

How does liberalization affect emerging stock markets?

Theories and empirical evidence from the literature review

(Accepted version)

Abstract

This paper reviews the literature that discusses how liberalization affects emerging stock markets on *the cost of equity, stock volatility, stock liquidity, and informational efficiency*. The survey consists of two parts, theoretical arguments and empirical evidence. Four primary mechanisms explaining the impacts are *risk diversification, information-sharing, friction channel, and market competition*. Our survey indicates that liberalization was evidenced to reduce the cost of equity (via risk diversification mechanism), stabilize stock volatility (mainly through risk diversification mechanism), increase stock market liquidity (in both friction channels and informational-sharing mechanisms), and improve the local market's informational efficiency (by informational-sharing mechanism). Also, we suggest some aspects of theoretical arguments that still need further examination by empirical research.

Keywords: Liberalization, emerging stock markets, cost of equity, stock volatility, stock liquidity, informational efficiency.

JEL Classification: F320, F380, B170

1. Introduction

The economic implication of liberalism was described by the Enlightenment thinkers, who defended individual rights and natural laws (Locke¹, 1692; Davenant², 1696; Martyn³, 1701; Smith⁴, 1776). The whole international system benefits when individuals and nations are allowed to trade things that they have advantages and be left from interferences. In post-Keynesian economics, this freedom resurged in the approach of open economies (Minsky, 1975; Keller and Carson, 1982), with more responsibilities of the Government in deregulation and privatization (Galbraith, 1967; Eichner, 1976; Lavoie, 2001). Nowadays, freedom in international trade has become a driving force of globalization, which Friedman described as it once "was driven by countries"⁵ and now "is being driven by everyone and anyone... connecting East and West, North and South, and South and South"⁶.

With the research interest in the free trade of financial assets, our literature survey focuses on liberalization policies implemented in emerging stock markets. Under capital controls, trading by non-resident investors is regulated within the foreign ownership limitation in domestic public companies. Literature research defines equity market liberalization as the host countries' actions removing or relaxing restrictions on these limitations (Christopher, 1999; Laopodis, 2003; Nguyen and Fontaine, 2006; Kim et al., 2013). There are some reasons that attract us to conduct this survey. First, trading on stock markets facilitates transactions on residual claims on domestic assets. Second, according to Smith (1776), who both forcefully advocated international trade and criticized its primary goals in his day, the profit-seeker could act in various degrees of independence from the host country's legislative and by different purposes between their home countries and abroad. Third, many emerging markets are still completing their foreign investment frameworks, and market failure is one of the main concerns in literature studies.

¹ Locke (1692) criticized the interferences of government on interest rates and claimed the rates should be determined by the demand and supply of credit, and things must be left to find their own prices.

² Davenant (1696) expressed his opinions to oppose the protectionist proposals for the English textile industry

³ Martyn (1701) gave more arguments for the benefits of free trade across nations, which comes from competition

⁴ Smith (1776) stated that productivity was the key, and provision of labour was the secret to achieve the targets. Individuals act based on self-interest, the "invisible hand". International trade benefits countries involving and let the countries supply the commodity which they have relative advantages

⁵ Friedman, T. L. (2015). *The World Is Flat: A Brief History of the Twenty-First Century*. New York: Farrar, Straus and Giroux

⁶ Friedman, T. L. (2016). *Thank You for Being Late: An Optimist's Guide to Thriving in the Age of Accelerations*. New York, NY: Farrar, Straus and Giroux

The literature is interested in how liberalization affects *equity cost*, *stock volatility*, *stock liquidity*, and *informational efficiency* in emerging stock markets. There are four primary mechanisms, including *risk diversification*, *information-sharing*, *friction channel*, and *market competition*, that have been discussed to explain these impacts. Our study is designed to survey each effect in two parts, theoretical arguments and empirical evidence. In the first part, we summarize theories that predicted the changes in emerging markets when liberalization policies were implemented. Some differences among the arguments were indicated, such as in the effects on stock volatility, stock liquidity, and informational efficiency. Then, in the second part, our study synthesizes conclusions from empirical research. This part concerns two matters, the direction of liberalization effects and the mechanisms to explain these effects.

Our study brings the answer to the question of whether liberalization, the free trade of financial assets, benefits emerging stock markets. Enhancing market functioning, such as lowering equity cost, reducing stock volatility, improving liquidity, and informational efficiency, are the expected outcomes. Besides, in the conclusion part, we suggest some areas of theories that still need further examination in empirical research and also attention by policymakers.

2. Background of the research

2.1. Stock market liberalization

Stock market liberalization is a type of financial liberalization. The liberalization was initiated in Western European countries and the United States after the collapse of the Bretton Woods system in 1971. From the 1980s to the 1990s, many countries opened their capital markets to non-resident investors. Liberalization policies facilitated the mobility of international capital flows (Figure 2). First, the policies relax regulations about foreign investment in local company business, encouraging the flow of Foreign Direct Investment (FDI). Second, liberalization removes barriers to trading financial assets for non-resident investors in the local stock market, which is associated with the increase of Portfolio Equity Investment, and local debt instrument market, facilitating the inflows of Portfolio Debt Investment. Third, financial liberalization is in terms of credit extension, the flow of Foreign Bank Lending. Lastly, the removal of capital control refers to the relaxation of exchange rates. The rates at

which currencies are converted should be determined by the demand and supply of the markets, ensuring the assets in foreign investment channels are priced at fair values (Kaminsky and Schmukler, 2008).

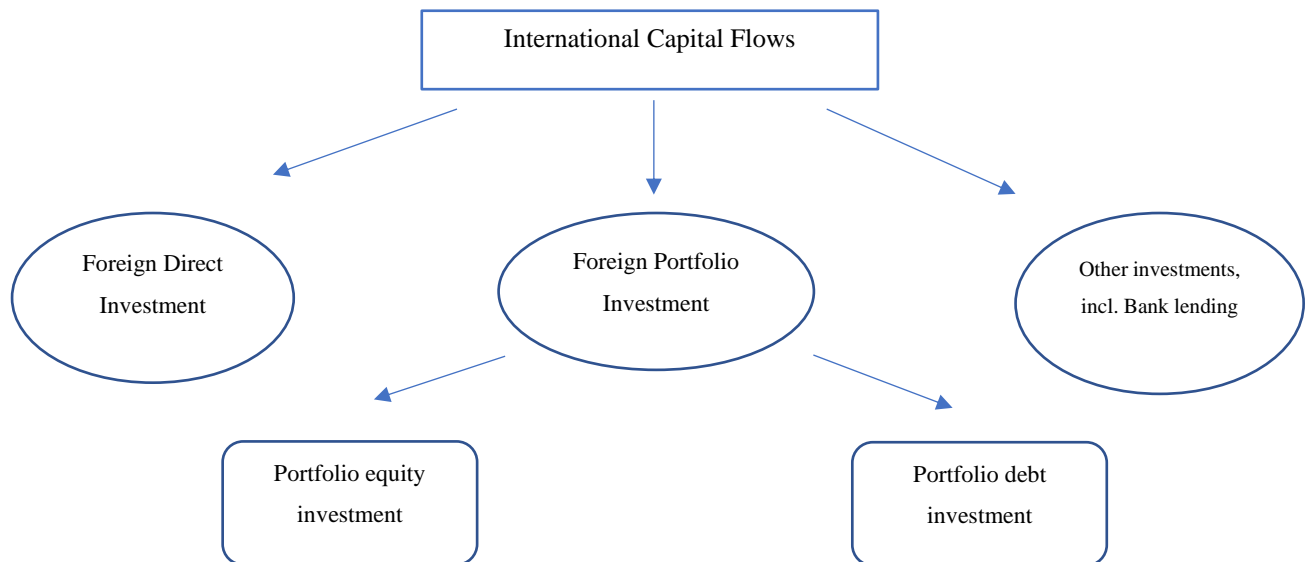


Figure 2: Composition of international capital flows following the Balance of Payment (IMF, 2010)

Literature research defines stock market liberalization as the host countries' actions removing or relaxing restrictions on foreign ownership in local public companies (Christopher, 1999; Laopodis, 2013; Nguyen and Fontaine, 2006; Kim et al., 2013). Under capital control policies, trading by non-resident investors is limited and foreign investors are allowed to own a certain level of shares. Hence, liberalization enables foreign investors to possess more local companies' ownership. For emerging stock markets, the liberalization is expected to facilitate the inflow of Portfolio Equity Investment.

Portfolio Equity Investment has equity-like features, which are similar to FDI. In these two types of investments, the investors own residual claims on institutions' assets. However, FDI is often associated with entire controlling or significant influences on domestic firms in the long run, while the holding of Foreign Equity Investment has less control and can be liquidated in the short run. In addition, Portfolio Equity Investment is sensitive to macro-news, and any adverse information could trigger

sudden capital outflows, followed by significant volatility in stock markets and even the collapse of the financial system.

The liberalization aims to develop a well-functioning domestic equity market, which ensures the savings are at low cost and be channelled into efficient investments. However, some argue that emerging markets might be exposed more to volatility by the booms of capital inflows (Agosin and Huaita, 2012; Borio, 2012). Once the situation happens, the credit channels become blocked, damaging back the functions of the domestic financial sector. Also, market failure is another concern. The cost of market failure in liberalized markets could be higher than the cost of government failure in closed markets (Stiglitz and Weiss, 1981; Stiglitz, 1994). Thus, it is necessary to evaluate the effects of liberalization with prudent actions from policymakers.

Developing countries often liberalize their equity markets through prudential stages (Christopher, 1999). At the beginning of liberalization, most countries gradually lifted the foreign investment cap on public companies up to less than 50%. Geert and Campbell (2000) used the term "*gradualism*" to refer to this phase of market opening. That gives non-resident investors more opportunities to participate in equity transactions but limits their majority control. When the hosting countries' regulatory framework and market infrastructure are complete, foreign ownership limitation will increase to allow non-resident investors to possess majority ownership of public companies. Kim et al. (2013) referred to this phase of liberalization as the "*cold turkey*" progress. The equity market opening in South Korea from 1991 to 1998 is an example of both "*gradualism*" and "*cold turkey*" liberalization in one country.

2.2. *Foreign capital flows to emerging stock markets*

Conventionally, capital flows to emerging stock markets are from developed countries. The decline of interest rates in developed countries and the potentially high return rates in developing countries, where capital resources are scarce, resulted in the return differentials. Thus, investing in emerging markets enables investors from developed countries to seek higher investment yields and the benefits of international diversification. Besides interest rates, other factors also drive capital to flow to

emerging stock markets, including global risk aversion, mature economy output, domestic output growth and country risk indicators (Koepke, 2019).

Another direction, which has become increasingly outstanding in the last decade, is investment flow among developing countries. Besides the conventional, the expansion of South-South capital flows was driven by technological innovations, the rising income in developing countries, and globalization and liberalization progress (World Bank, 2006). The similarity of geographic regions and proximity in culture and ethnic ties promotes the integration of developing countries' stock exchanges. Thus, along with the risk diversification effect that was well explained in conventional views, market competition is the mechanism of impacts that many researchers are paying attention to (Subrahmanyam, 1991; Spiegel and Subrahmanyam, 1992).

While most of the research focuses on capital inflows, a few studies, such as Rainhart and Rainhart (2008) and Ghosh et al. (2014), pay attention to capital outflows from developing countries. That is supported by the arguments that net flows, the difference between the capital inflows and outflows, reflect more accurately the changes in a country's liabilities versus changes in its assets in the Balance of Payment (IMF, 2010). However, the research does not often use net flows as a proxy for equity investment because they are jointly determined with the current account balance and settlement balance, which vary across nations (Debelle and Faruquee, 1996; Chinn and Prasad, 2003). Our literature survey only focuses on studies examining capital inflows in emerging stock markets.

3. The strands of literature research about stock market liberalization

With different aspects examined, literature about stock market liberalization focus on two main questions: (i) what factors drive foreign investment flows? (ii) and what are the effects of liberalization in emerging markets? This section presents these two literature strands (*Figure 1*) and the position of our survey.

In classic economic theories, foreign capital flows are directed by potential investment growth and higher return rates in liberalized markets. However, according to Lucas (1990), this pure prediction ignores two underlying assumptions in the scenarios of foreign investment. First, it does not take into account the fundamentals in liberalized markets, including technology, institutional infrastructures, and

government policies. Second, market imperfection, especially in emerging markets, also needs to be considered. Lucas (1990) explained these factors for the failure of liberalization policies in some developing countries in the 1990s. Later studies continued to examine the driving factors of foreign investment flows to stock markets, which formed the *first strand* of the literature research. The survey by Koepke (2019) synthesized this strand by the Push-Pull framework. Foreign investment in emerging stock markets depends on the push factors, which are the conditions of original countries, such as global risk aversion (Fratzscher, 2012; Broner et al., 2013; Bruno and Shin, 2015), mature economy interest rates (Cerutti et al., 2014; Bruno and Shin, 2015), and mature economy output growth (Baek, 2006; Bluedorn et al., 2013). Also, foreign investment is determined by pull factors, which are from the host countries, such as domestic output growth (Herrmann and Mihaljek, 2013; Ferrucci et al., 2004), asset return indicators (Lo Duca, 2012; Ahmed and Zlate, 2013), and country risk indicators (Takats, 2010; Herrmann and Mihaljek, 2013).

Also, a significant number of studies have examined the effects of liberalization in emerging markets, forming the *second strand* of the literature. In this survey, we aim to provide a comprehensive assessment of whether emerging stock markets benefited from liberalization. We expect that our survey, along with the survey of Koepke (2019) in the first strand, will complete the literature about stock market liberalization.



Figure 1: Literature strands of stock market liberalization

As the research in the second strand uses various concepts to measure and analyze the impacts, it is critical to structure empirical findings systematically. Before presenting our survey results, we started by reviewing the theoretical context in section 3. This part summarizes different research approaches, such as proxies of liberalization, mechanisms to explain the impacts, and levels of effects,

which the surveyed studies employed. Then, the survey is presented in section 4. This section synthesizes theoretical explanations and empirical evidence for four impacts of market liberalization: equity cost, stock volatility, stock liquidity, and informational efficiency. Section 5 concludes the study and suggests some implications from the survey results.

4. The context of the surveyed literature

4.1. Proxies of stock market liberalization

Literature research employs *de jure* and *de facto* as the methods to proxy for the liberalization of local equity markets:

De jure is the method used to analyze the effects of important events associated with the policy. Several studies are interested in the changes in domestic firms and stock markets after the restrictions on foreign investment are lifted (Kawakatsu and Morey, 1999; Laopodis, 2003; Nguyen and Fontaine, 2006; Lim et al., 2016). These studies identified the implementation dates of market liberalization and then examined them by event windows methodology. Also, *de jure* is used in some studies investigating the changes in time-varying market performance indicators (Henry, 2000; Chari and Henry, 2004; Patro and Wald, 2005; Christoffersen et al., 2006; Aymen and Adel, 2013; Kim et al., 2013; Hiremath and Narayan, 2016; Lee and Chou, 2018; Mateus and Hoang, 2021). These research examined the structure break-point in series indicators and identified whether the structural changes in market performance are associated with liberalization event dates.

Meanwhile, *de facto* method captures the actual presence of foreign investment in local markets. It is often measured by the ratios of foreign equity investment relative to total market capitalization (Hillier and Loncan, 2019) or by the proportions of foreign portfolio ownership to firm's ownership (Li et al., 2011; Chen et al., 2013; Vo, 2015; Lim et al., 2016; Ding et al., 2017; Vo, 2017; Lee and Chung, 2018; Li et al., 2020). These ratios are then treated as explanatory variables in regression models, controlled by market-level and firm-level factors, to examine the effects on the variables of interest.

According to Kose et al. (2006), *de jure* describes legally recognized practices but is not a good proxy for liberalization. Evidence of integration would be found before the liberalization policies

were implemented. Countries could offer investment instruments such as country funds and depository receipts, which allow foreign investors to access the local stock market even though the domestic market has not been liberalized. Thus, *de facto* performs better to reflect the actual depth of integration degree instead. As argued by Quinn and Toyoda (2008), however, *de facto* does not work well under some circumstances, such as when capital flows would be modest in fully liberalized emerging markets if the domestic rate of return is close to the world interest rate. Therefore, selecting *de jure* or *de facto* depends on the study context and whether the research interest is about the market level or firm level.

4.2. *Mechanisms of impacts from market liberalization*

There are different opinions explaining the mechanisms by which liberalization has impacts on emerging stock markets. The effect channels could be grouped into *risk diversification*, *market competition*, *information sharing*, and *friction channel*.

Risk diversification: This mechanism focuses on the changes in risk structure after stock markets are liberalized. When emerging markets are segmented, their market returns are often higher and more volatile than those in developed markets. Thus, the transformation to become a part of the global portfolio reduces the systematic risk component exposed to stocks in emerging markets (King and Levine, 1993; Geert and Campbell, 1995; Hubbard, 1998; Foerster and Karolyi, 1999). The arguments in the Global CAPM employ this mechanism to predict the reduction of equity cost in post-liberalization (Stulz 1995a and 1995b).

Information sharing: Asymmetrical information is a big concern in emerging markets, as investors might have different levels of information regarding financial transactions. Besides the existing domestic investors, the participation of foreign investors contributes to completing subsets of information in emerging markets (Merton, 1987; Kwan and Reyes, 1997; Wang, 2007). Foreign investors are often involved with informed trading strategies, improving the accuracy of information reflected in stock prices. Moreover, they could put local firms under the pressure of corporate disclosure and transparency, which enhance the availability of information to the public (Shleifer and Vishny, 1986; Stultz, 1999a; Boyd and Smith, 1996; Beasley, 1996; Ali et al., 2004; Ke and Petroni, 2004;).

Friction channel refers to the non-informational effects of foreign investors trading on local equity markets. In emerging markets, the holdings of foreign institutions in domestic companies would signal potential investment. This will then attract the attention of local investors to these companies, increasing their trading and possessions on those firm stocks (Grinblatt and Keloharju, 2000; Froot et al., 2001; Seasholes, 2004). However, the friction channel raises concerns about the increasing involvement of foreign institutional investors or groups of foreign shareholders in local company business. It is because when those investors significantly influence corporate governance, they might be privy to private information for their own interest (Edmans, 2009). Their significant ownership in local firms might limit the outstanding shares that can be traded in the markets (Amihud and Mendelson, 1986; Ng et al., 2011), increasing the bid-ask spread (Bolton and Thadden, 1998; Rubin, 2007; Brockman and Yan., 2009), or even making firms more "foreign" to local investors (Rhee and Wang, 2009).

Market competition: Recent studies examining investment flows among emerging countries are interested in market competition changes. The advanced trading techniques, pricing strategies, diversification of culture, social norms, and corporate governance of foreign investors from different countries are the impacts of market liberalization (Subrahmanyam, 1991; Spiegel and Subrahmanyam, 1992). These effects are examined to influence stock liquidity and informational efficiency at both market and firm levels.

4.3. *Market-level and firm-level research*

The effects of market liberalization were examined at the market and firm levels in the literature. Regarding market-level research, both *de jure* and *de facto* were employed to investigate the changes in market performance indicators (Henry, 2000; Chari and Henry, 2004; Christoffersen et al., 2006; Amen and Adel, 2013; Hiremath and Narayan, 2016; Lee and Chou, 2018; Hillier and Loncan, 2019; Mateus and Hoang, 2021). Meanwhile, firm-level research examines the impacts of foreign institutional holdings on firm performance indicators (Bley and Saad, 2011; Li et al., 2011; Chen et al., 2013; Lim et al., 2016; Ding et al., 2017; Vo, 2017; Lee and Chung, 2018; Li et al., 2020). In firm-level studies, *de facto* was the popular method used to proxy the liberalization effects.

Table 1 summarizes different research approaches which empirical studies employed to examine the effects of liberalization on emerging stock markets:

Aspects	Approaches
Proxies	De jure and de facto
Mechanism of effects	Risk diversification, information sharing, friction channel, and market competition
Level of research	Market-level and firm-level

Table 1: The context of the surveyed literature

5. The effects of liberalization discussed in the literature

Our study surveys the literature on emerging market liberalization. For each impact, the survey consists of theoretical arguments and empirical evidence. While empirical evidence has been in the research since the 2000s, theories for market liberalization started earlier in the Global Capital Asset Pricing Model and other studies in the 1990s. Figure 3 illustrates the structure of this survey.

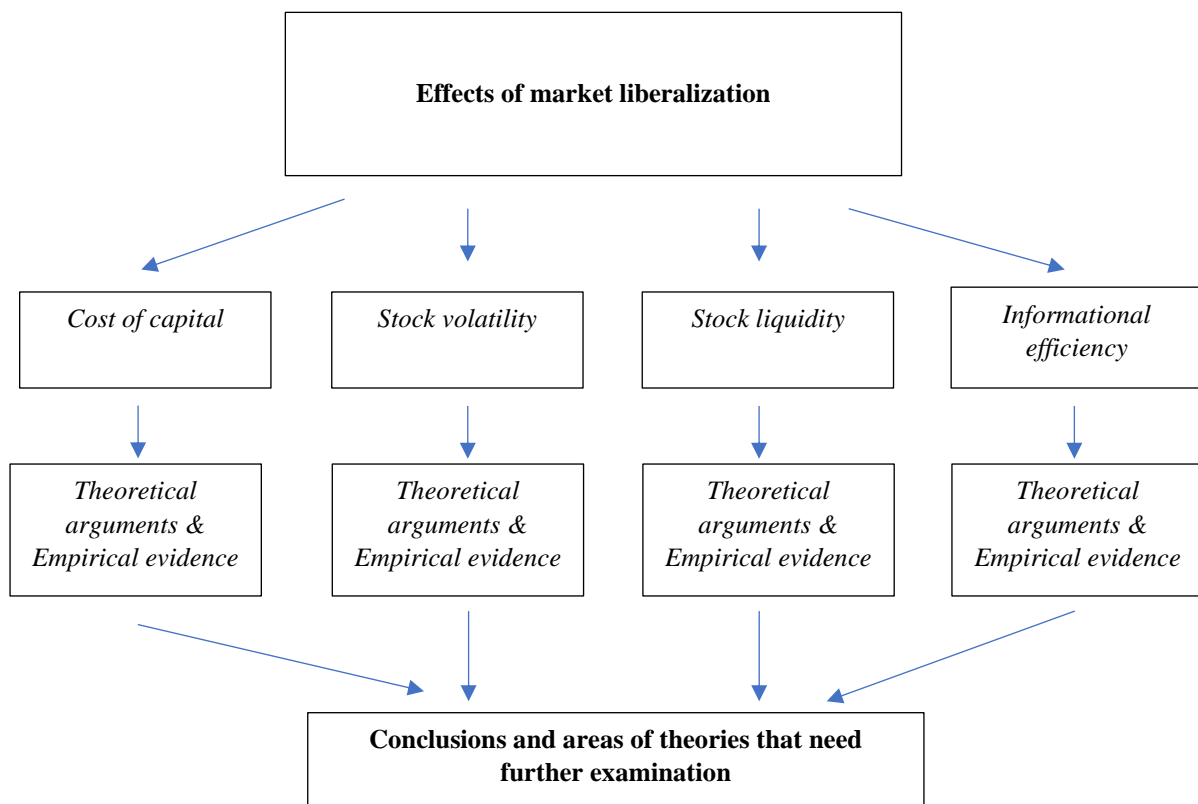


Figure 3: The structure of the literature survey

5.1. Effects on the cost of equity

5.1.1. Theoretical arguments

The adjustment in the cost of equity in liberalized markets is the argument from the Global Capital Asset Pricing Model (Global CAPM), developed by Stulz (1995). From the Capital Pricing Asset Model (CAPM) (Treyner, 1962; Sharpe, 1964; Lintner, 1965; and Mossin, 1966), the Global CAPM proposed the required rate of equity return as:

$$E(r) = R^{\text{world}}(\text{free-rate}) + \beta^{\text{world}} * [R^{\text{world}}(\text{market}) - R^{\text{world}}(\text{free-rate})]$$

In developing or relatively capital-poor countries, the expected risk-free rate and risk premium are often higher. Also, the profits and values of companies are more correlated with local economies than the global economy, so the β^{world} is expected less than the local β . For these reasons, the required rate of return in liberalized markets would be lower than the one in closed markets. Global CAPM predicts that liberalization decreases the cost of equity.

Global CAPM provided fundamental theoretical arguments that backed up the wave of liberalization in emerging markets in the 1990s. Risk diversification is the primary mechanism in this theory. Equity cost represents the minimum return that investors expect to invest. Hence, with the lower cost of equity, the more likely that firms could raise equity by issuing their shares to the public. From a risk-return tradeoff perspective, removing financing constraints could make capital less costly, optimizing firms' approach to one of the production inputs, which is predicted to spur economic growth for the country (King and Levine, 1993; Hubbard, 1998).

5.1.2. Empirical studies

Later research in the 2000s brought evidence that supported theoretical arguments implied in the Global CAPM. The revaluation of stocks, which is reversely associated with equity cost, was the primary method employed in market-level and firm-level studies.

First, the revaluation effects were confirmed at the market level. Henry (2000) provided one of the earliest evidence of the changes in risk-return tradeoffs by market opening. This study investigated the revaluation of stock prices around the first liberalization dates in Asian and South

American countries from 1986 to 1992. Panel regression was employed to evaluate abnormal returns of the countries' stock index during liberalization windows. In this research, liberalization dates were determined as the first months with any of the following: announcement of policy decree, establishing the country's fund, or an increase in the IFC investability index of at least 10 per cent. Then, the monthly price jumps constructed from T-7 to announcement dates are controlled by other macroeconomic fundamentals and policy endogeneity, such as economic stabilization, trade opening, privatization, and exchange rates. The findings indicate that, on average, the country's equity index experienced abnormal returns of 3.3 per cent during an eight-month window leading to the first liberalization.

Second, the revaluation effect was evidenced at the firm level. When the countries liberalize equity markets, not all stocks are investible for foreign investors. For this reason, Chari and Henry (2004) investigate the changes in 238 firms' stock prices in Argentina, Brazil, Chile, Colombia, India, Korea, Mexico, Pakistan, Taiwan, Turkey, and Venezuela around the countries' liberalization dates. The findings indicate that firms, which were investible to foreign investors, experienced a 15.1% increase in stock prices after liberalization. Also, the systematic risk that all firms in these countries are exposed to decreased by 6.8 percentage points. Patro and Wald (2005) were interested in different phases of liberalization affecting the firm's cost of equity. This study employed the data of 109,750 firms in 18 emerging countries and investigates stock prices in the PRE period, from -43 to -7 months of liberalization, DURING period, -6 to +5 months of liberalization, POST period, +6 to +41 months of liberalization, and AFTER period, +42 to +77 months of liberalization. The results confirm that the proportion of firms with positive price reactions in the DURING period is 52.4%, in the POST period is 45.8%, and in the AFTER period is 77.8%. Christoffersen et al. (2006) found that the cost of capital reduction, impacted by market liberalization, depends on firm size. This study examines the stock prices of 322 firms in 12 emerging countries that liberalized stock markets from 1985 to 1999. Large firms tend to be impacted more by liberalization effects, resulting in more capital cost reduction and higher stock prices.

Third, the revaluation effect was evidenced in the case study with special circumstances of liberalizing their stock markets. Kim et al. (2013) investigated market liberalization in Korea, where

the progress was implemented in two different styles, gradual steps from 1991 to November 1997 and "cold turkey" liberalization from November 1997 to May 1998. In the first step of liberalization, foreign ownership was lifted gradually by 2% or 3%, but in the short time of "cold turkey" progress, foreign ownership was raised suddenly from 50% to 100%. The findings conclude that liberalization only reduces the cost of capital in the second phase. Hillier and Loncan (2019) examined deregulation in the Brazilian stock market. Instead of employing *de jure*, this study measures the ratio of portfolio values held by foreign investors to market capitalization as a proxy for the actual. The results indicate that market opening reduces the cost of capital for Brazilian firms, which translates to a higher level of investment and stimulates economic growth.

To summarize, both theoretical arguments and empirical evidence brought one conclusion of the liberalization impact on equity cost. As the implication of the Global CAPM, risk diversification is the factor that reduces the risk-free rate and risk-premium, lowering domestic equity cost. This conclusion was further supported by empirical evidence of revaluation effects at the market level, firm level and single case studies. The robustness of the impact was tested in different samples of firms, different phases of market opening, and various investible shares to foreign investors.

5.2. *Effect on stock volatility*

While the literature research in the 2000s brought optimistic opinions about stock market liberalization, empirical studies in the 2010s presented more prudential viewpoints. The financial crises in Asian countries 1997-1998, Brazil 1999, Argentina 2001, and 2007-2008 and the adoption of capital control in Mexico in 1994 and Malaysia in 1998 illustrated that market opening is not a risk-free policy and does not come without any cost. Some theoretical arguments explain the changes in stock volatility through risk diversification and information-sharing mechanisms.

5.2.1. *Theoretical arguments*

First, market liberalization affects the systematic volatility component by risk diversification mechanism. Systematic volatility is impacted by local factors in a closed-small market but exposed to global elements in a liberalized one. Given the higher volatility of local factors in emerging markets,

liberalization helps to reduce their systematic volatility (Geert and Campbell, 1995; Foerster and Karolyi, 1999). This is similar to the theoretical explanation in the Global CAPM, which predicts the lower required rate of return and lower volatility of local stocks after they are liberalized.

Second, market liberalization affects the idiosyncratic volatility component via information-sharing mechanisms. Merton (1987) theoretically shows that existing investors in the market only know a subset of information about stocks, and the increases in the numbers of investors with this kind of incomplete information increases risk-sharing and decreases expected returns. By extending this assumption, Kwan and Reyes (1997) and Wang (2007) argue that the participation of foreign portfolio investors improves the precision of public information on firm stock, helping to reduce idiosyncratic volatility. On the other hand, Xu and Malkiel (2003) claim that the increased information coverage, which is associated with the increased degree of liberalization, leads to various directions of firm information, increasing stock volatility.

5.2.2. *Empirical studies*

Historical volatility, which reflects share price fluctuations in the past, was used in empirical studies to examine the effects of liberalization. The volatility describes dispersion from the sample mean, measured by variance and standard deviation, or conditional volatility, estimated by ARCH modelling. These studies brought findings addressing two controversial issues in theoretical arguments: how stock volatility changed after liberalization and the main component of volatility that was impacted.

Regarding the first issue, research evidence concluded that emerging markets became less volatile after liberalizing. By employing *de facto*, ownership held by foreign institutional investors, Li et al. (2011) examined the effects of foreign equity investment on stock return volatility in 31 emerging countries from 2002 to 2006. The findings show a negative relationship between foreign portfolio ownership and stock return volatility, measured by the annual average of the logarithm of the squared monthly returns. This conclusion is robust after controlling endogeneity and domestic economic events. Thus, the authors concluded that liberalization stabilizes emerging markets' volatility. This influence was examined further and explained as institutional investors' impacts on monitoring functions. The

same conclusion was found in the research of Vo (2015). This research has the same approach as Li et al. (2011) but applies to the Vietnam stock market sample data from 2006-2012. The results imply that liberalization policies enable emerging countries to transfer parts of their domestic risks.

For the second research's concern, different conclusions of the idiosyncratic volatility component have been found. Umutlu et al. (2010) use the sum of foreign equity investment to the country's GDP as the *de facto* proxying the degree of market liberalization. The authors decompose stock volatilities by calculating the return on a stock as the sum of the return on a global market portfolio multiplied by country-specific factors and a firm-specific residual. Regression models are applied to 25 emerging equity markets in the period 1991 to 2005. The results show that market liberalization reduces stock return volatilities, and the effects are transmitted through both local and aggregated idiosyncratic volatility. Research by Bley and Saad (2011) employed a different method for estimating total and idiosyncratic volatility. These volatilities are determined by vectors of explanatory variables in the conditional mean equation. The degree of liberalization, measured by *de facto* foreign ownership in public companies, is examined in the relationship with volatilities in 602 stocks of the Gulf Cooperation Council from 1998 to 2009. The results indicate that opening markets has no impact on idiosyncratic volatility.

In summary, risk diversification and information-sharing are factors of liberalization that affect stock volatility. Theoretical arguments predict that risk diversification reduces the systematic volatility component. Meanwhile, the information-sharing factor affects the idiosyncratic element, and this impact could lead to the idiosyncratic volatility either increasing or decreasing. However, empirical research confirmed one conclusion of that stock volatility reduces after markets are liberalized. Although different findings have been found regarding idiosyncratic volatility, there was no evidence that this volatility component increases in liberalized markets.

5.3. Effects on stock liquidity

5.3.1. Theoretical arguments

While local corporates are interested in the cost of equity, investors pay attention to the cost of trading, or market liquidity, which directly affect their investment profits. A highly liquid market

could absorb a huge volume of securities trading at a lower transaction cost within a short period without significantly impacting securities prices (Brennan et al., 2012). Some theoretical arguments explain the effects of liberalization on stock liquidity through friction channels and information-sharing mechanisms.

Friction channel or non-information channel refers to the effects of trading activities on equity markets. According to Amihud and Mendelson (1986) and Ng et al. (2011), foreign portfolio investors, especially large shareholders such as hedge funds and mutual funds, often possess a significant proportion of local firms' outstanding shares, reducing the number of securities available for public trading. Besides, firms with high ownership concentration might experience a higher bid-ask spread and lower trading activities (Bolton and Thadden, 1998; Rubin, 2007; Brockman and Yan, 2009).

On the other hand, there are opinions claiming that securities become more liquid if foreign portfolio investors possess those companies' shares (Grinblatt and Keloharju, 2000; Froot et al., 2001; Seasholes, 2004). Foreign hedge funds and mutual funds often have superior experience and advanced knowledge, making them outperform local investors when selecting quality stocks. That is especially true in developing countries where stock markets are not long-old established. The presence of foreign institutional investors would be a guaranteeing signal for the firm-stock investment, which then influences domestic investors' trading behaviours. Domestic investors might even overreact and have "anchoring bias" and "herd behaviour", making firm stocks highly preferred in their trading activities.

Meanwhile, *information-sharing* mechanisms focus on how liberalization alters the asymmetrical information of the market. When markets are opened to non-resident investors, foreign portfolio investors would significantly improve greater transparency and corporate disclosure of market information (Stultz, 1999a; Ali et al., 2004; Ke and Petroni, 2004). Also, they could monitor corporate governance better than domestic investors (Khanna and Palepu, 2000). Thus, these institutional investors could help lower information asymmetry associated with firms, reducing the bid-ask spread and improving firm-stock liquidity (Stultz, 1999b; and Wei, 2010).

However, some authors argue that foreign equity investment is negatively associated with information transparency. Although hedge funds or mutual funds have no control over local firms, many

large institutional investors could together possess a significant number of outstanding shares, making firms more "foreign" to local investors (Rhee and Wang, 2009). As a result, liberalization increases informational asymmetry (Heflin and Shaw, 2000; Rubin, 2007). Also, market makers are concerned about potential losses when trading against foreign institutions, which increases the securities' bid-ask spreads, creating adverse selection effects (Ding et al., 2017).

5.3.2. Empirical studies

In empirical studies on emerging market liberalization, liquidity is proxied by low-frequency liquidity measures. As explained by Le and Gregoriou (2000), low-frequency data is easy to access and available for newly established stock exchanges such as emerging markets. Besides, in the research context of financial liberalization, low-frequency liquidity measures are more suitable as many control variables, which are from accounting and economics data, can only be collected quarterly or annually. The proxies include transaction cost-based, volume-based, and price impact-based measures. With various liquidity measurements, the findings from empirical studies helped clarify two theoretically controversial issues.

First, it was evidenced that liberalization improves liquidity in emerging markets. Lee and Chou (2018) employed *de jure*, policy announcement dates, to capture the changes in financial openness and how they impacted stock liquidity in China, the Czech Republic, Egypt, Indonesia, the Philippines, and Taiwan. The findings indicate that financial openness is negatively associated with the Amihud illiquidity measure, the proxy for the price impact of trade. The effects were more significant in emerging countries than in developed countries. Lee and Chung (2018) and Lee and Ryu (2019) used *de facto*, the ownership held by foreign institutional investors, as a proxy for foreign equity investment. Both studies also employ the price impact of trade and bid-ask spread as the measurements for market liquidity. In the research of Lee and Chung (2018), the regression models are examined in the sample of 20 emerging countries, and the results conclude that foreign institutional ownership enhances the stock's liquidity. The same conclusion was found in the research of Lee and Ryu (2019) when the authors examined the data sample of Korean firms from 2004 to 2015. Also, this study finds that

liquidity still positively correlates with foreign ownership even if FX liquidity decreases, as foreign investors tend to react by rebalancing their portfolios.

Second, empirical studies proved that both friction channels and information-sharing mechanisms affect liquidity. Ng et al. (2016) examine the influences of foreign institutional ownership on stock liquidity, measured by illiquidity measures, proportions of daily zero stock returns, and effective spreads. Then, to explain why foreign equity investment could enhance stock liquidity, the authors employ stock turnover and the number of trades per day, proxying for trading activities, and the probability of information-based trading and stock price non-synchronicity, proxying for the information environment of firms. The results confirm that effects are transmitted through both friction and informational channel. Ding et al. (2017) were particularly interested in the influences of qualified foreign institutional investors on A, B, and H-shares listed in the SHSE and SZSE in China from 2004 to 2012. To separate between frictional and informational effects, the authors decompose the spread into the realized spread, proxying for the non-informational component of spread, and the price impact, proxying for the informational component. The findings conclude that qualified foreign institutional investors improve stock liquidity in China through both mechanisms, but mainly from the friction channel. Also, this conclusion implies that the trading activities of foreign investors have influenced the trading behaviours of domestic investors in China.

In summary, empirical studies proved that liberalization improved emerging markets' liquidity. The evidence was investigated at the market level and firm level. Although theories bring controversial arguments about the impacts of friction channels and information-sharing, the evidence indicates that both channels positively affect the liquidity of stocks after markets are liberalized.

5.4. Effects on information efficiency

5.4.1. Theoretical arguments

The concept of an efficient market where the prices fully reflect all available information on securities was provided by Fama (1970, 1991). When markets become efficient, shares are traded at fair prices and determined by information about the companies and financial markets, optimizing capital allocation and economic resources. Also, the degree of efficiency depends on environmental factors,

characterizing the market ecology, profit opportunities, and the adaptability of market participants (Lo, 2004). For developing countries, some theoretical arguments (Spiegel and Subrahmanyam, 1992; Shleifer and Vishny, 1986; Boyd and Smith, 1996; Beasley, 1996) predict that liberalization and foreign participation improve the local markets' efficiency. First, the impact is by the increase in market competition. Subrahmanyam (1991) and Spiegel and Subrahmanyam (1992) expect that the participation of foreign traders creates more competition in emerging markets, causing information to be incorporated into stock prices fast and accurately. Second, foreign equity investment could positively impact the local market's informational efficiency through information-sharing mechanisms. Foreign investors are usually institutional investors who get involved in more informed trading than domestic investors. The presence of foreign institutional investors as shareholders would pressure local companies to follow highly standard corporate transparency and world-class disclosure practices (Shleifer and Vishny, 1986; Boyd and Smith, 1996; Beasley, 1996). Thus, those investors can promote corporate governance and mitigate asymmetrical information.

It could be seen that there are similarities in theoretical arguments about the effects of market liberalization on informational efficiency and stock liquidity since both of the impacts are partly explained by information-sharing channel. Also, their connections are hypothesized in mutual effect directions. Liberalization increases market liquidity, a positive attribute associated with informational efficiency (Chordia et al., 2008 and Jiang, 2011), and on the other direction, portfolio investment improves information efficiency, reducing uncertainties and facilitating securities to be traded easily with high frequency (Subrahmanyam, 1991).

However, according to explanations by friction channel, foreign equity investment could negatively impact informational efficiency. According to He and Tian (2013) and Ng et al. (2015), when investors significantly influence corporate governance, they will be privy to private information for their own interest. This argument raises concerns that market efficiency would be eroded if the size of stockholders increases. This hypothesis was also explained in the exit-threat model of Edmans (2009). The issues of adverse selection could be raised because of interaction among the "trading effect", "effort effect", and "camouflage effect". Foreign institutional investors might lack control

rights, but they could exert governance and manipulate prices through trading. For this reason, the relationship between foreign shareholdings and price informativeness should be non-linear.

5.4.2. *Empirical evidence*

In the financial liberalization literature, market efficiency is defined in two ways. Firm-level studies described efficiency as the speed with which stock price reacts to the arrival of new information. Stock price delay in responding to market-wide news, an inverse measure of informational efficiency, is often the proxy of that speed and is examined in panel data with common effects across firms. Meanwhile, market-level studies particularly emphasized testing the weak form of efficiency in time series data. In efficient markets, stock returns follow the random walk and the autoregressive coefficients in return series are equal to zero or statistically insignificant.

The firm-level findings concluded that liberalization improves local markets' informational efficiency, and the impact was evidenced through the information-sharing mechanism. *De facto* was the primary method employed in the research. Lim et al. (2016) used foreign institutional ownership as the proxy of liberalization at the firm level. This study investigated the sample of Malaysian public firms over the 2002-2009 period and examined how foreign ownership impacted stock price efficiency. The findings show that foreign investment accelerates the incorporation of local and global information into publicly listed companies in Malaysia. The research of Vo (2017) brought similar conclusions on the examination of Vietnamese public firms over the period 2007-2015. The results confirm the positive relationship between foreign portfolio ownership and price informativeness. Stocks of firms with higher foreign ownership are associated with more public and less firm-specific information. Li et al. (2020) examined the specific A-share group in China from 2004 to 2012 and provided the same conclusions. The study documents that qualified foreign institutional investors (QFIIs) positively affect market efficiency, and the relationship is more profound if QFIIs have more influence on monitoring, disciplinary roles, and corporate governance in the investee firms.

In market-level studies, we also can find some empirical evidence that proves the positive effects of liberalization on informational efficiency. *De jure* method was used to proxy liberalization and examine the weak-form efficiency in these studies. Aymen and Adel (2013) estimate the time-

varying beta coefficient in the state-space model regressing past prices on future prices. Hiremath and Narayan (2016) and Mateus and Hoang (2021) examine Hurst exponents to measure long-range dependence in the time series stock returns. Those studies concluded that the degree of informativeness in emerging countries' data sets increased significantly after liberalization events.

To summarize, there are different arguments for the effects on informational efficiency. While the views of market competition and information-sharing mechanisms predict that informational efficiency would increase post-liberalization, the explanation by the frictional channel concerns that the efficiency would decrease due to market openness. In this literature survey, we found that empirical studies, both at the firm and market levels, proved one conclusion that liberalization positively impacts emerging markets' informational efficiency. Research at the firm level also indicates that information-sharing is the primary mechanism for this impact.

6. Conclusion

Liberalization is still in progress in many emerging stock markets. Foreign investors are given more opportunities to possess shares of local companies with more relaxing restrictions on their ownership limitations. A strand of the literature investigated the push-pull framework, which suggested recommendations to attract foreign capital to emerging stock markets. Our literature survey looks at another side of the story. We are interested in whether this foreign investment benefits emerging stock markets. By synthesizing theoretical arguments and empirical evidence in the literature, we can draw some conclusions and suggest ideas for future studies to examine liberalization policies.

The effects researched in the literature include the *cost of equity*, *stock volatility*, *stock liquidity*, and *informational efficiency*. The literature has examined market liberalization and its effects in various aspects by different methods. Market opening is proxied by the event dates, which is *de jure* method, or by the actual presence of the Portfolio Equity Investment flows, which is *de facto* method. These effects were examined at both the *market level* and *firm level*. In conventional viewpoints in which the investment flows were from developed countries, *risk diversification*, *information-sharing*, and *friction channel* are the primary mechanisms of liberalization effects in emerging markets. In recent studies, *market competition* is another mechanism that could explain the impacts of foreign investment.

For each effect, the survey consists of two parts, theoretical arguments and empirical evidence. The conclusions are presented in Table 2. In the first part of the survey, we summarized different theoretical arguments explaining the impacts of market liberalization. The cost of equity is predicted to be lowered in liberalized markets (via risk diversification mechanism). Stock volatility is expected to decrease (through risk diversification and information-sharing mechanisms) or increase (through information-sharing mechanism). Stock liquidity is predicted to either increase or decrease (in both information-sharing and friction channels). Information efficiency is expected to be improved (by market competition and information-sharing mechanism) or reduced (through friction channel).

In the second part, we surveyed empirical studies that investigated the effects. We synthesized evidence relating to two matters: the direction of impacts from liberalization and the mechanisms to explain these impacts. Our findings indicate that market opening was evidenced to reduce the cost of equity (via risk diversification mechanism), stabilize stock volatility (mainly through risk diversification mechanism), increase stock market liquidity (in both friction channels and informational-sharing mechanisms), and improve the local market's informational efficiency (by informational-sharing mechanism).

It was evidenced that emerging markets benefited from liberalization. However, some aspects of theoretical arguments still need further consideration in empirical studies. As explained via the friction channel, firms' stock liquidity decreases if the shares are possessed by large institutional investors or big groups of investors. Since this issue has not yet been examined in the literature on emerging market liberalization, it brings ideas to investigate the effect of liberalization on stock liquidity in the condition of local firms with high foreign ownership concentration. Besides, the mechanism explaining the impact on informational efficiency was only evidenced in firm-level empirical studies. There is still a gap in the literature research that demonstrates by which mechanisms, market competition or information-sharing, that liberalization improves informational efficiency at the market level.

Our survey focuses only on studies that examined foreign capital inflows to emerging markets. Liberalization was defined in the surveyed literature as relaxing restrictions on foreign stock trading

and foreign ownership in local public companies. In order to have more comprehensive literature that helps reassess liberalization policies, some topics can be developed in future research. First, as liberalization facilitate the free movement of capital flows among nations, it is necessary to have a survey of the literature that examines the ability of companies to raise funds abroad and the ability of domestic investors to invest overseas. We could find that some studies by Rainhart and Rainhart (2008) and Ghosh et al. (2014) have a particular interest in capital outflows from emerging markets. Second, future studies can examine the dependence of liberalization policies among financial markets, between stock markets and banking sectors. Third, besides the effects on emerging markets, we are also interested in whether foreign investment impacted local firms and markets of developed countries.

Effects	Theoretical arguments		Empirical evidence
	<i>Mechanism of impacts from liberalization</i>	<i>Predicted impacts of liberalization</i>	
1. Cost of equity	Risk diversification	<ul style="list-style-type: none"> ▪ Lowers equity cost as risk diversification reduces the risk-free rate and risk premium. 	<ul style="list-style-type: none"> ▪ Reduced equity cost in liberalized markets (Henry, 2000; Chari and Henry, 2004; Patro and Wald, 2005; Christoffersen et al., 2006; Kim et al., 2013; Hillier and Loncan, 2019). ▪ The robustness of the impact was tested in different samples of firms, different phases of market opening, and various investible shares to foreign investors.
2. Stock volatility	Risk diversification	<ul style="list-style-type: none"> ▪ Reduces stock volatility as liberalization lowers the systematic volatility of emerging markets. 	<ul style="list-style-type: none"> ▪ Reduced stock volatility (Umutlu et al., 2010; Bley and Saad, 2011; Li et al., 2011; Vo, 2015) ▪ There was no evidence that the idiosyncratic volatility component increases in liberalized markets.
	Information-sharing	<ul style="list-style-type: none"> ▪ Reduces stock volatility as foreign investors complete subsets of firm information and lower idiosyncratic volatility. ▪ Increases idiosyncratic volatility as liberalization increases local firms' information coverage and variation. 	
3. Stock liquidity	Friction channel	<ul style="list-style-type: none"> ▪ Reduces stock liquidity as foreign institutional investors possess a significant proportion of shares, reducing outstanding stocks available for trading. 	<ul style="list-style-type: none"> ▪ Increases the liquidity of emerging markets (Lee and Chou, 2018; Lee and

		<ul style="list-style-type: none"> Increases stock liquidity as the presence of foreign investors signals potential investment, influencing domestic investors' trading behaviours. 	<p>Chung, 2018; Lee and Ryu, 2019; Ng et al., 2016; Ding et al., 2017).</p> <ul style="list-style-type: none"> The effects are transmitted through both friction channels and informational-sharing mechanisms (Ng et al., 2016; Ding et al., 2017).
	Information-sharing	<ul style="list-style-type: none"> Reduces stock liquidity as large institutional investors or groups of investors make firms more "foreign" to local investors, increasing information asymmetry. Increases stock liquidity because liberalization helps to lower information asymmetry in the market, reducing the bid-ask spread in trading stocks. 	
4. Informational efficiency	Market competition	<ul style="list-style-type: none"> Improves informational efficiency because the participation of foreign traders creates more competition in emerging markets, causing information to be incorporated into stock prices fast and accurately. 	<ul style="list-style-type: none"> Improves informational efficiency in emerging markets (Lim et al., 2016; Vo, 2017; Li et al., 2020; Aymen and Adel, 2013; Hiremath and Narayan, 2016; Mateus and Hoang, 2021). Research at the firm level also indicates that information-sharing is the primary mechanism for this impact (Lim et al., 2016; Vo, 2017; Li et al., 2020).
	Information-sharing	<ul style="list-style-type: none"> Improves informational efficiency as foreign shareholders would pressure local companies to follow highly standard corporate transparency, promoting corporate governance and mitigating asymmetrical information. 	
	Friction channel	<ul style="list-style-type: none"> Reduces informational efficiency as foreign institutional investors or groups of investors will be privy to private information for their own interest. 	

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