■ Q1(b)

Firm Ages		
	GEM	main board
count	1910	2692
mean	78.73403141	91.53677563
std	22.70533323	22.46612181
min	24	25
25%	63	77
50%	79	92
75%	92	104
max	172	264

Monthly Return		
	GEM	main board
count	113574	323852
mean	1.23%	1.15%
std	0.181763874	0.152302056
min	-86.35%	-88.22%
25%	-8.44%	-6.90%
50%	-0.49%	-0.14%
75%	8.11%	7.38%
max	639.98%	1275.22%

Monthly P/E Ratios		
	GEM	main board
count	104179	306983
mean	289.0491572	128.4159867
std	32401.53146	16840.05381
min	-2078571.429	-3864000
25%	72.59936556	43.13431289
50%	125.6905463	84.92926883
75%	216.806124	158.0931273
max	6262500	1230000

Monthly P/B Ratios		
	GEM	main board
count	113412	322125
mean	4.745566697	1.211243838
std	19.103693	828.082257
min	-733.5111401	-282500
25%	2.383835832	1.645522089
50%	3.525184651	2.543963352
75%	5.535595086	4.023514356
max	3484.119346	9346.110485

ROA		
	GEM	main board
count	40516	113024
mean	3.05%	2.88%
std	0.06478548	0.06004554
min	-187.85%	-187.19%
25%	0.69%	0.63%
50%	2.38%	2.08%
75%	5.27%	4.70%
max	96.86%	448.90%

ROE		
	GEM	main board
count	40400	112326
mean	-0.75%	3.81%
std	8.740368866	0.764463167
min	-175604.32%	-17489.47%
25%	1.06%	1.36%
50%	3.52%	4.04%
75%	7.63%	8.42%
max	131.93%	1402.10%

R&D Expense / Total Asset Ratios		
	GEM	main board
count	40400	112326
mean	-0.75%	3.81%
std	8.740368866	0.764463167
min	-175604.32%	-17489.47%
25%	1.06%	1.36%
50%	3.52%	4.04%
75%	7.63%	8.42%
max	131.93%	1402.10%

● Firm ages

According to the data, firstly the average firm age and percentiles indicates a longer average existence of firms in the main board market. Secondly, the standard deviation of firm ages in both board are low, suggesting concentrated distributions of firm ages in both markets with minimal fluctuations. This is corroborated by the percentile analysis.

● Monthly stock return

The majority of the data comes from the main board, indicating a larger scale for this market segment. The Main Board has a slight lower average stock monthly return. And the standard deviation for the main board market is also slightly lower, indicating that stocks in the main board market have relatively smaller fluctuations in monthly returns. This is corroborated by the percentile analysis. This may reflect the characteristics of smaller-sized companies with stronger growth potential in the GEM market, leading to greater volatility and risk. Companies with stable profitability and mature business models primarily listed on the main board tend to offer lower but more stable monthly returns, with lower associated risks.

● P/E Ratios

Firstly, the data for mean and percentile reveals that the overall PE ratio for GEM exceeds that of the Main Board. This likely comes from the perceived growth potential of companies in the GEM market, prompting investors to have higher expectations for their future earnings growth and resulting in a higher market valuation. Secondly, the GEM market exhibits a greater standard deviation, implying higher volatility. This volatility may stem from the elevated risks and uncertainties associated with characteristics of companies in the GEM market, leading to continuous shifts in investor sentiment regarding the earnings prospects of these companies and consequently causing significant fluctuations in market expectations.

- **P/B Ratios**

Firstly, the data for mean and percentile indicates together that the P/B ratio of GEM companies is generally higher than that of the Main Board. This may be because companies listed on the GEM are predominantly emerging companies which in their early growth stages. On one hand, the assets of these companies may primarily be invested in research and development, market expansion, and brand building during this stage, resulting in relatively smaller book values compared to mature enterprises which are mainly listed on the Main Board. On the other hand, investors hold optimistic expectations about the future profitability potential of these companies, anticipating higher growth rates, thereby leading to a higher valuation by the market. Secondly, the standard deviation of the PB ratio for GEM companies is larger. Firstly, considering extreme values, we believe this is influenced by extreme values. Secondly, we attribute this to the complexity and large number of industries represented by companies listed on the Main Board.

- **ROA**

Based on the data for mean, percentile, and standard deviation, both main board and GEM-listed companies show similar ROA performance. However, GEM companies exhibit slightly higher ROA with slightly more volatility. This could be due to their flexibility in industry selection and smaller scale, enabling quicker adjustment to market changes, leading to better asset utilization and higher ROA. Additionally, as high-growth emerging companies in their early stages of development, they may be undergoing rapid business expansion, leading to higher asset utilization rates and potentially higher ROA.

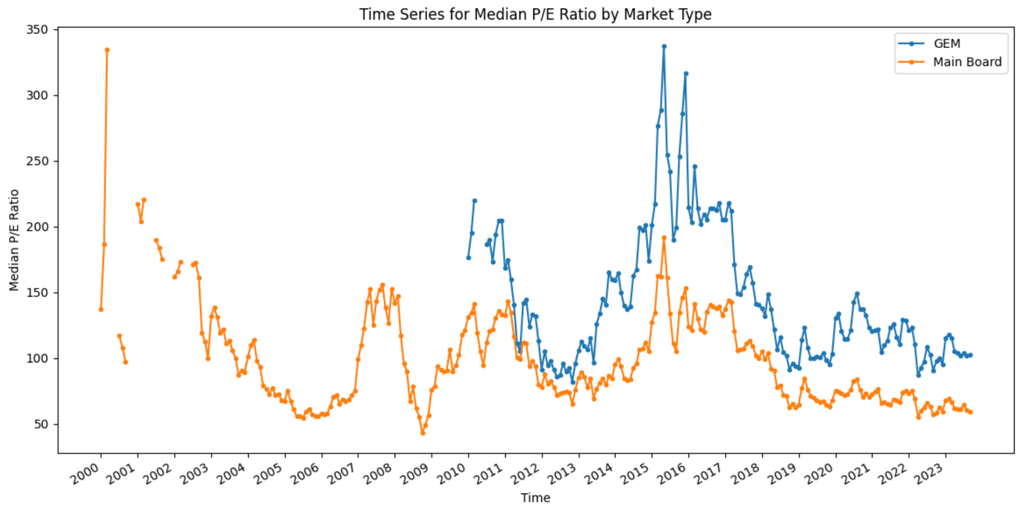
- **ROE**

Observing the extremes and averages of ROE, we find that the GEM's average deviates. Thus, we primarily evaluate these segments based on percentiles. Overall, there isn't a significant difference between them, with the Main Board showing relatively higher ROE. Considering the Main Board's lower ROA overall, this higher ROE may stem from mature companies adept at adjusting their capital structure to maximize financial leverage, thereby increasing ROE.

● R&D Expense / Total Asset Ratios

Combining the mean and percentile, we find that the R&D Expense / Total Asset ratio of GEM-listed companies is generally higher. There are two main reasons for this: firstly, companies listed on the GEM typically come from innovative industries such as technology and biotechnology, which often require more R&D investment to drive product and technology innovation. Secondly, GEM-listed enterprises are often in the early stages of development stage and lack mature products to rely on. In order to gain a competitive advantage, they may increase investment in R&D for new products and technologies. Additionally, the larger standard deviation among GEM companies reflects significant differences in R&D investment among companies.

■ Q2



i) Based on the observed time-series data of P/E ratios, it's noted that in September 2023, the median P/E ratios for both markets were at historical lows. This suggests that many stocks in the market may be undervalued currently. Considering this, investing at this time could potentially yield higher returns in the future. Based on these findings, making new investments in September 2023 appears to be a prudent choice.

ii) Based on the data from 2024, in September 2023, the median P/E ratio of the main board was lower than approximately 96% of historical median P/E ratios, while the median P/E ratio of GEM was slightly lower than the historical median. This suggests that stocks in both segments are generally undervalued, with significant potential for upward movement. However, comparatively, the main board's median P/E ratio is lower, indicating greater potential for stock price appreciation and thus more attractive for investment.

Additionally, we observed that the median P/E ratio of GEM is relatively higher. This could be attributed to the fact that companies listed on GEM are primarily early-stage growth companies and tech firms. Investors hold optimistic expectations regarding the future profit potential of these companies, leading to higher valuations. However, it's essential to acknowledge the risks associated with high-growth potential. These companies often lack the stable profit capability of mature companies and face significant competitive pressures. Furthermore, the volatility of P/E ratios in GEM is higher. Conversely, the main board market, dominated by mature companies, exhibits stable P/E ratios and lower risk, albeit with slightly lower returns. In summary, GEM can bring higher theoretical value return, but must bear greater risk; The risk faced by the main board is relatively small, and the corresponding return can only be low.

Taking both points into consideration, the choice of ETF strategy heavily depends on the risk appetite of the investor. Risk-averse individuals may prefer to invest more in the main board, while risk-tolerant investors may allocate more to GEM. Moreover, given the greater appreciation potential of main board stocks, I strongly recommend assigning higher weights to main board stocks in the portfolio.

■ **3**