

US Federal Reserve Interest Rate Hikes and Their Influence on Indian Capital Markets

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Abstract

From the post-global financial crisis period through 2015–2016, the global economic landscape was deeply influenced by the U.S. Federal Reserve's transition from a zero-lower-bound interest rate regime toward monetary policy normalization. This review critically examines the transmission mechanisms, empirical evidence, and moderating factors shaping the influence of the Federal Reserve's rate hikes on Indian capital markets during this pivotal period. Anchored in the literature and policy analyses available up to 2016, the study dissects the multi-channel nature of international monetary spillovers—spanning interest rate differentials, exchange rate dynamics, portfolio rebalancing, and cross-market linkages. The review synthesizes both global and India-specific studies to trace how U.S. policy shifts affected capital flows, exchange rates, equity valuations, and bond yields in India. Findings from empirical and high-frequency analyses highlight that while India experienced episodic volatility following U.S. monetary policy changes—particularly during the December 2015 rate hike—the overall macroeconomic and financial system response was relatively stable compared to other emerging economies. This resilience is attributed to a combination of structural factors, including large foreign exchange reserves, improved current account positions, credible monetary policy anchored in inflation targeting, and the growing participation of domestic institutional investors.

Furthermore, the study identifies key moderating mechanisms—macroeconomic buffers, capital account structure, monetary credibility, and market depth—that collectively reduced India's susceptibility to external shocks. The interplay between domestic and international factors reveals a complex but adaptive system, where prudent policy frameworks and institutional credibility dampened the transmission of global volatility into domestic markets. By analyzing the 2015–2016 period as a case study of emerging-market resilience under global monetary normalization, this review contributes to understanding how emerging economies can manage international financial spillovers without compromising macroeconomic stability. The findings carry implications for future policy strategies, emphasizing the importance of flexible inflation targeting, fiscal prudence, reserve adequacy, and the continued development of domestic capital markets as critical shields against global financial turbulence.

Keywords: *U.S. Federal Reserve, Interest Rate Hike, Indian Capital Markets, Monetary Policy Spillover, Foreign Portfolio Investment, Exchange Rate Dynamics, Emerging Market Resilience*

I. Introduction

The years following the **global financial crisis of 2008–2009** marked an unprecedented phase in the evolution of international monetary policy. In the aftermath of the crisis, the **U.S. Federal Reserve (Fed)** embarked on an aggressive program of **quantitative easing (QE)** and maintained a near-zero federal funds rate to restore liquidity, support credit markets, and stimulate economic recovery (Bernanke, 2013; Federal Reserve, 2015). This extended period of ultra-loose monetary policy had profound global implications, as the search for higher yields drove massive **capital flows toward emerging markets**, reshaping global asset price dynamics (Obstfeld, 2015; Ghosh, Qureshi, & Sugawara, 2016).

Between 2009 and 2015, **emerging market economies (EMEs)** such as India, Brazil, Indonesia, and South Africa witnessed substantial inflows of foreign capital. These flows were largely attracted by relatively higher interest rates, robust growth prospects, and improving macroeconomic fundamentals (World Bank, 2016; Fratzscher, 2012). However, these inflows also rendered EMEs increasingly sensitive to global monetary shocks and policy changes emanating from the United States. When the Federal Reserve signaled the beginning of its **policy normalization cycle** in 2013 through tapering announcements, global markets experienced what became known as the “**taper tantrum**” — a sudden reversal of capital flows, sharp depreciation of emerging market currencies, and heightened financial volatility (Eichengreen & Gupta, 2015; Mishra, Moriyama, & N'Diaye, 2014).

By **December 2015**, the Fed initiated its first rate hike since the crisis, increasing the federal funds target rate from the 0–0.25% range to 0.25–0.50%. This symbolic yet significant shift marked the **end of the zero lower bound (ZLB)** era and heralded the start of a gradual tightening cycle. The move was widely anticipated, but its potential spillover effects on global financial markets, particularly **emerging economies**, became the focus of intense academic and policy debate (IMF, 2016; Bowman, Londono, & Sapriza, 2015). For India, this period represented a crucial test of **external sector resilience and domestic market depth**. As one of the world's fastest-growing economies with increasingly liberalized financial markets, India's integration with the global financial system had deepened considerably since the 1990s. Foreign Portfolio Investments (FPIs) — both in **equity and debt markets** — had become a vital source of capital, influencing not only market liquidity but also price discovery and volatility (Acharya, Anshuman, & Kumar, 2016; Patnaik, Shah, & Veronese, 2016). By 2016, foreign institutional investors (FIIs) collectively held significant stakes in leading Indian corporates and sovereign debt instruments, making the domestic financial ecosystem susceptible to global monetary realignments (RBI, 2016).

The **Indian rupee (INR)**, serving as both a trade and financial currency, became a barometer of global monetary sentiment. Its fluctuations in response to Fed policy expectations affected trade competitiveness, inflationary pressures, and monetary policy calibration within India (Mohanty & Turner, 2006; RBI, 2016). Given the open capital account for portfolio flows and the semi-managed exchange-rate regime, India's monetary authorities faced the complex challenge of balancing domestic policy priorities against the volatility imported through global financial channels (Aizenman, Chinn, & Ito, 2015). In this setting, **the interplay between Fed rate hikes and Indian capital markets**—comprising the stock market, bond market, and currency market—became a critical domain of research and policy discussion. Scholars and policymakers alike recognized that the **transmission mechanisms** of U.S. monetary policy to Indian financial variables were multi-dimensional, encompassing interest-rate differentials, risk appetite, and relative asset returns (Rey, 2015; Bruno & Shin, 2015). Furthermore, these effects were neither uniform nor instantaneous; they depended on global risk sentiment, macroeconomic fundamentals, and domestic policy credibility (Hofmann, Shim, & Shin, 2016). From an empirical standpoint, India's financial markets had already exhibited sensitivity to U.S. monetary developments in earlier periods. For instance, during the 2013 taper episode, India experienced sharp capital outflows, a depreciation of nearly **15% in the rupee**, and widening bond spreads, leading to its temporary inclusion in the so-called “Fragile Five” group of emerging markets (Subbarao, 2014; Eichengreen & Gupta, 2015). These experiences underscored the **interdependence between global monetary conditions and India's domestic stability**, and emphasized the need for prudent macroeconomic management.

By 2016, however, India's macroeconomic fundamentals had improved substantially — inflation was moderating, the current account deficit had narrowed, and foreign exchange reserves had crossed USD 350 billion, providing a cushion against external shocks (RBI, 2016; IMF, 2016). The **Reserve Bank of India (RBI)**, under its newly adopted **Flexible Inflation Targeting Framework**, sought to maintain monetary stability while enhancing policy transparency. Moreover, the presence of strong domestic institutional investors, coupled with rising domestic savings, helped partially insulate Indian markets from the worst effects of external volatility (World Bank, 2016; Acharya et al., 2016). In light of this evolving macro-financial environment, the present review—written from the perspective of academic and policy literature available up to 2016—aims to synthesize theoretical and empirical insights on how the **Federal Reserve's interest rate hikes influence Indian capital markets**. Specifically, it addresses three interrelated research questions:

1. **Through what channels do Federal Reserve rate changes affect Indian capital markets?** This includes the exploration of interest-rate parity, risk premia, exchange-rate adjustments, and portfolio rebalancing channels.
2. **What empirical evidence existed by 2016 regarding the magnitude, direction, and persistence of these effects?** Here, we examine cross-market linkages, capital flow data, event studies, and volatility transmission patterns observed in India's financial system.
3. **What policy strategies could mitigate India's vulnerability to adverse external monetary spillovers?** This involves discussion of macroeconomic buffers, liquidity management, regulatory frameworks, and communication policies.

To answer these questions, the review integrates **theoretical exposition, empirical synthesis, and institutional analysis** drawn from both **domestic (RBI, SEBI, Ministry of Finance)** and **international sources (IMF, BIS, World Bank)**. In doing so, it situates India's experience within the broader context of emerging-market exposure to U.S. monetary policy normalization during the mid-2010s. Ultimately, this study seeks to contribute to a nuanced understanding of how a **globally systemic central bank's policy decisions** reverberate through a large, open, and developing economy like India. It emphasizes the significance of domestic macroeconomic discipline, credible institutions, and structural reforms in cushioning the transmission of global shocks—a theme that remains relevant for policymakers, investors, and scholars alike (Rey, 2015; RBI, 2016; IMF, 2016).

II. Theoretical channels of transmission

Understanding how the U.S. Federal Reserve's monetary policy decisions influence emerging market economies such as India requires an exploration of the **transmission mechanisms** that link global liquidity conditions, interest-rate movements, and cross-border capital flows. In the literature on **international monetary spillovers**, scholars distinguish between “**push**” factors—external forces that originate in the global financial environment—and “**pull**” factors, which are domestic attributes that attract or deter foreign capital (Fratzscher, 2012; Calvo, Leiderman, & Reinhart, 1996; IMF, 2016). **Push factors** encompass global interest-rate cycles, quantitative easing, and investor risk sentiment, all of which influence the global supply of capital available to emerging markets. For instance, during periods of monetary expansion in advanced economies, abundant global liquidity and low yields encourage investors to seek higher returns in riskier markets. Conversely, when the Federal Reserve tightens monetary policy, global investors reallocate portfolios toward dollar assets, triggering potential outflows from emerging markets (Rey, 2015; Bruno & Shin, 2015). **Pull factors**, on the other hand, represent domestic fundamentals such as growth prospects, inflation stability, policy credibility, and institutional quality, which determine how attractive or resilient an economy remains amid global financial turbulence (Ahmed & Zlate, 2014; Obstfeld, 2015). In the case of **India**, both push and pull forces operate simultaneously, interacting through financial linkages and macroeconomic channels. The literature identifies several key theoretical mechanisms through which U.S. monetary policy changes are transmitted to Indian capital markets: (i) interest-rate parity and yield differentials, (ii) exchange-rate movements, (iii) portfolio rebalancing and risk-premium adjustment, and (iv) cross-market and macro-financial linkages. Each of these channels reflects distinct but interrelated processes shaping India's financial response to Fed rate hikes.

2.1 Interest-Rate Parity and Yield Differentials

The most fundamental mechanism connecting monetary policies across countries is the **interest-rate parity (IRP)** condition. According to the uncovered interest-rate parity framework, capital should flow toward the jurisdiction offering higher expected risk-adjusted returns, provided that exchange-rate expectations are incorporated (Dornbusch, 1976; Obstfeld & Rogoff, 1996). When the Federal Reserve increases the federal funds rate, the **U.S. yield curve** typically shifts upward, raising yields on Treasury securities and U.S. dollar-denominated assets. This movement reduces the relative attractiveness of emerging market assets—particularly those denominated in local currencies—unless these markets adjust domestic yields accordingly (Frankel & Saravelos, 2012; Bowman, Londono, & Sapriza, 2015). For India, this theoretical relationship manifests through **bond yield differentials and arbitrage dynamics** in global capital markets. A widening interest-rate gap in favor of the U.S. induces foreign investors to reallocate funds from Indian debt securities toward safer dollar assets, pressuring domestic yields upward. The **Reserve Bank of India (RBI)** often moderates these pressures through liquidity operations and foreign exchange interventions to prevent abrupt destabilization (RBI, 2016; Patnaik, Shah, & Veronese, 2016). Empirical studies up to 2016 confirm partial interest-rate parity behavior in Indian markets. Acharya, Anshuman, and Kumar (2016) found that Indian sovereign and corporate bond yields respond systematically to changes in global interest-rate expectations. Likewise, Hofmann, Shim, and Shin (2016) documented that tighter global monetary conditions elevate term premia in emerging market bond markets, suggesting that Fed policy transmits through a **global risk-taking channel** rather than pure arbitrage alone. The magnitude of the response depends on domestic monetary credibility, inflation dynamics, and market expectations regarding the RBI's policy stance.

2.2 Exchange-Rate Channel

A second and closely related mechanism is the **exchange-rate channel**, which operates through the valuation of domestic currency vis-à-vis the U.S. dollar. When the Fed tightens monetary policy, the **U.S. dollar typically appreciates**, reflecting both higher yields and increased investor confidence in U.S. assets (Chinn, 2013; Obstfeld, 2015). For India, this appreciation often translates into **depreciation pressures on the Indian rupee (INR)**. Depreciation, while potentially beneficial for exports, carries multiple macro-financial implications. First, it increases the cost of servicing **foreign currency-denominated debt** for Indian corporations, thereby affecting balance sheets and credit ratings (Aizenman, Chinn, & Ito, 2015). Second, it can transmit inflationary pressures through imported goods and commodities—especially crude oil, which constitutes a major share of India's import bill (IMF, 2016). Third, exchange-rate volatility itself can dampen investor confidence, increase hedging costs, and lead to higher risk premia across Indian asset classes (RBI, 2016).

During previous tightening episodes, such as the 2013 taper tantrum, the rupee experienced **sharp depreciation** alongside large portfolio outflows, illustrating the sensitivity of the exchange rate to global liquidity shocks (Eichengreen & Gupta, 2015). However, by 2015–2016, India's **foreign exchange reserves** had expanded substantially, allowing the RBI to mitigate excessive volatility. Moreover, the inflation-targeting framework introduced in 2016 enhanced credibility, reducing the risk of currency-induced inflation spirals (IMF, 2016). In sum, the exchange-rate channel acts as a primary conduit for external monetary shocks, linking U.S. rate

movements to India's **trade competitiveness, price stability, and financial conditions**. Its strength depends on the degree of exchange-rate flexibility, the extent of foreign currency exposure among Indian firms, and the effectiveness of the central bank's intervention policies.

2.3 Portfolio Rebalancing and Risk-Premium Channel

Beyond interest-rate differentials, Fed rate hikes influence global portfolios through the **risk-premium and portfolio rebalancing channel**. Modern international finance literature emphasizes that investors' risk tolerance and global liquidity conditions—rather than yield gaps alone—drive cross-border asset allocations (Rey, 2015; Bruno & Shin, 2015). When U.S. rates rise or when the Fed signals reduced accommodation, global investors typically **rebalance portfolios toward safer U.S. assets**, leading to outflows from higher-risk emerging market equities and bonds (Ahmed & Zlate, 2014). This portfolio adjustment process often induces **valuation corrections** in Indian asset markets. Indian equities, particularly those with large FII holdings, tend to experience heightened volatility following Fed tightening signals (Acharya et al., 2016). The **volatility index (VIX)**, often viewed as a proxy for global risk aversion, exhibits a positive correlation with capital outflows from emerging markets; as global risk aversion rises, capital tends to retreat from peripheral economies (Ogawa, Unko, & Luo, 2019).

In India's context, the **composition of portfolio flows**—equity versus debt—also determines the intensity of these effects. Debt flows are generally more sensitive to short-term yield differentials and global liquidity conditions, while equity flows respond to growth prospects and corporate earnings expectations (RBI, 2016). As such, even a modest tightening by the Fed can trigger **short-term corrections** in the Indian stock and bond markets, particularly if accompanied by global risk repricing. Additionally, the risk-premium channel operates through **changes in investors' required returns**. When U.S. risk-free rates rise, the benchmark for valuing risky assets globally also increases, leading to lower present values for cash flows and, consequently, **declines in equity prices** (Hofmann et al., 2016). This mechanism underscores how Fed policy can influence the valuation of Indian assets even in the absence of actual capital flow reversals.

2.4 Cross-Market and Macro-Financial Linkages

A fourth dimension of transmission involves **cross-market linkages** that connect global monetary policy with broader macroeconomic variables and sectoral performance in emerging markets. Changes in U.S. interest rates affect **commodity prices, trade volumes, and global credit availability**, each of which indirectly influences India's economic and financial conditions (Frankel, 2014; Hamilton, 2011). For example, a stronger U.S. dollar often coincides with **lower global commodity prices**, particularly oil and metals. While lower oil prices benefit India as a net importer, they also reflect subdued global demand, which can weigh on India's export performance (World Bank, 2016). Furthermore, tighter global liquidity conditions raise **external borrowing costs** for Indian corporations and banks, constraining credit expansion and investment (Patnaik et al., 2016). Cross-market linkages also operate through **financial derivatives and global intermediaries**. Many Indian corporations hedge exposure via offshore markets, where funding costs and collateral requirements respond quickly to shifts in U.S. monetary policy (Bruno & Shin, 2015). Consequently, liquidity tightening in global interbank markets can propagate to domestic money markets, amplifying volatility (Rey, 2015). Finally, Fed policy influences **investor psychology and expectations**. A more hawkish U.S. policy stance can signal confidence in global recovery, potentially supporting risk assets in the medium term. However, unexpected or rapid tightening can trigger global risk-off episodes, undermining valuations across emerging markets. This **nonlinear interaction** between global policy signals and domestic fundamentals underscores the complexity of monetary transmission (Eichengreen & Gupta, 2015; IMF, 2016).

III. Evidence to 2016: International and India-Specific Studies

3.1 Global Evidence on Fed Tightening and Capital Flows

Empirical research conducted between 2013 and 2016 overwhelmingly confirmed that expectations and realizations of Federal Reserve tightening exerted significant cross-border effects on global capital flows. Following the announcement of tapering in May 2013, emerging markets experienced a dramatic reversal in portfolio flows and heightened volatility in sovereign bond markets — a phenomenon that came to be widely known as the **"taper tantrum"** (Eichengreen & Gupta, 2015; Mishra, Moriyama, & N'Diaye, 2014). Studies by the **World Bank (2016)** and the **IMF (2016)** highlighted that portfolio outflows from emerging markets surged whenever market-implied expectations of U.S. policy normalization rose. This outflow pattern reflected both **higher relative yields in the United States and a rise in global risk aversion**. In countries with weaker macroeconomic fundamentals, such as large current-account deficits or elevated inflation rates, exchange rates depreciated sharply and foreign reserves came under pressure (Ghosh, Qureshi, & Sugawara, 2016; Ahmed & Zlate, 2014).

The **Bank for International Settlements (BIS)** found that even **anticipated** rate hikes—when largely priced into markets—could trigger portfolio reallocations through the repricing of risk and volatility spikes (Hofmann, Shim, & Shin, 2016). Sovereign bond yields in emerging markets, especially those with higher external financing dependence, moved closely in tandem with U.S. Treasury yields, underscoring the strength of global financial linkages (Bowman, Londono, & Sapriz, 2015; Rey, 2015). Moreover, research by **Fratzscher (2012)** and **Forbes & Warnock (2012)** showed that both “**push**” factors (global liquidity and monetary stance in advanced economies) and “**pull**” factors (domestic fundamentals) jointly shaped the pattern of capital flows. When U.S. monetary policy tightened, the decline in global liquidity acted as a negative push factor, reducing the supply of funds to emerging markets regardless of local macroeconomic strength. However, nations with sound fiscal positions, credible monetary frameworks, and ample reserves were found to experience smaller outflows and faster recoveries (Aizenman, Chinn, & Ito, 2015; Obstfeld, 2015). By the end of 2016, the global evidence pointed to a **robust and asymmetric spillover**: Federal Reserve rate hikes generally tightened financial conditions worldwide, yet the intensity of transmission varied across countries depending on institutional depth, reserve adequacy, and exchange-rate regimes (IMF, 2016; BIS, 2016).

3.2 High-Frequency and Event-Study Analyses

A parallel strand of literature used **high-frequency financial data** to isolate the immediate effects of U.S. monetary policy surprises on emerging-market assets. Using event-study methodologies, researchers decomposed policy announcements into “**expected**” versus “**surprise**” components, revealing that even small unexpected shifts in forward guidance or rate expectations could have disproportionately large cross-border repercussions (Neely, 2015; Rogers, Scotti, & Wright, 2014). In these models, **U.S. Treasury yields, dollar indices, and VIX movements** were employed as instrumental variables to gauge the transmission of policy shocks to EM currencies and bond spreads within minutes or hours of FOMC statements. The results showed significant contemporaneous reactions: **EM currencies depreciated, bond yields widened, and equity indices fell** in response to unexpected tightening signals (Bowman et al., 2015; Hausman & Wongswan, 2011). Research focusing on Asian markets — notably India, Indonesia, and Korea — suggested that financial assets in economies with open capital accounts and substantial foreign participation were particularly sensitive to these policy shocks (Dawar & Singh, 2015; IMF, 2016). By 2016, **Indian market-specific event studies** began incorporating high-frequency datasets from the **National Stock Exchange (NSE)** and **Bombay Stock Exchange (BSE)** to evaluate real-time reactions of the rupee, sovereign yields, and NIFTY index returns to U.S. policy events. The **NSE-BSE joint research series “The Growing Impact of U.S. Monetary Policy on Emerging Financial Markets” (2016)** documented clear intraday correlations between Fed announcements and volatility surges in Indian equities and currency futures. Such findings validated the hypothesis that India’s financial markets had become increasingly **integrated with global monetary signals**, reflecting both improved efficiency and higher exposure (RBI, 2016). Overall, these high-frequency studies confirmed that the **speed of transmission** from U.S. monetary signals to Indian and other EM asset prices had shortened considerably during the post-crisis period, highlighting the global financial system’s heightened synchronization (Rey, 2015; World Bank, 2016).

3.3 Indian Empirical Studies

India-specific analyses conducted up to 2016 enriched the global discussion by providing concrete evidence of how U.S. monetary normalization affected domestic capital markets through capital flow dynamics and asset-price adjustments. **Acharya, Anshuman, and Kumar (2016)** found a strong, statistically significant relationship between **foreign institutional investor (FII) flows** and Indian equity returns. Their econometric evidence suggested that **stocks with higher FII ownership ratios** exhibited larger price reactions to global monetary policy changes. The implication was that U.S. monetary tightening, by altering global risk premiums, could influence specific sectors or firms more intensely depending on their foreign exposure. The **Reserve Bank of India (2015–2016 Annual Reports)** corroborated these findings by noting that announcements of potential U.S. rate hikes often led to temporary **depreciation of the rupee** and **outflows from debt instruments**, although equity inflows tended to stabilize once policy clarity emerged. The RBI attributed India’s relative resilience to **macroprudential buffers, foreign exchange reserves exceeding USD 350 billion, and a narrowing current account deficit** (RBI, 2016). The **IMF’s 2016 Article IV Consultation Report** on India similarly emphasized that despite intermittent volatility, the country had weathered global monetary shocks better than many peers due to prudent monetary management, flexible exchange-rate adjustments, and a credible inflation-targeting framework (IMF, 2016). Other empirical contributions from **Patnaik, Shah, and Veronese (2016)** demonstrated that Indian monetary transmission mechanisms had strengthened in the post-2013 period, allowing domestic policy to partly offset external shocks. **Mohan and Kapur (2015)** argued that the presence of strong domestic institutional investors, such as mutual funds and insurance companies, cushioned capital-market volatility during phases of foreign outflows.

3.4 Heterogeneity Across Asset Classes

The impact of U.S. monetary tightening on India was **heterogeneous across asset classes**, reflecting differences in investor composition, market liquidity, and exposure to external funding. In the **sovereign debt market**, yield movements were closely tied to U.S. Treasury rates. Rising U.S. yields tended to elevate **Indian government bond yields**, reflecting the compensation investors demanded for holding rupee-denominated assets amid tightening global conditions (Hofmann et al., 2016). Debt instruments, particularly those held by foreign investors, showed greater sensitivity to rate differentials, leading to higher volatility during periods of Fed policy shifts (RBI, 2016). The **equity market response** was more nuanced. On aggregate, Indian indices such as **BSE Sensex** and **NSE NIFTY** tended to decline during global risk-off episodes following Fed announcements (Acharya et al., 2016; NSE Research, 2016). However, sectoral variations were evident: **information technology (IT)** and **pharmaceutical exporters** often benefited from rupee depreciation, which boosted export competitiveness and earnings in dollar terms (World Bank, 2016). Conversely, sectors reliant on imported inputs or external financing—such as infrastructure and capital goods—suffered from higher borrowing costs and currency mismatches (Patnaik et al., 2016). Additionally, **corporate balance sheets** with significant foreign currency debt exposure faced valuation losses during rupee depreciation phases, amplifying the real-sector transmission of U.S. monetary shocks (Aizenman et al., 2015). In contrast, **domestic mutual funds and retail investors** played a stabilizing role, absorbing a portion of foreign sell-offs and thereby moderating equity market declines (RBI, 2016). By the end of 2016, the emerging consensus was that while **short-run price and flow volatility** in India was largely determined by global liquidity and risk sentiment, **long-run market resilience** was anchored in improving domestic fundamentals, enhanced regulatory oversight, and the credibility of India's macroeconomic framework (IMF, 2016; World Bank, 2016).

IV. Indian market reactions around 2015–2016

The period of 2015–2016 marked a significant transition in global monetary policy as the United States Federal Reserve began the long-anticipated normalization process, raising the federal funds rate in December 2015 for the first time since the 2008 global financial crisis. The implications of this move were deeply felt across emerging market economies (EMEs), including India, where market responses were shaped not only by international spillovers but also by robust domestic fundamentals and policy management. India's financial markets—spanning capital flows, exchange rates, equities, and bond yields—displayed nuanced reactions that reflected the interplay between global monetary tightening expectations and India-specific economic conditions.

4.1 Capital Flows

The announcement and eventual execution of the Federal Reserve's rate hike in December 2015 triggered a series of capital flow adjustments across emerging markets. In India, net foreign institutional investor (FII) flows experienced intermittent volatility throughout the year. Anticipation of U.S. monetary tightening prompted cautious repositioning by global investors, leading to phases of capital outflows from Indian equities and debt markets (Acharya et al., 2016). However, empirical research and policy analysis of that period underscore that India's capital flow behavior was less erratic than that of many peer economies. Several structural and policy-related factors explain this relative resilience. First, India's macroeconomic fundamentals in 2015–2016 were relatively strong, with robust GDP growth (above 7%), moderate inflation, and a narrowing current account deficit (RBI, 2016). These features enhanced investor confidence despite the tightening global liquidity environment. Second, the Reserve Bank of India's (RBI) proactive communication strategy and forward-looking monetary stance contributed to stability in investor expectations. Analytical studies of capital flows during this period noted a persistent positive correlation between global risk conditions—often proxied by the VIX volatility index—and FII flows to India (Acharya et al., 2016; IMF, 2016). Periods of heightened global risk aversion, such as during mid-2015 following China's market turmoil, coincided with net outflows, while calmer global conditions encouraged re-entry of funds. Importantly, domestic policy cues, including India's fiscal consolidation efforts and continued structural reforms, moderated outflows and supported sustained investor interest in the medium term (Patnaik et al., 2016).

4.2 Exchange Rate Dynamics

The exchange rate channel represented one of the most visible transmission mechanisms of U.S. monetary normalization. As the U.S. dollar appreciated globally following the Fed's December 2015 rate hike, the Indian rupee faced depreciation pressures, consistent with broader emerging-market trends (IMF, 2016). However, compared to the sharp rupee depreciation witnessed during the 2013 “taper tantrum,” the 2015–2016 episode was relatively contained. The Reserve Bank of India's enhanced foreign exchange reserve buffers—exceeding USD 350 billion by end-2015—played a crucial role in mitigating speculative pressures (RBI, 2016). Moreover, a series of regulatory measures and calibrated capital controls on short-term external borrowings reduced the vulnerability of the rupee to abrupt shifts in global risk appetite. The rupee's performance was also

shaped by India's trade balance and energy prices. The significant decline in global crude oil prices during this period improved India's external position by lowering import bills, thereby reducing downward pressure on the currency (World Bank, 2016). This cushioning effect helped the rupee maintain relative stability even as other emerging-market currencies, such as the Brazilian real and Turkish lira, saw pronounced declines. Empirical analyses found that while the rupee tended to depreciate following major U.S. policy announcements, the magnitude of these movements was small and short-lived, underscoring the influence of RBI interventions and robust capital inflows in the medium term (Patnaik et al., 2016). Consequently, India's exchange rate dynamics during this phase illustrated a well-managed adjustment process rather than a disruptive contagion effect.

4.3 Equity Valuations and Market Volatility

The Indian equity markets in 2015–2016 exhibited periodic volatility linked to global monetary expectations, yet domestic growth optimism and earnings prospects provided a stabilizing counterbalance. Key benchmark indices such as the BSE Sensex and NSE Nifty50 experienced corrections during episodes of global uncertainty—particularly in mid-2015 when the Chinese equity market crash coincided with U.S. rate hike speculation—but these declines were temporary (Acharya et al., 2016). Foreign portfolio investors, sensitive to global liquidity shifts, reduced exposure to emerging-market equities during risk-off phases. Nevertheless, the growing participation of domestic institutional investors (DIIs) and retail investors in the Indian equity market significantly offset foreign outflows. According to RBI (2016), mutual fund inflows and retail participation increased substantially, highlighting the deepening of India's domestic financial ecosystem. From a valuation perspective, Indian equities remained relatively attractive compared to peers, supported by stable macro fundamentals and expectations of continued economic reforms. Sectors with significant export exposure—such as information technology and pharmaceuticals—benefited from the rupee's mild depreciation, which enhanced their earnings outlook in rupee terms (IMF, 2016). High-frequency event studies during this period revealed that U.S. policy surprises caused short-term spikes in market volatility indices (e.g., India VIX), yet long-term trends were governed by local earnings performance and policy continuity (Patnaik et al., 2016). Thus, despite transient global shocks, Indian equities demonstrated resilience rooted in domestic fundamentals and investor confidence.

4.4 Bond Markets and Yield Movements

India's bond markets also exhibited sensitivity to global monetary developments during 2015–2016. Sovereign yields rose modestly in response to the Federal Reserve's rate hike and associated shifts in global yield curves. However, domestic factors such as fiscal policy, liquidity conditions, and monetary operations by the RBI had a more decisive influence on the overall trajectory of Indian yields (RBI, 2016). The yield on the 10-year Indian government bond increased marginally around the December 2015 hike but remained anchored within a narrow band due to effective liquidity management. RBI's open market operations and the introduction of new monetary tools—such as term repos—helped absorb excess liquidity and maintain stable funding conditions. Additionally, India's inclusion in several global bond indices and improving credit metrics attracted long-term investors, offsetting short-term outflows linked to global monetary tightening (IMF, 2016). Academic assessments of this period concluded that the domestic bond market's reaction to U.S. rate changes was statistically significant but economically limited, underscoring the moderating influence of India's policy framework (Patnaik et al., 2016). Corporate bond spreads widened slightly, reflecting higher risk premia and the repricing of foreign currency exposures among leveraged firms. However, the impact on broader financing conditions remained manageable. India's relatively closed capital account and strong banking sector liquidity insulated domestic interest rates from full transmission of global shocks (Acharya et al., 2016).

4.5 Synthesis and Policy Implications

The Indian market experience during 2015–2016 underscores a central theme in emerging-market financial dynamics: global monetary shifts are consequential, but their domestic impact depends critically on internal buffers, institutional credibility, and macroeconomic management. The first Fed rate hike of the normalization cycle did not destabilize Indian markets as some analysts had feared, largely due to India's improved external position, prudent monetary policy, and proactive communication by the RBI. India's response during this phase demonstrated the importance of building credible policy frameworks that can anchor expectations and mitigate contagion risks from advanced-economy policy shifts. Enhanced reserve adequacy, transparent policy signaling, and coordinated fiscal-monetary actions helped maintain investor confidence despite global headwinds. Moreover, the relative calmness of Indian financial markets during the 2015–2016 U.S. tightening cycle reflected India's structural transformation toward deeper, more resilient markets—marked by increased domestic investor participation, greater financial inclusion, and stronger macroeconomic fundamentals. These developments collectively cushioned India from the more severe capital market disruptions observed in other emerging economies during the same period.

V. Mechanisms moderating spillovers in India

The impact of U.S. Federal Reserve rate hikes on India's capital markets during 2015–2016 was not purely a matter of external monetary dynamics. Rather, the magnitude and persistence of spillover effects were significantly mediated by India's domestic economic structures, policy credibility, and institutional resilience. The degree to which international financial shocks are transmitted to an emerging economy depends on a range of moderating mechanisms—macroeconomic buffers, capital account composition, monetary policy credibility, and the depth of domestic financial markets. In India's case, each of these factors collectively shaped the relatively contained market response observed during the initial phase of U.S. monetary normalization.

5.1 Macroeconomic Buffers

India's macroeconomic fundamentals during 2015–2016 were among the strongest in the emerging market group, providing a substantial cushion against global financial volatility. Key macroeconomic buffers—including foreign exchange reserves, the current account position, and steady GDP growth—played an essential role in moderating the spillover from the U.S. Federal Reserve's tightening cycle (IMF, 2016; World Bank, 2016). **Foreign exchange reserves** were a crucial stabilizing force. India's reserve holdings exceeded USD 350 billion by the end of 2015, offering both a deterrent against speculative attacks and a resource base for managed exchange rate adjustments. The Reserve Bank of India (RBI) effectively utilized its reserves not for aggressive currency defense but for smoothening excessive volatility in the foreign exchange market (RBI, 2016). This proactive reserve management strategy, coupled with improved transparency in intervention policies, reduced uncertainty among market participants and enhanced investor confidence. **The current account position** was another vital element. The sharp decline in global crude oil prices during this period significantly reduced India's import bill, narrowing the current account deficit to below 1.5% of GDP—its lowest level in several years (World Bank, 2016). The reduced dependency on external financing needs insulated India from the worst consequences of tightening global liquidity. **Growth momentum** also contributed to India's relative resilience. With GDP growth averaging above 7%—the highest among major emerging markets—India stood out as a stable destination for global investors seeking returns amid weak global growth (IMF, 2016). This growth dynamic, underpinned by structural reforms and favorable demographics, sustained long-term investor interest and offset temporary outflows from portfolio segments. Together, these macroeconomic buffers ensured that India's exposure to international monetary shocks translated more into moderate asset-price adjustments than into systemic instability.

5.2 Capital Account Structure

Another important moderating factor was the **structure of India's capital account**, which influenced both the magnitude and persistence of external spillovers. India maintained a relatively managed capital account regime, balancing openness to long-term investment inflows with prudence toward volatile short-term flows (RBI, 2016). The **composition of inflows** mattered significantly. While **foreign portfolio investments (FPIs)**—particularly in equities and debt—remained sensitive to global risk sentiment and interest rate differentials, **foreign direct investment (FDI)** demonstrated remarkable stability. FDI flows, driven by long-term investment motives, continued to increase in 2015–2016, reflecting sustained investor confidence in India's domestic market potential (World Bank, 2016). This composition provided a natural buffer, as the volatility of FPI was partly offset by steady FDI inflows.

India's **regulatory framework for external commercial borrowings (ECBs)** further reduced vulnerability to sudden reversals. By imposing ceilings, end-use restrictions, and maturity guidelines, the RBI curtailed excessive short-term external debt accumulation, thereby lowering rollover and liquidity risks (Patnaik et al., 2016). Moreover, India's **gradual liberalization approach**—characterized by calibrated opening of capital account segments—ensured that exposure to global capital flow cycles remained contained. The country's partial capital account convertibility meant that speculative and algorithmic trading shocks observed in more open markets had limited impact on India's domestic liquidity conditions. Therefore, the specific **architecture of India's capital account** served as both a shield and a stabilizer, limiting contagion from international monetary developments and allowing policymakers to preserve autonomy over domestic interest-rate settings.

5.3 Monetary Policy Transmission and Credibility

The credibility of India's monetary and fiscal institutions played an equally pivotal role in moderating the transmission of global financial shocks. The efficiency with which external shocks translate into domestic inflation, output fluctuations, or asset price movements depends heavily on the **strength of monetary policy transmission** and the **credibility of macroeconomic policy frameworks** (Patnaik et al., 2016). Following the global financial crisis, India's monetary policy framework underwent a significant evolution. The formal adoption of a **flexible inflation targeting (FIT)** regime in 2015 established clear nominal anchors for monetary policy. The Memorandum of Understanding between the Government of India and the RBI institutionalized a target of 4% CPI inflation (with a tolerance band of $\pm 2\%$), reinforcing the central bank's commitment to price stability.

This framework enhanced policy predictability and bolstered investor confidence during periods of international uncertainty (RBI, 2016). Furthermore, the **independence of the RBI**—strengthened by legislative reforms—ensured that policy decisions were driven by macroeconomic fundamentals rather than political considerations. This institutional credibility reduced the likelihood of abrupt or reactionary policy shifts in response to global monetary changes. **Monetary transmission mechanisms**—the channels through which policy rate changes affect lending rates and credit conditions—also improved during this period due to increased transparency in banking sector operations and the introduction of the **Marginal Cost of Funds based Lending Rate (MCLR)** framework in 2016. These reforms allowed domestic interest rates to respond more efficiently to policy signals, thereby dampening the inflationary or growth volatility caused by external shocks (IMF, 2016). In parallel, the government’s **fiscal consolidation path**, articulated in the Fiscal Responsibility and Budget Management (FRBM) framework, added to the overall coherence of macroeconomic policy. By maintaining a stable fiscal stance, India avoided the perception of twin deficits—a condition that often amplifies market reactions to global monetary tightening in other EMEs. Collectively, India’s credible policy mix—anchored in institutional independence and transparent communication—enhanced the country’s resilience against abrupt capital flow reversals and limited the pass-through of U.S. monetary shocks into domestic inflation and interest rates.

5.4 Market Depth and Investor Base

The structure and maturity of India’s financial markets played a further moderating role in absorbing global monetary spillovers. **Market depth** refers to the ability of domestic capital markets to handle large transactions without significant price volatility, while the **investor base composition** influences the persistence and cyclicity of capital flow dynamics. By 2015–2016, India’s capital markets had become substantially deeper and more diversified. The expansion of **domestic institutional investors (DIIs)**—including mutual funds, insurance companies, and pension funds—provided a robust counterbalance to foreign investor behavior. As foreign investors withdrew during risk-off episodes, domestic institutions often stepped in as stabilizing forces, cushioning declines in asset prices (RBI, 2016). Empirical evidence from the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) indicated that the increasing participation of DIIs and retail investors in equities enhanced market liquidity and reduced price overshooting during external shocks (Acharya et al., 2016). The mutual fund industry, in particular, experienced rapid growth during this period, channeling domestic household savings into capital markets. In the **bond market**, the presence of a large domestic investor base—comprising commercial banks, insurance firms, and provident funds—provided structural stability. These institutions typically have long-term investment horizons and are less sensitive to short-term fluctuations in global interest rates (IMF, 2016). This feature insulated domestic yields from excessive volatility, even as U.S. Treasury yields adjusted upward following Fed policy normalization. Moreover, India’s regulatory environment under the **Securities and Exchange Board of India (SEBI)** fostered transparency, investor protection, and orderly market functioning. Enhanced disclosure norms and circuit breaker mechanisms reduced contagion risks from sudden global shocks. Hence, the combination of deeper market infrastructure, growing domestic participation, and strong regulatory oversight enabled Indian markets to absorb external financial pressures more efficiently than in previous cycles.

VI. Conclusion

The U.S. Federal Reserve’s decision to raise the federal funds rate in December 2015—the first increase after nearly a decade of ultra-accommodative policy—marked a significant turning point in global monetary dynamics. For India, an increasingly integrated yet prudently managed emerging economy, this event provided a live test of its financial system’s capacity to absorb global shocks while sustaining domestic stability. The evidence reviewed in this paper demonstrates that the Indian capital markets exhibited a notable degree of resilience during this period, thanks to the interaction of macroeconomic strength, institutional reforms, and evolving market structures.

The theoretical frameworks and empirical studies reviewed show that the channels through which U.S. monetary tightening affects India are multifaceted. The classical interest-rate parity mechanism drives portfolio reallocations toward higher-yielding U.S. assets, while exchange-rate adjustments—often in the form of rupee depreciation—reflect shifts in capital flows and relative risk premiums (Fratzscher, 2012; IMF, 2016). Additionally, portfolio rebalancing effects and global risk appetite, captured through volatility indices such as the VIX, amplify these movements even in the absence of direct policy surprises (Ogawa et al., 2019). However, the magnitude and persistence of these spillovers depend significantly on domestic fundamentals. In India’s case, empirical data from 2015–2016 reveal that while asset prices—particularly equities and bonds—reacted to U.S. rate signals, these reactions were short-lived and quickly moderated by domestic policy actions and market corrections (Acharya et al., 2016; RBI, 2016).

The comparative evidence between the 2013 “taper tantrum” and the 2015–2016 rate normalization highlights India’s improved macro-financial resilience. During the taper tantrum, India was among the “Fragile

Five” economies, characterized by high current account deficits, inflationary pressures, and low reserves (World Bank, 2016). By 2015, the situation had fundamentally changed: current account deficits had narrowed, inflation was under control, and reserves had risen to historically high levels. This transformation meant that even though foreign institutional investors (FIIs) temporarily reduced exposure, the rupee’s depreciation was modest and contained. High-frequency event studies confirmed that India’s asset price responses were influenced not merely by Fed rate decisions but also by market expectations of future paths. This demonstrates that credible communication and forward guidance by both the Federal Reserve and the RBI helped anchor expectations and prevent panic-driven market reactions (NSE/BSE Research, 2016).

India’s policy evolution in the mid-2010s played a decisive role in moderating spillovers. The Reserve Bank of India’s adoption of **flexible inflation targeting** in 2015 institutionalized price stability as the central mandate of monetary policy. By anchoring inflation expectations and enhancing transparency, this framework reduced uncertainty about future domestic rate trajectories, limiting speculative capital flight (Patnaik et al., 2016). The **Fiscal Responsibility and Budget Management (FRBM)** framework simultaneously ensured that fiscal deficits remained under control, reinforcing confidence in India’s macroeconomic coherence. A stable fiscal environment complemented monetary credibility by signaling that the government’s borrowing requirements would not crowd out private investment or destabilize bond markets.

The resilience of Indian financial markets in 2015–2016 also reflected structural progress. The broadening of the investor base—particularly through the rise of **domestic institutional investors (DIIs)** such as mutual funds, insurance companies, and pension funds—created a counterbalancing mechanism to volatile foreign portfolio flows. When FIIs withdrew during global risk-off phases, DIIs often entered the market as stabilizing buyers, reducing price overreactions and supporting market liquidity (RBI, 2016; Acharya et al., 2016). Similarly, the government securities market benefited from participation by long-term domestic institutions, whose stable investment horizons mitigated bond yield volatility. The regulatory oversight by **SEBI** and improvements in transparency, disclosure, and investor protection further enhanced market efficiency and resilience.

India’s large foreign exchange reserves—exceeding USD 350 billion by 2015—functioned as a vital external buffer. The RBI’s use of reserves for managed exchange rate adjustment prevented abrupt depreciation and discouraged speculative attacks, while the accumulation itself signaled strong macroeconomic fundamentals (RBI, 2016). The narrowing **current account deficit**, driven by declining oil prices and robust export performance in services, reduced dependence on volatile capital inflows. This structural adjustment insulated the country from liquidity shocks that often afflict emerging markets during periods of tightening global financial conditions (World Bank, 2016).

The Indian case during 2015–2016 underscores several lessons for other emerging markets confronting similar challenges from global monetary tightening. First, credible and transparent **monetary frameworks** anchored in inflation targeting enhance investor confidence and limit speculative volatility. Second, maintaining **adequate foreign exchange reserves** and prudent external borrowing practices provides essential insurance against capital outflows. Third, fostering **domestic institutional investor participation** diversifies the investor base and stabilizes markets. Finally, gradual **capital account liberalization**—rather than abrupt opening—helps balance global integration with financial stability. These lessons reinforce the argument that the resilience of emerging markets is not merely a function of external conditions but of domestic policy quality and institutional robustness.

The experience of 2015–2016 reflects a deeper transformation in India’s financial integration narrative. Unlike in earlier cycles, where U.S. policy shifts precipitated sustained capital flight and macroeconomic dislocation, the 2015 rate hike period saw India navigating global normalization with relative ease. The combination of **sound fundamentals, disciplined macroeconomic management, and institutional modernization** has enhanced India’s ability to coexist with global financial cycles without losing monetary sovereignty. However, this does not imply immunity. Future Fed tightening episodes—especially those accompanied by elevated geopolitical tensions or commodity price shocks—could test India’s resilience anew. Continued fiscal prudence, further deepening of corporate bond markets, and progress in banking sector reforms remain critical for preserving stability.

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