



The Evolution and Review of Regulatory Changes on Emerging Asian Mutual Fund Industry Post-Global Financial Crisis

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Abstract

The proposed research paper aims to explore the significant transformations in the mutual fund industry following the global financial crisis of 2007-2009, with a particular focus on regulatory changes and their effects on mutual fund performance and investor confidence. The study will examine how new liquidity related regulations, such as enhanced liquidity-related disclosures, have contributed to the industry's resilience and growth. Additionally, the paper will analyze the disparity in mutual fund objectives and compositions across different regions, specifically comparing the dominant markets of the United States, and Emerging Asian, markets. By investigating the evolution of open-ended and exchange-traded funds as the fastest-growing investment vehicles post-crisis, this research aims to provide a comprehensive understanding of the current state and future prospects of the global mutual fund industry.

Keywords: Regulatory Changes, Mutual Fund, Financial Crisis

1. Introduction

The origin of mutual funds dates back in the late of 18th century. According to data collected from Bloomberg L.P (2019) United States is holding almost 48% of world mutual fund industry, while Asian markets together contribute approximately 10%. The countries with the largest market share of Asian fund industry are China and India from emerging markets, and Japan and Australia, from developed markets, respectively, as per Bloomberg L.P (2019).

The mutual fund objectives and compositions are greatly disparate, both regionally (Asian) and internationally, and range from open-ended funds to exchange traded funds. As a main portion of the world's mutual funds, open-ended funds held 76% of total mutual fund assets in 2018. Despite a slight decline in industry size during the global financial crisis of 2007-2009, open-ended and exchange-traded funds were noted as the fastest growing investments following the crisis. Furthermore, the total market share of closed-end funds is declining speedily in Emerging-Asian countries.

After the global financial crises of 2007–2009, local and international regulatory authorities added regulations that required mutual funds to register with the SEC, provide liquidity-related disclosure, disclose the provision of liquidity management tools that a fund may exercise in a crisis period, and sought to minimize conflicts of interest. All of this renewed investor confidence. With these numerous innovations, the overall mutual fund industry has become able to continue to expand.

1.1. Key Objectives

- To analyze the historical development of mutual funds and their global distribution, with a focus on the Global and Emerging Asian markets.
- To evaluate the impact of regulatory changes introduced after the global financial crisis on mutual fund operations and investor confidence.
- To compare and contrast the composition and objectives of mutual funds across different regions, emphasizing the differences between open-ended and exchange-traded funds.
- To investigate the reasons behind the declining market share of closed-end funds in Emerging Asian countries.
- To assess the overall growth trajectory of the mutual fund industry and identify key factors driving its expansion.

1.2. Mutual Fund Industry Evaluation

According to Rouwenhorst (2004), Great Britain and the USA were the pioneers in the mutual fund industry, having introduced the first structure of closed-end funds. A trust, the Foreign and Colonial Government Trust, was introduced in London (1868) and the Boston Personal Property Trust in the USA (1893). According to the Closed-end Fund Association (USA), the first open-end fund structure was introduced in 1924, after 30 years in Boston (USA) (Rutterford, 2009). Massachusetts Investor's Trust, the first mutual fund, introduced significant innovations to the pooled investment concept, such as "establishing a simplified capital structure, continuous offering of shares, the ability to redeem shares rather than hold them until dissolution of the fund, and a set of clear investment restrictions and policies" (ICI, 2016). The Investment Company Act of 1940 (USA) was signed into law, setting the structure and regulatory framework for registered investment companies (ICI, 2019). As far as the asset management industry is concerned, there has been a sharp increase in the mutual fund industry over

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the past few decades, but the U.S. still holds the lion's share of the world mutual fund industry, with a USD 24.76 trillion out of a total of USD 52.55 trillion (total assets of 124110 primary funds) according to data extracted from Bloomberg L.P (2019). The number of mutual funds has also grown dramatically, reaching more than 124,110 primary funds (all fund types) worldwide. The size of the overall asset management industry, including mutual funds, exchange-traded funds, private equity funds, money market funds, and hedge funds, had crossed USD 76 trillion in 2013, which was equal to 100 percent of the world's GDP (Bloomberg, IMF, 2013). See figure 2.1 below.

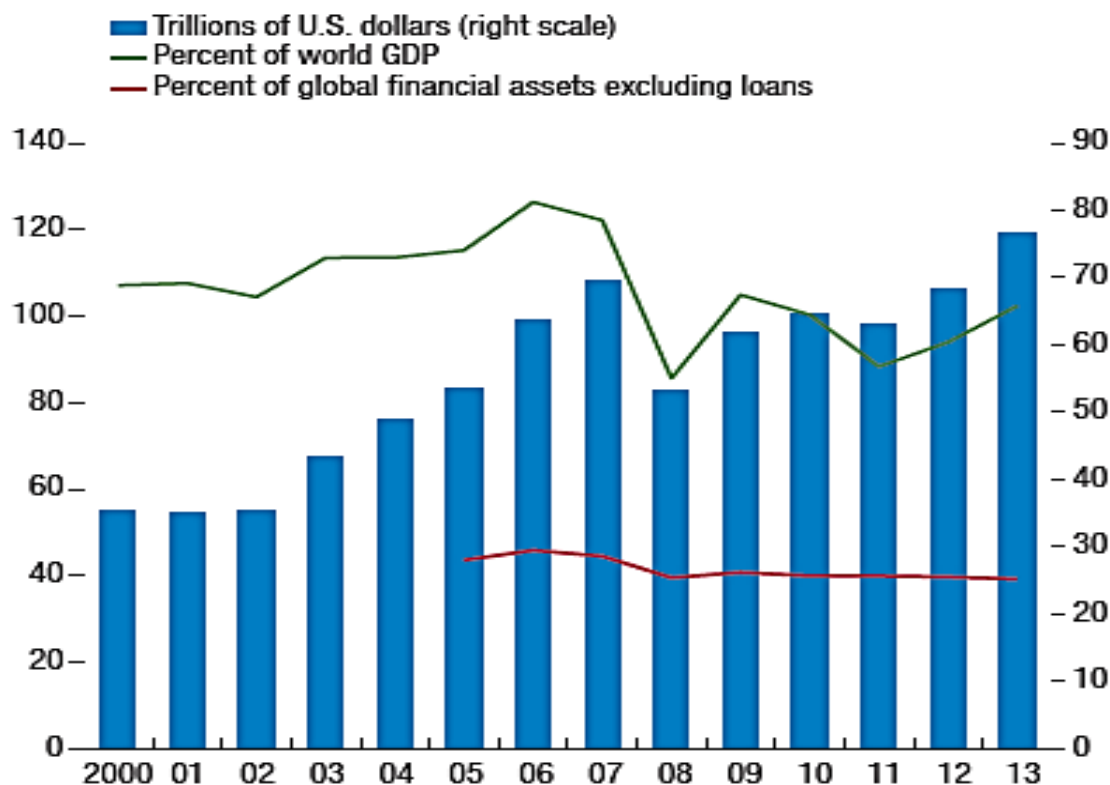


Figure 0.1: World Top 500 Asset Managers' Assets under Management

Sources: Bloomberg, L.P.; McKinsey (2013); Pensions and Investments and Towers Watson (2014); IMF, World Economic Outlook database

The determinants of mutual fund industry size in a country are laws and regulations to protect investors' rights, wealth and educated population, and the country's security trading environment (Khorana, Servaes, & Tufano, 2005). Klapper, Sulla, and Vittas (2004) argued that capital market performance and development, along with the globalization of finance, contributed to the global growth of the mutual fund industry.

In the current scenario, the majority of mutual funds are structured as open-end funds (despite excluding ETFs and other funds) and very few exist in closed-end form. Out of 124110 funds, 91588 are open-end funds and 4672 are closed-end funds (Bloomberg, 2019). In terms of total assets, closed-end funds' contributions are just 2% of total industry assets, compared to the 76% contribution of open-ended funds. Given below are Table 2.1 and Figure 2.2, showing the total assets of different fund structures.

Table 0.1: Total Assets of different Fund Structures (2019)

Fund Structure	Total Assets \$
Open-End Funds	40.17 Trillions
Exchange Traded Funds	5.42 Trillions
Fund of Funds	3.47 Trillions
Closed End Funds	958.08 Billions
Variable Annuity	833.47 Billions
Separately Managed Funds	784.27 Billions
Hedge Funds	686.63 Billions
Private Equity Funds	78.37 Billions
Unit Investment Trust	6.39 Billions
Other Funds	192.27 Billions
Total	52.67 Trillions

Source: Bloomberg L.P

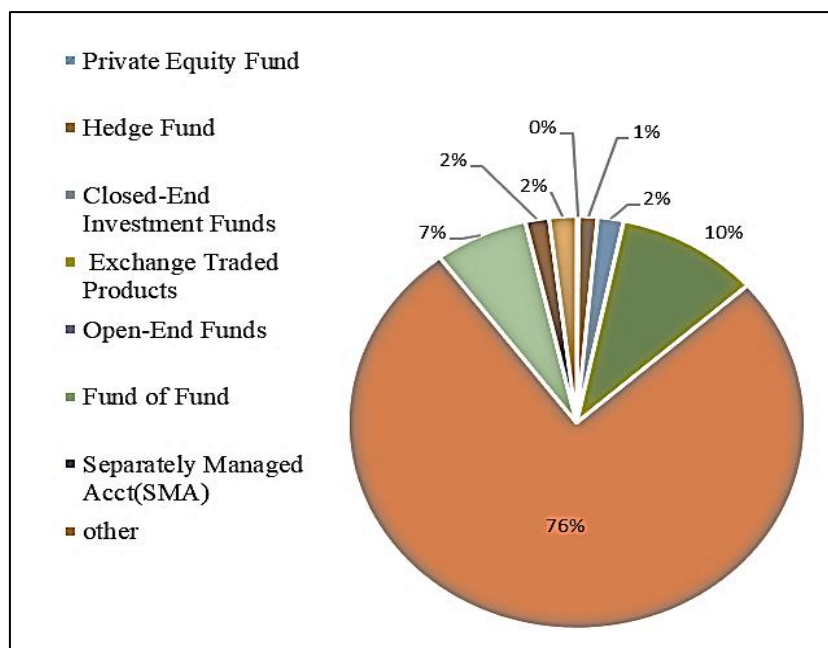


Figure 0.2: Percentage wise Total Assets of different Fund Structures (2019)

After the global financial crises of 2007–2009, a number of local and international regulatory authorities showed concerns about potential financial stability risks posed by the asset management industry. In response to regulations, which specifically protect investors' interests, both open-end funds and exchange-traded funds have recorded strong growth (Figure 2.3) after the global crisis.

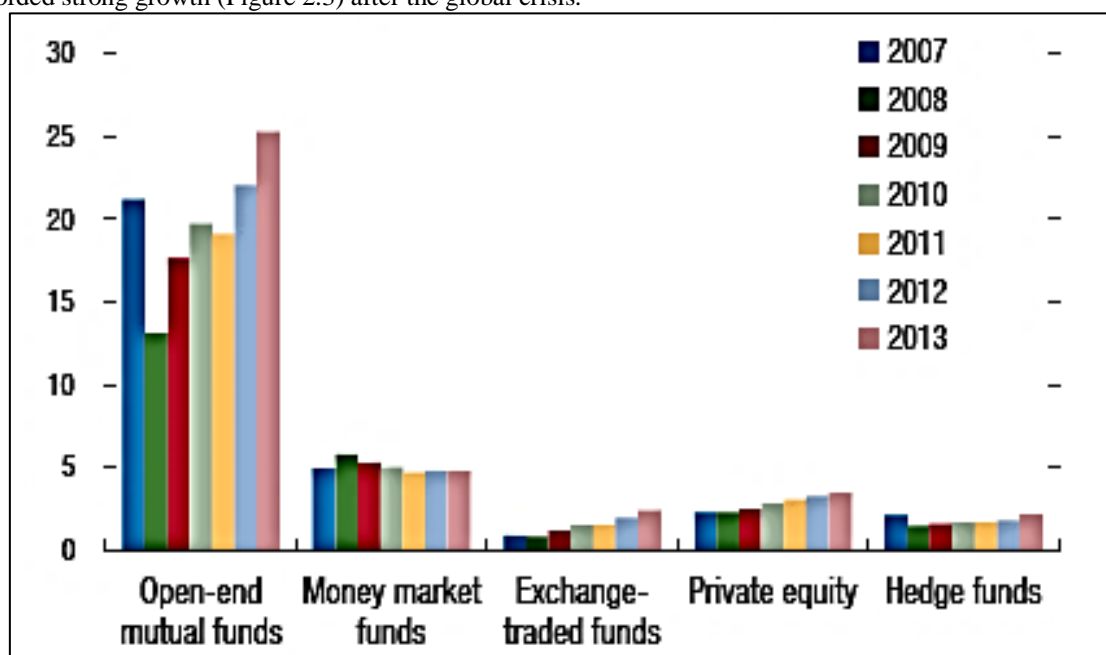


Figure 0.3. Assets under management in trillions of USD

Source: European Fund and Asset Management Association; OECD, IMF

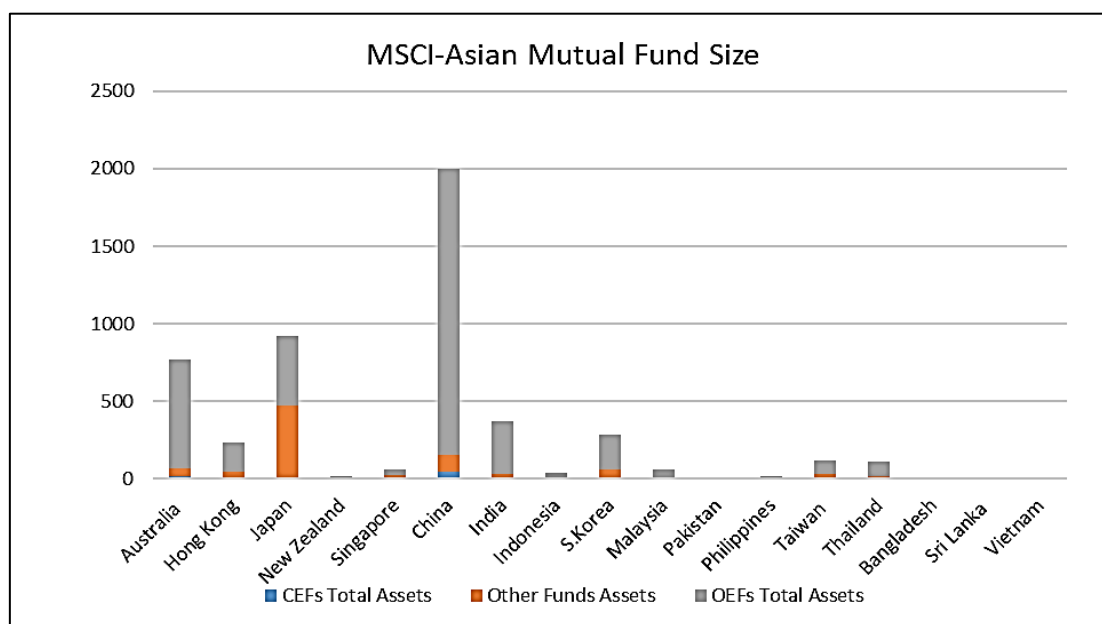
1.3. Mutual Fund Industry Structure Emerging-Asian Perspective

The MSCI-Asian mutual fund industry structure is detailed in Table 2.2 and Figure 2.4, whereas data is extracted from Bloomberg L.P. (2019). The data placed in table 2.2 shows that, at the end of 2018, the MSCI-Asian mutual fund industry held USD 5 trillion in assets (excluding ETFs and institutional funds). The countries with the largest fraction of the Asian industry were China (40%), India (7.5%), and South Korea (5.75%) from emerging markets, and Japan (18.30%), Australia (15.30%), and Hong Kong (4.75%) from developed markets. Countries from frontier markets contribute only a very small part of the Asian fund industries, including Bangladesh, Sri Lanka, and Vietnam. In addition, Japan, Taiwan, and Vietnam are the three markets where not a single fund is operating in a closed-end structure. On the contrary, Bangladesh is the only MSCI-Asian country where the mutual-fund industry is fully composed of closed-end funds, and no other type of fund structure exists there.

Table 0.2: MSCI-Asian mutual fund industry structure

Country Name	OEF		CEF		Other		Total	
	Total Assets	N	Total Assets	N	Total Assets	N	Total Assets	N
Developed Countries								
Australia	699.11B	6794	15.15B	104	51.52B	294	765.79B	7192
Hong Kong	189.69B	706	105.31M	1	43.94B	129	233.73B	836
Japan	448.26B	5017	0	0	471.16B	1124	919.42B	6141
New Zealand	12.23B	108	339.46M	5	1.8B	22	14.37B	135
Singapore	40.52B	288	61.66M	1	21.60B	194	62.18B	483
Total	1.38 T	12913	15.65 B	111	589.48 B	1819	1.995 T	14787
Emerging Countries								
China	1.84 T	4122	42.50 B	47	113.05B	325	2.00T	4494
India	340.33B	1623	11.63 B	308	20.51B	160	372.47B	2091
Indonesia	35.57B	817	98.72M	1	1.83B	43	37.51B	861
S.Korea	228.92B	3865	3.26B	12	55.36B	1182	287.48B	5059
Malaysia	59.08B	819	1.43B	1	3.49B	198	64.01B	
Pakistan	3.42B	145	149.42M	3	21.78M	5	3.59B	153
Philippines	18.18B	260	1.32M	0	30.21M	1	18.21B	263
Taiwan	85.86B	647	0	0	34.9B	234	120.76B	881
Thailand	92.13B	717	18.83M	0	15.70B	366	107.85B	1083
Total	2.70 T	13015	59.08 B	372	244.89B	2260	3.00 T	15902
Frontier Countries								
Bangladesh	0	0	746.85M	37	0	0	746.85M	37
Sri Lanka	184.80M	21	2.86M	2	0	0	187.66M	22
Vietnam	150.55M	5	0	0	235.32M	2	385.87M	7
Total	355.35 M	26	749.71 M	39	235.32M	2	1.34 B	66

Source: Bloomberg L.P

**Figure 0.4: Emerging-Asian Mutual Fund Industry**

Source: Bloomberg L.P

According to Lipper Analytical Services Inc. (1996), the trend of closed-end funds in Asian markets has been decreasing since 1994 in comparison to open-ended funds. As Table 2.2 confirms, there are only 522 active and listed on primary exchange closed-end funds versus 25954 open-ended funds in MSCI-Asian countries in the first quarter of 2019 (Bloomberg L.P.). Some industry experts blame the complex structure of closed-end funds for turning off many investors. Closed-end funds are traded in the secondary market. To purchase or redeem investments from closed-end funds, investors need a brokerage account. For example, Teera Phutrakul, managing director of Bangkok-based fund-management company Thai Capital Management Co, in 1996, pointed out that it was difficult to trade shares of Thailand's closed-end funds as, of the country's 800,000 mutual-fund investors, hardly 5% had accounts with any brokerage houses.

1.4. Decomposition of Open-ended Funds Growth

Nonetheless, the number of open-ended funds (after the addition of exchange traded funds, and institutional funds) has also grown dramatically, reaching more than 118,987 worldwide (ICI, 2019). Again, the U.S is holding the major share, with USD 21.1 trillion out of a total of USD 46.7 trillion (total assets of 118,987 open-end funds), (ICI, 2019). Furthermore, Figure 2.5 shows that equity funds (which invest primarily in publicly traded stocks) remained the most popular type of regulated fund, accounting for 43 percent of net assets at the end of 2018. Mixed/other funds made up another 23 percent, while bond funds (which invest primarily in fixed-income securities) had 22 percent of net assets. Money market funds (which primarily invest in short-term, high-quality money market instruments) accounted for 13% of net assets. The decline in net assets in 2018 was driven by several factors that weighed on global stock markets and foreign exchange markets.

1.5. Decreasing trend of illiquid products

A careful survey of the fund industry claims that the size of illiquid fund structures (like CEFs) is constantly decreasing throughout the world and being replaced by more liquid products (like Exchange Traded Funds). This fact indicates that the fund industry is taking liquidity risk more seriously than enjoying a liquidity premium. All segments of funds had the choice to fall into two extreme organizational forms: closed-end and open-end. Including these two, another emerging organizational form of mutual fund is exchanging traded funds (ETF), which has mixed features of open-ended and closed-ended organizational forms. An ETF is a fund that tracks a stock, bond, currency, commodity index, or a basket of assets just like index tracking funds.

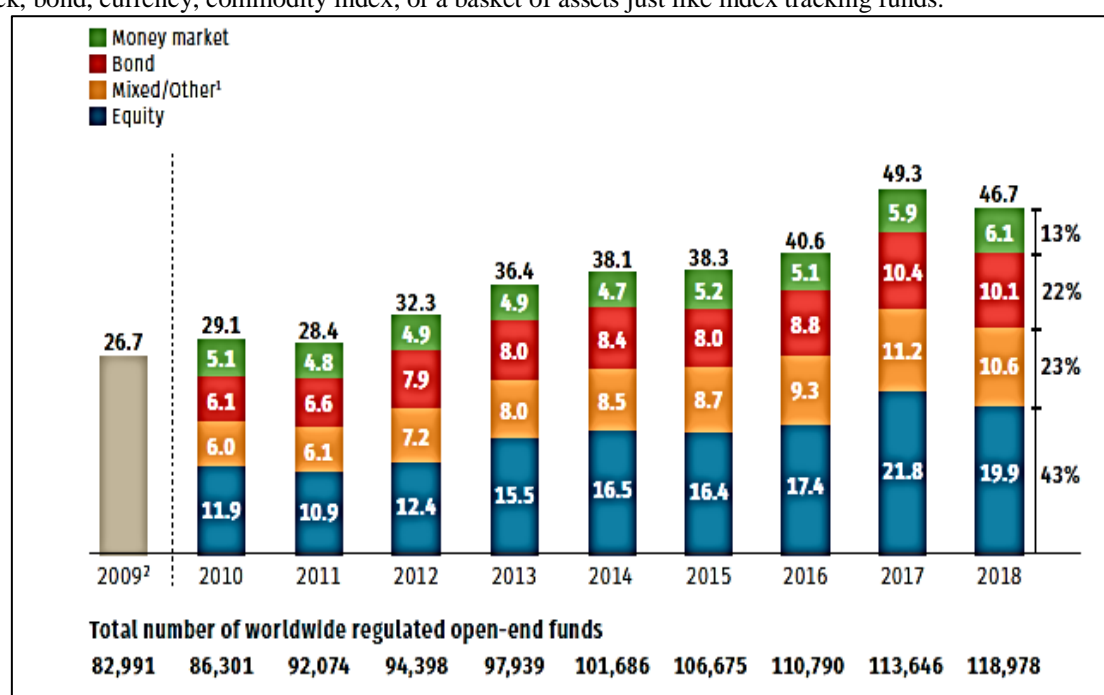


Figure 0.5: Total Net Asset of World Open-ended Funds

Note: Open-ended funds include mutual funds, ETFs, and institutional funds. Mixed/other funds include balanced/mixed funds. Data for total net assets by type of fund are not available in 2009.

Source: International Investment Funds Association

The liquidity premium hypothesis holds that illiquid assets' returns are higher than liquid assets' returns. Moreover, the liquidity score (most liquid) of the underlying portfolio of three types of funds, perhaps on average, ranks first with exchange traded funds (ETFs), second with OEFs, and third with CEFs. Equity fund research has shown that funds with illiquid assets in their underlying portfolios typically choose the closed-end organizational form (Chordia 1996; Deli & Varma 2002), whereas ETFs, on average, hold liquid securities in their underlying portfolio (Hamm, 2011). Furthermore, ETFs invest in a basket of assets that belong to a certain index. That's why ETFs normally avoid redundant securities and perhaps lower liquidity risk due to diversified investment. However, the liquidity of ETFs ultimately depends on the liquidity of the underlying index.

According to Barnhart and Rosenstein (2010), ETFs cannibalized the market share of CEFs by being close substitutes. The declining trend of closed-end funds is very much evident from the case of Thailand, where not a single closed-end fund is listed on a primary exchange at this date, whereas in 1992 about 97% of mutual funds were closed-end funds (Bloomberg, 2019). In Pakistan, there were 63 closed-end funds against 305 open-ended funds in 2007, and currently, there are 253 open-ended funds against one closed-end fund in Pakistan (MUFAP, 2019). India has 308 closed-end mutual funds, placing it at the top of Asian countries. In 2006, the Security and Exchange Board of India abolished the law of amortizing 6% of the total amount raised through an IPO, as the

IPO launching expenses. After that, Indian asset management firms started investing in closed-end funds. In Bangladesh, the mutual fund industry grew over time, but there are only 37 close-ended funds and none of the mutual funds are registered as open-end funds or any other fund category.

The complex structure of closed-end funds is also one of the reasons that turned off many investors. Closed-end funds are traded in the secondary market. To purchase or redeem investments from closed-end funds, investors need a brokerage account. For example, Teera Phutrakul, managing director of Bangkok-based fund-management company Thai Capital Management Co, in 1996, pointed out that it was difficult to trade shares of Thailand's closed-end funds as, of the country's 800,000 mutual-fund investors, hardly 5% had accounts with any brokerage houses.

2. Global Regulatory Challenges of Liquidity Risk Management

Liquidity transformation is a process by which mutual funds are invested in illiquid securities but provide investors with liquid securities. A long literature is available on liquidity transformation as a basic function of financial intermediaries, which is contributed by Kacperczyk and Schnabl (2010), Krishnamurthy and Jorgenson (2015), Chernenko and Sunderam (2016), Moreira and Savov (2016). Mutual funds, for example, may hold highly illiquid long-term assets such as bonds and real estate but provide investors with the ability to redeem their investment on demand in the short run. negative difference is a cost).

CEF has limited capitalization with shares listed on local or national stock exchanges, similar to other listed corporations. Once the shares of CEF have floated in the market through an initial public offering (IPO), it is not the responsibility of CEF to redeem those shares from investors. Therefore, redemption is not an obligation for CEF (Cherkes, 2001). However, an OEF is a publicly offered collective investment scheme that can issue an unlimited number of units to attract investment and, similarly, withdraw units when there is investor demand to redeem investment. Units or shares of OEF are not listed on any exchange (secondary market); therefore, the issuance or redemption of units is a direct obligation of the asset management company (AMC). Therefore, in the OEFs system, the investor demand for redemptions is fulfilled with perfect liquidity (fund units or shares are redeemable at current NAV as long as inflows and liquid reserves are more than the redemption amount), so the penalizing liquidity cost of funds' units for redeeming investors is zero. According to the Financial Stability Board (2017: p.11), "a key structural vulnerability from asset management activities is the potential mismatch in open-ended funds between the liquidity of fund investments and daily redemption of fund units."

Investors are increasingly interested in mutual fund investments. That's why investors and regulatory authorities are both demanding detailed fund portfolios, liquidity management, and other material information. Regulatory authorities mandate compulsory reporting of information about securities holdings, timely reporting of net asset value (NAV), fees charged, management expense, and risk profiles. According to US Securities Exchange Act of 1934 and the Investment Company Act of 1940, disclosure of underlying assets in fund's portfolio is mandatory (Agarwal, Mullally, Tang, & Yang, 2015). In May 2004 SEC (US) altered the portfolio disclosure requirement from semiannually to quarterly basis, which increased the reporting frequency to four times per year.

After global financial crises of 2007-2009 number of local (Security Exchange Commission), and international regulatory authorities' i.e. Board of the International Organization of Securities Commissions (IOSCO), Financial Stability Board (FSB), had tighten their belt on managing illiquid assets. According to their jurisdictions fund managers are required to develop a robust liquidity risk management system, which should deal with issue of mismatch, during tranquil and stress market condition. In January 2017, the Financial Stability Board published its final recommendations to address structural vulnerabilities from asset management activities (Board, F. S, 2017). Among those recommendations, nine are designed to address the liquidity mismatch between fund investments and redemption terms and conditions for open-ended fund units.

Open ended funds are subject to numerous global liquidity associated regulations, including Sec 22e-4 ASC 820 (Accounting Standards Codification 820), AIFMD (Alternative Investment Fund Managers Directive), MiFID (Markets in Financial Instruments Directive), ICAAP (Internal Capital Adequacy Assessment Process), ILAAP (Internal Liquidity Adequacy Assessment Process), Basel III LCR (liquidity coverage ratio), UCITS (Undertakings for the Collective Investment in Transferable Securities).

Now US GAAP is demanding a fair value measure and disclosure. Accounting Standards Codification 820 (ASC 820) requires mutual funds and other financial institutions to disclose the liquidity class of assets and liabilities. ASC 820 divides the fund's assets and liabilities into three levels, where level 1 valued securities are more liquid in comparison to level 2 and level 3 securities.

AIFMD and UCITS are both directives on risk management, where AIFMD particularly defines conduct for liquidity risk management. These rules require fund managers to maintain a stable liquidity profile of the fund, which should be consistent with the redemption requirement of the fund under stress and normal conditions. These directives guide the systematic conduct of stress testing (detailed below in risk management tools) and reporting to regulatory authorities. AIFMD and UCITS are UK-based liquidity management regulations, impressed by European Union legislation. UCITS funds are bound to invest only in transferable and liquid assets according to the provided list of eligible securities. The MiFID regulatory initiatives are followed by the European Union.

MiFID regulations are mainly focused on transparent trading with order execution at the best price, client categorization, reporting of trader details, and illiquid securities. One of the objectives of MiFID regulation is to provide financial integration regulation in the European Union. ICAAP, LCR, and ILAAP are risk management tools for credit institutions and banks where regulatory authorities ensure that the entity under observation is maintaining a satisfactory level of capital and risk provision.

Hong Kong's Securities and Future Commission (SFC) has also issued a circular providing guidelines for fund managers for effective liquidity risk management of retail funds (Bloomberg L.P., 2017).

3. Coping with redemption risk (Liquidity risk management tools)

Liquidity risk management is the basic tool for dealing with redemption risk. If a mutual fund portfolio is balanced with liquid assets, it can easily absorb large redemptions and dampen the pressure of fund outflows. Liquidity risk management imposes limits on cash holdings, the percentage of illiquid and liquid assets in a portfolio, leverage, and investment in derivatives. There are numerous other techniques and tools available under the jurisdiction of a liquidity risk management program to solve the difference between fund inflow and outflow. These are the features of funds, which can be embedded while designing the mutual fund (IOSCO, 2015).

In 2015, IOSCO issued a report titled "Liquidity Management Tools in Collective Investment Schemes" which described the liquidity provisions available to mutual fund managers. These tools are divided into three categories with respect to the objective they ought to achieve (Table 2.3). Similarly, the International Capital Markets Association (ICMA) and the European Fund and Asset Management Association (EFAMA) jointly published a report in 2016 titled "Managing Fund Liquidity Risk in Europe." Later on, the French asset management association, Association Française de la Gestion financière (AFG), in 2017, released a report titled "Liquidity Risk Management Tools in Open-ended Funds".

Table 0.3:Liquidity Risk Management Tools

Tool Name	Explanation	Objective
Swing pricing	It is a tool to adjust the NAV of a fund, upward (in case of net inflow) or downward (in case of net outflow) so that burden of transaction fall on redeeming investors. The manager calculates fund's NAV first and adjust it upward or downward according to given swing factor, i.e. 0.10% of unadjusted NAV. According to IOSCO (2015), swing pricing is adopted by 11 countries, which are mainly from European Union (EU). Securities and Exchange Commission (SEC) of US also sanction swing pricing in 2016, but usefulness of this tool is restricted in size (Goldstein, Jiang, and David, 2017).	To pass transaction cost to redeeming investor
Anti-Dilution Levies	It imposes a trading cost of fund, expressed in percentage of NAV, on redeeming investors. This tool is adoptable in stress market condition.	To pass transaction cost to redeeming investor
Redemption in specie	Redemption 'in specie' do not restrict the redemption but offer redeeming investor with securities of underlying portfolio of equivalent amount as the units sold at recent NAV.	To pass transaction cost to redeeming investor
Redemption Gate	Redemption gate is a tool to limit redemption for short duration of 10 to 90 business days, mostly applicable in time of stress market. Fund may also set a partial redemption gate, i.e., a three percent redemption gate would mean that order will be partially executed if it is crossing three percent of net asset value of fund.	Slow or stop redemption
Notice period	Notice period requires redeeming investor to submit a prior notification of withdrawal to redeem his/her investment on specific incoming date. Some funds also charge redemption fees if investor want immediate redemption before notification period.	Slow or stop redemption
Loads	Front-end and back-end loads are fees on purchase and sale of units respectively. However front-end and back-end loads (especially back-end load) have dramatically declined with increase in competition in industry (IMF, 2015).	Slow or stop redemption
Side Pockets	In this approach fund manager open a sub-account of fund's main portfolio, and segregate illiquid assets of portfolio from liquid assets. After segregation only current investors have ownership rights of segregated illiquid portfolio or sub-account. Any change in segregated portfolio will not affect incoming investors. While illiquid segregated assets of portfolio in side pockets will be operated differently.	Restrict investor access to his capital
Suspension	Where redemption gate restrict redemption for short duration, suspension of fund allows funds to temporary suspend all operations of sale, redemption, new issue etc., in interest of investor protection.	Restrict investor access to his capital

In addition, stress testing is another practise increasingly proposed by regulators as an integral part of liquidity risk management (IOSCO, 2018). Stress testing is a method to test the robustness of fund portfolio liquidity in different market conditions. This process may take into account the three types of databases: (i) historical data to report changes in trading volume; average bid-ask spread; speed of trade; total number of transactions; number of market participants; and other factors. (ii) Previous stressors, such as the global financial crisis of 2007–2008 and Brexit in 2016. (iii) Upcoming future scenarios, such as hypothetical events such as changes in political and economic conditions, interest rate changes, rule and regulation changes, and so on.

4. Discussion

The analysis of the mutual fund industry's transformation since the 2007–2009 financial crisis reveals several key trends and their ongoing impact. The post-crisis regulatory changes, including enhanced liquidity disclosures, stress testing and conflict-of-interest minimization, have demonstrably restored investor confidence. This is evident in the continued growth of the industry despite the initial decline during the crisis. However, it's crucial to examine the long-term effectiveness of these regulations.

This discussion has highlighted several key questions that deserve further investigation.

The significant disparity between the US and Emerging Asian markets highlights the role of factors like investor education, economic development, and legal frameworks. As these markets mature, will their fund structures converge with the US model, or will distinct regional preferences emerge? Understanding these growth drivers will be essential for pinpointing future industry leaders.

The dominance of open-ended funds, particularly compared to the declining presence of closed-end funds in Emerging Asia, warrants further exploration. Are there inherent risk factors associated with closed-end funds that make them less attractive in certain regions? Is this a permanent shift, or could market conditions lead to a resurgence of closed-end funds?

The rapid growth of ETFs necessitates a closer look at their potential impact on the industry. How will they compete with traditional open-ended funds? Do they introduce new systemic risks, or are they simply a more efficient way to achieve similar investment goals?

5. Conclusion

This paper provides a detailed review of existing literature on the history and evolution of mutual funds, with an emphasis on regulatory changes and their impact. Furthermore, liquidity risk management tools were discussed, which funds may exercise in a crisis period to protect themselves from liquidation. The case studies of specific mutual funds that have shown significant growth or decline post-crisis to illustrate the practical implications of regulatory changes. The net result shows that total assets and the number of open-ended funds are expanding in Asia and around the world.

References

- Agarwal, V., Mullally, K. A., Tang, Y., & Yang, B. (2015). Mandatory portfolio disclosure, stock liquidity, and mutual fund performance. *The Journal of Finance*, 70(6), 2733-2776.
- Barnhart, S. W., & Rosenstein, S. (2010). Exchange-traded fund introductions and closed-end fund discounts and volume. *Financial Review*, 45(4), 973-994.
- Bloomberg L.P (2017). Bloomberg Professional Service, Getting ahead of liquidity risk management rules in Asia. <https://www.bloomberg.com/professional/blog/getting-ahead-liquidity-risk-management-rules-asia/>
- Board, F. S. (2017). Policy recommendations to address structural vulnerabilities from asset management activities. Policy document.
- Chordia, T. (1996). The structure of mutual fund charges. *Journal of financial Economics*, 41(1), 3-39.
- Chernenko, S., & Sunderam, A. (2016). Liquidity transformation in asset management: Evidence from the cash holdings of mutual funds (No.w22391). National Bureau of Economic Research.
- Cherkes, M. (2001). The closed-end funds: A misunderstood asset. Available at SSRN 687821.
- Deli, D. N., & Varma, R. (2002). Contracting in the investment management industry: evidence from mutual funds. *Journal of Financial Economics*, 63(1), 79-98.
- Goldstein, I., Jiang, H., & Ng, D. T. (2017). Investor flows and fragility in corporate bond funds. *Journal of Financial Economics*, 126(3), 592-613.
- Hamm, S. (2014). The effect of ETFs on stock liquidity. Available at SSRN 1687914.
- Investment Company Institute (2016) ICI Comments on the SEC's Liquidity Risk Management. https://www.ici.org/pdf/16_ici_sec_irm_rule_comment.Pdf
- Investment Company Institute (2019) Investment Company Fact Book https://www.ici.org/system/files/attachments/pdf/2019_factbook.pdf
- Khorana, A., Servaes, H., & Tufano, P. (2005). Explaining the size of the mutual fund industry around the world. *Journal of Financial Economics*, 78(1), 145-185.

- Klapper, L., Sulla, V., & Vittas, D. (2004). The development of mutual funds around the world. *Emerging Markets Review*, 5(1), 1-38.
- Kacperczyk, M., & Schnabl, P. (2010). When safe proved risky: Commercial paper during the financial crisis of 2007-2009. *Journal of Economic Perspectives*, 24(1), 29-50.
- Krishnamurthy, A., & Vissing-Jorgensen, A. (2015). The impact of Treasury supply on financial sector lending and stability. *Journal of Financial Economics*, 118(3), 571-600.
- Moreira, A., & Savov, A. (2016). Online Appendix for “The Macroeconomics of Shadow Banking”. Working paper.
- Rouwenhorst, K. G. (2004). The origins of mutual funds. Available at SSRN 636146.
- Rutterford, J. (2009). Learning from one another’s mistakes: Investment trusts in the UK and the US, 1868-1940. *Financial History Review*, 16(2), 157-181.
- The International Organization of Securities Commissions (2015). Recommendations for Liquidity Risk Management for Collective Investment Schemes Final Report. www.iosco.org
- The International Organization of Securities Commissions (2018). Recommendations for Liquidity Risk Management for Collective Investment Schemes Final Report. www.iosco.org
- Vulnerabilities, L. (2015). Global financial stability report. <https://www.imf.org/en/Publications/GFSR/Issues/2016/12/31/Global-Financial-Stability-Report-October-2015-Vulnerabilities-Legacies-and-Policy-43157>