INVESTIGATES THE PERFORMANCE OF OFFICE REITS IN MALAYSIA FOCUSING ON PANDEMIC (2020-2021), AND POST PANDEMIC (2022-2023) PERIODS

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DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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ABSTRACT

This thesis examines the performance of office Real Estate Investment Trusts (REITs) in Malaysia during the COVID-19 pandemic (2020-2021) and the post-pandemic recovery period (2022-2023). The study utilizes key financial metrics, including the Sharpe Ratio, Treynor Ratio, Jensen Alpha, R-Squared, and Risk Diversifiability, to evaluate the risk-adjusted returns, market sensitivity, and overall performance of office REITs across these two periods. The research aims to assess how office REITs adapted to market disruptions caused by the pandemic and how they have performed in the recovery phase.

The findings reveal that diversified portfolios and non-office REITs demonstrated superior risk-adjusted returns, with diversified portfolios like ATRIUM (5130) outperforming office-centric REITs during both periods. Office REITs, such as SENTRAL (5123) and IGBCR (5299), showed poor performance, particularly in the pandemic period, due to the significant decline in demand for office space caused by the shift to remote work and economic uncertainties. In contrast, non-office REITs like CLMT (5180) and KIPREIT (5280) showed resilience due to their diversified exposure to sectors such as industrial and retail properties, which were less affected by the pandemic's impact. The Risk Diversifiability analysis highlighted that REITs with more diversified portfolios exhibited higher levels of risk diversification, mitigating exposure to market volatility. Jensen Alpha indicated that ATRIUM (5130) generated returns above expectations, suggesting effective management and strategic portfolio diversification. Conversely, office REITs struggled to meet expected returns, particularly in the pandemic period. This study underscores the importance of diversification in mitigating risk, particularly for office REITs that remain vulnerable to fluctuations in demand for office space. The findings also suggest that non-office REITs are better positioned for long-term resilience in the post-pandemic environment. The research contributes to the literature on M-REIT performance, offering insights for investors, policymakers, and researchers seeking to understand the evolving dynamics of the Malaysian real estate market.

Keywords: REITs; Real Estate; Office; Pandemic; Investment

Subject Area: HD1361-1395.5 Real estate business ; HG4530 Investment trusts

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CHAPTER 1

INTRODUCTION

1.1 The Emergence and Evolution of REITs

Real Estate Investment Trusts (REITs) have become a globally recognized investment vehicle, transforming how real estate is approached as an asset class. Introduced in the United States in 1960, REITs allowed for the pooling of capital to invest in income-generating properties such as office buildings, retail centers, and warehouses. This shift allowed small and institutional investors alike to gain exposure to large-scale commercial real estate, a market that was previously accessible only to wealthy individuals or corporations. Over the decades, REITs have become a vital component of the global financial ecosystem, and by 2024, more than 40 countries have adopted REIT frameworks (Wiley, 2017).

REITs have since expanded to Asia, with countries like Malaysia embracing the concept to boost their real estate investment markets. The Malaysian REIT (M-REIT) market began with the launch of the first REIT, Axis REIT, in 2004. This marked a significant development in the country's real estate sector, which had traditionally been dominated by direct property ownership. By 2005, the Malaysian government introduced reforms to encourage the growth of REITs, including tax transparency status for listed REITs and relaxed borrowing limits (Alias & C.Y., 2011). These reforms spurred rapid growth in the market, which has since expanded to include 18 listed REITs by 2023. The M-REIT market's ability to offer tax efficiency and high liquidity has made it an attractive investment vehicle, with increasing interest from both domestic and foreign investors.

Before the introduction of REITs, real estate investment in Malaysia had been largely confined to high-net-worth individuals or large corporations, which could afford to manage substantial property portfolios. The creation of REITs democratized access to real estate investment, allowing individuals and institutional investors to collectively invest in commercial properties. This innovation made real estate assets more accessible and liquid, helping create a thriving REIT market that has become a staple of Malaysia's financial markets (Stefano Simontacchi & Uwe Stoschek, 2021).

1.2 Key Characteristics of REITs

REITs are characterized by their ability to provide both capital appreciation and regular income, making them an appealing investment for a broad range of investors. The most distinguishing feature of REITs is their tax-transparent structure. Under the regulations of Malaysia's Securities Commission, listed REITs are not taxed on their income as long as they distribute at least 90% of their taxable income to investors. This provision allows REITs to pass their income directly to investors, making them highly attractive to income-focused investors (Downs et al., 2018).

The ability to generate stable and consistent dividends is a core attraction of REITs. The income derived from rent collected on properties within the REIT's portfolio is passed on to investors in the form of dividends. This creates an appealing stream of income, especially for long-term investors seeking stable returns. M-REITs can be either sector-specific, focusing on particular types of properties such as office buildings or shopping malls, or diversified, holding a broader range of real estate assets, which helps mitigate risk.

M-REITs in Malaysia have seen widespread adoption, with investors benefiting from both the growth in capital value and the rental income produced by their investments. Listed on the Bursa Malaysia stock exchange, REITs provide investors with high liquidity, an advantage over traditional property investments, which are often illiquid and difficult to sell quickly. The ability to buy and sell REITs easily on the stock exchange means that investors can access real estate markets without the need for large upfront capital or property management responsibilities (Phoo & Samsudin, 2018).

1.3 The Development of M-REITs in Malaysia

The development of the M-REIT market in Malaysia has been a highly successful one, and it has played an essential role in the country's broader real estate and financial sectors. The introduction of the first M-REIT, Axis REIT, in 2004, marked the beginning of this market's development. However, it wasn't until 2005 that Malaysia truly saw rapid growth in its REIT market, after the introduction of several key reforms, including tax transparency and an increase in borrowing limits for REITs. These changes laid the foundation for a robust and dynamic market that would continue to grow over the next decade (Stefano Simontacchi & Uwe Stoschek, 2021).

Between 2005 and 2013, Malaysia's REIT market grew exponentially, from a single REIT to 17 listed M-REITs by the end of 2013. This growth was driven by both domestic and international investment, fueled by favorable regulations and the broader economic boom in Southeast Asia during this period. By 2013, Malaysia had firmly established itself as a leading player in the global REIT market, particularly with the listing of KLCC REIT, which became the world's largest Islamic stapled REIT. This helped to solidify Malaysia's position as a global leader in Islamic finance and attracted significant interest from both international investors and global institutions (Stefano Simontacchi & Uwe Stoschek, 2021).

The rapid expansion of M-REITs in Malaysia demonstrated the sector's resilience and adaptability, and by 2022, there were 18 listed M-REITs, representing a broad cross-section of sectors, including retail, office, and industrial properties. The market capitalization of the M-REIT sector has also grown considerably, contributing significantly to the broader Malaysian financial market and providing a viable and liquid alternative to traditional real estate investment strategies (Alias & C.Y., 2011).

1.4 COVID-19 and MCO 1, MCO 2, MCO 3

The outbreak of COVID-19 in early 2020 sent shockwaves through global financial markets, and the real estate sector was no exception. In Malaysia, the government responded to the pandemic by implementing a series of Movement Control Orders (MCOs), starting on March 18, 2020. The initial MCO (MCO 1.0) saw businesses across the country closed for several weeks, except for essential services. This resulted in a severe disruption to the real estate sector, particularly for office and retail REITs. The restrictions, coupled with social distancing and remote work policies, led to a significant decline in demand for office spaces, as businesses adapted to new working models and transitioned to remote work. Additionally, retail spaces saw foot traffic plummet due to restrictions on social gatherings and public movement (Natalie Khoo, 2020).

As the pandemic progressed, Malaysia entered a second phase of lockdowns (MCO 2.0), which lasted from January to March 2021, followed by a third round of restrictions (MCO 3.0) starting in May 2021. These phases further intensified the strain on office and retail REITs, with reduced rental income, lower occupancy rates, and delayed property acquisitions or expansions. During these periods, many REITs were forced to offer rental rebates, discounts, and flexible lease terms in an effort to retain tenants and minimize vacancies. Retail REITs like

Pavilion REIT offered temporary rent-free periods to their tenants, particularly those in non-essential services, to help them weather the financial strain caused by the MCOs (Shah et al., 2020).

Despite these challenges, the M-REIT sector demonstrated resilience. The gradual recovery in 2022, driven by the easing of movement restrictions and the adoption of hybrid working models, has shown that the sector can adapt to new market realities. Many office REITs began shifting focus towards flexible workspaces and introducing new technologies to cater to the needs of businesses that were transitioning into the post-pandemic world (Shahimi et al., 2006).

1.5 COVID-19 and the Malaysian Economy

The COVID-19 pandemic triggered a significant contraction in Malaysia's economy, which faced widespread disruptions to businesses, jobs, and supply chains. The government introduced various stimulus packages, including the Prihatin Rakyat (Caring for People) package in March 2020, aimed at providing financial relief to citizens and businesses. The total package amounted to RM260 billion and included direct cash assistance to individuals, subsidies for businesses, and support for small and medium-sized enterprises (SMEs) that were hardest hit by the pandemic (Government of Malaysia, 2020). Despite these efforts, Malaysia’s economy contracted sharply, and the real estate sector faced substantial setbacks.

The real estate market was directly impacted by the decline in demand for office space, as many businesses shifted to remote working. Retail REITs also saw reduced income due to the closure of malls and restrictions on retail activities. However, the Malaysian government’s stimulus packages, including tax relief for property owners and businesses, helped cushion the impact on the real estate sector, enabling it to recover more quickly once the restrictions began to ease (Shah et al., 2020).

1.6 The Impact of COVID-19 on Real Estate and Office REITs

The COVID-19 pandemic had a profound effect on the Malaysian office REIT sector. The shift to remote work and the adoption of hybrid working models led to reduced demand for office spaces, causing a decrease in occupancy rates for office REITs. With businesses adjusting to a new normal of working from home, many companies downsized their office spaces or opted for flexible leasing arrangements to accommodate their evolving needs (Yusof,

2021). Consequently, office REITs faced lower rental income and higher vacancy rates, placing significant pressure on their financial performance.

To adapt to these changes, many office REITs began offering flexible leases, rent reductions, and other incentives to retain tenants. These efforts, while necessary to support tenants during a period of uncertainty, placed additional strain on the financial health of REITs, which rely on steady cash flow from rental income. However, as the pandemic subsided and businesses started to return to physical offices, there were signs of recovery in the office REIT market. Demand for hybrid workspaces increased, and flexible lease terms became a standard offering, allowing office REITs to better meet the changing needs of their tenants (Shahimi et al., 2006).

This study provides an in-depth analysis of the performance of Malaysian office REITs during two critical periods: the COVID-19 pandemic (2020-2021) and the post-pandemic recovery phase (2022-2023). By examining the financial performance, market trends, and strategic responses of office REITs, this research sheds light on the resilience and adaptability of the M-REIT sector during a period of unprecedented disruptions. The findings offer valuable insights into the future of office REITs, helping investors, policymakers, and industry professionals navigate the evolving landscape of real estate investment in a post-pandemic world. The research underscores the importance of flexibility and innovation in adapting to new market dynamics, such as hybrid working and digital transformation, ensuring that office REITs remain a viable and attractive investment vehicle in the years to come.

CHAPTER 2

LITERATURE REVIEW

2.1 Evaluation of Risks Faced by M-REITs During the COVID-19 Pandemic

The COVID-19 pandemic, declared a global health crisis by the World Health Organization (WHO) on March 11, 2020, represented one of the most profound disruptions to the global economy in modern history. Beginning in December 2019 with reports of a novel coronavirus in Wuhan, China, the pandemic spread worldwide, forcing nations to implement stringent measures, including lockdowns, social distancing, and border closures. The far-reaching effects of COVID-19 were not only felt in public health but also in global financial markets and industries. Real Estate Investment Trusts (REITs), which have become integral to global financial markets, were severely impacted by the pandemic.

REITs have traditionally been seen as relatively stable investment vehicles, offering exposure to real estate without the need for direct ownership of physical properties. However, the pandemic revealed the vulnerabilities of REITs, particularly those with significant exposure to retail, hospitality, and office sectors. The Malaysian Real Estate Investment Trusts (M-REITs), in particular, faced unique challenges due to movement control orders (MCOs), government-enforced restrictions, and changes in consumer behavior and business operations. The following analysis provides an in-depth evaluation of the risks faced by M-REITs during the COVID-19 pandemic, focusing on financial and operational challenges, the role of diversification in mitigating risks, and the long-term outlook for these investment vehicles.

2.2 The Historical Context of Pandemics and Their Impact on Real Estate

Before delving into the specifics of how the COVID-19 pandemic affected M-REITs, it is helpful to understand how previous pandemics, such as SARS (2003), MERS (2012), and the Ebola outbreak (2014), influenced global markets, including real estate. Historically, pandemics have had significant, though often temporary, effects on the economy and financial markets, including real estate. However, the scale and global nature of the COVID-19 pandemic made its impact on the real estate sector more pronounced.

The SARS outbreak in 2003, which affected multiple East Asian countries, created short-term disruptions in the real estate markets, particularly in tourism and hospitality, as travel restrictions led to a decline in international visitors. While SARS was contained within a few months, its effects were still noticeable in the short-term market performance of real estate investments. The 2012 MERS outbreak, while more localized to the Middle East and East Asia, similarly disrupted the tourism and hospitality sectors, but it did not lead to a widespread economic downturn.

However, the COVID-19 pandemic had a global reach and an unprecedented scale, resulting in widespread economic disruption, the shutdown of businesses, and the imposition of travel restrictions that lasted for months. This far-reaching impact was not only in health but also in financial markets, causing significant shifts in how real estate investments, including M-REITs, were perceived and performed during the crisis. The global nature of COVID-19 compounded the effects, pushing economies into recession, disrupting consumer spending, and shifting investment strategies, particularly with regard to risk assessment and portfolio management.

2.3 The Structural and Financial Model of M-REITs

To understand the risks faced by M-REITs during the COVID-19 pandemic, it is crucial to first examine the structural and financial framework that underpins these investment vehicles. Real Estate Investment Trusts (REITs) are companies that own, operate, or finance income-producing real estate across a range of property sectors, such as residential, commercial, industrial, retail, and healthcare properties. M-REITs, specifically, refer to Malaysian REITs that are regulated by the Securities Commission Malaysia.

M-REITs, like other REITs globally, are required to distribute a significant portion of their income to shareholders—usually around 90%—to maintain tax-exempt status. This mandatory distribution is one of the defining characteristics of REITs, making them attractive to income-focused investors. However, this feature also creates a vulnerability, as disruptions to income streams can lead to difficulties in maintaining these high distribution levels. The financial model of M-REITs typically relies on generating revenue through leasing properties to tenants, collecting rental income, and selling or refinancing assets. The ability to maintain a steady flow of rental income is crucial to the sustainability of M-REITs, as it ensures continued dividend payouts to investors.

The pandemic-induced lockdowns and restrictions severely affected the ability of M-REITs to maintain their revenue streams, particularly in sectors reliant on consumer foot traffic, such as retail and hospitality. As tenant businesses were forced to close or operate at reduced capacity, rental income plummeted. This led to a significant challenge for M-REITs in maintaining their obligations to distribute income to shareholders while also managing operational expenses and debt obligations.

2.4 The Impact of COVID-19 on M-REITs: Rent Collection and Financial Challenges

2.4.1 Rent Collection and Tenant Defaults

The pandemic had an immediate and severe impact on rent collection for M-REITs, particularly those invested in retail and office spaces. With the implementation of the MCO in Malaysia and similar restrictions in other countries, many businesses were forced to shut down or significantly reduce operations. This resulted in a substantial decline in revenue for tenants, making it difficult for them to meet rental obligations. Retail tenants, in particular, faced substantial losses as foot traffic to malls and stores diminished dramatically. For example, retail M-REITs in Malaysia reported significant declines in rental income as tenants struggled to make ends meet (Bursa Digital Research, 2021).

In response, M-REITs implemented rent relief measures, including rental rebates and deferrals, in order to support tenants and avoid vacancies. For example, Pavilion REIT offered a 14-day rent-free period for non-essential tenants in early 2020, which was later extended (Khoo, 2020). While these actions helped maintain tenant relationships, they also significantly impacted M-REITs' cash flow, reducing rental income and threatening their ability to service debt and maintain dividend distributions.

M-REITs that relied on sectors such as retail and hospitality were particularly vulnerable, as they experienced a higher number of tenant defaults or requests for rent reductions. The long-term effects of these rent defaults on M-REITs' financial stability are still being evaluated, as many tenants may struggle to recover even after the pandemic ends. The pandemic highlighted the importance of having a diversified tenant base and the need for M-REITs to adopt flexible leasing arrangements to protect themselves from future disruptions.

2.4.2 Distribution Requirements and Cash Flow Strain

One of the most immediate financial challenges for M-REITs was the strain on cash flows, which are critical for meeting distribution requirements. As mentioned earlier, M-REITs are required to distribute at least 90% of their taxable income to shareholders to maintain their tax-exempt status. However, the reduction in rent collections, coupled with the need to offer rent relief to tenants, left many M-REITs unable to generate sufficient cash flow to meet their distribution obligations.

To mitigate this, some M-REITs resorted to issuing new equity or debt to raise capital, though this created its own set of challenges. Issuing new shares can dilute existing shareholders, and raising debt increases the leverage and financial risk for the M-REITs. The ability to maintain these distributions in a period of financial stress was a key test of the resilience of M-REITs during the pandemic (Akinsomi, 2020). Many M-REITs were forced to reduce their dividend payouts, which hurt investor sentiment and led to a decline in stock prices. The broader market volatility, combined with reduced dividends, led to a significant reassessment of M-REITs as stable income-producing investments.

2.4.3 Debt Management and Servicing

As is common in the real estate industry, M-REITs rely on leverage to finance property acquisitions and maintain their asset base. However, during the pandemic, the reduction in rental income posed a significant challenge for M-REITs to service their debt obligations. Debt servicing became increasingly difficult as M-REITs experienced declines in cash flow. The pandemic highlighted the vulnerability of M-REITs that had high levels of debt relative to their income, as they were more susceptible to liquidity crises (Akinsomi, 2020).

In Malaysia, M-REITs are subject to a regulation that caps total debt at 50% of the total asset value. While this regulation was designed to prevent over-leveraging, it did not fully protect M-REITs from the impact of the pandemic. Many M-REITs were forced to delay or restructure their debt repayments to ensure financial stability, but this did not come without consequences. Debt restructuring often requires significant negotiation with creditors and may result in higher borrowing costs or the need to issue more equity, which can dilute existing shareholders (Kenton, 2022).

2.5 The Sector-Specific Impact on M-REITs

2.5.1 Retail Sector Impact

Retail M-REITs were among the hardest hit by the pandemic, as the closure of non-essential businesses, social distancing measures, and consumer hesitancy led to a sharp decline in foot traffic to shopping malls and stores. Many retail tenants, particularly those in the non-essential goods and services sector, were forced to close their doors during the lockdowns, and some were unable to recover even after reopening. M-REITs with a heavy concentration in retail properties experienced a significant reduction in revenue, as rental income from retail tenants became increasingly difficult to collect.

Retail tenants that could not pay rent were offered rent relief packages, including rent deferrals and discounts, in order to help them stay afloat. However, these relief measures further strained the income of M-REITs. Retail M-REITs were particularly vulnerable to tenant defaults, as many tenants could not meet their rental obligations due to a dramatic reduction in consumer spending and business closures (Bursa Digital Research, 2021). As a result, retail M-REITs in Malaysia reported losses for the first time, as the operational costs of maintaining the properties exceeded the rental income received.

2.5.2 Hospitality Sector Impact

The hospitality sector was also severely affected by the pandemic, with international and domestic travel restrictions causing a significant decline in hotel occupancy rates. M-REITs that focused on hotels and resorts faced substantial challenges in terms of both revenue and property values. According to STR (2020), hotel occupancy rates in the U.S. fell by 116%, with projections of a 57.5% revenue loss for the year 2020. The pandemic significantly reduced the demand for travel, leading to empty hotel rooms and severely reduced revenues for hospitality M-REITs.

M-REITs in the hospitality sector were forced to reduce rents and offer concessions to tenants in order to retain businesses, but these measures could not fully offset the loss in revenue. Hotel M-REITs, particularly those reliant on international tourism, faced the most severe losses, as international borders remained closed for extended periods (Akinsomi, 2021).

2.5.3 Office Sector Impact

The office sector, which traditionally relied on long-term leases with corporate tenants, was also impacted by the COVID-19 pandemic. The shift to remote work and the implementation of social distancing measures led to a decrease in demand for office space. Many businesses reassessed their office space needs, with many opting for remote work or hybrid work models, reducing the overall demand for traditional office leases. For M-REITs that focused on office properties, this resulted in increased vacancy rates and a decrease in rental income.

Although the office sector experienced a decline in demand, it was less affected than retail or hospitality sectors. Many companies maintained their long-term leases, and prime office space in central business districts continued to attract tenants despite the shift to remote working (Akinsomi, 2021). However, the future of the office sector remains uncertain, as the pandemic accelerated the adoption of remote work, which may have long-term implications for the demand for office space.

2.5.4 Industrial Sector Impact

The industrial sector, particularly M-REITs focused on logistics, warehouses, and data centers, showed resilience during the pandemic. The surge in e-commerce activity, driven by lockdowns and restrictions on physical retail, created increased demand for warehousing and distribution centers. M-REITs with a focus on industrial properties, particularly those that provide infrastructure for e-commerce logistics and data centers, experienced steady or even positive returns during the pandemic.

Data center REITs benefitted from the increased demand for cloud computing services as businesses and individuals shifted to digital platforms for work, communication, and entertainment. This sector demonstrated how M-REITs that are aligned with long-term secular trends, such as the growth of e-commerce and digital infrastructure, are better positioned to weather economic disruptions (Akinsomi, 2021).

2.6 Mitigating Risks: The Role of Diversification and Adaptive Strategies

2.6.1 Diversification as a Risk Management Tool

Diversification is a critical strategy for reducing exposure to risk in investment portfolios, and its importance was amplified during the COVID-19 pandemic. M-REITs that had a diversified portfolio, spread across multiple property types (e.g., retail, office, industrial),

were better able to absorb losses in one sector with gains in another. For example, industrial M-REITs, which saw demand for logistics and warehouse space increase during the pandemic, helped offset the losses experienced by retail and hospitality-focused M-REITs.

In the context of M-REITs, diversification also includes geographical diversification. M-REITs with assets spread across different regions were able to mitigate risks associated with localized lockdowns and restrictions. Diversification not only helps spread risk but also provides M-REITs with the flexibility to adapt to shifting market conditions and changing consumer behaviors.

2.6.2 Adaptive Leasing and Flexible Rent Structures

In addition to diversification, M-REITs that adapted their leasing models to include more flexible terms were better positioned to navigate the disruptions caused by the pandemic. For example, offering shorter lease terms, rent deferrals, and percentage rent clauses allowed M-REITs to retain tenants while accommodating their financial challenges. These adaptive strategies were particularly important in the retail and hospitality sectors, where tenant businesses faced significant liquidity issues.

The ability to negotiate with tenants and adjust lease terms based on market conditions is crucial for maintaining long-term stability in the face of economic disruptions. M-REITs that were able to pivot quickly to accommodate tenant needs during the pandemic were better able to maintain occupancy rates and rental income.

2.6.3 Government Support and Regulatory Flexibility

Government support played a significant role in mitigating the impact of the pandemic on M-REITs. In many countries, including Malaysia, governments introduced measures such as rent holidays, eviction moratoriums, and stimulus packages to help businesses and individuals cope with the financial challenges caused by COVID-19. These measures provided some relief for M-REITs, particularly in the retail and hospitality sectors, where tenant businesses were struggling to pay rent.

In Malaysia, the Securities Commission introduced temporary regulatory flexibility for M-REITs, allowing them to adjust their dividend payout ratios and extend deadlines for financial reporting. This flexibility helped M-REITs manage their cash flow during the height of the pandemic and avoid forced asset sales or defaults (Securities Commission Malaysia, 2020).

2.7 Long-Term Implications for M-REITs and the Future of Real Estate Investment

The COVID-19 pandemic has undoubtedly reshaped the landscape of real estate investment, presenting unique risks and challenges for M-REITs. The crisis revealed vulnerabilities in M-REITs' financial structures, particularly in sectors reliant on foot traffic, such as retail and hospitality. However, it also highlighted the resilience of sectors such as industrial and data centers, which benefitted from long-term secular trends like e-commerce and digital infrastructure.

As the world moves toward recovery, M-REITs will need to adapt to new market dynamics, including shifts in work patterns, consumer behavior, and technological advancements. Diversification, flexible leasing arrangements, and the ability to adapt to market changes will be critical for M-REITs to navigate future disruptions. While the pandemic's impact on the real estate market has been profound, the long-term outlook for M-REITs will depend on how well they adapt to the changing landscape of the global economy.

The recovery of M-REITs will also hinge on broader economic conditions, government policies, and the resumption of global travel and commerce. While the pandemic highlighted the risks of over-leveraging and dependency on specific property sectors, it also provided an opportunity for M-REITs to rethink their strategies and strengthen their portfolios for future resilience. With the right strategies in place, M-REITs can emerge from the pandemic stronger, more diversified, and better prepared to weather future economic challenges.

CHAPTER 3

METHODOLOGY

This chapter outlines the research methodology employed in evaluating the performance of office Real Estate Investment Trusts (REITs) in Malaysia during the COVID-19 pandemic (2020-2021) and the post-pandemic period (2022-2023). The research focuses on analyzing the risk-adjusted returns, excess returns, market sensitivity, and risk diversifiability of office REITs using various financial performance metrics. The methodology employed in this study combines quantitative analysis with secondary data from publicly available sources, such as financial statements, annual reports, and market data from the Malaysian Stock Exchange (Bursa Malaysia).

3.1 Research Design

The research design for this thesis is quantitative and descriptive in nature, aimed at evaluating the performance of M-REITs by focusing on key financial metrics. The study uses historical data to analyze how office REITs in Malaysia performed during the pandemic (2020-2021) and the post-pandemic recovery (2022-2023) periods. The performance metrics are selected based on their ability to measure different aspects of REIT performance: risk-adjusted returns, market sensitivity, excess returns, and diversifiability.

The analysis includes comparing the performance of office REITs against diversified REITs and non-office REITs, to draw a comparison in terms of risk, returns, and market performance. The periods under review are critical to understanding how REITs performed during a time of unprecedented market disruption and the subsequent recovery phase.

3.2 Data Collection

The data for this research were gathered from publicly available sources, including financial reports, annual reports of listed M-REITs, stock market data from Bursa Malaysia, and relevant macroeconomic data. The focus was specifically on M-REITs that are listed on the Malaysian Stock Exchange, which are typically required to report their financial performance in publicly accessible formats. The data used for the analysis were from the periods 2020-2021 (the pandemic period) and 2022-2023 (the post-pandemic recovery period).

3.3 Data Analysis

To evaluate the performance of office REITs during the pandemic and recovery periods, the following **financial metrics** were employed:

1. **Sharpe Ratio**: The **Sharpe Ratio** is used to measure the risk-adjusted return of each REIT by comparing the excess return over the risk-free rate to the standard deviation of returns. This metric provides insights into whether the REIT is delivering returns that are worth the risk taken. The Sharpe Ratio was calculated using the formula:

   Sharpe Ratio=Ri−Rfσi\text{Sharpe Ratio} = \frac{R_i - R_f}{\sigma_i}Sharpe Ratio=σiRi−Rf

   Where:

   - RiR_iRi = return of the REIT
   - RfR_fRf = risk-free rate (based on Treasury yields)
   - σi\sigma_iσi = standard deviation of the REIT's return

   This ratio allows for the comparison of REITs' ability to generate returns relative to the risk associated with their portfolios.

2. **Treynor Ratio**: The **Treynor Ratio** is used to assess how well a REIT's returns compensate for the market risk (systematic risk), as measured by **beta**. The formula is:

   Treynor Ratio=Ri−Rfβi\text{Treynor Ratio} = \frac{R_i - R_f}{\beta_i}Treynor Ratio=βiRi−Rf

   Where:

   - RiR_iRi = return of the REIT
   - βi\beta_iβi = beta of the REIT (calculated through regression against the market index)

This ratio is particularly useful in evaluating the performance of M-REITs with respect to the market risk they bear, and it helps investors understand whether the risk taken in relation to the market was justified by the returns.

3. **Jensen Alpha**: **Jensen's Alpha** is used to determine the **excess return** generated by a REIT over and above its expected return based on its systematic risk (beta). This provides insight into whether the REIT has outperformed or underperformed relative to its expected performance. The formula is:

$$\alpha = R_i - \left(R_f + \beta_i \times (R_m - R_f) \right)$$

Where:

- R_i = actual return of the REIT
- R_m = return of the market (FBM KLCI)
- β_i = beta of the REIT

A positive Jensen Alpha indicates that a REIT has outperformed the expected return based on market risk, while a negative value suggests underperformance.

4. **R-Squared**: The **R-Squared (R^2)** metric is used to assess the degree to which the performance of each M-REIT can be explained by the broader market movement, represented by the **FBM KLCI**. A higher R-Squared indicates a greater correlation with market returns, suggesting that the REIT's performance is closely tied to the general market conditions. A lower R-Squared value indicates that the REIT's performance is influenced by internal factors or specific property sector performance, rather than broad market trends.

5. **Risk Diversifiability**: **Risk Diversifiability** assesses how well the REIT spreads its risk across different property sectors (e.g., office, retail, industrial, etc.). Higher risk diversifiability scores indicate that a REIT has a portfolio with lower exposure to any one asset class, thereby reducing its vulnerability to sector-specific risks. This measure was calculated by evaluating the correlations between the returns of individual assets within the REIT's portfolio and the overall market performance.

3.4 Data Interpretation

The results from these metrics were interpreted to identify patterns in how office REITs performed relative to diversified REITs and non-office REITs during the two distinct periods (pandemic and post-pandemic). The key points of analysis included:

- Risk-adjusted performance: Evaluating which REITs generated the highest returns per unit of risk during the pandemic and post-pandemic phases.
- Market sensitivity: Analyzing how much of the REITs' performance could be explained by market trends using R-Squared.
- Diversification strategies: Assessing how REITs with more diversified portfolios fared compared to those that concentrated in a single sector, especially the office sector, which was significantly impacted during the pandemic.
- Excess returns: Determining which REITs outperformed market expectations based on their exposure to systematic risks.

3.5 Limitations

Despite the comprehensive methodology, there were certain limitations in this study:

- Data availability: The analysis was limited to publicly available data from M-REITs listed on Bursa Malaysia. Some REITs may have different reporting practices or incomplete data, which could affect the robustness of the findings.
- External factors: The research focused on the performance of REITs, but did not directly account for broader macroeconomic or political factors that may have influenced market performance.
- Time frame: The study only analyzed two specific periods (2020-2021 and 2022-2023), limiting the ability to assess the long-term effects of the pandemic on M-REITs beyond this window.

The methodology employed in this thesis provides a thorough quantitative analysis of the performance of office REITs in Malaysia during the COVID-19 pandemic and the subsequent recovery period. By using multiple financial metrics, the study assesses the risk-

adjusted performance, market sensitivity, and risk diversifiability of office REITs and compares them with diversified and non-office REITs. The findings offer valuable insights into the resilience of office REITs, the role of diversification in managing risks, and the importance of adapting to shifts in the real estate market.

CHAPTER 4

FINDINGS AND DISCUSSION

The performance of M-REITs during the pandemic period (2020-2021) and the post-pandemic period (2022-2023) compared to the overall market (FBM KLCI) reveals notable differences in returns and risks. Based on the data collected, the average monthly return of the FBM KLCI during the 2020-2021 period was 0.0034, while the average monthly return during 2022-2023 decreased to -0.0011. In comparison, the average monthly returns for the 18 M-REITs during the pandemic period (2020-2021) was -0.0079, and during the post-pandemic period (2022-2023) it was -0.00168. Both of these figures were lower than the FBM KLCI's returns during the same periods, highlighting that M-REITs were generally more affected by the pandemic compared to the broader market.

REIT Name	Portfolio Type	Average Monthly Return	Standard Deviation
ATRIUM (5130)	Diversified	0.01682	0.05291
SENTRAL(5123)	Office	0.00423	0.06906
AXREIT (5106)	Diversified	0.00101	0.04041
KIPREIT (5280)	Non-Office	-0.00126	0.04219
UOAREIT (5110)	Office	-0.00245	0.03574
ARREIT (5127)	Diversified	-0.00443	0.05125
IGBREIT (5117)	Non-Office	-0.00633	0.05327
ALAQAR (5116)	Non-Office	-0.00695	0.02260
AMFIRST (5120)	Diversified	-0.00720	0.05022
KLCC (5235SS)	Diversified	-0.00942	0.02928
TWRREIT (5111)	Office	-0.00948	0.08104
IGBCR (5299)	Office	-0.00989	0.06925
YTLREIT (5109)	Non-Office	-0.01075	0.10923
SUNREIT (5176)	Diversified	-0.01213	0.05125
PAVREIT (5212)	Diversified	-0.01468	0.06023

CLMT(5180)	Non-Office	-0.02228	0.04484
ALSREIT (5269)	Diversified	-0.02327	0.06666
HEKTAR (5121)	Non-Office	-0.02511	0.07794
	Average	**-0.00798**	

Table 4.1: Average Return and Standard Deviation of Malaysian REITs for the period from 2020 to 2021

REIT Name	Portfolio Type	Average Monthly Return	Standard Deviation
HEKTAR (5121)	Non-Office	0.01308	0.06549
YTLREIT (5109)	Non-Office	0.00612	0.03148
IGBREIT (5117)	Non-Office	0.00573	0.04371
SUNREIT (5176)	Diversified	0.00509	0.03631
KLCC (5235SS)	Diversified	0.00474	0.02417
ALAQAR (5116)	Non-Office	0.00432	0.02367
KIPREIT (5280)	Non-Office	0.00207	0.01280
CLMT(5180)	Non-Office	-0.00030	0.04206
PAVREIT (5212)	Diversified	-0.00113	0.03684
AXREIT (5106)	Diversified	-0.00132	0.02703
ALSREIT (5269)	Diversified	-0.00166	0.06339
UOAREIT (5110)	Office	-0.00211	0.02061
ATRIUM (5130)	Diversified	-0.00350	0.01546
SENTRAL(5123)	Office	-0.00682	0.03251
AMFIRST (5120)	Diversified	-0.00693	0.03274
IGBCR (5299)	Office	-0.00961	0.02542
TWRREIT (5111)	Office	-0.01562	0.05323
ARREIT (5127)	Diversified	-0.02247	0.03340
	Average	**-0.00168**	

Table 4.2: Average Return and Standard Deviation of Malaysian REITs for the period from 2022 to 2023

During the pandemic period (2020-2021), only two M-REITs—Atrium and Sentral—performed better than the FBM KLCI in terms of monthly returns. This indicates that the

majority of M-REITs struggled to maintain positive returns, with several recording negative performance. However, in the post-pandemic period (2022-2023), the performance of M-REITs improved, with eight of the 18 M-REITs outperforming the FBM KLCI. This improvement suggests that the real estate sector, especially those outside of heavily impacted areas, began to recover as the pandemic's restrictions eased.

The disparity in performance between M-REITs and the FBM KLCI can be attributed to the composition of the FBM KLCI, which includes companies from essential industries such as utilities, telecommunications, and healthcare. These sectors were less affected by the pandemic, as their demand remained relatively stable or even increased, whereas M-REITs, which are heavily reliant on real estate sectors like retail, hospitality, and office spaces, were significantly impacted by the lockdowns and reduced consumer spending.

4.1 Risk Comparison: Standard Deviation Analysis

Standard deviation is a measure of the volatility or risk of an asset's return. A higher standard deviation indicates a higher level of risk, while a lower standard deviation indicates more stability in returns. For the period of 2020-2021, the FBM KLCI had a standard deviation of 0.0428, indicating a relatively higher level of market risk. During this same period, 13 of the 18 M-REITs exhibited higher risk compared to the FBM KLCI, as evidenced by their higher standard deviations. Conversely, only seven M-REITs showed higher risk than the FBM KLCI in the post-pandemic period (2022-2023), when the overall market volatility decreased, and the average standard deviation of M-REITs also declined to 0.0348.

This suggests that M-REITs were more volatile during the pandemic period, with several properties in the retail, hospitality, and office sectors experiencing significant declines in occupancy and revenue. This high volatility during the pandemic reflects the uncertainty and disruption caused by the health crisis, which caused wide fluctuations in asset performance. On the other hand, the decrease in risk during the post-pandemic period suggests that M-REITs have started to stabilize as the market recovers and property values adjust.

In terms of sector performance, office REITs did not exhibit significant deviations in risk compared to other types of M-REITs, as the volatility in office properties was somewhat consistent with the broader market performance. This can be attributed to the gradual recovery in demand for office spaces, particularly in prime locations, as businesses started adjusting to hybrid working models.

4.2 M-REITs Performance Compared to Overall Market (FBM KLCI)

Based on the findings from Table 1 and Table 2, it is evident that the performance of M-REITs during the pandemic period (2020-2021) significantly lagged behind the overall market (FBM KLCI), with a negative average monthly return of -0.0079. This was contrasted with a marginally positive return of 0.0034 for the FBM KLCI. The post-pandemic period (2022-2023) saw a modest improvement, with M-REITs achieving an average monthly return of -0.00168, but they still underperformed relative to FBM KLCI's return of -0.0011.

M-REITs' performance during the pandemic was heavily impacted by the widespread economic shutdowns, which led to reduced demand for commercial properties, especially in the retail, hospitality, and office sectors. The slower recovery in these sectors compared to the broader market highlights the particular vulnerability of M-REITs to disruptions in the real estate market. On the other hand, sectors such as utilities and telecommunications, which make up a significant portion of the FBM KLCI, continued to provide stable returns, as these industries were less affected by the pandemic.

Moreover, the high standard deviations of many M-REITs during the pandemic period indicate significant volatility in returns, suggesting that M-REITs were not only underperforming but were also exposed to higher levels of risk compared to the overall market. However, as we move into the post-pandemic period, the reduced standard deviations and the improved average returns for many M-REITs suggest a stabilization of performance, reflecting a recovery in some sectors of the real estate market and a return to more stable conditions.

In conclusion, while M-REITs experienced a challenging period during the pandemic, particularly in terms of rental income and asset values, the post-pandemic recovery has been promising, with several M-REITs performing better than the overall market. This recovery may be attributed to factors such as the reopening of the economy, the resumption of business activities, and the gradual recovery of consumer confidence in the real estate sector. However, M-REITs must remain cautious, as the underlying volatility in the real estate market and broader economic conditions could still pose risks in the future.

4.3 Analysis of M-REITs Based on the Sharpe Ratio

From the data provided, we can observe the Sharpe Ratio values for the 18 Malaysian REITs (M-REITs) in the sample, along with their rankings:

REIT Name	Portfolio Type	Sharpe Ratio Index	Ranking
ATRIUM (5130)	Diversified	0.286997809	1
SENTRAL(5123)	Office	0.037552238	2
AXREIT (5106)	Diversified	-0.015354712	3
KIPREIT (5280)	Non-Office	-0.068575212	4
YTLREIT (5109)	Non-Office	-0.11333347	5
UOAREIT (5110)	Office	-0.114398907	6
ARREIT (5127)	Diversified	-0.118274015	7
TWRREIT (5111)	Office	-0.137110284	8
IGBREIT (5117)	Non-Office	-0.149451899	9
IGBCR (5299)	Office	-0.164880508	10
AMFIRST (5120)	Diversified	-0.175822437	11
SUNREIT (5176)	Diversified	-0.268589433	12
PAVREIT (5212)	Diversified	-0.270885959	13
HEKTAR (5121)	Non-Office	-0.3431278	14
ALSREIT (5269)	Diversified	-0.373648734	15
KLCC (5235SS)	Diversified	-0.377686383	16
ALAQAR (5116)	Non-Office	-0.379704953	17
CLMT(5180)	Non-Office	-0.533234533	18

Table 4.3: Sharpe Ratio Index of M-REITs for the period from 2020 to 2021

REIT Name	Portfolio Type	Sharpe Ratio Index	Ranking
HEKTAR (5121)	Non-Office	0.162385926	1
YTLREIT (5109)	Non-Office	0.116718615	2
KLCC (5235SS)	Diversified	0.094998183	3
ALAQAR (5116)	Non-Office	0.079901189	4

IGBREIT (5117)	Non-Office	0.075588447	5
SUNREIT (5176)	Diversified	0.072804628	6
KIPREIT (5280)	Non-Office	-0.028549326	7
ALSREIT (5269)	Diversified	-0.064742489	8
CLMT(5180)	Non-Office	-0.065338513	9
PAVREIT (5212)	Diversified	-0.096885719	10
AXREIT (5106)	Diversified	-0.138686176	11
UOAREIT (5110)	Office	-0.220879518	12
SENTRAL(5123)	Office	-0.284959911	13
AMFIRST (5120)	Diversified	-0.28620879	14
TWRREIT (5111)	Office	-0.339300086	15
ATRIUM (5130)	Diversified	-0.383872682	16
IGBCR (5299)	Office	-0.485121157	17
ARREIT (5127)	Diversified	-0.746040253	18

Table 4.4:Sharpe Ratio Index of M-REITs for the period from 2022 to 2023

The Sharpe Ratio values for the 18 Malaysian Real Estate Investment Trusts (M-REITs) in this sample, along with their rankings, provide insights into how well each REIT performed on a risk-adjusted basis during the observed periods.

ATRIUM (5130), with its diversified portfolio, ranks highest with a Sharpe Ratio of 0.287. This positive Sharpe Ratio indicates that ATRIUM managed to generate relatively strong returns in relation to the risk taken. The diversified nature of its portfolio, which likely balances risks across various property types, helped mitigate sector-specific risks, contributing to its stable performance.

SENTRAL (5123), focusing on office properties, ranks second with a Sharpe Ratio of 0.038. While still positive, this value is significantly lower than ATRIUM’s, suggesting that while SENTRAL's office-centric strategy offers stable returns, it underperforms when adjusted for risk. The office sector, especially during the pandemic and post-pandemic periods, faced challenges with fluctuating occupancy rates, which likely contributed to the relatively lower Sharpe Ratio.

AXREIT (5106), another diversified portfolio, ranks third with a negative Sharpe Ratio of -0.015. This indicates that AXREIT's performance, when adjusted for risk, has been below the risk-free rate. Despite its diversified approach, AXREIT struggled with volatility in certain sectors or an insufficient recovery in its asset prices, leading to subpar risk-adjusted returns.

KIPREIT (5280), with a non-office portfolio, follows with a Sharpe Ratio of -0.069, placing it fourth. The negative Sharpe Ratio suggests that KIPREIT's returns were not sufficient to compensate for the risks undertaken. As a non-office REIT, KIPREIT's exposure to more volatile sectors like retail and hospitality, which were severely impacted during the pandemic, likely contributed to its poor performance.

YTLREIT (5109) also has a negative Sharpe Ratio of -0.113, ranking fifth. This indicates that YTLREIT's returns were inadequate considering the level of risk involved. Its focus on hospitality and retail, sectors heavily disrupted during the pandemic, likely explains its underperformance in terms of risk-adjusted returns.

UOAREIT (5110), another office-focused REIT, ranks sixth with a Sharpe Ratio of -0.114. Similar to YTLREIT, UOAREIT's performance indicates that the returns from its office-focused portfolio were insufficient to justify the risk. The reduced demand for office space due to the rise of remote working likely played a significant role in its low Sharpe Ratio.

ARREIT (5127), with a diversified portfolio, ranks seventh with a Sharpe Ratio of -0.118. This negative Sharpe Ratio suggests that despite diversification, ARREIT still faced significant volatility that affected its performance. The underperformance in terms of risk-adjusted returns could be due to challenges in specific sectors, such as retail or office spaces, which were severely impacted during the pandemic.

TWRREIT (5111), focusing on office properties, ranks eighth with a Sharpe Ratio of -0.137, reinforcing the challenges faced by office REITs. Despite some recovery, the office market struggled with high vacancy rates and reduced rents, contributing to TWRREIT's poor risk-adjusted returns.

IGBREIT (5117), which focuses on non-office properties, has a Sharpe Ratio of -0.149, ranking ninth. This negative value indicates significant risk in IGBREIT's portfolio, suggesting that despite exposure to diversified property types, the REIT faced high volatility and insufficient returns to compensate for the risks involved.

IGBCR (5299), another office REIT, ranks tenth with a Sharpe Ratio of -0.165. Like other office REITs, IGBCR's performance was negatively impacted by the downturn in the office rental market, reflecting the reduced demand for office spaces during the pandemic and beyond.

AMFIRST (5120), with a diversified portfolio, ranks eleventh with a Sharpe Ratio of -0.176, suggesting that its returns were not enough to justify the risks taken by investors. Despite the benefits of diversification, AMFIRST's performance suffered from challenges in certain sectors, such as retail and hospitality, which were hit hard by the pandemic.

SUNREIT (5176), another diversified REIT, has a Sharpe Ratio of -0.269, placing it twelfth. The negative Sharpe Ratio indicates that SUNREIT's returns were not sufficient to offset the risks taken. The exposure to vulnerable sectors, particularly retail and hospitality, likely contributed to the poor performance during the pandemic.

PAVREIT (5212) ranks thirteenth with a Sharpe Ratio of -0.271. Despite being a diversified REIT, PAVREIT faced significant difficulties, with a negative Sharpe Ratio reflecting the challenges faced by the real estate market during this period. The struggles in sectors like retail and office spaces contributed to its underperformance.

HEKTAR (5121), focusing on non-office properties, ranks fourteenth with a Sharpe Ratio of -0.343, indicating substantial underperformance. The negative Sharpe Ratio suggests that HEKTAR's portfolio faced significant challenges, particularly in sectors like retail, which were heavily impacted by the pandemic, resulting in poor risk-adjusted returns.

ALSREIT (5269), with a diversified portfolio, ranks fifteenth with a Sharpe Ratio of -0.374, signaling poor risk-adjusted returns. Despite its diversification, ALSREIT struggled with generating sufficient returns to compensate for the risks, possibly due to difficulties in sectors severely affected by the pandemic.

KLCC (5235SS), another diversified REIT, ranks sixteenth with a Sharpe Ratio of -0.378, indicating that its returns were not adequate relative to the risks taken. The diversified nature of KLCC's portfolio may have helped mitigate some risks, but it still faced significant challenges in sectors affected by the pandemic.

ALAQAR (5116), focusing on non-office properties, ranks seventeenth with a Sharpe Ratio of -0.380, signaling poor performance in risk-adjusted returns. This negative Sharpe

Ratio indicates that ALAQAR, like many other non-office REITs, was adversely impacted by the economic downturn during the pandemic, particularly in retail and hospitality sectors.

Finally, CLMT (5180), which focuses on non-office properties, ranks eighteenth with the lowest Sharpe Ratio of -0.533. This significant negative Sharpe Ratio indicates that CLMT experienced extreme volatility, with its returns failing to justify the risks taken by investors. Its performance during the period studied was consistently underwhelming, reflecting poor risk-adjusted returns across the observed time frame.

In summary, the analysis of the Sharpe Ratios for the 18 M-REITs indicates that the overall performance of these REITs has been affected by the high level of risk involved during the pandemic and its aftermath. While some diversified M-REITs like ATRIUM (5130) performed well with a positive Sharpe Ratio, many others exhibited negative Sharpe Ratios, signifying that their returns were not sufficient to offset the risks taken. Office and non-office REITs faced varying levels of performance, with some sectors (like office space) underperforming relative to diversified and non-office-focused REITs.

The low Sharpe Ratios for several M-REITs highlight the significant challenges faced by the Malaysian real estate sector, especially in volatile market conditions caused by the pandemic. These figures underscore the importance of strategic diversification, strong asset management, and a focus on sectors with strong recovery potential to improve risk-adjusted returns for M-REITs in the future.

4.4 Analysis of M-REITs Based on the Treynor Ratio

The Treynor Ratio is another key metric used in finance to assess the performance of an investment in relation to the systematic risk (or market risk) it takes on. Unlike the Sharpe Ratio, which uses total risk (standard deviation), the Treynor Ratio focuses on the risk that cannot be diversified away, known as systematic risk, represented by beta. A higher Treynor Ratio implies better returns for the level of market risk taken, while a negative value or a lower ratio suggests that the returns are not adequate for the risk associated with the investment.

The formula for the Treynor Ratio is:

Treynor Ratio=Return of the portfolio−Risk-free rateBeta of the portfolio\text{Treynor Ratio} = \frac{\text{Return of the portfolio} - \text{Risk-free rate}}{\text{Beta of the portfolio}}Treynor Ratio=Beta of the portfolioReturn of the portfolio−Risk-free rate

This ratio is particularly valuable for investors with diversified portfolios who are more concerned with systematic risk as opposed to the total risk (including unsystematic risk). Therefore, the Treynor Ratio is often used to compare the performance of different REITs or investment vehicles, providing insights into whether the returns generated justify the systematic risk involved.

REIT Name	Portfolio Type	Treynor Ratio Index	Ranking
CLMT(5180)	Non-Office	0.239958754	1
ATRIUM (5130)	Diversified	0.045250725	2
SENTRAL(5123)	Office	0.004745081	3
AXREIT (5106)	Diversified	-0.002293173	4
IGBCR (5299)	Office	-0.006486318	5
YTLREIT (5109)	Non-Office	-0.007481773	6
ARREIT (5127)	Diversified	-0.007688416	7
IGBREIT (5117)	Non-Office	-0.010280817	8
TWRREIT (5111)	Office	-0.013447552	9
UOAREIT (5110)	Office	-0.01363583	10
KIPREIT (5280)	Non-Office	-0.013995977	11
SUNREIT (5176)	Diversified	-0.023407972	12
AMFIRST (5120)	Diversified	-0.024756307	13
PAVREIT (5212)	Diversified	-0.026865614	14
HEKTAR (5121)	Non-Office	-0.027391694	15
ALSREIT (5269)	Diversified	-0.036520348	16
KLCC (5235SS)	Diversified	-0.051312548	17
ALAQAR (5116)	Non-Office	-0.077474867	18

Table 4.5:Treynor Ration Index of M-REITs for the period from 2020 to 2021

REIT Name	Portfolio Type	Treynor Ratio Index	Ranking
YTLREIT (5109)	Non-Office	0.030805675	1
HEKTAR (5121)	Non-Office	0.017962427	2
ALAQAR (5116)	Non-Office	0.01430748	3
KLCC (5235SS)	Diversified	0.011109568	4
SUNREIT (5176)	Diversified	0.009931842	5
KIPREIT (5280)	Non-Office	-0.008030441	6
SENTRAL(5123)	Office	-0.019178066	7
TWRREIT (5111)	Office	-0.021735699	8
CLMT(5180)	Non-Office	-0.023876796	9
AMFIRST (5120)	Diversified	-0.032434278	10
ALSREIT (5269)	Diversified	-0.047053928	11
ATRIUM (5130)	Diversified	-0.049806407	12
AXREIT (5106)	Diversified	-0.053335085	13
ARREIT (5127)	Diversified	-0.073096367	14
UOAREIT (5110)	Office	-0.088125874	15
IGBCR (5299)	Office	-0.106320149	16
IGBREIT (5117)	Non-Office	-0.190575696	17
PAVREIT (5212)	Diversified	-4.662995458	18

Table 4.6: Treynor Ration Index of M-REITs for the period from 2022 to 2023

4.4.1 Treynor Ratio for M-REITs: 2020 to 2021 and 2022 to 2023

In the data provided, the Treynor Ratio values for M-REITs over two periods, 2020-2021 and 2022-2023, are presented. Let’s analyze and discuss the findings.

Period 2020-2021:

The table shows that the highest Treynor Ratio in 2020-2021 was recorded by CLMT (5180), with a ratio of 0.239958754, which is significantly higher than the other M-REITs in the sample. This suggests that CLMT managed to deliver a return that was well-adjusted for its level of systematic risk. The portfolio's strategy, despite being categorized as Non-Office, may have been more resilient to market fluctuations or benefited from diversification across

property types or geographical areas, allowing it to outperform other M-REITs in terms of market risk-adjusted return.

Next, ATRIUM (5130), a diversified portfolio, comes in second with a Treynor Ratio of 0.045250725. While this ratio is positive and suggests good market-adjusted performance, it is much lower than CLMT's, indicating that ATRIUM did not provide as much return relative to the market risk it took on. Diversified M-REITs like ATRIUM tend to balance risk across multiple sectors, but the lower Treynor Ratio suggests that some sectors in ATRIUM's portfolio may not have performed as well during this period.

SENTRAL (5123), with an office portfolio, follows with a Treynor Ratio of 0.004745081, ranking third. Although this is a positive value, it indicates a much lower return for the risk taken compared to CLMT and ATRIUM. Office REITs generally struggled due to reduced demand during the pandemic, and this is reflected in SENTRAL's relatively lower Treynor Ratio.

The majority of other M-REITs in the sample show negative Treynor Ratios, indicating that the returns were insufficient to compensate for the systematic risk taken. For example, AXREIT (5106), IGBCR (5299), YTLREIT (5109), and others display negative Treynor Ratios, signaling poor market-adjusted returns and underperformance during this period. The negative ratios indicate that these REITs were not rewarding investors adequately for the level of market risk involved, likely due to factors such as reduced rental income, high vacancy rates, and the broader economic disruptions caused by the pandemic.

Period 2022-2023:

In the post-pandemic period (2022-2023), YTLREIT (5109), which is a Non-Office REIT, achieved the highest Treynor Ratio of 0.030805675, indicating a relatively strong risk-adjusted return during the recovery phase. The positive Treynor Ratio, although lower than CLMT's ratio from 2020-2021, suggests that YTLREIT's non-office portfolio performed well compared to the market risk it took on. The post-pandemic recovery saw some sectors, especially those outside of office spaces (e.g., retail or industrial), gaining traction as consumer demand increased, and YTLREIT benefitted from these trends.

HEKTAR (5121) also performed well with a Treynor Ratio of 0.017962427, ranking second. This indicates that despite being a Non-Office REIT, HEKTAR managed to deliver decent returns relative to its market risk. Non-office portfolios that are more diversified or

exposed to sectors like industrial properties or real estate with more robust recovery may explain these positive results.

ALAQAR (5116), another Non-Office REIT, recorded a positive Treynor Ratio of 0.01430748, ranking third. ALAQAR's portfolio strategy likely benefited from post-pandemic growth in certain sectors, contributing to improved market-adjusted returns during this period.

In contrast, PAVREIT (5212), with a diversified portfolio, ranked last with a negative Treynor Ratio of -4.662995458, signaling exceptionally poor returns relative to market risk. This could be due to underperformance in key sectors within PAVREIT's portfolio, especially those that were slow to recover post-pandemic, or possibly due to high exposure to more volatile real estate sectors.

Many other M-REITs in this period still show negative Treynor Ratios, such as SENTRAL (5123), TWRREIT (5111), and CLMT (5180), highlighting that the returns for these REITs were not sufficient to offset the market risks. Office REITs, in particular, continued to struggle as the demand for office space remained volatile and uncertain in the aftermath of the pandemic. The slow recovery of office leasing markets and the continued trend of remote work or hybrid models negatively impacted office-focused REITs.

4.4.2 Discussion and Interpretation of Results

The Treynor Ratio analysis provides insight into the risk-adjusted returns of M-REITs, particularly in terms of how well they performed relative to the market risk they took on. From the analysis:

1. CLMT's Outperformance in 2020-2021: CLMT (5180) leads with a high Treynor Ratio in the 2020-2021 period, suggesting that its portfolio, though focused on non-office properties, was well-positioned to mitigate systematic market risks. This could be attributed to its diversification within non-office properties or its exposure to sectors like industrial or logistics, which performed better than retail and office during the pandemic.

2. ATRIUM's Positive, Yet Modest Performance: ATRIUM (5130), with a diversified portfolio, performed well with a positive Treynor Ratio, but not as well as CLMT. This indicates that while ATRIUM's diversification helped it absorb some of the market's risks, the performance was still constrained by weak returns in certain sectors within its portfolio.

3. Office REITs Struggling: Office REITs like SENTRAL, TWRREIT, and IGBCR continue to show negative Treynor Ratios, both in the pandemic and post-pandemic

periods. This aligns with the broader trend of reduced demand for office space and the shift to remote work, which severely affected office property markets. The low Treynor Ratios indicate that these office REITs did not provide sufficient returns to justify the risks taken during these periods.

4. Post-Pandemic Recovery and Risk-adjusted Returns: In the post-pandemic period (2022-2023), YTLREIT and HEKTAR saw positive Treynor Ratios, suggesting that their portfolios were better positioned to capitalize on the recovery of real estate markets. Non-office properties like retail and industrial, which were affected but less so than office properties, appear to have benefitted from the economic rebound.

5. Negative Treynor Ratios Indicating Underperformance: Many M-REITs, especially those with high exposure to office and diversified sectors, exhibited negative Treynor Ratios in both periods. This suggests that these REITs were not able to generate returns that were sufficient to compensate for the market risks, especially in uncertain or recovery phases.

The Treynor Ratio analysis of M-REITs for the periods from 2020-2021 and 2022-2023 reveals significant differences in performance, with some REITs offering better risk-adjusted returns than others. Non-office REITs such as CLMT and YTLREIT outperformed the market relative to their risk, reflecting their exposure to sectors that either recovered quickly or were less impacted by the pandemic. On the other hand, office REITs continue to underperform, as their exposure to the commercial office market remains problematic in the post-pandemic era.

For investors, the Treynor Ratio serves as a valuable tool for understanding how well M-REITs are managing market risk. While diversification can help reduce unsystematic risk, M-REITs with high exposure to office properties or sectors with long-term recovery challenges will need to reconsider their strategies to improve risk-adjusted returns.

4.5 Analysis of M-REITs Based on the Jensen Alpha Index

The Jensen Alpha is an important performance measure used to evaluate the excess return generated by an investment compared to its expected return based on its risk profile. This is particularly useful in understanding whether a fund or REIT has outperformed or underperformed its expected return given its level of risk, often referred to as "market risk" or beta. A positive Jensen Alpha suggests that a REIT has generated returns above the market expectation (adjusted for risk), while a negative value indicates underperformance.

The Jensen Alpha Index is calculated as follows:

Jensen’s Alpha=Actual Return−(Risk-free Rate+β×(Market Return−Risk-free Rate))\text{Jensen's Alpha} = \text{Actual Return} - \left(\text{Risk-free Rate} + \beta \times (\text{Market Return} - \text{Risk-free Rate}) \right)Jensen’s Alpha=Actual Return−(Risk-free Rate+β×(Market Return−Risk-free Rate))

Where:

- Beta (β) represents the systematic risk of the REIT relative to the market.
- Actual Return is the return achieved by the REIT.
- Market Return is the expected return from the market (e.g., FBM KLCI).
- Risk-free Rate is the return from an investment with zero risk, often represented by government bonds.

Now, let's break down the Jensen Alpha data for M-REITs during the periods 2020-2021, 2022-2023, and understand the performance of various REITs in relation to their expected returns.

REIT Name	Portfolio Type	Jensen Alpha Index	Ranking
ATRIUM (5130)	Diversified	0.016225623	1
SENTRAL(5123)	Office	0.003262205	2
AXREIT (5106)	Diversified	0.000535841	3
KIPREIT (5280)	Non-Office	-0.001624131	4
UOAREIT (5110)	Office	-0.002984045	5
ARREIT (5127)	Diversified	-0.005819473	6
ALAQAR (5116)	Non-Office	-0.007141011	7
IGBREIT (5117)	Non-Office	-0.007694775	8
AMFIRST (5120)	Diversified	-0.007825281	9
KLCC (5235SS)	Diversified	-0.009803245	10
TWRREIT (5111)	Office	-0.010936398	11

SUNREIT (5176)	Diversified	-0.013170325	12
IGBCR (5299)	Office	-0.013178338	13
YTLREIT (5109)	Non-Office	-0.013667376	14
PAVREIT (5212)	Diversified	-0.015754282	15
CLMT(5180)	Non-Office	-0.022101304	16
ALSREIT (5269)	Diversified	-0.024477074	17
HEKTAR (5121)	Non-Office	-0.026833191	18

Table 4.7: Jensen Alpha Index of M-REITs for the period from 2020 to 2021

REIT Name	Portfolio Type	Jensen Alpha Index	Ranking
HEKTAR (5121)	Non-Office	0.015181351	1
YTLREIT (5109)	Non-Office	0.006541027	2
SUNREIT (5176)	Diversified	0.00603241	3
IGBREIT (5117)	Non-Office	0.005673419	4
KLCC (5235SS)	Diversified	0.005473142	5
ALAQAR (5116)	Non-Office	0.004789548	6
KIPREIT (5280)	Non-Office	0.002226294	7
CLMT(5180)	Non-Office	0.000104449	8
AXREIT (5106)	Diversified	-0.001068665	9
PAVREIT (5212)	Diversified	-0.001123368	10
ALSREIT (5269)	Diversified	-0.001351026	11
UOAREIT (5110)	Office	-0.001925207	12
ATRIUM (5130)	Diversified	-0.003082589	13
SENTRAL(5123)	Office	-0.005105629	14
AMFIRST (5120)	Diversified	-0.00589994	15
IGBCR (5299)	Office	-0.009163967	16
TWRREIT (5111)	Office	-0.012665779	17
ARREIT (5127)	Diversified	-0.021263033	18

Table 4.8: Jensen Alpha Index of M-REITs for the period from 2022 to 2023

4.5.1 Jensen Alpha Analysis for 2020-2021

In the period from 2020 to 2021, the top performer in terms of Jensen Alpha was ATRIUM (5130), with a positive Jensen Alpha of 0.0162. This suggests that ATRIUM's returns exceeded expectations based on its risk, meaning it generated positive excess returns compared to the broader market. As a diversified portfolio, ATRIUM's success likely comes from its well-balanced allocation across different sectors, which helped cushion against downturns in specific real estate sectors.

The second-best performer, SENTRAL (5123), an office REIT, achieved a Jensen Alpha of 0.0033. While still positive, the returns of SENTRAL were more in line with what was expected from the market, suggesting that the office sector might not have experienced the same level of excess return as ATRIUM, but it still generated a reasonable return adjusted for risk.

In contrast, AXREIT (5106), a diversified REIT, had a slightly positive Jensen Alpha of 0.0005. This indicates that while AXREIT was able to match its expected return based on its risk, it did not significantly outperform the market. However, its returns remained positive, suggesting stable but not exceptional performance.

On the other end of the spectrum, HEKTAR (5121) and CLMT (5180) showed negative Jensen Alphas, with HEKTAR at -0.0268 and CLMT at -0.0221. These negative values imply that these REITs underperformed relative to what was expected based on their market risk. This underperformance can likely be attributed to weak returns in sectors such as retail and hospitality, which were significantly impacted during the pandemic.

4.5.2 Jensen Alpha Analysis for 2022-2023

Moving into the post-pandemic period (2022-2023), HEKTAR (5121) became the top performer in terms of Jensen Alpha, with a value of 0.0152, signaling a strong recovery relative to its market risk. This indicates that HEKTAR's non-office properties performed better than expected, possibly benefiting from the rebound in consumer spending and the recovery of retail sectors, as restrictions eased and economic activities resumed.

YTLREIT (5109) also posted a positive Jensen Alpha of 0.0065, ranking second. This indicates that, similar to HEKTAR, YTLREIT's returns exceeded expectations during the recovery phase. Being a non-office REIT, YTLREIT likely benefited from demand in sectors such as industrial properties or logistics, which experienced growth post-pandemic.

KLCC (5235SS), a diversified REIT, achieved a positive Jensen Alpha of 0.0055, reflecting strong market-adjusted performance. This suggests that KLCC, with its exposure to prime office and retail spaces, has been able to recover well compared to other office-focused REITs, possibly due to its exposure to high-demand sectors and premium properties.

In contrast, PAVREIT (5212), a diversified portfolio, had a massively negative Jensen Alpha of -4.663, which is an extreme case of underperformance. This large negative value points to a significant failure to meet expectations relative to the systematic risk involved, likely due to poor performance in key sectors within its portfolio.

Interpretation and Discussion

Top Performers (2020-2021):

ATRIUM (5130), a diversified REIT, demonstrated exceptional performance during the 2020-2021 period. It posted a positive Jensen Alpha, indicating that its returns exceeded expectations based on its market risk. This suggests that ATRIUM effectively managed its diversified portfolio, generating returns beyond what would typically be anticipated. The strong performance highlights the benefits of diversification, as ATRIUM's ability to balance its exposure across various property sectors likely helped it mitigate the negative impacts of the pandemic.

SENTRAL (5123), although having a lower Jensen Alpha compared to ATRIUM, still showed positive results. Its performance was enough to meet or slightly exceed expectations given its focus on office properties. While office REITs were hit hard by declining demand for office space due to the shift toward remote work, SENTRAL's positive Jensen Alpha reflects its ability to maintain some level of stability during this challenging period.

Underperformers (2020-2021):

On the other hand, HEKTAR (5121) and CLMT (5180) experienced negative Jensen Alphas, indicating that these REITs underperformed relative to the market risk they took on. Both REITs had significant exposure to sectors like retail and non-office properties, which were among the hardest hit during the pandemic. The retail sector faced store closures, low consumer foot traffic, and declining rents, while non-office properties also struggled with lower demand and occupancy. The poor performance of these sectors, combined with limited market recovery during the initial pandemic period, likely contributed to their negative Jensen Alphas.

Post-Pandemic Performance (2022-2023):

As the economy began to recover in the post-pandemic period, HEKTAR (5121) and YTLREIT (5109) led the way with positive Jensen Alphas, signaling that they not only recovered but also outperformed expectations. Both REITs benefited from the renewed demand for retail and non-office spaces, particularly logistics and industrial properties. The strong performance of these sectors, which rebounded faster than others, helped drive positive returns for these REITs during the recovery phase.

KLCC (5235SS), with its diversified portfolio, also posted positive returns during the post-pandemic phase. Despite continuing challenges in the office space sector, KLCC's diverse mix of assets allowed it to maintain a strong position in the recovery, benefiting from the broader economic rebound.

Negative Performers (2022-2023):

However, not all REITs enjoyed the recovery. PAVREIT (5212) stood out with an extremely negative Jensen Alpha, suggesting that it struggled significantly during the post-pandemic period. The underperformance may have been due to its portfolio's exposure to underperforming sectors, particularly office properties and retail spaces. These sectors, which were slow to recover, likely weighed down PAVREIT's overall performance, as demand remained subdued and rents stayed low in these areas.

UOAREIT (5110) and IGBCR (5299), both of which focus on office properties, also showed negative Jensen Alphas. This reflects the ongoing struggles of the office market, particularly as remote and hybrid work models continued to diminish demand for traditional office spaces. Despite the recovery of many other sectors, the office market lagged behind, which likely contributed to the poor performance of these office REITs.

The performance of the M-REITs during and after the pandemic varied significantly based on their sectoral exposure. Diversified portfolios such as ATRIUM (5130) and KLCC (5235SS) were better positioned to weather the storm and recover, while REITs with heavy exposure to retail and office spaces, such as HEKTAR (5121), CLMT (5180), PAVREIT

(5212), and UOAREIT (5110), faced greater challenges during both the pandemic and the recovery phase.

In conclusion, the Jensen Alpha Index offers valuable insights into how well M-REITs performed relative to their market risk, with ATRIUM (5130) consistently outshining the rest, particularly in 2020-2021, due to its well-diversified portfolio that effectively mitigated risks. On the other hand, PAVREIT (5212), with its massive negative Jensen Alpha in 2022-2023, serves as an example of poor risk-adjusted returns and highlights the vulnerability of certain portfolios during uncertain periods.

The office sector, represented by SENTRAL (5123), TWRREIT (5111), and others, has had mixed results, with many showing negative Jensen Alphas, reflecting the ongoing challenges in the office space market, which was particularly vulnerable during and after the pandemic.

In the post-pandemic recovery phase, non-office and diversified portfolios, such as those held by HEKTAR and YTLREIT, have managed to perform better relative to their market risk, showing signs of resilience and growth potential. However, REITs with high office exposure, particularly those with poorly performing assets, continue to lag behind in terms of market-adjusted returns.

4.6 Analysis Based on R Squared

R-Squared (R^2) is a statistical measure that indicates how well the performance of an asset (in this case, a Real Estate Investment Trust or REIT) can be explained by the movements in the market, such as a benchmark index (e.g., FBM KLCI). R-Squared values range from 0 to 1, with:

- $R^2 = 1$ meaning that 100% of the asset's performance is explained by the market movements (the asset's returns move perfectly in sync with the market).
- $R^2 = 0$ meaning that the asset's returns are completely independent of the market's movements.

In the context of M-REITs, high R-Squared values suggest that the returns of the REIT are largely driven by market movements, indicating it may be influenced by broader economic trends and the overall performance of the real estate market. Low R-Squared values, on the

other hand, indicate that the REIT's returns are more driven by specific factors within its portfolio or by its management decisions, rather than by the market or external economic influences.

REIT Name	Portfolio Type	R Squared	Ranking
IGBCR (5299)	Office	0.750214674	1
ARREIT (5127)	Diversified	0.433939193	2
YTLREIT (5109)	Non-Office	0.420756957	3
IGBREIT (5117)	Non-Office	0.387499918	4
HEKTAR (5121)	Non-Office	0.287738538	5
SUNREIT (5176)	Diversified	0.241420573	6
ALSREIT (5269)	Diversified	0.191946952	7
TWRREIT (5111)	Office	0.190624003	8
PAVREIT (5212)	Diversified	0.186424699	9
UOAREIT (5110)	Office	0.129063844	10
SENTRAL(5123)	Office	0.114844016	11
KLCC (5235SS)	Diversified	0.099343507	12
AMFIRST (5120)	Diversified	0.092491296	13
AXREIT (5106)	Diversified	0.082211713	14
ATRIUM (5130)	Diversified	0.073761557	15
ALAQAR (5116)	Non-Office	0.04404482	16
KIPREIT (5280)	Non-Office	0.044020185	17
CLMT(5180)	Non-Office	0.009054977	18

Table 4.9: R-Squared of M-REITs for the period from 2020-2021

REIT Name	Portfolio Type	R Squared	Ranking
TWRREIT (5111)	Office	0.295098362	1
SENTRAL(5123)	Office	0.267364663	2
ARREIT (5127)	Diversified	0.126147604	3

IGBCR (5299)	Office	0.101782662	4
HEKTAR (5121)	Non-Office	0.098972107	5
AMFIRST (5120)	Diversified	0.094298227	6
KLCC (5235SS)	Diversified	0.088548727	7
ATRIUM (5130)	Diversified	0.073626097	8
SUNREIT (5176)	Diversified	0.065073536	9
ALAQAR (5116)	Non-Office	0.037819525	10
YTLREIT (5109)	Non-Office	0.017384607	11
KIPREIT (5280)	Non-Office	0.01532137	12
CLMT(5180)	Non-Office	0.009068437	13
AXREIT (5106)	Diversified	0.008559368	14
UOAREIT (5110)	Office	0.007607642	15
ALSREIT (5269)	Diversified	0.002292625	16
IGBREIT (5117)	Non-Office	0.000190624	17
PAVREIT (5212)	Diversified	5.228E-07	18

Table 4.10: R-Squared of M-REITs for the period from 2022-2023

4.6.1 R-Squared Analysis of M-REITs for the Period from 2020 to 2021

In the 2020-2021 period, the highest R-Squared value was recorded by IGBCR (5299), an office REIT, with a value of 0.7502, meaning that 75.02% of IGBCR's returns can be explained by market movements. This relatively high R-Squared suggests that IGBCR's performance was strongly correlated with broader market conditions, such as shifts in the office real estate market. Since office spaces were significantly impacted during the pandemic, this could reflect the sector's dependence on economic recovery and market dynamics.

ARREIT (5127), a diversified REIT, ranked second with an R-Squared of 0.4340. This indicates that nearly 43.4% of ARREIT's performance was attributable to market movements, while the rest was driven by factors within its specific portfolio. This relatively high value suggests that ARREIT is moderately sensitive to market conditions, but still retains some independence based on its diverse property holdings.

YTLREIT (5109), a non-office REIT, ranked third with an R-Squared of 0.4208. This means that about 42% of its performance was driven by broader market trends. Non-office REITs are generally more exposed to sectors like retail, industrial, and healthcare, which tend to be more sensitive to local economic factors. The relatively high R-Squared here suggests that these broader market factors were significant drivers for YTLREIT's returns during this period.

In contrast, CLMT (5180), a non-office REIT, showed the lowest R-Squared value of 0.0091, suggesting that almost none of CLMT's performance could be explained by market movements. This low R-Squared indicates that CLMT's returns were largely driven by internal factors, such as management decisions, operational performance, or sector-specific issues within its portfolio. In particular, this suggests that CLMT might have had assets that were less correlated with the broader market, or that its management strategies significantly influenced performance.

The rest of the M-REITs displayed moderate R-Squared values, which indicates a mix of market and internal factors driving their performance. For example, SUNREIT (5176) and ALSREIT (5269) had R-Squared values of 0.2414 and 0.1919, respectively, showing that these REITs were somewhat influenced by market conditions, but their specific property portfolios still played an important role in their returns.

4.6.2 R-Squared Analysis of M-REITs for the Period from 2022 to 2023

The 2022-2023 period saw shifts in the R-Squared values across most M-REITs, reflecting the continued market recovery post-pandemic and the evolving dynamics within the real estate sector.

TWRREIT (5111), an office REIT, achieved the highest R-Squared value of 0.2951, showing that nearly 30% of its performance was explained by market movements. While this is lower than the highest R-Squared in the previous period (IGBCR), it still reflects a significant correlation with market trends, especially in the office space market. TWRREIT's moderate exposure to market fluctuations suggests that its performance could have been influenced by changes in office leasing demand as the market recovered post-pandemic.

SENTRAL (5123), another office REIT, ranked second with an R-Squared of 0.2674. This also indicates a high level of correlation with the broader market, as office space demand remained volatile throughout the recovery period. The relatively high R-Squared for

SENTRAL suggests that its returns were closely tied to the overall health of the office market, and external factors, such as shifts in work habits or regional demand, likely played a major role in determining its performance.

On the other hand, ARREIT (5127), a diversified REIT, had a lower R-Squared value of 0.1261, showing that only about 12.61% of its performance could be attributed to market movements. The rest of its performance could be explained by internal factors like property management strategies or sector-specific decisions. The moderate R-Squared value for ARREIT reflects its diversified nature, where performance is influenced by a range of property types, each with its own set of dynamics.

KLCC (5235SS), a diversified REIT, had an R-Squared value of 0.0885, indicating that its performance was only marginally correlated with market trends during this period. The lower R-Squared reflects KLCC's more stable and possibly more local market dynamics, which may not have been as strongly tied to broader economic conditions as other REITs.

YTLREIT (5109), a non-office REIT, recorded a much lower R-Squared value of 0.0174, signaling that a very small portion of its performance could be attributed to market movements. This suggests that YTLREIT's returns were largely driven by specific property factors or sector-specific issues rather than market-wide trends.

The lowest R-Squared value in this period was recorded by PAVREIT (5212), which had a minuscule R-Squared value of 5.228E-07 (essentially 0). This suggests that PAVREIT's performance was completely independent of the market's movements, indicating that internal factors such as management strategies, sector performance, or specific property-level dynamics were the key drivers behind its returns.

4.6.3 Discussion and Interpretation

- Office REITs' Higher R-Squared: In both periods, office REITs like IGBCR (5299), TWRREIT (5111), and SENTRAL (5123) showed relatively high R-Squared values, indicating a stronger correlation with market performance. This reflects the fact that office space demand is often tied to broader economic conditions, including employment levels, business expansion, and macroeconomic recovery. As the office sector was significantly impacted by the pandemic and the shift to remote working, these REITs likely followed broader market trends, with their returns being highly sensitive to market conditions.

- Non-Office REITs' Moderately Low R-Squared: Non-office REITs, such as YTLREIT (5109) and HEKTAR (5121), showed relatively moderate R-Squared values, which suggests a moderate influence of market conditions on their performance. These REITs likely had more exposure to sectors like industrial, retail, or healthcare, which have different market dynamics than office space. While still affected by broader market conditions, their returns might also have been influenced by sector-specific factors, such as shifts in consumer behavior, e-commerce growth, or demand for healthcare facilities, making them less correlated with overall market trends.

- Diversified REITs: Diversified REITs like ARREIT (5127), KLCC (5235SS), and ATRIUM (5130) showed a mix of R-Squared values. Diversified portfolios are generally less sensitive to single-sector performance, and thus their R-Squared values were lower in comparison to office REITs. The relatively low R-Squared values for these REITs suggest that factors within the portfolio, such as property management, specific leasing strategies, or geographic exposure, played a more significant role in driving performance than broader market conditions.

- Low R-Squared Values and Underperformance: CLMT (5180), PAVREIT (5212), and IGBREIT (5117) had the lowest R-Squared values across both periods, indicating poor correlation with market movements. This suggests that their returns were largely driven by internal factors, which could include management decisions, portfolio composition, or specific property-level performance. These REITs might have faced challenges that prevented them from benefiting from market-wide recovery, or their returns could have been influenced by poor property-level performance, which was not tied to the market's overall performance.

R-Squared values provide valuable insight into the performance drivers of M-REITs, revealing the degree to which their returns are influenced by broader market movements. Office REITs generally exhibit higher R-Squared values, reflecting their stronger sensitivity to market trends, especially in times of economic uncertainty. Non-office REITs and diversified portfolios, on the other hand, tend to show more independence from the market, with their performance being driven by specific sectoral or internal factors.

For investors, R-Squared serves as an important tool for understanding the degree of market exposure a REIT has and assessing whether a REIT’s performance is aligned with broader economic conditions or driven by unique internal factors. This information can help

investors make more informed decisions about portfolio diversification and risk management based on market sensitivity.

4.7 Discussion based on Risk Diversifiability

Risk Diversifiability is a critical concept in portfolio management, particularly in the context of Real Estate Investment Trusts (REITs). It refers to the extent to which the risk of a given portfolio can be mitigated or reduced through diversification. The general principle is that by diversifying a portfolio across multiple property types and regions, a REIT can reduce the total risk it is exposed to, especially the unsystematic or asset-specific risk. This, in turn, allows the REIT to provide more stable returns, even in times of economic uncertainty or market volatility. High levels of risk diversifiability indicate that a REIT is less susceptible to the performance of any single property sector, while lower levels suggest higher risk concentration within specific sectors or geographic regions.

REIT Name	Portfolio Type	Risk Diversifiability	Ranking
CLMT(5180)	Non-Office	0.990945023	1
KIPREIT (5280)	Non-Office	0.955979815	2
ALAQAR (5116)	Non-Office	0.95595518	3
ATRIUM (5130)	Diversified	0.926238443	4
AXREIT (5106)	Diversified	0.917788287	5
AMFIRST (5120)	Diversified	0.907508704	6
KLCC (5235SS)	Diversified	0.900656493	7
SENTRAL(5123)	Office	0.885155984	8
UOAREIT (5110)	Office	0.870936156	9
PAVREIT (5212)	Diversified	0.813575301	10
TWRREIT (5111)	Office	0.809375997	11
ALSREIT (5269)	Diversified	0.808053048	12
SUNREIT (5176)	Diversified	0.758579427	13

HEKTAR (5121)	Non-Office	0.712261462	14
IGBREIT (5117)	Non-Office	0.612500082	15
YTLREIT (5109)	Non-Office	0.579243043	16
ARREIT (5127)	Diversified	0.566060807	17
IGBCR (5299)	Office	0.249785326	18

Table 4.11: Risk Diversifiability of M-REITs for the period 2020-2021

REIT Name	**Portfolio Type**	**Risk Diversifiability**	**Ranking**
PAVREIT (5212)	Diversified	0.999999477	1
IGBREIT (5117)	Non-Office	0.999809376	2
ALSREIT (5269)	Diversified	0.997707375	3
UOAREIT (5110)	Office	0.992392358	4
AXREIT (5106)	Diversified	0.991440632	5
CLMT(5180)	Non-Office	0.990931563	6
KIPREIT (5280)	Non-Office	0.98467863	7
YTLREIT (5109)	Non-Office	0.982615393	8
ALAQAR (5116)	Non-Office	0.962180475	9
SUNREIT (5176)	Diversified	0.934926464	10
ATRIUM (5130)	Diversified	0.926373903	11
KLCC (5235SS)	Diversified	0.911451273	12
AMFIRST (5120)	Diversified	0.905701773	13
HEKTAR (5121)	Non-Office	0.901027893	14
IGBCR (5299)	Office	0.898217338	15
ARREIT (5127)	Diversified	0.873852396	16
SENTRAL(5123)	Office	0.732635337	17
TWRREIT (5111)	Office	0.704901638	18

Table 4.12: Risk Diversifiability of M-REITs for the period 2022-2023

This analysis explores how the risk diversifiability of various Malaysian Real Estate Investment Trusts (M-REITs) has evolved during different periods, namely 2020-2021 and 2022-2023, based on their portfolio types. The values presented in the tables represent the degree to which risk can be diversified within each M-REIT's portfolio, with higher values indicating better risk diversification.

4.7.1 Risk Diversifiability Analysis for 2020-2021

The data for the 2020-2021 period reveals that CLMT (5180), a non-office REIT, achieved the highest risk diversifiability with a value of 0.9909, followed closely by KIPREIT (5280) and ALAQAR (5116), which also showed high diversifiability scores of 0.9560 and 0.9560, respectively. These values suggest that these REITs had well-diversified portfolios, effectively spreading their risk across different property types or regions. For CLMT, its non-office portfolio likely included a mix of retail, industrial, and other real estate sectors, which helped to mitigate risks associated with any single property type or market segment.

ATRIUM (5130), a diversified REIT, ranked 4th with a risk diversifiability value of 0.9262, indicating that its portfolio was also highly diversified. As a diversified REIT, ATRIUM likely included a mix of office, retail, and industrial properties, which would have contributed to a well-balanced exposure to various property types, further reducing its exposure to any single market.

AXREIT (5106), another diversified REIT, had a risk diversifiability score of 0.9178, ranking 5th. This suggests that AXREIT's portfolio was also well-diversified, likely combining assets in various property sectors. A diversified portfolio helps to smooth out the risk from individual assets, making AXREIT less vulnerable to market fluctuations in any one sector.

In contrast, IGBCR (5299), an office REIT, had the lowest risk diversifiability in this period, with a score of 0.2498. This indicates that IGBCR’s portfolio was highly concentrated in office properties, which inherently carries a higher risk, especially during the pandemic when demand for office space significantly declined due to remote work and changing business dynamics. This lack of diversification made IGBCR more susceptible to market fluctuations specific to the office sector.

Similarly, ARREIT (5127), IGBREIT (5117), and other office-centric REITs such as UOAREIT (5110) also demonstrated lower risk diversifiability, reflecting the vulnerabilities associated with having a portfolio concentrated in a single sector (office properties). The

pandemic's impact on office space demand would have exacerbated the risks for these REITs, further highlighting the benefits of diversification.

4.7.2 Risk Diversifiability Analysis for 2022-2023

In the 2022-2023 period, the top-ranked REIT in terms of risk diversifiability was PAVREIT (5212), with an R^2 value of 0.999999477, which suggests near-perfect diversification within its portfolio. This indicates that PAVREIT's assets were likely spread across a range of property types, making the portfolio highly resistant to sector-specific downturns. The near-total risk diversifiability also suggests that PAVREIT was well-positioned to recover from the pandemic and market disruptions due to its broad exposure to various real estate markets.

IGBREIT (5117), a non-office REIT, ranked second with an extremely high risk diversifiability value of 0.9998, indicating a highly diversified portfolio. As a non-office REIT, IGBREIT likely benefited from exposure to less volatile sectors, such as logistics, industrial, or healthcare properties, which performed relatively better during the recovery phase post-pandemic. Its well-diversified portfolio likely contributed to its ability to withstand market fluctuations and perform well during the post-pandemic recovery.

ALSREIT (5269), another diversified REIT, ranked third with a value of 0.9977, again reflecting its well-diversified portfolio. ALSREIT’s high risk diversifiability suggests that its property holdings were spread across multiple sectors and geographic regions, which helped reduce the volatility and exposure to any single market segment.

On the other hand, SENTRAL (5123), an office REIT, had a lower risk diversifiability score of 0.7326, indicating that its portfolio was less diversified compared to the top performers. Office REITs like SENTRAL, which are heavily reliant on the office sector, are more vulnerable to market fluctuations and demand shifts within that sector. The relatively lower score of SENTRAL suggests that its portfolio was still significantly exposed to the risks associated with office properties, especially in a post-pandemic environment where the future of office space demand remains uncertain.

TWRREIT (5111), another office-focused REIT, followed with a risk diversifiability score of 0.7049, further reinforcing the challenges faced by office REITs. As remote working and hybrid models became more mainstream, office REITs struggled to attract tenants, leading

to a reduced demand for office spaces. The relatively low risk diversifiability for TWRREIT reflects its higher exposure to these sector-specific risks.

4.7.3 Interpretation and Discussion

- Non-Office REITs' High Diversifiability: Non-office REITs, such as CLMT (5180), KIPREIT (5280), and ALAQAR (5116), consistently showed high risk diversifiability in both periods. These REITs tend to hold assets in more stable and diverse sectors like industrial, healthcare, retail, and logistics. These sectors are generally less susceptible to market swings and have exhibited resilience during the pandemic, allowing non-office REITs to better weather the storm. The high risk diversifiability scores of these REITs indicate that they were able to spread their risks across different property sectors and geographies, providing stability and reducing exposure to any single market.

- Diversified REITs' Moderate Risk Diversifiability: Diversified REITs, such as ATRIUM (5130) and AXREIT (5106), showed moderate risk diversifiability. Diversification across different types of properties typically reduces the overall risk of a portfolio. However, the performance of these diversified REITs was still somewhat influenced by the market's overall health and the performance of specific sectors. Despite their ability to spread risks across property types, office sector exposure continues to weigh on the risk profiles of these REITs, especially during times of market disruption.

- Office REITs' Lower Diversifiability: Office-focused REITs, including IGBCR (5299), SENTRAL (5123), and TWRREIT (5111), had relatively lower risk diversifiability in both periods, reflecting their significant reliance on the performance of the office market. The pandemic severely impacted the office space market due to lockdowns and the widespread shift to remote work. As the future of office demand remains uncertain, office REITs with low diversifiability are particularly vulnerable to changes in market conditions and tenant needs. The lower risk diversifiability scores indicate that these REITs were more exposed to risks inherent in the office property sector and less able to mitigate those risks through diversification into other property types.

- Risk Diversifiability as a Key Factor in Post-Pandemic Recovery: The post-pandemic period (2022-2023) saw many non-office REITs and diversified REITs continuing to demonstrate high risk diversifiability, which positioned them well for recovery. PAVREIT (5212) and IGBREIT (5117), with near-perfect risk diversifiability, exemplify the strength of portfolios that are not heavily reliant on any single property type or sector. These REITs were

able to weather the storm better than their office-centric counterparts, whose risk diversifiability remained lower and who continued to struggle with the long-term shifts in office space demand.

The analysis of risk diversifiability across M-REITs reveals that non-office REITs and diversified REITs generally exhibited higher levels of risk diversifiability, making them more resilient during the pandemic and recovery phases. By spreading risk across multiple property sectors, these REITs were able to mitigate the impact of market volatility, particularly in sectors heavily impacted by the pandemic, such as office and retail. On the other hand, office REITs with low risk diversifiability remained vulnerable to changes in demand for office space, particularly in the wake of remote working trends and shifts in commercial real estate dynamics.

For investors, this analysis underscores the importance of diversification in managing risk, especially in uncertain times. A well-diversified portfolio not only reduces exposure to individual sector risks but also provides more stable returns over time. As the commercial real estate market continues to evolve, particularly with changes in the office space sector, the future performance of M-REITs will depend on how effectively they can diversify their portfolios and adapt to market demands.

CHAPTER 5

CONCLUSION

The objective of this thesis was to investigate the performance of office Real Estate Investment Trusts (REITs) in Malaysia during the COVID-19 pandemic (2020-2021) and the post-pandemic recovery period (2022-2023). This study analyzed key performance metrics, including Sharpe Ratio, Treynor Ratio, Jensen Alpha, R-Squared, and Risk Diversifiability, to assess the risk-adjusted returns, excess returns, market sensitivity, and overall performance of office REITs in Malaysia during these tumultuous periods. The results of this study provide valuable insights into how the office REIT sector responded to market disruptions caused by the pandemic and the subsequent recovery phase, with particular focus on their resilience, diversification strategies, and risk management practices.

5.1 Key Findings

5.1.1 Risk-Adjusted Performance (Sharpe and Treynor Ratios)

The Sharpe Ratio and Treynor Ratio analyses revealed that the performance of office REITs during the pandemic was highly impacted by the disruption in the office space market. SENTRAL (5123), TWRREIT (5111), and IGBCR (5299) were among the office REITs that struggled with low or negative Sharpe and Treynor Ratios, indicating that these REITs did not deliver satisfactory returns when adjusted for risk during the pandemic.

Despite the challenges, SENTRAL (5123) showed a positive Sharpe Ratio and Treynor Ratio during both periods, suggesting that it was one of the more resilient office REITs during the pandemic and recovery phases, although still underperforming compared to diversified REITs and non-office REITs.

The post-pandemic period (2022-2023) showed some improvement, but office REITs still lagged behind their diversified and non-office counterparts in terms of risk-adjusted performance. The continued struggle of office REITs reflects the ongoing uncertainties in the office market, particularly with the rise of remote work and flexible work arrangements that reduced demand for office space.

5.1.2 Excess Returns (Jensen Alpha)

Jensen Alpha demonstrated that, in the 2020-2021 period, ATRIUM (5130) and other diversified REITs managed to outperform their expected returns based on their market risk. This indicates that these REITs generated returns beyond what would have been expected from their exposure to the broader market, partly due to their diversified portfolios and effective management strategies.

In contrast, office REITs such as PAVREIT (5212) and IGBCR (5299) experienced negative Jensen Alpha, highlighting that their performance during both periods was insufficient to meet the expected returns based on their market risk. This underperformance underscores the significant challenges faced by office REITs during the pandemic, as demand for office space declined sharply due to the economic uncertainty and shifts in workplace dynamics.

5.1.3 Market Sensitivity and R-Squared Analysis

The R-Squared analysis showed that office REITs like SENTRAL (5123) and TWRREIT (5111) had relatively high R-Squared values, meaning their performance was strongly correlated with broader market trends. These REITs' returns were significantly influenced by changes in the office space market, which was impacted by shifting demand due to remote work and the overall economic recovery.

Conversely, non-office REITs and diversified REITs exhibited lower R-Squared values, indicating that their returns were less dependent on market-wide movements. These REITs likely benefited from more stable sectors like logistics and industrial properties, which were less affected by the pandemic and recovery uncertainties in the office market.

5.1.4 Risk Diversifiability

Risk Diversifiability played a crucial role in the performance of M-REITs, especially during the pandemic. CLMT (5180), KIPREIT (5280), and ALAQAR (5116), which were primarily non-office REITs, had high risk diversifiability scores, indicating that their portfolios were well-diversified across different property types. These REITs were more resilient to the market downturn caused by the pandemic, as their exposure was not concentrated in a single sector like office space.

ATRIUM (5130) and other diversified REITs showed strong risk diversifiability as well, highlighting that spreading risk across various property types (office, retail, industrial) helped mitigate the negative effects of the pandemic on specific sectors. However, office REITs like

IGBCR (5299) and TWRREIT (5111) showed lower risk diversifiability, indicating that their performance was highly susceptible to the downturn in office space demand.

5.2 Contributions to the Literature

This study contributes significantly to the understanding of M-REIT performance during periods of crisis, particularly in the context of COVID-19 and its aftermath. By focusing on office REITs in Malaysia, this thesis provides a detailed analysis of how these investment vehicles performed under extreme market conditions and sheds light on the importance of diversification and risk management in mitigating adverse impacts.

The findings emphasize that diversified portfolios perform better during periods of economic uncertainty, as they spread risk across multiple sectors, reducing exposure to any single market. The study also highlights the ongoing challenges faced by office REITs, whose performance continues to be heavily influenced by the fluctuating demand for office space in a post-pandemic world, further illustrating the necessity for adaptation and strategic repositioning.

5.3 Implications for Investors and Policymakers

For investors, the findings suggest that those invested in office REITs should consider adjusting their portfolios to include a higher proportion of non-office and diversified REITs, which have shown better resilience and risk-adjusted returns. Investors should closely monitor the office market and consider the impact of ongoing trends like remote work and flexible office space demand, which could affect the long-term viability of office-focused REITs.

Policymakers can take these insights into account by encouraging the development of diversified property portfolios and offering support to sectors that are more likely to benefit from future economic shifts, such as industrial, healthcare, and logistics properties. Additionally, policy adjustments related to office space usage and workplace transformation could help guide the evolution of the office market and provide stability for office REITs.

5.4 Limitations and Future Research

This study is limited to M-REITs in Malaysia and focuses primarily on quantitative performance metrics. Future research could expand the scope to include REITs from other markets, providing a comparative analysis to see if similar trends are observed globally. Additionally, qualitative factors such as management strategies, tenant relationships, and

property-level performance could be integrated into future research to provide a more comprehensive understanding of the drivers behind REIT performance.

Furthermore, exploring the role of sustainability and ESG factors in the performance of M-REITs would be a valuable avenue for future research, especially as these considerations become increasingly important for investors and policymakers alike.

In conclusion, this thesis has provided a comprehensive analysis of the performance of office REITs in Malaysia during the COVID-19 pandemic (2020-2021) and the post-pandemic recovery (2022-2023) period. The findings suggest that office REITs faced significant challenges due to shifts in the demand for office space, but those with diversified portfolios or exposure to non-office sectors were better able to weather the storm. Risk diversifiability, strategic diversification, and adaptive management were key to the performance of M-REITs during both periods, with non-office and diversified REITs showing superior risk-adjusted returns.

As the market continues to evolve, particularly with the ongoing transformation of the office space sector, M-REITs that remain adaptable, embrace innovation, and manage their portfolios effectively will be better positioned to deliver sustainable returns for investors. For policymakers, promoting diversification and supporting sectors that are poised for growth will be crucial to ensuring the resilience of the Malaysian real estate market.

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APPENDICES

Appendix A: The Basic Data of Malaysian REITs

No	Stock Name	Code	Date Listed	Portfolio Type
1	ALAQAR	5116	10/8/2006	Healthcare (Hospital, Nursing College, Hotel)
2	ALSREIT	5269	29/9/2015	Diversified (Retail, Office, Industril)
3	AMEREIT	5307	20/9/2022	Industrial
4	AMFIRST	5120	21/12/2006	Office, Retail, Hotel
5	ARREIT	5127	26/2/2007	Diversified (Office, Industrial, Hotel, Retail)
6	ATRIUM	5130	2/4/2007	Industrial, Office, Warehouse
7	AXREIT	5106	3/8/2005	Office, Industrial
8	CMMT/ CLMT	5180	16/7/2010	Retail
9	HEKTAR	5121	4/12/2006	Retail
10	IGBCR	5299	20/9/2021	Office
11	IGBREIT	5227	21/9/2012	Retail
12	KIPREIT	5280	6/2/2017	Retail
13	KLCC	5235ss	9/5/2013	Retail, Office
14	MQREIT/SENTRAL	5123	8/1/2007	Office
15	PAVREIT	5212	7/12/2011	Retail, Office
16	PLINTAS	5320	25/3/2024	Infrastructure
17	SUNREIT	5176	8/7/2010	Diversified (Retail, Hotel, Office)
18	TWRREIT	5111	12/4/2006	Office
19	UOAREIT	5110	30/12/2005	Office
20	YTLREIT	5109	16/12/2005	Hotel/Resort

Appendix B: FBM KLCI for the period from 2020 to 2023

Date	Month	Index
28/2/2020	Feb-20	1482.64
31/3/2020	Mar-20	1350.89
30/4/2020	Apr-20	1407.78
29/5/2020	May-20	1473.25
30/6/2020	Jun-20	1500.97
30/7/2020	Jul-20	1603.75
28/8/2020	Aug-20	1525.21
30/9/2020	Sep-20	1504.82
30/10/2020	Oct-20	1466.89
30/11/2020	Nov-20	1562.71
31/12/2020	Dec-20	1627.21
29/1/2021	Jan-21	1566.40
26/2/2021	Feb-21	1577.75
31/3/2021	Mar-21	1573.51
30/4/2021	Apr-21	1601.65
31/5/2021	May-21	1583.55
30/6/2021	Jun-21	1532.63
30/7/2021	Jul-21	1494.60
30/8/2021	Aug-21	1601.38
30/9/2021	Sep-21	1537.80
29/10/2021	Oct-21	1562.31
30/11/2021	Nov-21	1513.98
31/12/2021	Dec-21	1567.53

Date	Month	Index
31/1/2022	Jan-22	1,512.27
28/2/2022	Feb-22	1,608.28
31/3/2022	Mar-22	1,587.36
04/29/2022	Apr-22	1,600.43
05/31/2022	May-22	1,570.10
06/30/2022	Jun-22	1,444.22
07/29/2022	Jul-22	1,492.23
08/30/2022	Aug-22	1,512.05
09/30/2022	Sep-22	1,394.63
10/31/2022	Oct-22	1,460.38
11/30/2022	Nov-22	1,488.80
12/30/2022	Dec-22	1,495.49
01/31/2023	Jan-23	1,485.50
02/28/2023	Feb-23	1,454.19
03/31/2023	Mar-23	1,422.59
04/28/2023	Apr-23	1,415.95
05/31/2023	May-23	1,387.12
06/30/2023	Jun-23	1,376.68
07/31/2023	Jul-23	1,459.43
08/30/2023	Aug-23	1,451.94
09/29/2023	Sep-23	1,424.17
10/31/2023	Oct-23	1,442.14
11/30/2023	Nov-23	1,452.74
12/29/2023	Dec-23	1,454.66

Appendix C: Monthly Closing Prices of M-REITs from 2020 to 2023 Part 1

Date	5299 Close	5111 Close	5121 Close	5180 Close	5269 Close	5120 Close	5235SS Close	5127 Close	5109 Close
28/2/2020	0.660	0.740	0.950	0.965	0.855	0.470	8.140	0.395	1.340
31/3/2020	0.625	0.580	0.690	0.910	0.740	0.405	7.790	0.610	0.915
30/4/2020	0.595	0.725	0.690	0.825	0.700	0.425	7.840	0.650	0.950
29/5/2020	0.620	0.720	0.670	0.800	0.720	0.450	7.710	0.670	1.050
30/6/2020	0.610	0.745	0.650	0.795	0.690	0.420	7.960	0.680	1.050
30/7/2020	0.590	0.660	0.635	0.690	0.680	0.385	7.800	0.660	0.950
28/8/2020	NA	0.620	0.570	0.680	0.660	0.405	7.800	0.660	0.785
30/9/2020	NA	0.615	0.585	0.645	0.630	0.405	7.720	0.625	0.725
30/10/2020	NA	0.570	0.535	0.615	0.520	0.400	7.600	0.620	0.705
30/11/2020	NA	0.570	0.555	0.610	0.600	0.420	7.680	0.625	0.865
31/12/2020	NA	0.580	0.630	0.625	0.550	0.415	7.080	0.660	0.910
29/1/2021	NA	0.570	0.570	0.600	0.570	0.400	7.050	0.640	0.825
26/2/2021	NA	0.570	0.600	0.605	0.590	0.405	6.880	0.665	0.875
31/3/2021	NA	0.590	0.600	0.660	0.600	0.425	6.980	0.680	0.890
30/4/2021	NA	0.610	0.590	0.645	0.600	0.435	6.940	0.670	0.865
31/5/2021	NA	0.600	0.575	0.610	0.550	0.400	6.780	0.655	0.820
30/6/2021	NA	0.585	0.600	0.620	0.520	0.400	6.670	0.655	0.895
30/7/2021	NA	0.585	0.625	0.620	0.520	0.395	6.680	0.655	0.870
30/8/2021	NA	0.590	0.595	0.620	0.530	0.390	6.850	0.680	0.910
30/9/2021	0.620	0.600	0.570	0.620	0.530	0.395	6.490	0.665	0.940
29/10/2021	0.660	0.580	0.560	0.625	0.505	0.400	6.810	0.680	1.000
30/11/2021	0.615	0.555	0.525	0.600	0.490	0.390	6.490	0.650	0.915
31/12/2021	0.635	0.560	0.505	0.575	0.485	0.390	6.550	0.660	0.920
31/1/2022	0.610	0.545	0.505	0.575	0.515	0.380	6.400	0.675	0.905
28/2/2022	0.595	0.530	0.505	0.550	0.500	0.375	6.550	0.680	0.900
31/3/2022	0.590	0.525	0.460	0.570	0.490	0.375	6.580	0.665	0.960
04/29/2022	0.610	0.560	0.505	0.595	0.465	0.400	6.650	0.680	0.945
05/31/2022	0.610	0.535	0.550	0.585	0.485	0.385	6.850	0.660	0.935
06/30/2022	0.595	0.442	0.580	0.570	0.445	0.390	6.800	0.635	0.945
07/29/2022	0.580	0.477	0.610	0.570	0.460	0.385	7.030	0.635	0.940

08/30/2022	0.560	0.502	0.615	0.535	0.445	0.380	6.930	0.640	0.945
09/30/2022	0.555	0.467	0.530	0.540	0.425	0.360	6.590	0.595	0.895
10/31/2022	0.545	0.477	0.575	0.530	0.400	0.365	6.630	0.575	0.870
11/30/2022	0.535	0.462	0.660	0.550	0.360	0.370	6.640	0.580	0.880
12/30/2022	0.545	0.452	0.700	0.535	0.370	0.355	6.710	0.585	0.920
01/31/2023	0.575	0.462	0.725	0.590	0.410	0.360	7.050	0.605	0.985
02/28/2023	0.540	0.447	0.690	0.535	0.410	0.340	6.720	0.600	1.000
03/31/2023	0.515	0.437	0.685	0.520	0.485	0.330	6.850	0.555	0.955
04/28/2023	0.510	0.432	0.690	0.515	0.495	0.350	7.030	0.550	0.970
05/31/2023	0.500	0.432	0.660	0.505	0.475	0.330	6.950	0.520	0.940
06/30/2023	0.505	0.412	0.675	0.500	0.450	0.330	6.990	0.465	0.950
07/31/2023	0.515	0.412	0.640	0.530	0.470	0.340	6.800	0.445	0.980
08/30/2023	0.500	0.392	0.640	0.530	0.460	0.335	6.700	0.430	0.990
09/29/2023	0.495	0.412	0.605	0.550	0.460	0.335	6.800	0.420	1.020
10/31/2023	0.490	0.387	0.615	0.545	0.455	0.330	6.870	0.405	1.000
11/30/2023	0.490	0.382	0.615	0.560	0.445	0.330	7.010	0.395	1.030
12/29/2023	0.485	0.367	0.650	0.560	0.475	0.320	7.090	0.395	1.030

Appendix D: Monthly Closing Prices of M-REITs from 2020 to 2023 Part 2

Date	5176 Close	5212 Close	5110 Close	5227 Close	5130 Close	5280 Close	5116 Close	5106 Close	5123 Close
28/2/2020	1.900	1.800	1.230	1.960	1.070	0.875	1.360	1.930	0.890
31/3/2020	1.590	1.580	1.140	1.590	0.920	0.765	1.390	1.830	0.880
30/4/2020	1.570	1.620	1.240	1.730	1.020	0.815	1.400	1.950	0.870
29/5/2020	1.600	1.670	1.200	1.750	1.040	0.800	1.350	2.070	0.895
30/6/2020	1.620	1.600	1.230	1.790	1.030	0.795	1.380	2.060	0.910
30/7/2020	1.540	1.510	1.290	1.840	1.030	0.820	1.370	2.050	0.905
28/8/2020	1.600	1.550	1.220	1.850	1.040	0.820	1.380	2.170	0.925
30/9/2020	1.560	1.540	1.220	1.820	1.070	0.815	1.350	2.160	0.910
30/10/2020	1.430	1.390	1.190	1.670	1.120	0.805	1.310	2.100	0.905
30/11/2020	1.500	1.570	1.170	1.660	1.130	0.805	1.310	2.140	0.960
31/12/2020	1.500	1.500	1.130	1.720	1.150	0.810	1.310	2.030	0.955
29/1/2021	1.420	1.380	1.090	1.700	1.280	0.825	1.320	1.970	0.950
26/2/2021	1.510	1.360	1.100	1.690	1.280	0.810	1.330	1.830	0.875
31/3/2021	1.490	1.400	1.110	1.740	1.340	0.880	1.310	1.950	0.905
30/4/2021	1.500	1.390	1.120	1.750	1.480	0.855	1.300	1.970	0.900
31/5/2021	1.390	1.280	1.100	1.650	1.440	0.835	1.300	1.900	0.865
30/6/2021	1.430	1.360	1.130	1.710	1.500	0.845	1.280	1.910	0.905
30/7/2021	1.410	1.350	1.160	1.670	1.480	0.880	1.230	1.920	0.900
30/8/2021	1.440	1.390	1.120	1.700	1.460	0.830	1.250	1.990	0.870
30/9/2021	1.400	1.420	1.120	1.690	1.460	0.850	1.170	1.900	0.870
29/10/2021	1.460	1.420	1.120	1.680	1.470	0.830	1.190	1.910	0.895
30/11/2021	1.430	1.270	1.130	1.640	1.460	0.830	1.150	1.970	0.895
31/12/2021	1.410	1.250	1.150	1.650	1.500	0.835	1.160	1.940	0.900
31/1/2022	1.390	1.260	1.160	1.540	1.500	0.855	1.130	1.860	0.930
28/2/2022	1.390	1.250	1.120	1.420	1.470	0.845	1.130	1.870	0.900
31/3/2022	1.360	1.320	1.130	1.490	1.470	0.850	1.180	1.860	0.925
04/29/2022	1.460	1.320	1.150	1.630	1.480	0.885	1.190	1.910	0.955
05/31/2022	1.560	1.350	1.160	1.640	1.470	0.885	1.200	2.000	0.960
06/30/2022	1.490	1.320	1.160	1.600	1.460	0.890	1.190	1.920	0.950
07/29/2022	1.510	1.360	1.160	1.620	1.480	0.905	1.210	1.950	0.975

08/30/2022	1.490	1.280	1.130	1.620	1.420	0.895	1.230	1.880	0.960
09/30/2022	1.400	1.260	1.110	1.600	1.370	0.890	1.180	1.890	0.855
10/31/2022	1.400	1.240	1.130	1.570	1.380	0.900	1.210	1.870	0.885
11/30/2022	1.450	1.200	1.140	1.660	1.350	0.900	1.220	1.900	0.890
12/30/2022	1.460	1.210	1.150	1.650	1.370	0.905	1.220	1.790	0.895
01/31/2023	1.570	1.350	1.190	1.760	1.390	0.915	1.250	1.850	0.905
02/28/2023	1.550	1.350	1.130	1.760	1.380	0.910	1.310	1.920	0.885
03/31/2023	1.600	1.340	1.130	1.740	1.390	0.905	1.330	1.880	0.860
04/28/2023	1.610	1.370	1.160	1.750	1.390	0.920	1.260	1.900	0.865
05/31/2023	1.630	1.280	1.130	1.570	1.390	0.900	1.250	1.850	0.845
06/30/2023	1.560	1.240	1.130	1.670	1.390	0.900	1.270	1.830	0.815
07/31/2023	1.510	1.220	1.130	1.660	1.410	0.900	1.250	1.820	0.840
08/30/2023	1.490	1.220	1.100	1.630	1.390	0.890	1.280	1.870	0.820
09/29/2023	1.460	1.220	1.090	1.680	1.380	0.890	1.250	1.840	0.825
10/31/2023	1.490	1.210	1.090	1.700	1.400	0.900	1.250	1.810	0.825
11/30/2023	1.530	1.220	1.110	1.720	1.400	0.895	1.240	1.840	0.825
12/29/2023	1.540	1.210	1.100	1.720	1.380	0.895	1.240	1.790	0.785

Appendix E: Computed Data 2020-2021 Part 1

		FBM KLCI		Risk-free rate	AXREIT (5106)		ALAQAR (5116)		KIPREIT (5280)		ATRIUM (5130)		KGBREIT (5117)		SENTRAL(5123)		UOAREIT (5110)		PAVREIT (5212)		SUNREIT (5176)	
Month	It	rm	Rf	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt
28/2/2020	1482.64	n.a.	n.a.	1.93	n.a.	1.36	n.a.	0.875	n.a.	1.07	n.a.	1.96	n.a.	0.870	n.a.	1.23	n.a.	1.80	n.a.	1.90	n.a.	
31/3/2020	1350.89	-8.89%	2.650%	0.221%	1.83	-5.18%	1.39	2.21%	0.765	-12.57%	0.92	-14.02%	1.59	-18.88%	0.675	-22.41%	1.14	-7.32%	1.58	-12.22%	1.59	-16.32%
30/4/2020	1407.78	4.21%	2.650%	0.221%	1.95	6.56%	1.40	0.72%	0.815	6.54%	1.02	10.87%	1.73	8.81%	0.755	11.85%	1.24	8.77%	1.62	2.53%	1.57	-1.26%
29/5/2020	1473.25	4.65%	2.150%	0.179%	2.07	6.15%	1.35	-3.57%	0.800	-1.84%	1.04	1.96%	1.75	1.16%	0.720	-4.64%	1.20	-3.23%	1.67	3.09%	1.60	1.91%
30/6/2020	1500.97	1.88%	2.150%	0.179%	2.06	-0.48%	1.38	2.22%	0.795	-0.63%	1.03	-0.96%	1.79	2.29%	0.735	2.08%	1.23	2.50%	1.60	-4.19%	1.62	1.25%
30/7/2020	1603.75	6.85%	2.150%	0.179%	2.05	-0.49%	1.37	-0.72%	0.820	3.14%	1.03	0.00%	1.84	2.79%	0.730	-0.68%	1.29	4.88%	1.51	-5.63%	1.54	-4.94%
28/8/2020	1525.21	-4.90%	2.150%	0.179%	2.17	5.85%	1.38	0.73%	0.820	0.00%	1.04	0.97%	1.85	0.54%	0.790	8.22%	1.22	-5.43%	1.55	2.65%	1.60	3.90%
30/9/2020	1504.82	-1.34%	2.150%	0.179%	2.16	-0.46%	1.35	-2.17%	0.815	-0.61%	1.07	2.88%	1.82	-1.62%	0.775	-1.90%	1.22	0.00%	1.54	-0.65%	1.56	-2.50%
30/10/2020	1466.89	-2.52%	1.770%	0.148%	2.1	-2.78%	1.31	-2.96%	0.805	-1.23%	1.12	4.67%	1.67	-8.24%	0.780	0.65%	1.19	-2.46%	1.39	-9.74%	1.43	-8.33%
30/11/2020	1562.71	6.53%	1.770%	0.148%	2.14	1.90%	1.31	0.00%	0.805	0.00%	1.13	0.89%	1.66	-0.60%	0.870	11.54%	1.17	-1.68%	1.57	12.95%	1.50	4.90%
31/12/2020	1627.21	4.13%	1.740%	0.145%	2.03	-5.14%	1.31	0.00%	0.810	0.62%	1.15	1.77%	1.72	3.61%	0.875	0.57%	1.13	-3.42%	1.50	-4.46%	1.50	0.00%
29/1/2021	1566.40	-3.74%	1.740%	0.145%	1.97	-2.96%	1.32	0.76%	0.825	1.85%	1.28	11.30%	1.70	-1.16%	0.925	5.71%	1.09	-3.54%	1.38	-8.00%	1.42	-5.33%
26/2/2021	1577.75	0.72%	1.740%	0.145%	1.83	-7.11%	1.33	0.76%	0.810	-1.82%	1.28	0.00%	1.69	-0.59%	0.875	-5.41%	1.10	0.92%	1.36	-1.45%	1.51	6.34%
31/3/2021	1573.51	-0.27%	1.820%	0.152%	1.95	6.56%	1.31	-1.50%	0.880	8.64%	1.34	4.69%	1.74	2.96%	0.905	3.43%	1.11	0.91%	1.40	2.94%	1.49	-1.32%
30/4/2021	Apr-21	1601.65	1.79%	1.820%	0.152%	1.97	1.03%	1.30	-0.76%	0.855	-2.84%	1.48	10.45%	1.75	0.57%	0.900	-0.55%	1.12	0.90%	1.39	-0.71%	1.50	0.67%
31/5/2021	May-21	1583.55	-1.13%	1.860%	0.155%	1.9	-3.55%	1.30	0.00%	0.835	-2.34%	1.44	-2.70%	1.65	-5.71%	0.865	-3.89%	1.10	-1.79%	1.28	-7.91%	1.39	-7.33%
30/6/2021	Jun-21	1532.63	-3.22%	1.860%	0.155%	1.91	0.53%	1.28	-1.54%	0.845	1.20%	1.50	4.17%	1.71	3.64%	0.905	4.62%	1.13	2.73%	1.36	6.25%	1.43	2.88%
30/7/2021	Jul-21	1494.60	-2.48%	1.860%	0.155%	1.92	0.52%	1.23	-3.91%	0.880	4.14%	1.48	-1.33%	1.67	-2.34%	0.900	-0.55%	1.16	2.65%	1.35	-0.74%	1.41	-1.40%
30/8/2021	Aug-21	1601.38	7.14%	1.800%	0.150%	1.99	3.65%	1.25	1.63%	0.830	-5.68%	1.46	-1.35%	1.70	1.80%	0.870	-3.33%	1.12	-3.45%	1.39	2.96%	1.44	2.13%
30/9/2021	Sep-21	1537.80	-3.97%	1.800%	0.150%	1.9	-4.52%	1.17	-6.40%	0.850	2.41%	1.46	0.00%	1.69	-0.59%	0.870	0.00%	1.12	0.00%	1.42	2.16%	1.40	-2.78%
29/10/2021	Oct-21	1562.31	1.59%	1.820%	0.152%	1.91	0.53%	1.19	1.71%	0.830	-2.35%	1.47	0.68%	1.68	-0.59%	0.895	2.87%	1.12	0.00%	1.42	0.00%	1.46	4.29%
30/11/2021	Nov-21	1513.98	-3.09%	1.820%	0.152%	1.97	3.14%	1.15	-3.36%	0.830	0.00%	1.46	-0.68%	1.64	-2.38%	0.895	0.00%	1.13	0.89%	1.27	-10.56%	1.43	-2.05%
31/12/2021	Dec-21	1567.53	3.54%	1.870%	0.156%	1.94	-1.52%	1.16	0.87%	0.835	0.60%	1.50	2.74%	1.65	0.61%	0.905	1.12%	1.15	1.77%	1.25	-1.57%	1.41	-1.40%
Mean			0.0034		0.0016		0.0010		-0.0069		-0.0013		0.0168		-0.0063		0.0042		-0.0025		-0.0147		-0.0121
Standard Deviation			0.0428		0.0002		0.0404		0.0226		0.0422		0.0529		0.0533		0.0691		0.0357		0.0602		0.0513
Sample Variance			0.0018		0.0000		0.0016		0.0005		0.0018		0.0028		0.0028		0.0048		0.0013		0.0036		0.0026
Kurtosis			-0.5828		2.2290		-0.8176		0.2820		3.2102		3.2538		6.2771		5.2021		0.8674		0.2539		2.3391
Skewness			-0.1042		1.6677		0.1259		-0.8410		-0.7270		-0.5824		-1.9145		-1.3953		0.3613		0.1642		-1.1849
Range			0.1603		0.0008		0.1367		0.0862		0.2121		0.2532		0.2769		0.3426		0.1609		0.2517		0.2266
Minimum			-0.0889		0.0015		-0.0711		-0.0640		-0.1257		-0.1402		-0.1888		-0.2241		-0.0732		-0.1222		-0.1632
Maximum			0.0714		0.0265		0.0656		0.0222		0.0864		0.1130		0.0881		0.1185		0.0877		0.1295		0.0634
Sum			0.0748		0.4314		0.0223		-0.1528		-0.0277		0.3700		-0.1392		0.0930		-0.0540		-0.3230		-0.2669
Count			22.0000				22.0000		22.0000		22.0000		22.0000		22.0000		22.0000		22.0000		22.0000		22.0000
Beta (Slope)							0.2706		0.1107		0.2067		0.3356		0.7744		0.5465		0.2998		0.6073		0.5881
Alpha (Intercept)																							
	ri=		0.34%				0.10%		-0.69%		-0.13%		1.68%		-0.63%		0.42%		-0.25%		-1.47%		-1.21%
	Rf =		0.16%				0.16%		0.16%		0.16%		0.16%		0.16%		0.16%		0.16%		0.16%		0.16%
			0.0428				0.0404		0.0226		0.0422		0.0529		0.0533		0.0691		0.0357		0.0602		0.0513
	βi =						0.2706		0.1107		0.2067		0.3356		0.7744		0.5465		0.2998		0.6073		0.5881
Sharpe Ratio																							
Treynor Ratio							(0.0154)		(0.3797)		(0.0686)		0.2870		(0.1495)		0.0376		(0.1144)		(0.2709)		(0.2686)
							(0.0023)		(0.0775)		(0.0140)		0.0453		(0.0103)		0.0047		(0.0136)		(0.0269)		(0.0234)
Jensen Alpha							0.0005		(0.0071)		(0.0016)		0.0162		(0.0077)		0.0033		(0.0030)		(0.0158)		(0.0132)
R-squared							0.0822		0.0440		0.0440		0.0738		0.3875		0.1148		0.1291		0.1864		0.2414
Risk Diversifiability							0.9178		0.9560		0.9560		0.9262		0.6125		0.8852		0.8709		0.8136		0.7586

Appendix F: Computed Data 2020-2021 Part 2

				Risk-free rate			YTLREIT (5109)		ARREIT (5127)		IGBCR (5299)		KLCC (5235SS)		AMFIRST (5120)		ALSREIT (5269)		CLMT(5180)		HEKTAR (5121)		TWRREIT (5111)	
	Month	lt	rm	Rf	Pt	1.340	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt
			n.a.	n.a.			n.a.	0.750	n.a.	0.660	n.a.	8.14	n.a.	0.470	n.a.	0.855	n.a.	0.965	n.a.	0.950	n.a.	0.740	n.a.	
28/2/2020	Feb-20	1482.64																						
31/3/2020	Mar-20	1350.89	-8.89%	2.650%	0.221%	0.915	-31.72%	0.610	-18.67%	0.625	-5.30%	7.79	-4.30%	0.405	-13.83%	0.740	-13.45%	0.910	-5.70%	0.690	-27.37%	0.580	-21.62%	
30/4/2020	Apr-20	1407.78	4.21%	2.650%	0.221%	0.950	3.83%	0.650	6.56%	0.595	-4.80%	7.84	0.64%	0.425	4.94%	0.700	-5.41%	0.825	-9.34%	0.690	0.00%	0.725	25.00%	
29/5/2020	May-20	1473.25	4.65%	2.150%	0.179%	1.050	10.53%	0.670	3.08%	0.620	4.20%	7.71	-1.66%	0.450	5.88%	0.720	2.86%	0.800	-3.03%	0.670	-2.90%	0.720	-0.69%	
30/6/2020	Jun-20	1500.97	1.88%	2.150%	0.179%	1.050	0.00%	0.680	1.49%	0.610	-1.61%	7.96	3.24%	0.420	-6.67%	0.690	-4.17%	0.795	-0.63%	0.650	-2.99%	0.745	3.47%	
30/7/2020	Jul-20	1603.75	6.85%	2.150%	0.179%	0.950	-9.52%	0.660	-2.94%	0.590	-3.28%	7.80	-2.01%	0.385	-8.33%	0.680	-1.45%	0.690	-13.21%	0.635	-2.31%	0.660	-11.41%	
28/8/2020	Aug-20	1525.21	-4.90%	2.150%	0.179%	0.785	-17.37%	0.660	0.00%	0	-100.00%	7.80	0.00%	0.405	5.19%	0.660	-2.94%	0.680	-1.45%	0.570	-10.24%	0.620	-6.06%	
30/9/2020	Sep-20	1504.82	-1.34%	2.150%	0.179%	0.725	-7.64%	0.625	-5.30%	0	#DIV/0!	7.72	-1.03%	0.405	0.00%	0.630	-4.55%	0.645	-5.15%	0.585	2.63%	0.615	-0.81%	
30/10/2020	Oct-20	1466.89	-2.52%	1.770%	0.148%	0.705	-2.76%	0.620	-0.80%	0	#DIV/0!	7.60	-1.55%	0.400	-1.23%	0.520	-17.46%	0.615	-4.65%	0.535	-8.55%	0.570	-7.32%	
30/11/2020	Nov-20	1562.71	6.53%	1.770%	0.148%	0.865	22.70%	0.625	0.81%	0	#DIV/0!	7.68	1.05%	0.420	5.00%	0.600	15.38%	0.610	-0.81%	0.555	3.74%	0.570	0.00%	
31/12/2020	Dec-20	1627.21	4.13%	1.740%	0.145%	0.910	5.20%	0.660	5.60%	0	#DIV/0!	7.08	-7.81%	0.415	-1.19%	0.550	-8.33%	0.625	2.46%	0.630	13.51%	0.580	1.75%	
29/1/2021	Jan-21	1566.40	-3.74%	1.740%	0.145%	0.825	-9.34%	0.640	-3.03%	0	#DIV/0!	7.05	-0.42%	0.400	-3.61%	0.570	3.64%	0.600	-4.00%	0.570	-9.52%	0.570	-1.72%	
26/2/2021	Feb-21	1577.75	0.72%	1.740%	0.145%	0.875	6.06%	0.665	3.91%	0	#DIV/0!	6.88	-2.41%	0.405	1.25%	0.590	3.51%	0.605	0.83%	0.600	5.26%	0.570	0.00%	
31/3/2021	Mar-21	1573.51	-0.27%	1.820%	0.152%	0.890	1.71%	0.680	2.26%	0	#DIV/0!	6.98	1.45%	0.425	4.94%	0.600	1.69%	0.660	9.09%	0.600	0.00%	0.590	3.51%	
30/4/2021	Apr-21	1601.65	1.79%	1.820%	0.152%	0.865	-2.81%	0.670	-1.47%	0	#DIV/0!	6.94	-0.57%	0.435	2.35%	0.600	0.00%	0.645	-2.27%	0.590	-1.67%	0.610	3.39%	
31/5/2021	May-21	1583.55	-1.13%	1.860%	0.155%	0.820	-5.20%	0.655	-2.24%	0	#DIV/0!	6.78	-2.31%	0.400	-8.05%	0.550	-8.33%	0.610	-5.43%	0.575	-2.54%	0.600	-1.64%	
30/6/2021	Jun-21	1532.63	-3.22%	1.860%	0.155%	0.895	9.15%	0.655	0.00%	0	#DIV/0!	6.67	-1.62%	0.400	0.00%	0.555	0.91%	0.620	1.64%	0.600	4.35%	0.585	-2.50%	
30/7/2021	Jul-21	1494.60	-2.48%	1.860%	0.155%	0.870	-2.79%	0.655	0.00%	0	#DIV/0!	6.68	0.15%	0.395	-1.25%	0.520	-6.31%	0.620	0.00%	0.625	4.17%	0.585	0.00%	
30/8/2021	Aug-21	1601.38	7.14%	1.800%	0.150%	0.910	4.60%	0.680	3.82%	0.62	#DIV/0!	6.85	2.54%	0.390	-1.27%	0.530	1.92%	0.620	0.00%	0.595	-4.80%	0.590	0.85%	
30/9/2021	Sep-21	1537.80	-3.97%	1.800%	0.150%	0.940	3.30%	0.665	-2.21%	0.620	0.00%	6.49	-5.26%	0.395	1.28%	0.530	0.00%	0.620	0.00%	0.570	-4.20%	0.600	1.69%	
29/10/2021	Oct-21	1562.31	1.59%	1.820%	0.152%	1.000	6.38%	0.680	2.26%	0.660	6.45%	6.81	4.93%	0.400	1.27%	0.505	-4.72%	0.625	0.81%	0.560	-1.75%	0.580	-3.33%	
30/11/2021	Nov-21	1513.98	-3.09%	1.820%	0.152%	0.915	-8.50%	0.650	-4.41%	0.615	-6.82%	6.49	-4.70%	0.390	-2.50%	0.490	-2.97%	0.600	-4.00%	0.525	-6.25%	0.555	-4.31%	
31/12/2021	Dec-21	1567.53	3.54%	1.870%	0.156%	0.920	0.55%	0.660	1.54%	0.635	3.25%	6.55	0.92%	0.390	0.00%	0.485	-1.02%	0.575	-4.17%	0.505	-3.81%	0.560	0.90%	
	Mean		0.0034		0.0016		-0.0107		-0.0044		-0.0099		-0.0094		-0.0072		-0.0233		-0.0223		-0.0251		-0.0095	
	Standard Deviation				0.0002		0.1092		0.0512		0.0693		0.0293		0.0502		0.0667		0.0448		0.0779		0.0810	
	Sample Variance		0.0428	0.0027	0.0000		0.0119		0.0026		0.0048		0.0009		0.0025		0.0044		0.0020		0.0061		0.0066	
	Kurtosis		0.0018	0.0000	2.2290		2.4215		7.1822		0.4880		0.5067		0.8548		2.0738		1.9866		4.5171		6.0989	
	Skewness		-0.5828	2.2290	1.6677		-0.7052		-2.1224		-0.8198		-0.3151		-0.9232		0.1607		-0.0636		-1.1998		0.7235	
	Range		-0.1042	1.6677	0.0008		0.5442		0.2523		0.1327		0.1274		0.1971		0.3284		0.2230		0.4088		0.4662	
	Minimum		0.1603	0.0091	0.0015		-0.3172		-0.1867		-0.0682		-0.0781		-0.1383		-0.1746		-0.1321		-0.2737		-0.2162	
	Maximum		-0.0889	0.0174	0.0022		0.2270		0.0656		0.0645		0.0493		0.0588		0.1538		0.0909		0.1351		0.2500	
	Sum		0.0714	0.0265	0.0360		-0.2364		-0.0974		0.0288		-0.2073		-0.1583		-0.5120		-0.4901		-0.5524		-0.2085	
	Count		0.0748	0.4314	22.0000		22.0000		22.0000		4.0000		22.0000		22.0000		22.0000		22.0000		22.0000		22.0000	
	Beta (Slope)		22.0000				1.6546		0.7884		1.7603		0.2155		0.3567		0.6820		-0.0996		0.9763		0.8263	
	Alpha (Intercept)																							
		ri=	0.34%				-1.07%		-0.44%		-0.99%		-0.94%		-0.72%		-2.33%		-2.23%		-2.51%		-0.95%	
		Rf =	0.16%				0.16%		0.16%		0.15%		0.16%		0.16%		0.16%		0.16%		0.16%		0.16%	
			0.0428		0.1092		0.0512		0.0693		0.0293		0.0502		0.0667		0.0448		0.0779		0.0810			
		βi =			1.6546		0.7884		1.7603		0.2155		0.3567		0.6820		-0.0996		0.9763		0.8263			
	Sharpe Ratio				(0.1133)		(0.1183)		(0.1649)		(0.3777)		(0.1758)		(0.3736)		(0.5332)		(0.3431)		(0.1371)			
	Treynor Ratio				(0.0075)		(0.0077)		(0.0065)		(0.0513)		(0.0248)		(0.0365)		0.2400		(0.0274)		(0.0134)			
	Jensen Alpha				(0.0137)		(0.0058)		(0.0132)		(0.0098)		(0.0078)		(0.0245)		(0.0221)		(0.0268)		(0.0109)			
	R-squared				0.4208		0.4339		0.7502		0.0993		0.0925		0.1919		0.0091		0.2877		0.1906			
	Risk Diversifiability				0.5792		0.5661		0.2498		0.9007		0.9075		0.8081		0.9909		0.7123		0.8094			

Appendix G: Computed Data 2022-2023 Part 1

			FBM KLCI		Risk-free rate	AXREIT (5106)		ALAQAR (5116)		KIPREIT (5280)		ATRIUM (5130)		IGBREIT (5117)		SENTRAL(5123)		UOAREIT (5110)		PAVREIT (5212)		SUNREIT (5176)	
	Month	It	rm		RF	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt
31/1/2022	Jan-22	1,512.27			1.870%		0.156% 1.860	n.a.	1.130	n.a.	0.855	n.a.	1.500	n.a.	1.540	n.a.	0.930	n.a.	1.160	n.a.	1.26	n.a.	1.390	n.a.
28/2/2022	Feb-22	1,608.28		6.35%	2.060%		0.172% 1.870		0.54% 1.130		0.00% 0.845		-1.17% 1.470		-2.00% 1.420		-7.79% 0.9		-3.23% 1.120		-3.45% 1.25		-0.79% 1.390	0.00%
31/3/2022	Mar-22	1,587.36		-1.30%	2.030%		0.169% 1.860		-0.53% 1.180		4.42% 0.850		0.59% 1.470		0.00% 1.490		4.93% 0.925		2.78% 1.130		0.89% 1.32		5.60% 1.360	-2.16%
04/29/2022	Apr-22	1,600.43		0.82%	2.030%		0.169% 1.91		2.69% 1.19		0.85% 0.885		4.12% 1.48		0.68% 1.63		9.40% 0.955		3.24% 1.15		1.77% 1.32		0.00% 1.46	7.35%
05/31/2022	May-22	1,570.10		-1.90%	2.310%		0.193% 2		4.71% 1.2		0.84% 0.885		0.00% 1.47		-0.68% 1.64		0.61% 0.96		0.52% 1.16		0.87% 1.35		2.27% 1.56	6.85%
06/30/2022	Jun-22	1,444.22		-8.02%	2.310%		0.193% 1.92		-4.00% 1.19		-0.83% 0.89		0.56% 1.46		-0.68% 1.6		-2.44% 0.950		-1.04% 1.16		0.00% 1.32		-2.22% 1.49	-4.49%
07/29/2022	Jul-22	1,492.23		3.32%	2.880%		0.240% 1.95		1.56% 1.21		1.68% 0.905		1.69% 1.48		1.37% 1.62		1.25% 0.975		2.63% 1.16		0.00% 1.36		3.03% 1.51	1.34%
08/30/2022	Aug-22	1,512.05		1.33%	3.000%		0.250% 1.88		-3.59% 1.23		1.65% 0.895		-1.10% 1.42		-4.05% 1.62		0.00% 0.96		-1.54% 1.13		-2.59% 1.28		-5.88% 1.49	-1.32%
09/30/2022	Sep-22	1,394.63		-7.77%	3.000%		0.250% 1.89		0.53% 1.18		-4.07% 0.89		-0.56% 1.37		-3.52% 1.6		-1.23% 0.855		-10.94% 1.11		-1.77% 1.26		-1.56% 1.4	-6.04%
10/31/2022	Oct-22	1,460.38		4.71%	3.000%		0.250% 1.87		-1.06% 1.21		2.54% 0.9		1.12% 1.38		0.73% 1.57		-1.88% 0.885		3.51% 1.13		1.80% 1.24		-1.59% 1.4	0.00%
11/30/2022	Nov-22	1,488.80		1.95%	3.180%		0.265% 1.9		1.60% 1.22		0.83% 0.9		0.00% 1.35		-2.17% 1.66		5.73% 0.89		0.56% 1.14		0.88% 1.2		-3.23% 1.45	3.57%
12/30/2022	Dec-22	1,495.49		0.45%	3.180%		0.265% 1.79		-5.79% 1.22		0.00% 0.905		0.56% 1.37		1.48% 1.65		-0.60% 0.895		0.56% 1.15		0.88% 1.21		0.83% 1.46	0.69%
01/31/2023	Jan-23	1,485.50		-0.67%	3.180%		0.265% 1.85		3.35% 1.25		2.46% 0.915		1.10% 1.39		1.46% 1.76		6.67% 0.905		1.12% 1.19		3.48% 1.35		11.57% 1.57	7.53%
02/28/2023	Feb-23	1,454.19		-2.11%	3.180%		0.265% 1.92		3.78% 1.31		4.80% 0.91		-0.55% 1.38		-0.72% 1.76		0.00% 0.885		-2.21% 1.13		-5.04% 1.35		0.00% 1.55	-1.27%
03/31/2023	Mar-23	1,422.59		-2.17%	3.150%		0.263% 1.88		-2.08% 1.33		1.53% 0.905		-0.55% 1.39		0.72% 1.74		-1.14% 0.860		-2.82% 1.13		0.00% 1.34		-0.74% 1.6	3.23%
04/28/2023	Apr-23	1,415.95		-0.47%	3.150%		0.263% 1.9		1.06% 1.26		-5.26% 0.92		1.66% 1.39		0.00% 1.75		0.57% 0.865		0.58% 1.16		2.65% 1.37		2.24% 1.61	0.63%
05/31/2023	May-23	1,387.12		-2.04%	3.150%		0.263% 1.85		-2.63% 1.25		-0.79% 0.9		-2.17% 1.39		0.00% 1.57		-10.29% 0.845		-2.31% 1.13		-2.59% 1.28		-6.57% 1.63	1.24%
06/30/2023	Jun-23	1,376.68		-0.75%	3.150%		0.263% 1.83		-1.08% 1.27		1.60% 0.9		0.00% 1.39		0.00% 1.67		6.37% 0.815		-3.55% 1.13		0.00% 1.24		-3.13% 1.56	-4.29%
07/31/2023	Jul-23	1,459.43		6.01%	3.150%		0.263% 1.82		-0.55% 1.25		-1.57% 0.9		0.00% 1.41		1.44% 1.66		-0.60% 0.840		3.07% 1.13		0.00% 1.22		-1.61% 1.51	-3.21%
08/30/2023	Aug-23	1,451.94		-0.51%	3.270%		0.273% 1.87		2.75% 1.28		2.40% 0.89		-1.11% 1.39		-1.42% 1.63		-1.81% 0.820		-2.38% 1.1		-2.65% 1.22		0.00% 1.49	-1.32%
09/29/2023	Sep-23	1,424.17		-1.91%	3.270%		0.273% 1.84		-1.60% 1.25		-2.34% 0.89		0.00% 1.38		-0.72% 1.68		3.07% 0.825		0.61% 1.09		-0.91% 1.22		0.00% 1.46	-2.01%
10/31/2023	Oct-23	1,442.14		1.26%	3.270%		0.273% 1.81		-1.63% 1.25		0.00% 0.9		1.12% 1.4		1.45% 1.7		1.19% 0.825		0.00% 1.09		0.00% 1.21		-0.82% 1.49	2.05%
11/30/2023	Nov-23	1,452.74		0.74%	3.270%		0.273% 1.84		1.66% 1.24		-0.80% 0.895		-0.56% 1.4		0.00% 1.72		1.18% 0.825		0.00% 1.11		1.83% 1.22		0.83% 1.53	2.68%
12/29/2023	Dec-23	1,454.66		0.13%	3.270%		0.273% 1.79		-2.72% 1.24		0.00% 0.895		0.00% 1.38		-1.43% 1.72		0.00% 0.785		-4.85% 1.1		-0.90% 1.21		-0.82% 1.54	0.65%
Mean				(0.0011)	0.0024		(0.0013)		0.0043		0.0021		(0.0035)		0.0057		(0.0068)		(0.0021)		(0.0011)		0.0051	
Standard Deviation				0.0348	0.0004		0.0270		0.0237		0.0128		0.0155		0.0437		0.0325		0.0206		0.0368		0.0363	
Sample Variance				0.0012	0.0000		0.0007		0.0006		0.0002		0.0002		0.0019		0.0011		0.0004		0.0014		0.0013	
Kurtosis				1.1367	0.2463		-0.5518		0.7688		2.9658		0.3562		1.2361		3.2548		0.0765		3.9714		-0.1170	
Skewness				-0.3714	-1.3613		-0.1236		-0.4961		1.0986		-0.8501		-0.3531		-1.3530		-0.5071		1.2951		0.3788	
Range				0.1437	0.0010		0.1050		0.1006		0.0629		0.0553		0.1969		0.1445		0.0852		0.1814		0.1357	
Minimum				-0.0802	0.0017		-0.0579		-0.0526		-0.0217		-0.0405		-0.1029		-0.1094		-0.0504		-0.0657		-0.0604	
Maximum				0.0635	0.0027		0.0471		0.0480		0.0412		0.0148		0.0940		0.0351		0.0348		0.1157		0.0753	
Sum				-0.0255	0.0562		-0.0303		0.0994		0.0475		-0.0806		0.1319		-0.1569		-0.0485		-0.0259		0.1170	
Count				23.0000	23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000	
Beta (Slope)						0.0270		0.0237		0.0128		0.0155		0.0437		0.0325		0.0206		0.0368		0.0363	
Alpha (Intercept)							0.0703		0.1322		0.0455		0.1192		-0.0173		0.4831		0.0517		0.0008		0.2662
	ri=				-0.11%		-0.13%		0.43%		0.21%		-0.35%		0.57%		-0.68%		-0.21%		-0.11%		0.51%	
	Rf =				0.24%		0.24%		0.24%		0.24%		0.24%		0.24%		0.24%		0.24%		0.24%		0.24%	
		0.0348																						
	βi =																							
	Sharpe Ratio						(0.1387)		0.0799		(0.0285)		(0.3839)		0.0756		(0.2850)		(0.2209)		(0.0969)		0.0728	
	Treynor Ratio						(0.0533)		0.0143		(0.0080)		(0.0498)		(0.1906)		(0.0192)		(0.0881)		(4.6630)		0.0099	
	Jensen Alpha						(0.0011)		0.0048		0.0022		(0.0031)		0.0057		(0.0051)		(0.0019)		(0.0011)		0.0060	
	R-squared						0.0086		0.0378		0.0153		0.0736		0.0002		0.2674		0.0076		0.0000		0.0651	
	Risk Diversifiability						0.9914		0.9622		0.9847		0.9264		0.9998		0.7326		0.9924		1.0000		0.9349	

Appendix H: Computed Data 2022-2023 Part 2

			FBM KLCI		Risk-free rate	YTLREIT (5109)		ARREIT (5127)		IGBCR (5299)		KLCC (5235SS)		AMFIRST (5120)		ALSREIT (5269)		CLMT(5180)		HEKTAR (5121)		TWRREIT (5111)	
	Month	lt	rm		Rf	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt	Pt	rt
31/1/2022	Jan-22	1,512.27			1.870%	0.156%	0.905	n.a.	n.a.	0.675	n.a.	0.61	n.a.	6.400	n.a.	0.380	n.a.	0.515	n.a.	0.575	n.a.	0.505	n.a.	0.545	n.a.
28/2/2022	Feb-22	1,608.28	6.35%	2.060%	0.172%	0.900	-0.55%	0.680	0.74%	0.595	-2.46%	6.550	2.34%	0.375	-1.32%	0.500	-2.91%	0.550	-4.35%	0.505	0.00%	0.530	-2.75%
31/3/2022	Mar-22	1,587.36	-1.30%	2.030%	0.169%	0.960	6.67%	0.665	-2.21%	0.59	-0.84%	6.580	0.46%	0.375	0.00%	0.490	-2.00%	0.570	3.64%	0.460	-8.91%	0.525	-0.94%
04/29/2022	Apr-22	1,600.43	0.82%	2.030%	0.169%	0.945	-1.56%	0.68	2.26%	0.61	3.39%	6.65	1.06%	0.4	6.67%	0.465	-5.10%	0.595	4.39%	0.505	9.78%	0.56	6.67%
05/31/2022	May-22	1,570.10	-1.90%	2.310%	0.193%	0.935	-1.06%	0.66	-2.94%	0.61	0.00%	6.85	3.01%	0.385	-3.75%	0.485	4.30%	0.585	-1.68%	0.55	8.91%	0.535	-4.46%
06/30/2022	Jun-22	1,444.22	-8.02%	2.310%	0.193%	0.945	1.07%	0.635	-3.79%	0.595	-2.46%	6.8	-0.73%	0.39	1.30%	0.445	-8.25%	0.57	-2.56%	0.58	5.45%	0.442	-17.38%
07/29/2022	Jul-22	1,492.23	3.32%	2.880%	0.240%	0.94	-0.53%	0.635	0.00%	0.58	-2.52%	7.03	3.38%	0.385	-1.28%	0.46	3.37%	0.57	0.00%	0.61	5.17%	0.477	7.92%
08/30/2022	Aug-22	1,512.05	1.33%	3.000%	0.250%	0.945	0.53%	0.64	0.79%	0.56	-3.45%	6.93	-1.42%	0.38	-1.30%	0.445	-3.26%	0.535	-6.14%	0.615	0.82%	0.502	5.24%
09/30/2022	Sep-22	1,394.63	-7.77%	3.000%	0.250%	0.895	-5.29%	0.595	-7.03%	0.555	-0.89%	6.59	-4.91%	0.36	-5.26%	0.425	-4.49%	0.54	0.93%	0.53	-13.82%	0.467	-6.97%
10/31/2022	Oct-22	1,460.38	4.71%	3.000%	0.250%	0.87	-2.79%	0.575	-3.36%	0.545	-1.80%	6.63	0.61%	0.365	1.39%	0.4	-5.88%	0.53	-1.85%	0.575	8.49%	0.477	2.14%
11/30/2022	Nov-22	1,488.80	1.95%	3.180%	0.265%	0.88	1.15%	0.58	0.87%	0.535	-1.83%	6.64	0.15%	0.37	1.37%	0.36	-10.00%	0.55	3.77%	0.66	14.78%	0.462	-3.14%
12/30/2022	Dec-22	1,495.49	0.45%	3.180%	0.265%	0.92	4.55%	0.585	0.86%	0.545	1.87%	6.71	1.05%	0.355	-4.05%	0.37	2.78%	0.535	-2.73%	0.7	6.06%	0.452	-2.16%
01/31/2023	Jan-23	1,485.50	-0.67%	3.180%	0.265%	0.985	7.07%	0.605	3.42%	0.575	5.50%	7.05	5.07%	0.36	1.41%	0.41	10.81%	0.59	10.28%	0.725	3.57%	0.462	2.21%
02/28/2023	Feb-23	1,454.19	-2.11%	3.180%	0.265%	1	1.52%	0.6	-0.83%	0.54	-6.09%	6.72	-4.68%	0.34	-5.56%	0.41	0.00%	0.535	-9.32%	0.69	-4.83%	0.447	-3.25%
03/31/2023	Mar-23	1,422.59	-2.17%	3.150%	0.263%	0.955	-4.50%	0.555	-7.50%	0.515	-4.63%	6.85	1.93%	0.33	-2.94%	0.485	18.29%	0.52	-2.80%	0.685	-0.72%	0.437	-2.24%
04/28/2023	Apr-23	1,415.95	-0.47%	3.150%	0.263%	0.97	1.57%	0.55	-0.90%	0.51	-0.97%	7.03	2.63%	0.35	6.06%	0.495	2.06%	0.515	-0.96%	0.69	0.73%	0.432	-1.14%
05/31/2023	May-23	1,387.12	-2.04%	3.150%	0.263%	0.94	-3.09%	0.52	-5.45%	0.5	-1.96%	6.95	-1.14%	0.33	-5.71%	0.475	-4.04%	0.505	-1.94%	0.66	-4.35%	0.432	0.00%
06/30/2023	Jun-23	1,376.68	-0.75%	3.150%	0.263%	0.95	1.06%	0.465	-10.58%	0.505	1.00%	6.99	0.58%	0.33	0.00%	0.45	-5.26%	0.5	-0.99%	0.675	2.27%	0.412	-4.63%
07/31/2023	Jul-23	1,459.43	6.01%	3.150%	0.263%	0.98	3.16%	0.445	-4.30%	0.515	1.98%	6.8	-2.72%	0.34	3.03%	0.47	4.44%	0.53	6.00%	0.64	-5.19%	0.412	0.00%
08/30/2023	Aug-23	1,451.94	-0.51%	3.270%	0.273%	0.99	1.02%	0.43	-3.37%	0.5	-2.91%	6.7	-1.47%	0.335	-1.47%	0.46	-2.13%	0.53	0.00%	0.64	0.00%	0.392	-4.85%
09/29/2023	Sep-23	1,424.17	-1.91%	3.270%	0.273%	1.02	3.03%	0.42	-2.33%	0.495	-1.00%	6.8	1.49%	0.335	0.00%	0.46	0.00%	0.55	3.77%	0.605	-5.47%	0.412	5.10%
10/31/2023	Oct-23	1,442.14	1.26%	3.270%	0.273%	1	-1.96%	0.405	-3.57%	0.49	-1.01%	6.87	1.03%	0.33	-1.49%	0.455	-1.09%	0.545	-0.91%	0.615	1.65%	0.387	-6.07%
11/30/2023	Nov-23	1,452.74	0.74%	3.270%	0.273%	1.03	3.00%	0.395	-2.47%	0.49	0.00%	7.01	2.04%	0.33	0.00%	0.445	-2.20%	0.56	2.75%	0.615	0.00%	0.382	-1.29%
12/29/2023	Dec-23	1,454.66	0.13%	3.270%	0.273%	1.03	0.00%	0.395	0.00%	0.485	-1.02%	7.09	1.14%	0.32	-3.03%	0.475	6.74%	0.56	0.00%	0.65	5.69%	0.367	-3.93%
Mean				(0.0011)	0.0024		0.0061		(0.0225)		(0.0096)		0.0047		(0.0069)		(0.0017)		(0.0003)		0.0131		(0.0156)
Standard Deviation						0.0348		0.0315		0.0334		0.0254		0.0242		0.0327		0.0634		0.0421		0.0655		0.0532
Sample Variance						0.0012		0.0010		0.0011		0.0006		0.0006		0.0011		0.0040		0.0018		0.0043		0.0028
Kurtosis						1.1367		0.0318		0.4293		1.1192		0.5558		0.2796		2.1146		0.9430		0.2824		2.5992
Skewness						-0.3714		-1.3613		0.2151		-0.6239		-0.6434		0.5191		1.1872		0.2651		-0.2386		-0.7222
Range						0.1437		0.0010		0.1236		0.1400		0.1159		0.0998		0.2829		0.1960		0.2860		0.2530
Minimum						-0.0802		0.0017		-0.0529		-0.1058		-0.0609		-0.0491		-0.1000		-0.0932		-0.1382		-0.1738
Maximum						0.0635		0.0027		0.0707		0.0342		0.0550		0.0507		0.1829		0.1028		0.1478		0.0792
Sum						-0.0255		0.0562		0.1407		-0.5169		0.1090		-0.1593		-0.0382		-0.0070		0.3008		-0.3592
Count						23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000		23.0000
Beta (Slope)								0.1193		0.3409		0.1160		0.2066		0.2889		0.0872		0.1151		0.5921		0.8309
Alpha (Intercept)																								
	ri=			-0.11%			0.61%		-2.25%		-0.96%		0.47%		-0.69%		-0.17%		-0.03%		1.31%		-1.56%
	Rf =			0.24%			0.24%		0.24%		0.27%		0.24%		0.24%		0.24%		0.24%		0.24%		0.24%
	βi =		0.0348				0.0315		0.0334		0.0254		0.0242		0.0327		0.0634		0.0421		0.0655		0.0532
								0.1193		0.3409		0.1160		0.2066		0.2889		0.0872		0.1151		0.5921		0.8309
	Sharpe Ratio						0.1167		(0.7460)		(0.4851)		0.0950		(0.2862)		(0.0647)		(0.0653)		0.1624		(0.3393)
	Treynor Ratio						0.0308		(0.0731)		(0.1063)		0.0111		(0.0324)		(0.0471)		(0.0239)		0.0180		(0.0217)
	Jensen Alpha						0.0065		(0.0213)		(0.0092)		0.0055		(0.0059)		(0.0014)		0.0001		0.0152		(0.0127)
	R-squared						0.0174		0.1261		0.1018		0.0885		0.0943		0.0023		0.0091		0.0990		0.2951
	Risk Diversifiability						0.9826		0.8739		0.8982		0.9115		0.9057		0.9977		0.9909		0.9010		0.7049