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Decoding Global Portfolio Investment Flow Post-COVID19 Pandemic: Does Market Efficiency Matter?

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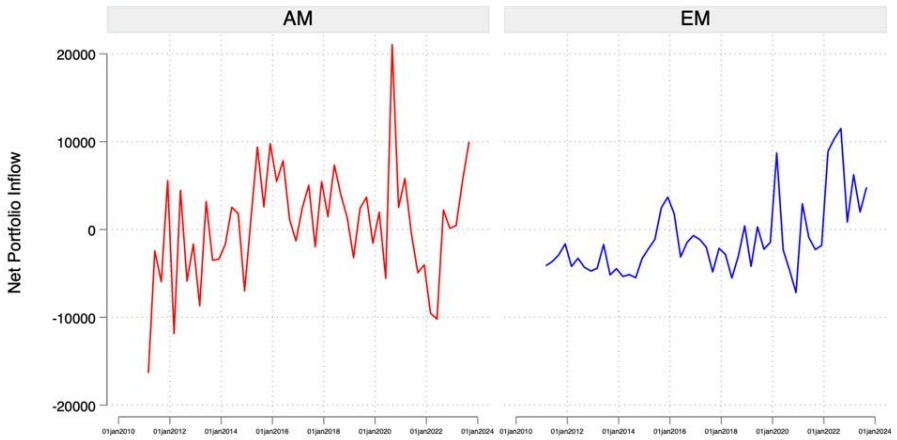
- In this paper, we try to uncover the pattern of global portfolio investment flow after the COVID-19 pandemic. Particularly, we are interested to see whether or not the majority of portfolio investments go to inefficient markets during this period.
- Based on the Efficient Market Hypothesis (EMH) by Fama (1970), investors should go to weak-form (inefficient) market to search for higher return, a common behavior after a period of market instability.
- We construct our measure of market efficiency by taking the absolute difference between standardized GDP growth (QoQ %) and standardized stock index return, where larger value means less market efficiency. We then regress this variable to standardized net portfolio inflows in five different periods (spanning from 1991Q1 to 2024Q1) to see whether or not larger deviation leads to larger inflows in each period.
- Further, we divide our sample of countries into efficient markets (those with average deviation in the entire timeframe of less than 50th percentile) and inefficient markets (*vice versa*). We conduct a t-test analysis based on this categorical variable to see whether or not the average net portfolio inflows of the two groups are statistically different in each of the five-time period.
- Results constructed by us indicates the preference of global investors. During stable periods, investors tend to prefer efficient markets incorporating all available information into asset prices. In times after a crisis (post 2008 financial crisis and post COVID-19), investors shift the capital towards inefficient markets. This behavior shifting is motivated by higher returns to compensate the loss during crisis.
- The shifting of portfolio investment flow is associated with the condition of market and the condition of information distribution which create opportunity. By moving to inefficient market, investors leverage the inefficiencies to prioritize higher gains.
- Inefficient markets should create sufficient ecosystem, especially during post-crisis period to attract more investments.

Introduction

The COVID-19 pandemic has caused a sudden stop of capital inflow to Emerging Markets (EMs). In March 2020 alone, $83 billions of capital has left EMs' stock and bond markets (Batini, 2020). These outflows are much larger in magnitude than those seen during the 2008 Global Financial Crisis and 2013 Taper Tantrum. From CEIC data, we can also see that Advanced Markets (AMs) experienced sharp decline in net portfolio inflows during the pandemic as well, as shown in **Exhibit 1**.

Exhibit 1. Average Quarterly Net Portfolio Inflows (in USD millions) to Advanced Markets (L) and Emerging Markets (R), 2010-2024



Source: IFGP Research Analysis, data from CEIC

However, EMs felt much more pain than AMs. For the whole year of 2020, each EM country on average faced $5.4 billion of capital outflows in total. This number is still positive for AMs, where on average they saw almost $20 billions of capital inflows in total. AMs only recorded a net outflow for the quarter of 2020Q2, where approximately $5.5 billion of funds flew from each country on average. However, this loss was quickly recovered, as capital entered AMs after exiting EM countries. This circumstance displays that investors were redirecting their assets to low-risk safe havens during the early pandemic days.

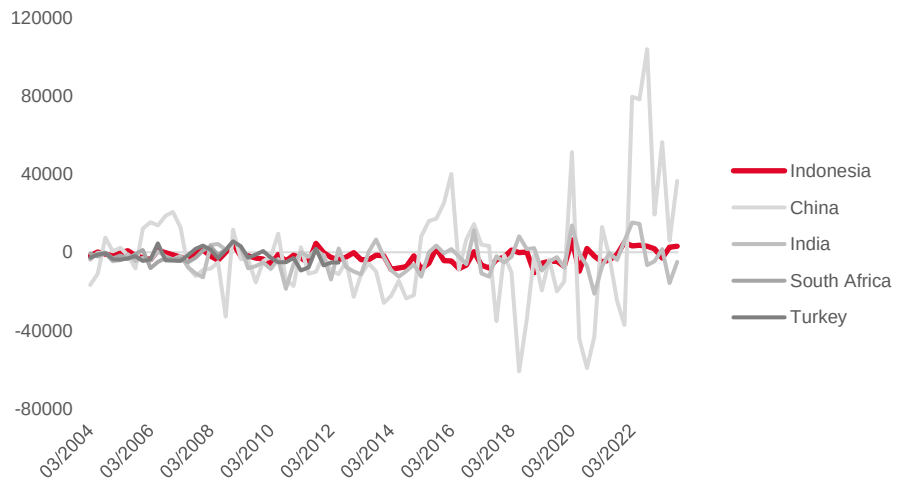
Since the early 2022, however, capital has been coming back to EMs. In 2022Q1, an average EM country would see a net inflow of $8.9 billions whereas an average AM country would realize a net outflow of $9.5 billions. This influx was driven by investors seeking high-return after they perceived that the pandemic risks had been somewhat mitigated by countries around the world (Nguyen et al, 2021).

When investors sought higher return, they focused on EM countries since financial assets in EMs reportedly had higher risk-adjusted return in 2022 (Boudreaux et al, 2022). Numerous fiscal and monetary policies taken by EMs to stabilize their economy has also played a part in nudging capital back to the countries. While both AMs and EMs have experienced positive portfolio inflows at the present moment, examining the motivation behind the global investors' decision to allocate their financial capital during this post-pandemic era is an interesting research question.

Quick Snapshot of Net Portfolio Inflows Trend in Indonesia & Select EMs

Since 2004, the data of net portfolio investment to Indonesia has been volatile. Notably, it has almost always been in the negative territory for most of the years recorded in CEIC, indicating that funds flew more often out of Indonesia than into the country. It is interesting to note, however, that Indonesia had a positive inflow in the period after the GFC and before the Taper Tantrum. Generally, the trend has been increasing since 2021Q4, where Indonesia recorded a net inflow of $5 billion. Up until 2023Q3, the total net portfolio investment inflow to the country is approximately $19.3 billions. This shows that Indonesia is one of the EM countries that gained substantial portfolio investments after the pandemic.

Exhibit 2. Quarterly Net Portfolio Inflows (in USD millions) to Indonesia & Select EMs, 2004-2023



Source: IFGP Research Analysis, data from CEIC

While the other EM countries in comparison follow a similar pattern with Indonesia, arguably China was much more volatile. In 2020Q3, $59.3 billions of funds flew out of China while exactly two years after, in 2022Q3, almost double of that value (about $103.9 billions) went into the country again. This volatility was even more significant in the pandemic's early days. In 2020Q1, $51.2 billions of fund was gained yet in the next quarter, 2020Q2, $42.2 billions was lost.

The volatility of the second-largest EMs in the dataset, India, was nothing compared to China. In 2020Q4, India lost $21 billions and they gained $14 billions in the two first consecutive quarters of 2022. This makes sense since China is on its way to become the world's economic and financial powerhouse, challenging the US. Meanwhile, South Africa, Turkey, and most of the other EMs in the dataset have similar magnitude of volatility with Indonesia.

Literature Review

Why, then, is it the case that investors prefer to invest in EMs nowadays? One theoretical framework to possibly explain this phenomenon is the Efficient Market Hypothesis (EMH), originally formulated by Fama (1970). The EMH posits that the price of a security is an accurate reflection of all available information that is

related to the security. This implies that a security is always trading at its fair value, making it impossible for investors/traders to consistently make profits by analyzing mispricing. The EMH theory is also related to the random walk theory, also previously developed by Fama (1965), which suggests that price changes are random and unpredictable.

The EMH divides financial markets into three levels of efficiency, as follows:

- *Weak Form Efficiency:* All historical trading information has been reflected in the current price. Therefore, technical analysis cannot be used to achieve superior gains.
- *Semi-strong Form Efficiency:* All publicly available information has been reflected in the current price. Therefore, technical analysis and fundamental analysis cannot be used to achieve superior gains.
- *Strong Form Efficiency:* All publicly- and non-publicly-available information has been reflected in the current price. Therefore, technical analysis, fundamental analysis, and even insider information cannot be used to achieve superior gains.

The EMH theory further implicitly hinted that when the market is in a strong form of efficiency, the best strategy is to just invest in a passive portfolio because any type of analysis would be futile. However, not every financial market in the world is an efficient market. In fact, ever since the EMH theory gained popularity, researchers have been exploring for ways to measure market efficiency. An influential paper, Bollerslev and Hodrick (1992), found that even the New York Stock Exchange (NYSE) has some level of inefficiency. Using autocorrelation test, they found that past price of NYSE's stocks influenced current and future price's predictability to an extent, implying that not all information had been captured in the current price.

Numerous other papers have tested market (in)efficiency after that. Boya (2017) found that stock prices were lagging in adjusting to events such as earnings result, displaying that there is a lag between newly available information and their incorporation to its stock price. Other researchers such as Park (2021) used other economic and financial markets, namely the P/E ratio and business cycle to predict returns and came into conclusion that markets were inefficient since these measures show signs of influence to price return. Hence, as early as 1992 up until now, academicians have argued that markets are not fully efficient in embedding all relevant information.

Historically, EMs in general are considered to be more inefficient than AMs, implying that investors can still make consistent profits through investing in undervalued securities (Smerkolj & Jeran, 2023). The idea that EMs are inefficient markets might explain why funds are being invested there post-pandemic. However, empirically, this notion still yields mixed results, as several papers also found that some EMs' financial market returns follow a random walk and thus not determined by mispricing (e.g., Aktan et al (2017) and Dias et al (2020) among others). Moreover, if we look back at Bollerslev and Hodrick (1992), we recognize that even the most advanced financial market, the NYSE, has some degree of inefficiency. Combining this together, market inefficiency is not something unique to EMs.

Consequently, while the data has displayed that capital flows to EMs after the pandemic, the rationale might not be as straightforwardly as saying that investors are searching for higher returns. To search for higher return, investors must invest in inefficient markets, without regards to whether they are EMs or AMs, since profit opportunities from mispricing are still existent. Therefore, our framework of thinking must shift in order to be more precise – *from investigating whether capital flows to EMs (from AMs) to whether capital flows to inefficient markets (from efficient markets).*

Data & Methodology

In this paper, we analyzed three variables of concern and their interdependence (or lack thereof), namely net portfolio inflows, GDP growth, and stock index returns. We collected our quarterly macroeconomic data of GDP QoQ% growth and Net Portfolio Inflows in USD millions from CEIC. Meanwhile, we got the stock index price for each country from Bloomberg. This stock index price is transformed into a quarterly stock index return simply by taking the percentage difference between the current period price and the previous period price. Our dataset comprised 34 countries spanning a period from 1991Q1 to 2024Q1. The list of countries included is reported in **Appendix 2**. If the panel is perfectly balanced, there should be 4522 observations in total. However, due to data availability, the sample sizes are different for each variable. **Table 1** below provides the summary statistics of our raw dataset.

Table 1. Summary Statistics of Raw Dataset

	Observation	Mean	Std. Dev	Min	Max
GDP Growth (QoQ%)	4027	0.6122	1.9165	-20.405	21.455
Net Portfolio Inflows (USD million)	3127	160.848	22099.08	-163691.7	254163.1
Stock Index Return (QoQ%)	4172	2.952	15.516	-41.484	303.649

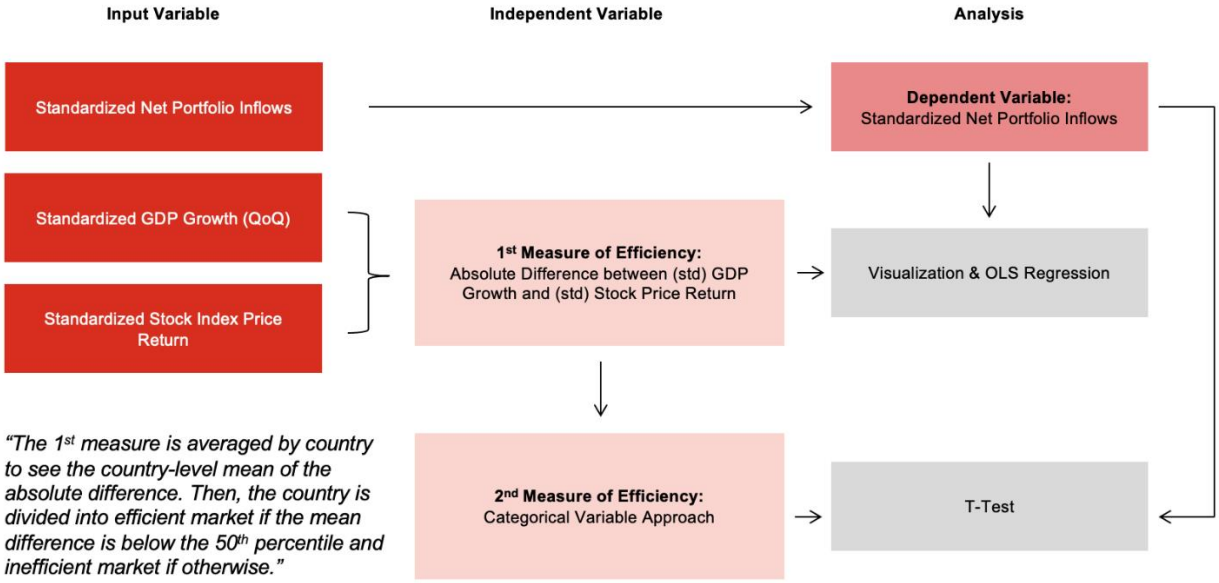
Source: IFGP Research Analysis, data from Bloomberg and CEIC

Exhibit 3 shows our research framework. Basically, we will firstly standardize our three variables into a normally-distributed variable with a mean of 0 and a standard deviation of 1 to ease the analysis since the scales of the variables are different. Then, we will operationalize our standardized variables of GDP growth and stock index return into two variants of market efficiency measure. These measures will then be analyzed in terms of their influence towards our dependent variable, the (standardized) net portfolio inflows.

The first efficiency measure is a continuous variable built by simply taking the absolute value of difference between the standardized GDP growth and the standardized stock index return while the second efficiency measure is a categorical variable distinguishing whether a country is an efficient or an inefficient market. The former will be utilized as an independent variable in a simple OLS regression with the standardized net portfolio inflows as the

dependent variable whereas the latter will be employed in a t-test setting which tries to infer the difference between two population means. Despite having different usage, the second measure of efficiency is actually derived from the first. Further discussion regarding each variable's construction and how they will be used in their respective statistical inference technique is outlined below.

Exhibit 3. Research Framework



Source: IFGP Research. Std is short for standardized.

1st Measure: Absolute Difference Between GDP Growth and Stock Return

The idea behind the first efficiency measure is that larger absolute difference in a standardized country's stock index return from its standardized GDP growth means that there is less relevant information that is being reflected in the stock price. Here, we made a relatively strong assumption that GDP growth reflects the country's macroeconomic condition that might comprehensively predict financial market returns. Hence, a strong form efficient market's return shall go hand-in-hand with its GDP growth. The equation of this 'deviation' variable is:

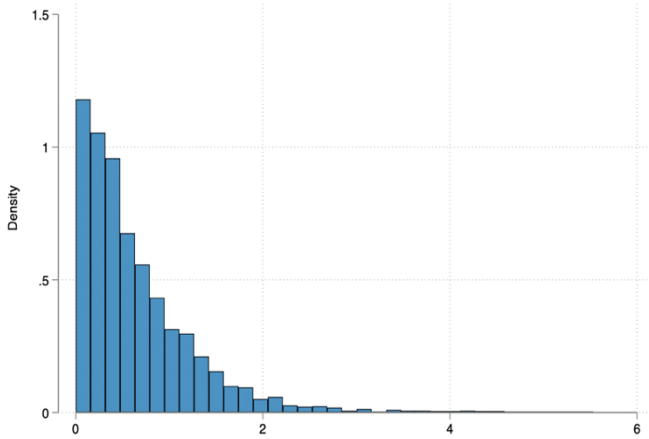
$$Deviation_{i,t} = |Std.GDP\ Growth_{i,t} - Std.Stock\ Index\ Return_{i,t}|$$

where $Std.GDP\ Growth_{i,t}$ is the standardized GDP (QoQ %) growth of country i at quarter t, $Std.Stock\ Index\ Return_{i,t}$ is the standardized stock index return of country i at quarter t, and $Deviation_{i,t}$ is the absolute difference between the two variables for country i at quarter t.

Exhibit 4 shows the histogram of this 'deviation' variable. This variable has a mean of 0.7381, a median of 0.4756, a standard deviation of 0.9969, a minimum value of 0.0066 and a maximum value of 5.8105. We can see that the variable is right-skewed, meaning that extreme absolute deviation is present. However, numerous near-zero deviations are visible as well. Overall, the data shows that

there are observations with both small and large deviations, which is good for our research in terms of enhancing data's variability.

Exhibit 4. Histogram of the 1st Measure – The Absolute Difference Between Standardized GDP Growth and Standardized Stock Index Return



Source: IFGP Research Analysis, data from Bloomberg and CEIC

The 1st measure will be used as a basis for gauging market efficiency. Larger value of the variable means that the deviation is larger so that the market is less efficient and *vice versa*. This variable will be used as an independent variable in a simple, two-variables, OLS regression with the following specification (where $NPI_{i,t}$ is the standardized net portfolio inflows of country i during quarter t while $Deviation_{i,t}$ is the 'deviation' of country i during quarter t):

$$NPI_{i,t} = \beta 0_{i,t} + \beta 1 Deviation_{i,t} + \varepsilon_{i,t}$$

We will regress this equation six times since we are interested to see the nature of the relationship for the entire timeframe and also in five different periods, as follows:

1.) Pre-Asian Financial Crisis: 1991Q1 – 1997Q4
2.) Pre-Global Financial Crisis: 1998Q1 – 2007Q4
3.) Pre-Taper Tantrum: 2008Q1 – 2012Q4
4.) Pre-COVID to COVID: 2013Q1 – 2020Q4
5.) Post-COVID: 2021Q1 – 2024Q1

We are mainly interested to see the slopes of the 'deviation' variable ($\beta 1$) in each period if we plot the equation on a graph. Since we are seeking the evidence on whether capital flows to inefficient markets during the post-pandemic era, we expect that the coefficient sign of the last period will be positive, implying that larger deviation will bring more net portfolio inflows. In other words, we predict that specifically in this era, the less efficient the market is, the more fund will come.

2nd Measure: Categorical Variable Approach

The deviation variable (1st measure) is further averaged by each country to see the average deviation that each country has for the entire timeframe (1991Q1 – 2024Q1). Then, we divided the countries into two groups with the following rule: the country will be marked as an efficient market if the mean deviation is less than the 50th percentile and *vice versa*. **Exhibit 5-6** show the average movement of standardized net portfolio inflows of the two types of country for the entire timeframe. We can see that after 2020, both markets experienced an increase in net portfolio inflows. **Appendix 2** provides the list of countries and their type of market efficiency.

Exhibit 5. Average Standardized Net Portfolio Inflows of Efficient Markets (Mean Deviation < 50th Percentile)

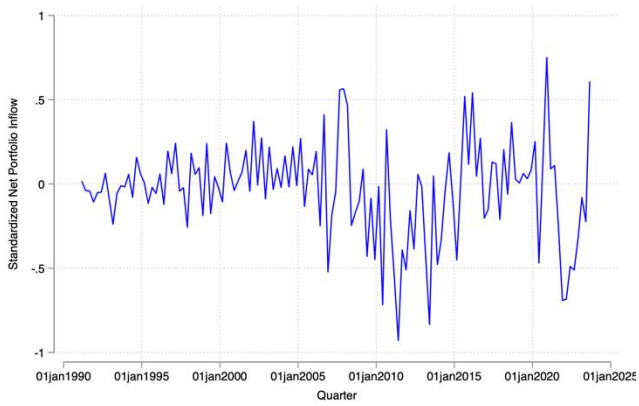
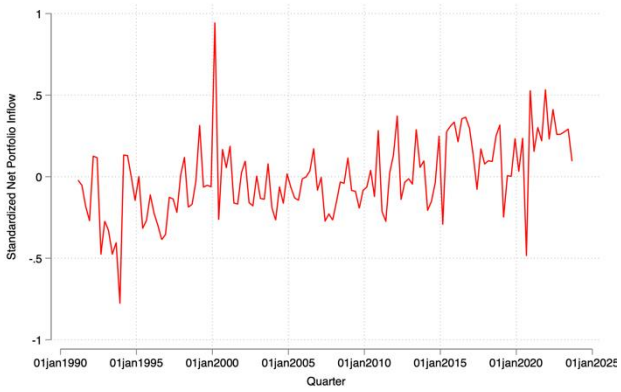


Exhibit 6. Average Standardized Net Portfolio Inflows of Inefficient Markets (Mean Deviation ≥ 50th Percentile)



Source: IFGP Research Analysis, data from Bloomberg and CEIC

Using these two groups, we will conduct a student's t-test statistical analysis. The test is used for comparing the 'inferred' population mean between two groups of samples. In our context, this is translated to comparing the mean of standardized net portfolio inflows in efficient markets versus the mean of standardized net portfolio inflows in inefficient markets. In our result table, if the mean difference is positive, that means that efficient markets have higher mean of standardized net portfolio inflows relative to inefficient markets, and *vice versa*.

This analysis is crucial to determining whether more funds went to efficient or inefficient markets. We will breakdown the t-test analysis into six different tests (one for the entire timeframe and five more for each of the five period), just like in the simple OLS regression. We expect that for the last period, the sign will be negative, suggesting that more funds enter inefficient markets.

Exhibit 7. Standardized Net Portfolio Inflows & Mean Difference of Standardized GDP vs Standardized Price Returns (All Period)

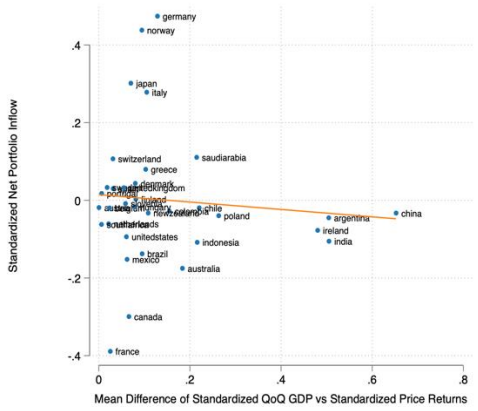


Exhibit 8. Standardized Net Portfolio Inflows & Mean Difference of Standardized GDP vs Standardized Price Returns (Period 1: Pre-1998)

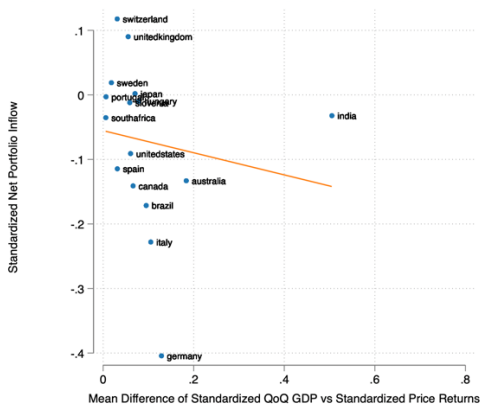


Exhibit 9. Standardized Net Portfolio Inflows & Mean Difference of Standardized GDP vs Standardized Price Returns (Period 2: 1998-2007)

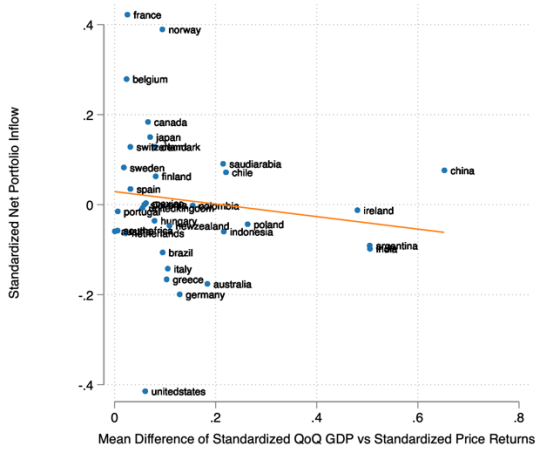


Exhibit 10. Standardized Net Portfolio Inflows & Mean Difference of Standardized GDP vs Standardized Price Returns (Period 3: 2008-2012)

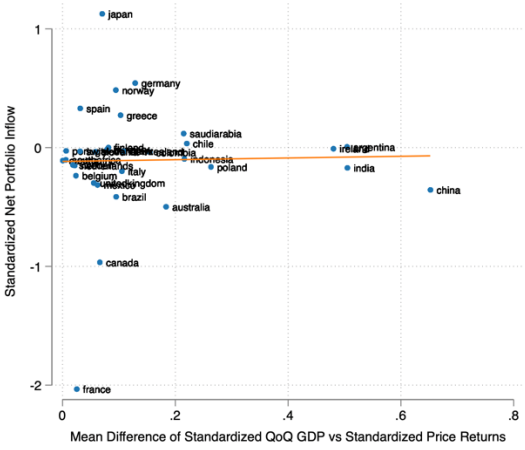


Exhibit 11. Standardized Net Portfolio Inflows & Mean Difference of Standardized GDP vs Standardized Price Returns (Period 4: 2013-2020)

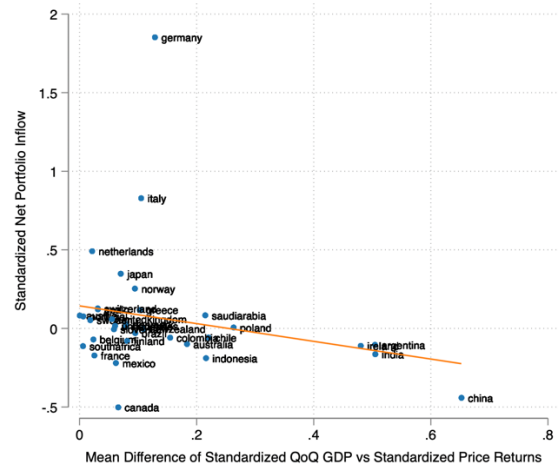
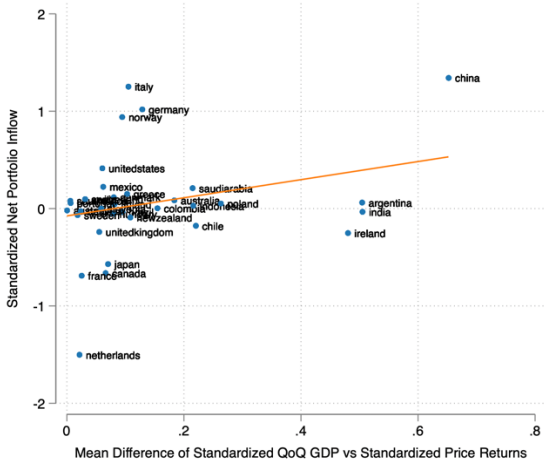


Exhibit 12. Standardized Net Portfolio Inflows & Mean Difference of Standardized GDP vs Standardized Price Returns (Period 5: Post-2020)



Source: IFGP Research Analysis, data from Bloomberg and CEIC

Results & Analysis

1st Measure's Analysis: Data Visualization and Simple OLS Regression

Exhibits 7-12 reflect how the market reacts to the efficiency of the market. The higher the mean of standardized difference between GDP growth and price returns, the less efficient the market is. The relationship between standardized NPI and the mean difference shows the flow of sample countries' investments inflow. If we observe a positive relationship between those two variables, it implies that the market's portfolio investment flows go to inefficient market. If the relationship between the two variables is negative, it suggests that flows of investment portfolio go to efficient markets.

Based on **Exhibits 7, 8, 9, 11**, we can observe that throughout the stable periods, investment flow goes to efficient market which is reflected from the negative relationship. On the other hand, crisis periods (financial crisis (2008-2012) & COVID-19 (post-2020)) show a positive relationship meaning that portfolio investment flow goes to inefficient market.

Exhibit 13. OLS Regression Result

VARIABLES	(1) All Period	(2) Period 1: Pre-1998	(3) Period 2: 1998-2007	(4) Period 3: 2008-2012	(5) Period 4: 2013-2020	(6) Period 5: Post-2020
Deviation	-0.00754	-0.0816*	-0.0286	0.135*	-0.0564	0.0378
	(0.0309)	(0.0488)	(0.0402)	(0.0712)	(0.0536)	(0.0968)
Constant	0.00697	-0.0458	0.0263	-0.214***	0.105**	0.0228
	(0.0277)	(0.0356)	(0.0441)	(0.0752)	(0.0452)	(0.109)
Observations	2,874	200	815	578	951	330
R-squared	0.000	0.010	0.000	0.005	0.002	0.000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: IFGP Research Analysis, data from Bloomberg and CEIC

To support the visual demonstration, we conduct OLS regression for each period. In general, portfolio investment flow goes to efficient market reflected in the all-period row even though the result is not significant. If we analyze deeper into respective periods (divided into 5 periods), period 3 and period 5 have positive signs. Period 3 represents a financial crisis in which the increase of 1 standardized deviation between GDP growth and price return would increase standardized NPI by 0.135. This relationship is statistically significant at the 90% confidence level. In period 5, even though it is not significant, similar to period 3, it shows positive sign of coefficient. In this period, a 1-point increase in the standardized deviation between GDP growth and price return would increase standardized NPI by 0.0378.

On the other hand, there are periods with negative coefficients as well. For instance, in period 1 (pre-1998), an increase of the deviation by 1 point will decrease standardized NPI by 0.0816. Periods 2 (-0.0286) and 4 (-0.0564) have the same negative sign of coefficient as period 1. For periods with negative coefficients (which tend to be a 'stable' period), we observe a statistical significance only in period 1, at the 90% level.

2nd Measure's Analysis: T-Test

Exhibit 14 provides the results of t-test comparing standardized net portfolio inflow between efficient and inefficient markets across different time periods.

Exhibit 14. T-Test Result

	(1) All Period	(2) Period 1: Pre-1998	(3) Period 2: 1998-2007	(4) Period 3: 2008-2012	(5) Period 4: 2013-2020	(6) Period 5: Post-2020
Difference in Mean	-0.0729	-0.0650	0.0834	-0.1048	-0.0816	-0.4333
Difference in Std. Error	0.0058	0.0187	0.0094	0.0380	0.0237	0.0270
Observations	3744	258	1174	640	1052	373
Significance Level	99%	99%	99%	99%	99%	99%

Unequal variances assumed
Variable of Concern is (Standardized) Net Portfolio Inflow
Difference in Mean = Mean of Efficient Markets – Mean of Inefficient Markets

Source: IFGP Research Analysis, data from Bloomberg and CEIC

Across all periods, standardized net portfolio inflow has a significant negative difference (-0.0729). Even though it is significant, the difference in mean is close to zero. 'Stable' periods of 1, 2, and 4 have various difference in mean (-0.0650, 0,0834, and -0,0816) yet those three respective periods have difference in mean between -0,1<diff<0,1. On the other hand, the difference in mean of period 3 and 5 is below -0,1 meaning that mean of standardized NPI to inefficient market is significantly higher than NPI of efficient market in these 'crisis' periods compared to other periods. All these periods are statistically significant at the 99% confidence level.

Shifting of Market Behavior under Crisis Periods

Global investors tend to prioritize their portfolio investment in stable markets (efficient market) during stable times. They venture capital to secure fairness of the asset price. Several reasons are mentioned as follows:

1. *Information Efficiency*

   Efficient markets reflect all available information into asset prices. In this condition, investors find it difficult to gain more profit without taking additional risk. in addition to difficulty of gaining more profit, investors believe that the asset prices reflect the true value based on all information available, minimizing the risk of inaccurate priced assets. According to Fama, E *et al*. (1969), stock prices are adjusting to new information and how quickly the adjust is. In this study, we cover the efficiency of market in difference between GDP growth and price return

suggesting that GDP growth contains information which reflects in stock price index return.

2. *Behavioral Investment insights*

   The anomalies of the market will be corrected by information trading, thus maintaining market stability will be met. Market players are attracted to stability depicted by market efficiency. This correction mechanism of market price is supported by Nofsinger, J (2017).

3. *The Attraction of Global Capital*

   The flow of global capital is fostered by information transparency and reliability. Global investors tend to choose countries where there is fairness of regulatory framework and lower asymmetric information (Woo *et al*, 2020).

The behavior of market players towards portfolio investment is shifting in the post financial crisis (2008) and post COVID-19 period where the portfolio investment flows to inefficient market. There are several reasons why those two periods create contradictory behavior of portfolio investment flow, as follows:

1. *Higher Returns*

   Investors are attracted to inefficient markets due to higher returns. The inefficient market gives the opportunity for higher yields and arbitrage which are attractive to lower interest rates market (Karahan, O & Bayir, M, (2022)).

2. *The Potential of Inefficient Markets*

   These markets are perceived as having higher growth potential compared to efficient markets. Kasabeh, Azghoul, and Alghraibeh (2022) explain that labor cost, country's openness, and market size play crucial roles in attracting foreign capital.

3. *Lower Entry Barriers*

   Inefficient markets have lower entry barriers compared to the efficient ones which allows a broader range of investors to participate in the inefficient market. The lower entry barriers would increase investment inflow.

4. *Exploitation of Asymmetric Information*

   Investors target the inefficient market to exploit asymmetric information. They exploit the opportunity of unevenly information to gain more profits incorporated into asset price (Stephens *et al*. (2021).

Based on the results, it can be concluded that there is a shifting phenomenon between the non–crisis state and crisis state where in non-crisis period investors choose stability over returns in general. After a crisis happens, investors seek to gain more returns to compensate the loss due to the crisis.

Stability-seeking is represented as more positive NPI to efficient market whereas return-seeking or profit-orientation is represented as more positive NPI to inefficient market. We conclude that the post COVID-19 (post 2020) period has

similar characteristics of net portfolio investment flow to post global financial crisis (2008-2012).

Conclusion

This study attempts to analyze the flow of net portfolio investment between efficient and inefficient markets. We look at similarities between respective periods. To cover the condition of inefficient and efficient markets, we use the absolute difference of standardized QoQ GDP growth and standardized market index return for each country. The difference between those two variables is the condition of the market and whether information available in the market (GDP growth) is reflected in the market index return.

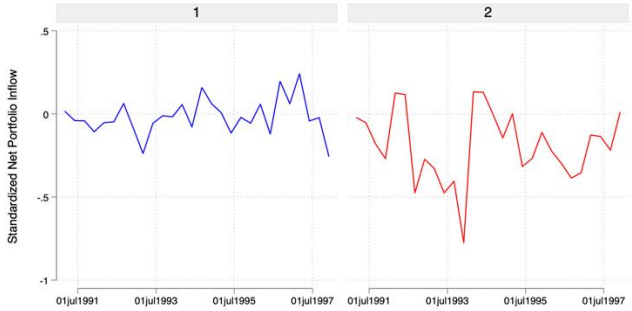
We use two approaches. We use data visualization between standardized NPI and difference of mean between GDP & market index returns (slope) coupled with an OLS regression which quantitatively shows the effect of standardized deviation between GDP growth & market index return to standardized NPI. The second method is t-test covering the difference in mean of standardized NPI between efficient and inefficient market.

In general, under normal conditions, global investors choose stability and information symmetry over seeking more return and exploitation of uneven information distribution. But under crisis period, global investors choose to exploit asymmetric information to gain more returns. Both market conditions could be utilized by investors under different circumstances.

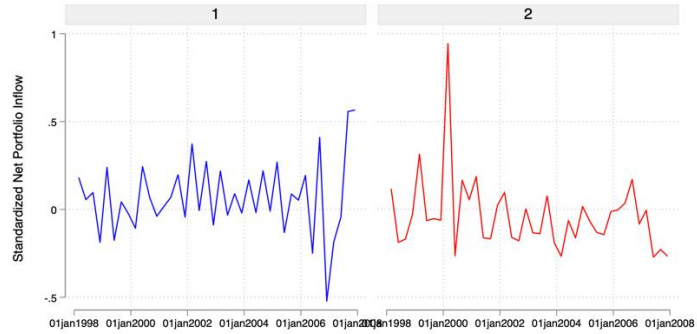
The information distribution holds a crucial role whether it is reflected in the asset price or not. Inefficient markets like Indonesia and most other emerging countries have advantages under crisis or post crisis period where global investors tend to compensate their loss during crisis by investing their capital in inefficient market. Thus, these inefficient markets should provide sufficient ecosystem to attract more capital especially during post crisis period.

Appendix 1 – Historical (Standardized) Aggregate Net Portfolio Inflows to Efficient and Inefficient Markets

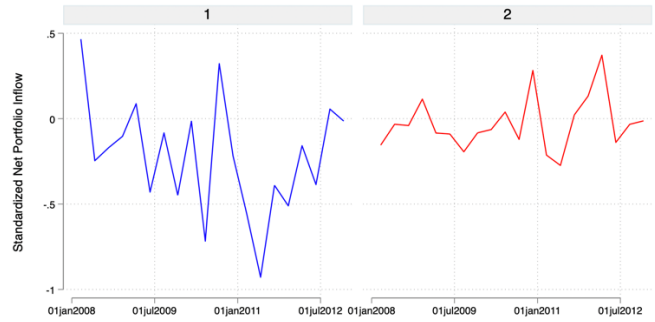
Standardized Net Portfolio Inflows to Efficient Markets (L) vs Inefficient Markets (R) – Period 1: Pre-1998



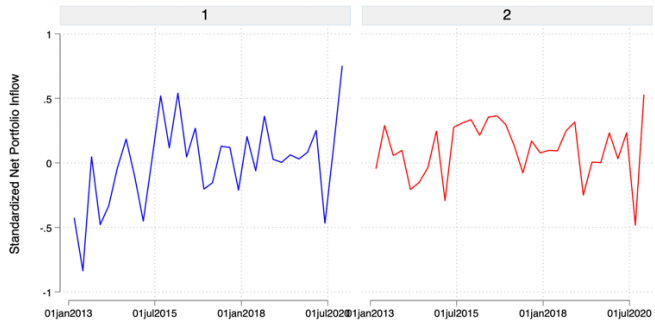
Standardized Net Portfolio Inflows to Efficient Markets (L) vs Inefficient Markets (R) – Period 2: 1998-2007



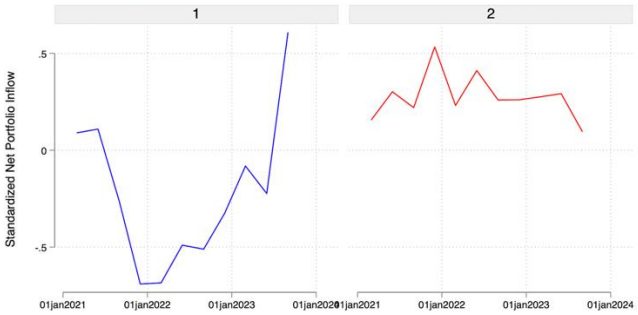
Standardized Net Portfolio Inflows to Efficient Markets (L) vs Inefficient Markets (R) – Period 3: 2008-2012



Standardized Net Portfolio Inflows to Efficient Markets (L) vs Inefficient Markets (R) – Period 4: 2013-2020



Standardized Net Portfolio Inflows to Efficient Markets (L) vs Inefficient Markets (R) – Period 5: Post-2020



Source: IFGP Research Analysis, data from Bloomberg and CEIC

Appendix 2 – List of Countries

Efficient Markets (Mean Deviation $< 50^{th}$ Percentile)	Inefficient Markets (Mean Deviation $\geq 50^{th}$ Percentile)
Belgium	Argentina
Canada	Australia
Denmark	Brazil
France	Chile
Hungary	China
Japan	Colombia
Mexico	Finland
Netherlands	Germany
Portugal	Greece
Slovenia	India
South Africa	Indonesia
Spain	Ireland
Sweden	Italy
Switzerland	New Zealand
United Kingdom	Norway
United States	Poland
	Saudi Arabia

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Indonesia Financial Group (IFG)
Indonesia Financial Group (IFG) adalah BUMN Holding Perasuransian dan Penjaminan yang beranggotakan PT Asuransi Kerugian Jasa Raharja, PT Jaminan Kredit Indonesia (Jamkrindo), PT Asuransi Kredit Indonesia (Askrindo), PT Jasa Asuransi Indonesia (Jasindo), PT Bahana Sekuritas, PT Bahana TCW Investment Management, PT Bahana Artha Ventura, PT Bahana Kapital Investa, PT Graha Niaga Tata Utama, dan PT Asuransi Jiwa IFG. IFG merupakan holding yang dibentuk untuk berperan dalam pembangunan nasional melalui pengembangan industri keuangan lengkap dan inovatif melalui layanan investasi, perasuransian dan penjaminan. IFG berkomitmen menghadirkan perubahan di bidang keuangan khususnya asuransi, investasi, dan penjaminan yang akuntabel, prudent, dan transparan dengan tata kelola perusahaan yang baik dan penuh integritas. Semangat kolaboratif dengan tata kelola perusahaan yang transparan menjadi landasan IFG dalam bergerak untuk menjadi penyedia jasa asuransi, penjaminan, investasi yang terdepan, terpercaya, dan terintegrasi. IFG adalah masa depan industri keuangan di Indonesia. Saatnya maju bersama IFG sebagai motor penggerak ekosistem yang inklusif dan berkelanjutan.

Indonesia Financial Group (IFG) Progress
The Indonesia Financial Group (IFG) Progress adalah sebuah *Think Tank* terkemuka yang didirikan oleh Indonesia Financial Group sebagai sumber penghasil pemikiran-pemikiran progresif untuk pemangku kebijakan, akademisi, maupun pelaku industri dalam memajukan industri jasa keuangan