging periods.

This table shows the results of the analysis with alternative lagging periods for the independent variables. In the main analysis in chapter 4.3 the independent variables were lagged by one period. Three alternative lagging periods are tested: two periods, three periods and five periods. For those three alternative lagging periods, the OLS and IV regressions following the Bena model as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 16. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Two periods								
OLS: Bena Model								
PO	0.054***	0.050***	0.046**	0.003	1.297***	-0.006	-1.347*	-0.092
	(0.015)	(0.016)	(0.019)	(0.008)	(0.182)	(0.068)	(0.758)	(0.073)
Observations	122,559	96,369	122,559	122,754	121,507	88,561	72,985	124,207
IV: Bena Model								
PO(fit)	-0.049	-0.162**	-0.002	-0.038	11.680***	0.204	3.381	0.607*
	(0.072)	(0.071)	(0.066)	(0.055)	(1.501)	(0.233)	(2.164)	(0.335)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	122,559	96,369	122,559	122,754	121,507	88,561	72,985	124,207
Three periods								
OLS: Bena Model								
PO	0.044**	0.039**	0.033*	0.009	1.305***	-0.015	-0.830	-0.120*
	(0.016)	(0.016)	(0.019)	(0.008)	(0.218)	(0.070)	(0.696)	(0.058)
Observations	108,397	83,273	108,397	108,585	106,289	77,278	63,279	109,099
IV: Bena Model								
PO(fit)	-0.172**	-0.252***	-0.113	-0.041	9.407***	0.090	3.446	0.074
	(0.076)	(0.072)	(0.078)	(0.064)	(1.347)	(0.198)	(2.160)	(0.302)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	108,397	83,273	108,397	108,585	106,289	77,278	63,279	109,099
Five periods								
OLS: Bena Model								
PO	0.013	0.012	0.007	0.006	1.284***	0.0001	-0.620	-0.226**
	(0.019)	(0.023)	(0.020)	(0.008)	(0.304)	(0.070)	(0.725)	(0.082)
Observations	82,005	63,029	82,005	82,145	79,436	56,693	46,461	81,469
IV: Bena Model								
PO(fit)	-0.333***	-0.375***	-0.272***	-0.040	4.579***	0.327	4.279**	-0.169
	(0.077)	(0.077)	(0.067)	(0.045)	(1.468)	(0.244)	(1.801)	(0.318)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82,005	63,029	82,005	82,145	79,436	56,693	46,461	81,469
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:*p<0.1; **p<0.05; ***p<0.01

changes such as another index switch might affect the results.

Analysis with additional ownership control variables

The 2SLS approach reduces omitted variable concerns.[182] Nevertheless, I cannot exclude the possibility that other investor types are correlated with long-term orientation, passive ownership, and MSCI ACWI membership. Thinkable variables are foreign and institutional ownership. Foreign investors have been found to be connected to MSCI ACWI membership and they also seem to positively impact long-term orientation.[183] If they are also associated with pas-

[182] See Roberts & Whited, 2013, p. 567.

[183] See Bena et al., 2017, pp. 123-124; Luong et al., 2017, p. 1470; Shin & Park, 2020, p. 9.

sive ownership, the results might be biased. Institutional investors should be positively connected with long-term orientation, because they seem to displace retail investors, which are not able to monitor and engage effectively.[184] Passive investors and institutional investors are expected to be correlated, because passive investors are a subgroup of institutional investors. If non-passive institutional investors are connected to MSCI ACWI inclusion, then the validity of the results might suffer. To eliminate concerns that foreign or institutional ownership affect the results, they are included as control variables.[185]

Table 11 shows that foreign and institutional ownership do not tackle the validity of the results of this thesis. The coefficients for passive ownership are robust compared to those of the main analysis.

4.4. Discussion

In the following, the underlying assumptions and the used methodology will be critically assessed. To tackle endogeneity, an IV approach is used. Even though this approach mitigates endogeneity concerns, there is no way to guarantee a sufficient removal.[186] This gets even more apparent considering that there are concerns regarding the exclusion restriction: Passive investors can manipulate the index reconstitution mechanisms by influencing the index providers. This can lead to a selection bias. A recent example is the successful engagement of passive investors against dual-class structure companies.[187] Analogous, they could influence the index providers to change the reconstitution mechanisms to systematically favor long-term oriented firms. I cannot exclude the possibility that passive investors influence the index providers. Firms that are expected to be long-term oriented might be more popular. Therefore, their market capitalization would be higher, and index inclusion get more likely. An association between long-term orientation and index inclusion seems thinkable, but I expect it to be unlikely because the MSCI ACWI aims to cover the investable equity universe of a country. Stocks are added because they are part of the investable equities of a country and not because of firm specific characteristics.[188]

Unobserved ownership dynamics such as ownership concentration might bias the findings. A study by J. Francis and Smith (1995) indicates that large blockholdings are correlated with innovation.[189] A rise in passive ownership is expected to foster blockholdings.[190] If blockholdings and MSCI ACWI inclusion are related in other ways than through passive ownership, then this might affect the results.[191] Because I have no data available for blockholdings, there is no control possible.

The results might also be influenced by passive investors trying to minimize rebalancing costs by predicting index switchers. This leads to a less pronounced passive ownership discontinuity at the index inclusion threshold.[192] Nevertheless, the relevance condition of the MSCI ACWI holds. The phenomenon of predicting index switchers seems not critically affect the results but must be considered when interpreting the magnitudes of the coefficients.

For the long-term orientation measures, the underlying assumption is that they aim at creating long-term value. Nevertheless, R&D expenses could also arise due to short-term focused or NPV negative projects, CAPEX could increase due to empire building, and staff costs could rise due to an uneconomical high wage level. Therefore, when analyzing the results it must be considered that long-term orientation is a latent variable and can only be proxied by the used measures.[193] One may also criticize that no measures for innovation output such as patents have been tested.[194] I argue that the sole intention to enhance long-term performance by increasing investment levels can be viewed as long-term orientation. Empirical evidence suggests a strong correlation between R&D expenses and patent numbers.[195] Therefore, by checking for R&D expenses I also get an indicator for passive investors' effect on innovation output. Nevertheless, it's not possible to directly evaluate the success of the investment activities by the results of this thesis.

Appel et al. (2020) argue that one should not rely on index switchers by including firm fixed effects. The estimates are noisier and the changes in passive ownership are rather transitory than sustained.[196] In the bandwidth analysis in chapter 4.3.3 firm fixed effects are substituted with country and industry fixed effects. The results are similar to the main analysis. Therefore, relying on index switchers seems to still capture sustained effects.

To address outliers, the continuous variables have been winsorized. While winsorizing is a standard practice in literature, there are also critics of this way of outlier treatment. Adams, Hayunga, Mansi, Reeb, and Verardi (2019) point out that winsorizing only affects univariate outliers. Outliers can also appear over several variables. While winsorizing manipulates univariate outliers, the effect of multivariate outliers might even increase.[197] Nevertheless, I followed the standard practice and performed winsorizing to the 1% and 99% quantile.

Finally, the findings of this thesis cannot be generalized to reconstitutions of other indices or general passive ownership changes. The IV approach explains the effects of passive

[184] See Mullins, 2014, p. 5.
[185] See B. B. Francis et al., 2020, p. 56.
[186] See Roberts & Whited, 2013, p. 567.
[187] See Fisch et al., 2020, pp. 51, 60-61; Robertson, 2019, pp. 795, 797-798.
[188] See Bena et al., 2017, p. 130.
[189] See J. Francis & Smith, 1995, p. 408.
[190] See Bebchuk & Hirst, 2019, p. 2033; Fichtner et al., 2017, pp. 306, 313; Fisch et al., 2020, pp. 61-62.
[191] See Angrist & Krueger, 2001, p. 79.
[192] See Wei & Young, 2017, pp. 1-5.
[193] See Brauer, 2013, p. 389.
[194] See Bena et al., 2017, pp. 125-127; Kim, Park, & Song, 2019, pp. 1168-1169.
[195] See Griliches, 1990, pp. 1701-1702.
[196] See Appel et al., 2020, pp. 26-27.
[197] See Adams et al., 2019, pp. 345, 347, 352.

Table 11: Summary of results: Additional ownership controls.

This table shows the results of the analysis with additional ownership control variables. The included controls are total institutional ownership and foreign ownership. For the OLS and IV regressions, both specifications as defined in chapter 4.1.2 are built. Detailed regression tables can be found in Appendix 17. The long-term orientation proxies are: (1) CAPEX+R&D | (2) CAPEX+R&D (3yr avg.) | (3) CAPEX | (4) R&D | (5) log(EMPLOYEES) | (6) STAFF_COST | (7) log(AVG_STAFF_COST) | (8) SG&A. The sample consists of firm-year combinations from Worldscope from 2000 to 2019. All independent variables are lagged by one year. The standard errors are clustered on the country and year level and are reported in the parentheses. All numeric variables are winsorized to their 1% and 99% quantile.

	Dependent variable:							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OLS: Full Model								
PO	0.059***	0.062***	0.043*	0.017***	0.432	-0.011	-1.655**	-0.003
	(0.019)	(0.018)	(0.022)	(0.006)	(0.259)	(0.075)	(0.678)	(0.103)
IO	-0.002	-0.004	0.001	-0.002**	0.184***	0.015	-0.140	-0.005
	(0.003)	(0.003)	(0.003)	(0.001)	(0.042)	(0.015)	(0.116)	(0.020)
IO_FOR	-0.003	-0.006	-0.002	-0.001	0.384***	0.028	-0.217	0.130***
	(0.006)	(0.007)	(0.005)	(0.002)	(0.120)	(0.026)	(0.130)	(0.042)
Observations	124,316	99,653	124,316	124,452	123,616	90,332	73,842	128,003
OLS: Bena Model								
PO	0.051**	0.060***	0.044*	0.005	0.463***	-0.031	-1.388*	-0.060
	(0.019)	(0.018)	(0.023)	(0.007)	(0.158)	(0.078)	(0.677)	(0.107)
IO	0.005*	-0.001	0.008***	-0.003***	0.499***	0.017	-0.114	-0.001
	(0.003)	(0.003)	(0.003)	(0.001)	(0.056)	(0.014)	(0.117)	(0.022)
IO_FOR	0.003	-0.005	0.004	-0.0003	0.640***	0.006	-0.096	0.117**
	(0.006)	(0.006)	(0.005)	(0.002)	(0.127)	(0.022)	(0.129)	(0.048)
Observations	137,583	109,462	137,583	137,772	137,554	100,461	83,051	140,171
IV: Full Model								
PO(fit)	-0.046	-0.071	-0.053	0.009	4.658***	0.940*	2.251	1.192*
	(0.079)	(0.074)	(0.052)	(0.046)	(1.226)	(0.459)	(3.498)	(0.570)
IO	0.006	0.004	0.008**	-0.002	-0.129	-0.023	-0.298	-0.094
	(0.006)	(0.007)	(0.003)	(0.004)	(0.105)	(0.028)	(0.197)	(0.063)
IO_FOR	-0.002	-0.006	-0.0003	-0.001	0.322*	-0.017	-0.389	0.108*
	(0.007)	(0.007)	(0.006)	(0.002)	(0.162)	(0.031)	(0.229)	(0.052)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	124,316	99,653	124,316	124,452	123,616	90,332	73,842	128,003
IV: Bena Model								
PO(fit)	0.082	-0.041	0.118**	-0.038	15.102***	0.730**	5.047	1.261**
	(0.090)	(0.073)	(0.053)	(0.062)	(2.292)	(0.326)	(3.377)	(0.485)
IO	0.003	0.006	0.003	-0.00002	-0.568**	-0.011	-0.350	-0.099*
	(0.005)	(0.006)	(0.004)	(0.005)	(0.201)	(0.022)	(0.203)	(0.056)
IO_FOR	0.003	-0.006	0.003	0.0001	0.488*	-0.029	-0.364	0.098*
	(0.006)	(0.006)	(0.004)	(0.002)	(0.255)	(0.027)	(0.247)	(0.053)
Instr. strong?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,583	109,462	137,583	137,772	137,554	100,461	83,051	140,171
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:*p<0.1; **p<0.05; ***p<0.01

investors on firms' long-term orientation due to exogenous passive ownership variation based on MSCI ACWI affiliation. The external validity is not given.[198] Therefore, changes in passive ownership due to other reasons than MSCI ACWI membership might yield different results.

[198] See Imbens & Angrist, 1994, p. 470; Roberts & Whited, 2013, p. 519.

5. Conclusion

This thesis investigates the effect of passive investors on the long-term orientation of their portfolio companies. This field of research is of specific interest due to the enormous growth of passive investors in the last decades and its implications for the whole economy.[199] This thesis contributes to existing literature by using recent and world-wide data. A broad bandwidth of long-term orientation measures is investigated. To mitigate endogeneity concerns an IV approach is applied. Hereby, passive ownership is instrumented by MSCI ACWI membership.

A comparison of the OLS and IV results express the need to account for endogeneity in 'passive investors' research. In the first stages a positive relation between MSCI ACWI affiliation and passive ownership is identified. This supports the usage of the MSCI ACWI as an instrument for passive ownership. The results provide evidence that an exogenous increase in passive ownership has a positive impact on long-term orientation. This in in line with the majority of literature. Especially, for investment in human and organizational capital the results suggest a strong and significant relation. Passive investors seem to foster number of employees, staff costs and SG&A expenses. For CAPEX only some evidence suggests a positive association with passive ownership. For R&D investment and average staff costs no effects can be identified. In additional tests I find remarkable differences of passive investors' impact regarding individual countries, market types, and size groups. Passive investors also shift their focus between the different long-term orientation facets over time.

This thesis suggests that passive investors positively influence the long-term orientation of their portfolio companies. This especially concerns investments in human and organizational capital, but recently also R&D- and CAPEX-based measures. Therefore, concerns of the growing power of passive investors and their capability to appropriately engage in their portfolio companies seem to be unfounded. Future research could focus on the exact channels[200] by which passive investors enhance long-term orientation. Interesting could also be an investigation of innovation output measures for an global sample.[201] An examination of whether to include the main determinants of index inclusion[202] as controls in an IV estimation with a index-based instrument - as proposed by Appel et al. (2016, 2019, 2020) - could also be meaningful, because this affects the results of this thesis at least partially.[203]

[199] See Bebchuk & Hirst, 2019, p. 2041; Qin & Wang, 2018, p. 8.
[200] E.g.: voting or private engagement.
[201] This could be analogous to Bena et al. (2017) approach for foreign ownership.
[202] Such as the (floating) market capitalization for the MSCI ACWI or the Russell 1000/2000.
[203] See Appel et al., 2016, pp. 113, 120-121; Appel et al., 2019, pp. 2733-2734; Appel et al., 2020, pp. 6-7.

References

Acharya, V. V., & Subramanian, K. V. (2009). Bankruptcy Codes and Innovation. *The Review of Financial Studies*, *22*(12), 4949–4988.

Adams, J., Hayunga, D., Mansi, S., Reeb, D., & Verardi, V. (2019). Identifying and treating outliers in finance. *Financial Management*, *48*(2), 345–384.

Aggarwal, R., Erel, I., Ferreira, M., & Matos, P. (2011). Does governance travel around the world? Evidence from institutional investors. *Journal of Financial Economics*, *100*(1), 154–181.

Aghion, P., Reenen, J. V., & Zingales, L. (2013). Innovation and Institutional Ownership. *American Economic Review*, *103*(1), 277–304.

Aguilera, R. V., Desender, K. A., Lamy, M. L.-P., & Lee, J. H. (2017). The governance impact of a changing investor landscape. *Journal of International Business Studies*, *48*, 195–221.

Anadu, K., Kruttli, M., McCabe, P., & Osambela, E. (2020). The Shift from Active to Passive Investing: Risks to Financial Stability? *Financial Analysts Journal*, *76*(4), 23–39.

Angrist, J. D., & Krueger, A. B. (2001). Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments. *Journal of Economic Perspectives*, *15*(4), 69–85.

Appel, I. R., Gormley, T. A., & Keim, D. B. (2016). Passive investors, not passive owners. *Journal of Financial Economics*, *121*(1), 111–141.

Appel, I. R., Gormley, T. A., & Keim, D. B. (2019). Standing on the Shoulders of Giants: The Effect of Passive Investors on Activism. *The Review of Financial Studies*, *32*(7), 2720–2774.

Appel, I. R., Gormley, T. A., & Keim, D. B. (2020). Identification Using Russell 1000/2000 Index Assignments: A Discussion of Methodologies. *Critical Finance Review, Forthcoming*. (Available at SSRN: https://ssrn.com/abstract=2641548 or http://dx.doi.org/10.2139/ssrn.2641548)

Bebchuk, L., & Hirst, S. (2019). Index Funds and the Future of Corporate Governance: Theory, Evidence, and Policy. *Columbia Law Review*, *119*(8), 2029–2146.

Bena, J., Ferreira, M. A., Matos, P., & Pires, P. (2017). Are foreign investors locusts? The long-term effects of foreign institutional ownership. *Journal of Financial Economics*, *126*(1), 122–146.

Boone, A. L., & White, J. T. (2015). The effect of institutional ownership on firm transparency and information production (June 12, 2015). *Journal of Financial Economics*, *117*(3), 508–533.

Brauer, M. F. (2013). The effects of short-term and long-term oriented managerial behavior on medium-term financial performance: Longitudinal evidence from Europe. *Journal of Business Economics and Management*, *14*(2), 386–402.

Brav, A., Jiang, W., Ma, S., & Tian, X. (2018). How does hedge fund activism reshape corporate innovation? *Journal of Financial Economics*, *130*(2), 237–264.

Brossard, O., Lavigne, S., & Sakinç, M. E. (2013). Ownership structures and R&D in Europe: the good institutional investors, the bad and ugly impatient shareholders. *Industrial and Corporate Change*, *22*(4), 1031–1068.

Brown, J. R., Martinsson, G., & Petersen, B. C. (2013). Law, Stock Markets, and Innovation. *The Journal of Finance*, *68*(4), 1517–1549.

Bushee, B. J. (1998). The Influence of Institutional Investors on Myopic R&D Investment Behavior. *The Accounting Review*, *73*(3), 305–333.

Bushee, B. J. (2001). Do Institutional Investors Prefer Near-Term Earnings Over Long-Run Value? *Contemporary Accounting Research*, *18*(2), 207–246.

Cameron, A. C., & Miller, D. L. (2015). A Practitioner's Guide to Cluster-Robust Inference. *The Journal of Human Resources*, *50*(2), 317–372.

Chang, X., Fu, K., Low, A., & Zhang, W. (2015). Non-executive employee stock options and corporate innovation (August 1, 2014). *Journal of Financial Economics*, *115*(1), 168–188.

Chen, T., Dong, H., & Lin, C. (2020). Institutional shareholders and corporate social responsibility (Article in Press; July 9, 2019). *Journal of Financial Economics*, *135*(2), 483–504.

Cheng, S., Massa, M., & Zhang, H. (2019). The Unexpected Activeness of Passive Investors: A Worldwide Analysis of ETFs. *Review of Asset Pricing Studies*, *9*(2), 296–355.

Crane, A. D., & Crotty, K. (2018). Passive versus Active Fund Performance: Do Index Funds Have Skill? *Journal of Financial and Quantitative Analysis*, *53*(1), 33–64.

Cremers, M., Pareek, A., & Sautner, Z. (2020). Short-Term Investors, Long-Term Investments, and Firm Value: Evidence from Russell 2000 Index Inclusions. *Management Science*, *66*(10), 4535–4551.

David, P., Hitt, M. A., & Gimeno, J. (2001). The Influence of Activism by Institutional Investors on R&D. *Academy of Management Journal*, *44*(1), 144–157.

Dong, T., & Eugster, F. (2017). "Passive" institutional investors and audit quality: Empirical evidence from the Russell index reconstitution. *Working Paper*.

Dreger, C., Kosfeld, R., & Eckey, H.-F. (2014). *Ökonometrie: Grundlagen - Methoden - Beispiele* (5th ed.). Wiesbaden, Springer Gabler Verlag.

Dyck, A., Lins, K. V., Roth, L., & Wagner, H. F. (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics*, *131*(3), 693–714.

Ferreira, D., Manso, G., & Silva, A. C. (2014). Incentives to Innovate and the Decision to Go Public or Private. *The Review of Financial Studies*, *27*(1), 256–300.

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics*, *88*(3), 499–533.

Fichtner, J., Heemskerk, E. M., & Garcia-Bernardo, J. (2017). Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk. *Business and Politics*, *19*(2), 298–326.

Fink, L. (2014). *Larry Fink's 2014 Letter to CEOs.* https://www.blackrock.com/corporate/investor-relations/2014-larry-fink-ceo-letter. (Accessed: 19.10.2021)

Fink, L. (2015). *Larry Fink's 2015 Letter to CEOs.* https://www.blackrock.com/corporate/investor-relations/2015-larry-fink-ceo-letter. (Accessed: 19.10.2021)

Fink, L. (2016). *Larry Fink's 2016 Letter to CEOs.* https://www.blackrock.com/corporate/investor-relations/2016-larry-fink-ceo-letter. (Accessed: 19.10.2021)

Fink, L. (2017). *Larry Fink's 2017 Letter to CEOs.* https://www.blackrock.com/corporate/investor-relations/2017-larry-fink-ceo-letter. (Accessed: 19.10.2021)

Fisch, J. E., Hamdani, A., & Solomon, S. D. (2020). The New Titans of Wall Street: A Theoretical Framework for Passive Investors. *University of Pennsylvania Law Review*, *168*, 17–72.

Flammer, C., & Bansal, P. (2017). Does a Long-Term Orientation Create Value? Evidence from a Regression Discontinuity. *Strategic Management Journal*, *38*(9), 1827–1847.

Foster, D. P., Stine, R. A., & Waterman, R. P. (1998). *Business Analysis Using Regression: A Casebook* (1st ed.). New York, Springer.

Francis, B. B., Maharjan, J., & Teng, H. (2020). Do Passive Investors Demand High Earnings Quality? Evidence from a Quasi-Natural Experiment. *China Accounting and Finance Review*, *22*(3), 32–67.

Francis, J., & Smith, A. (1995). Agency costs and innovation some empirical evidence. *Journal of Accounting and Economics*, *19*(2-3), 383–409.

Fu, L., Pan, L., & Wu, F. (2021). Does passive investment have a positive governance effect? Evidence from index funds ownership and corporate innovation. *International Review of Economics and Finance*, *75*, 524–545.

Gilje, E. P., Gormley, T. A., & Levit, D. (2020). Who's paying attention? Measuring common ownership and its impact on managerial incentives. *Journal of Financial Economics*, *137*(1), 152–178.

Glossner, S. (2019). Russell Index Reconstitutions, Institutional Investors, and Corporate Social Responsibility. *Critical Finance Review, Forthcoming*. (Available at SSRN: https://ssrn.com/abstract=3180776 or http://dx.doi.org/10.2139/ssrn.3180776)

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The Economic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics*, *40*(1-3), 3–73.

Griliches, Z. (1990). Patent Statistics as Economic Indicators: A Survey. *Journal of Economic Literature*, *28*(4), 1661–1707.

Grove, H., Clouse, M., & King, T. (2020). Passive investors: Implications for corporate governance. *Corporate Governance and Organizational Behavior Review*, *4*(2), 8–17.

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics* (5th ed.). New York, McGraw-Hill.

Hau, H., Massa, M., & Peress, J. (2010). Do Demand Curves for Currencies

Slope Down? Evidence from the MSCI Global Index Change. *The Review of Financial Studies*, *23*(4), 1681–1717.

Heath, D., Macciocchi, D., Michaely, R., & Ringgenberg, M. C. (2018). Passive Investors are Passive Monitors. *Working Paper*.

Holmstrom, B. (1989). Agency costs and innovation. *Journal of Economic Behavior and Organization*, *12*(3), 305–327.

Hou, W., & Zhang, X. (2016). Passive Investors and Corporate Social Responsibility: A Risk-Management Perspective. *Working paper*. (Available at SSRN: https://ssrn.com/abstract=2827052 or http://dx.doi.org/10.2139/ssrn.2827052)

Hsu, P.-H., Tian, X., & Xu, Y. (2014). Financial development and innovation: Cross-country evidence. *Journal of Financial Economics*, *112*(1), 116–135.

Iliev, P., & Lowry, M. (2015). Are Mutual Funds Active Voters? *Review of Financial Studies*, *28*(2), 446–485.

Imbens, G. W., & Angrist, J. D. (1994). Identification and Estimation of Local Average Treatment Effects. *Econometrica*, *62*(2), 467–475.

Investment Company Institute. (2021). *2021 Investment Company Fact Book* (Vol. 61).

Johnson, S. (2020). *Passive funds' share of European investment market jumps to 20%.* https://www.ft.com/content/0b5325da-585f-41ad-8267-0741e9693a7a. (Accessed: 20.10.2021)

Kacperczyk, M., Sundaresan, S., & Wang, T. (2021). Do Foreign Institutional Investors Improve Price Efficiency? *The Review of Financial Studies*, *34*(3), 1317–1367.

Kim, H.-D., Kim, T., Kim, Y., & Park, K. (2019). Do Long-term Institutional Investors Promote Corporate Social Responsibility Activities? (April 29, 2019). *Journal of Banking and Finance*, *101*, 256–269.

Kim, H.-D., Park, K., & Song, K. R. (2019). Do long-term institutional investors foster corporate innovation? *Accounting and Finance*, *59*(2), 1163–1195.

Lee, P. M., & O'Neill, H. M. (2003). Ownership Structures and R&D Investments of U.S. and Japanese Firms: Agency and Stewardship Perspectives. *Academy of Management Journal*, *46*(2), 212–225.

Lerner, J., & Wulf, J. (2007). Innovation and Incentives: Evidence from Corporate R&D. *The Review of Economics and Statistics*, *89*(4), 634–644.

Liu, Y., Shen, Y., Wang, J., & Wang, Q. (2019). *Passive Institutional Investors and Corporate Innovation.* https://ssrn.com/abstract=3415513.

Lumpkin, G. T., Brigham, K. H., & Moss, T. W. (2010). Long-Term Orientation: Implications for the Entrepreneurial Orientation and Performance of Family Businesses. *Entrepreneurship and Regional Development*, *22*(3-4), 241–264.

Luong, H., Moshirian, F., Nguyen, L., Tian, X., & Zhang, B. (2017). How Do Foreign Institutional Investors Enhance Firm Innovation? *Journal of Financial and Quantitative Analysis*, *52*(4), 1449–1490.

Midi, H., Sarkar, S. K., & Rana, S. (2010). Collinearity diagnostics of binary logistic regression model. *Journal of Interdisciplinary Mathematics*, *13*(3), 253–267.

Morley, J. D. (2019). Too Big to Be Activist. *Southern California Law Review*, *92*(6), 1407–1454.

MSCI Inc. (2021a). Factsheet: MSCI ACWI Index (USD).

MSCI Inc. (2021b). *MSCI ACWI Index.* https://www.msci.com/acwi. (Accessed: 30.06.2021)

MSCI Inc. (2021c). MSCI global investable market indexes methodology.

Mullins, W. (2014). The Governance Impact of Index Funds: Evidence from Regression Discontinuity. *Working Paper*.

Palia, D., & Sokolinski, S. (2019). DOES PASSIVE INVESTING HELP RELAX SHORT-SALE CONSTRAINTS? *Working Paper*.

Pereira da Silva, P. (2018). *Do managers pay attention to the market? A review of the relationship between stock price informativeness and investment.* https://ssrn.com/abstract=3244469. (Working Paper)

Qin, N., & Wang, D. (2018). *Are Passive Investors a Challenge to Corporate Governance?* https://ssrn.com/abstract=3148309. (Working Paper)

Roberts, M. R., & Whited, T. M. (2013). Endogeneity in Empirical Corporate Finance. In G. M. Constantinides, M. Harris, & R. M. Stulz (Eds.), *Handbook of the economics of finance* (2nd ed., pp. 493–572). Elsevier.

Robertson, A. Z. (2019). Passive in Name Only: Delegated Management and "Index" Investing. *Yale Journal on Regulation*, *36*(2), 795–851.

Schmidt, C., & Fahlenbrach, R. (2017). Do exogenous changes in passive institutional ownership affect corporate governance and firm value? *Journal of Financial Economics*, *124*(2), 285–306.

Schoenfeld, J. (2017). The effect of voluntary disclosure on stock liquidity: New evidence from index funds (October 22, 2016). *Journal of Accounting and Economics*, *63*(1), 51–74.

Sheather, S. (2009). *A Modern Approach to Regression with R* (1st ed.). New York, Springer-Verlag.

Shin, I., & Park, S. (2020). Role of Foreign and Domestic Institutional Investors in Corporate Sustainability: Focusing on R&D Investment. *Sustainability*, *12*(20), 8754.

Shrestha, N. (2020). Detecting Multicollinearity in Regression Analysis. *American Journal of Applied Mathematics and Statistics*, *8*(2), 39–42.

Strampelli, G. (2018). Are Passive Index Funds Active Owners? Corporate Governance Consequences of Passive Investing. *San Diego Law Review*, *55*(4), 803–852.

Tian, X., & Yang, Y. (2021). Are Passive Institutional Investors Engaged Monitors or Risk-Averse Owners? Both! *IMF Working Paper*.

Wei, W., & Young, A. (2017). *Passive Investors with Strategic Trading: A New Perspective on Index Funds.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3063732.