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India's External Commercial Borrowing: Trends, Composition, and Determinants

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Abstract. *With the turn of the century, external commercial borrowings (ECB) has assumed prominence in India's capital account and evolved as a preferred medium of overseas borrowing of select corporates. It accounts for about two-fifths of India's external debt in 2015. The objective of this paper is to study the trends, composition, and determinants of ECB in the Indian context for the period 2000 to 2015. It contributes to the extant literature in a number of ways. First, unlike other scholarly in the Indian context, this study focuses exclusively on ECB, and not as a constituent of capital flows. Second, it weaves the macroeconomic trends and changes in the regulatory regime, with ECB flows, covering the pre and post global crisis period. Finally, employing the Johansen cointegration and the error correction model, the paper investigates the role of domestic and global factors in influencing the ECB flows to India. Results suggest that while both the domestic and international factors significantly influenced ECB flows to India, the later seemed to dominate. The paper recommends that focusing on domestic economic fundamentals and adopting a cautious approach to capital account liberalization will be imperative for stabilizing the ECB flows.*

Key Words: External commercial borrowing, capital account openness, external debt, India.

JEL Classification: **F41, F20, E58.**

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1.   Introduction

In a caricatured simplified world, a firm can have the following three broad sources of finance: equity, debt, and borrowing. In each case, in terms of origin, funds can come from domestic and external sources. Relatedly, when one looks at a Balance of Payments (BoP) representation of a country, the major items in capital account are investments and borrowing. Within borrowing in terms of ownership of sources, one can make a further subdivision into official versus commercial. The purpose of this paper is to look into trends, composition, and determinants of this particular subcategory, i.e., external commercial borrowing (ECB).

External commercial borrowings (ECB) has emerged as an important item of the capital account in India's Balance of Payments (BoP) and is a key channel to facilitate access to foreign capital by Indian corporates and public sector units (PSUs). ECBs are commercial loans in the form of bank loans, buyers' credit, suppliers' credit or securitized instruments availed from non-resident lenders with a minimum average maturity of 3 years, and can be obtained through two routes, the automatic route and approval route. ECB regulations in India are monitored by the Reserve Bank of India (RBI) in consultation with the Ministry of Finance, Government of India, and are guided by the broad guidelines that govern the capital flows to India, and falls within the framework of the Foreign Exchange Management Act (FEMA), 1999.

Indian corporates' access to foreign borrowing was limited to bilateral and multilateral arrangements during the initial three decades after independence. However, in the 1980s when external assistance was not preferred because of the burgeoning debt, ECB evolved as a preferred medium and continued to increase till the onset of the BoP crisis in the early 1990s. During the period, ECBs, like all other capital flows ebbed to historical low levels on account of low investor confidence resulting from the poor sovereign risk ratings.

Nevertheless, a prudent external debt management policy together with the introduction of the liberalization scheme helped India tide away the BoP crisis. Although India

adopted a calibrated approach in its capital account management, it moved to a floating exchange rate system from a pegged exchange rate, which ultimately led to the current account convertibility in 1994. Significant reforms were also introduced in India's external sector since the early 1990s. External financing, including debt flows, has generally financed the current account deficit in India (Mohan and Ray, 2017).

As India embarked on the path of globalization and liberalization following the BoP crisis in the early 1990s, the composition of capital flows witnessed a paradigm shift from official transfers to private capital inflows (Gopinath, 2004) and ECB emerged as the prime component of debt creating capital flows. With the changing contours of capital flows to India, the composition of India's external debt has also undergone significant changes.

As of end March 2015, India's total external debt was US$ 475.8 billion (23.8 percent of GDP), and ECB alone accounted for about two-fifths of India's external debt. Over the years, the dwindling of external assistance in India's external debt became evident. While in 1990-91, multilateral and bilateral flows together constituted more than 40 percent of India's external debt, ECB accounted for only about 12 percent. However, over the years, the scenario has reversed, and ECB has emerged as a prime component of India's external debt. As of end March 2010, ECB accounted for about 27 percent of India's external debt which increased by more than 11 percentage points in a span of five years to 38.2 as on end March 2015. A host of factors like, increased integration of the Indian economy with the global economy and robust growth prospects of the domestic economy perhaps fueled the dominance of ECB (RBI, 2015).

The extant literature on ECB in the Indian context, especially the macroeconomic studies has studied ECB in the context of capital flows (Chakraborty, 2006; Singh, 2009; Verma and Prakash, 2011). Although Singh (2007) studies ECB standalone, the study covers the pre-crisis period only and focuses primarily on the domestic factors like interest rate, activity in the real sector and credit constraint in the domestic economy influencing overseas borrowing behavior by Indian corporates.

This present paper while embedded in the existing literature goes further in the following respects. First, it looks into ECB as its prime focus and not necessarily as a constituent

of capital flows. Second, it weaves the macroeconomic trends and changes in the regulatory regime, with ECB flows. Third, it covers the time-period till 2015, thus encompassing the global financial crisis period. Finally, it goes beyond the stylized facts and in the backdrop of a modified Mundell-Fleming model seeks to identify the factors influencing the flow of foreign private capital flows. Specifically, we identify factors like international liquidity, capital account openness, sovereign credit ratings, and exchange rate that has not been captured in past studies on ECB in the Indian context. Even as we try to investigate the impact of the growth potential of the domestic economy in influencing ECB flows, we consider it relative to the world growth rates, thus giving a new dimension. Using quarterly data from 2000 to 2015, we employ the Johansen cointegration approach and develop the error correction model (ECM) to investigate a long run relationship of ECB with both domestic and global factors in a VAR (Vector Auto Regressive) framework.

All the variables in the study, except sovereign credit ratings of India, were found to influence the ECB flows to India significantly. Real interest rate differential and growth differential between India and the international economy were the most significant factors influencing ECB flows to India. Another interesting finding of the paper pertains to the capital account openness, which is indicative of the role of the regulatory regime, also emerged to be significant. This finding is particularly significant because over the years the regulators have been keen to encourage ECB flows without compromising on the susceptibility associated with the flows.

The rest of the paper is organized as follows: A brief discussion of the relevant literature is contained in Section 2. Section 3 gives a brief overview of the regulatory regime in India and section 4 draws the trends and composition of the ECB flows to India. The subsequent section presents the determinants of ECB and variable construction, followed by the empirical results and robustness checks in section 6. Certain policy concerns and concluding observations emanating from the study are addressed in the last section.

2.   Received Literature

Studies on ECB in the Indian context can broadly be described under two categories, the micro level studies and the macro level studies. Most of the studies pertaining to ECB are in the context of capital flows to India, and there are only handful of studies exclusively on ECB. As a major component of debt flows, ECB has assumed importance over the years, and hence it is imperative to study it in details.

2.1.   Macro level studies on ECB

The macro level studies tend to indicate the following. First, although capital flows to India were in general highly volatile, debt-creating flows, particularly ECB was comparatively less volatile. Second, both domestic and external factors significantly affect the demand for foreign currency borrowing, and there exists a long run cointegrating relationship amongst them. However, a contradictory view that capital flows to India being exogenous is also revealed. Third, the pro-cyclical nature of capital flows also emerged. Fourth, future prospects of a country significantly influence FDI and ECB. The macro-level studies are summarized in Table 2.1 below.

[Table 2.1 to come about here]

Singh (2007) traces the causes of Indian corporates seeking overseas funding. His study points out that domestic demand, interest rate differentials and credit conditions primarily influence the demand for ECB by Indian corporates. His study also points out that Indian corporates have used ECBs to augment the scarce domestic resources, which over time have assumed critical importance as an important channel of capital flows to India. However, a major shortcoming of the study is that domestic sector activity is proxied by Index of Industrial Productivity (IIP), and thus does not take into account the performance of service sector. Hence, IIP is not an accurate reflection of real domestic activity.

In another study, Singh (2009) studies the changing contours of capital flows to India. He observes that although ECB was primarily influenced by the state of domestic real activity, interest rate differentials and global credit market shocks also had asignificant impact. He further pointed out that whereas demand shocks affected overseas borrowing behavior of the

corporates during normal times, external credit shocks were most prominent during crisis periods. However, the NRI deposits were influenced predominantly by exchange rate movements, interest rate differentials and domestic real activity and thus were considered volatile in nature. As regards the FII inflows, the results indicated a co-movement of FII inflows and stock prices and were more volatile.

Chakraborty (2006) using quarterly data on Indian economy for the post liberalization period (1993-2003) analyzed the behavior of net capital inflows. Her study revealed that whereas FDI and ECB were not volatile during the study period, portfolio flows exhibited high volatility. She, however, concluded that the net capital inflow, which is the sum of the three inflows mentioned above, was highly volatile. Her study also pointed out the cointegrating relationship between capital inflows, interest rate differential and the real exchange rate was due to the periodic interventions by the RBI in the foreign exchange market, which successfully prevented the volatility of the real exchange rate despite highly volatile capital inflow.

Verma and Prakash (2011) explored the relationship between interest rate sensitivity and capital flows. Foreign Currency Non-Resident (FCNR (B)) deposits etc. responded significantly to changes in interest rate. The findings on debt inflows were similar to that of Singh (2009). However, a study by Bhanumurthy *et. al.* (2014) finds the capital inflows in India to be exogenous in the long run. They contest that capital inflow to India to be independent of interest rate differentials and relative costs. Their study also reveals the procyclical nature of international capital flows vis-à-vis the economic activity in the destination country. They emphasize that the prospects of a country (captured by the credit rating agencies) significantly influence FDI and cross border lending. However, a drawback of the study is that they do not consider how capital inflows influence domestic activity and have made an a priori assumption of bi-directional causality between the two variables.

Bose's (2013) paper suggests that the pro-cyclical international capital flows have dominated economic cycles in emerging markets. Given the inherent herd behavior of financial markets, these create credit expansion, asset price bubbles, and over-indebtedness, which leads to increased spending and growth. She further points out that an endogenous fragility in the system develops with smaller margins of safety in the balance sheet. During recessions, the

situation worsens further as the assets acquired or the income generated is rendered insufficient to service the debt, paving the way for debt- deflation, exchange rate volatility and capital outflows. Kaminisky (2005) takes this even forward and contends with empirical evidence that during recessions capital flows receded on a systematic basis. These results are in contradiction with the general view that international capital markets allow countries to smooth out the effect of thebusiness cycle.

Akyuz (2013) studies the behavior of private capital flows and financial spillover in light of the Eurozone crisis and argues that financial spillovers affect other countries' capital flows, exchange rate, and asset prices. He prescribes rebalancing of domestic and external forces of growth and development. He further suggests that over-dependence on foreign capital and or foreign markets must be reduced.

2.2   Micro level studies on ECB

The micro-level studies focus on the micro financial linkages and indicate the following. First, they point out the increasing dependence of Indian firms on ECB. Second, the inefficiencies in the debt financing system in channelizing the funds is also highlighted. Third, the reluctance of Indian corporates to hedge their foreign exchange exposure and hence the systemic risk arising thereof is also pointed out. Table 2.2 summarizes the micro-level studies.

[Table 2.2 to come about here]

Hiroko Oura (2008) conducted a micro level study of the Indian financial system analyzing data on 9000 listed Indian firms from varied sectors for the period 1993-94 to 2005-06. The paper evaluates the corporate financing behavior of these firms and investigates the relationship between financing patterns, external dependence, and inefficiency in the Indian financial system. Oura explores the micro financial linkages and points out the increasing dependence of Indian firms on ECB. The author highlights the inefficiencies in the Indian financial system, particularly in the debt financing system in channelizing the funds. Finally, the study shows that the firms that depend on ECB tend to grow more slowly.

In another micro level study in the Indian context, Patnaik and Shah (2008) examined how currency exposure of firms varied with currency flexibility. By studying the firm behavior in alternating high and low currency volatility periods, they test the moral hazard versus the incomplete market hypothesis. Their results support the moral hazard hypothesis, suggesting that the Indian firms are reluctant to hedge their foreign exchange exposure in case of a low currency flexibility.

Ye *et. al.* (2014) studied the influence of exchange rate regimes on foreign exchange risk of 1523 firms selected from 20 emerging economies. They find that firms in countries with non-floating exchange rate have higher exposure compared to firms in countries with floating exchange rates. They further argue that exchange rate system matters at both micro and macro level and that a non-floating arrangement fails to protect firms from exchange rate risk.

A recent study by Patnaik *et. al.* (2016) summarizes the existing regulations governing the ECB in India and how they influence the inflow of ECB in India. Besides highlighting the liberal attitude of the regulators in encouraging the ECB, they also point out the systemic risk emanating from the unhedged borrowings of the corporates and recommend policy measures to address these concerns.

It is evident from literature survey that most of the studies relating to ECB has been done in the context of capital flows and focus of the studies have been to compare ECB with other debt or equity flows. Very few studies have focused on ECB exclusively. Singh (2007) is, however, an exception. The study examines the macroeconomic factors influencing the Indian corporates' decision in securing overseas funding. Singh (2007) has focused on a limited set of factors, viz. interest rate differential, liquidity constraint in the domestic market and the pace of domestic activity while analyzing the factors that determine the ECB flow to India. Our study while in spirit is akin to Singh (2007), departs from it in a number of ways. First, while Singh (2007) looks at the determinants from a firm's perspective, our study adopts a more macro perspective and focuses on the macroeconomic factors possibly influencing the ECB flows to India. Second, we incorporate certain factors not considered in erstwhile studies on ECB, like sovereign country ratings, growth differential between the host economy (India) and the rest of the world and the role of capital account openness in the domestic economy, i.e., India.

Further, the study extends the time-period to 2015 and hence includes the effect of the crisis (if any) on ECB flows. Moreover, the regulatory framework has undergone significant changes since the crisis period and hence by extending the study up to 2015 we test whether the changing regulatory environment has had any effect on ECB flows.

3.   Regulatory Regime

India has limited capital account convertibility. Thus, it is important to focus on the regulatory changes affecting ECB during the period under consideration. Further, the policy environment governing capital flows has witnessed a paradigm shift during this time.

Historically, although Indian firms resorted to ECB as early as the 1970s, it was only in late 1980s that it gained prominence. During 1970-1999, India's forex regime has been characterized by the restrictive FERA regime, in which, *"there were severe restrictions on all cross-border transactions… leave aside capital account, the current account transactions were also subject to stringent exchange control regulations"* (Padmanabhan, 2015). While moving to a flexible exchange rate regime, India attained the status of current account convertibility in 1994 (Article VIII obligations of the IMF), and finally, the draconian FERA has in due course been replaced by more market-friendly Foreign Exchange Management Act, 1999 (FEMA)[1].

Though the broad structure of the framework controlling India's capital account has not undergone much change since 1995, there have been significant changes in the operating procedure. Following Padmanabhan (2015), the following broad trends of the new regime of capital account may be emphasized.

Capital account transactions pertain to transactions in assets by non-residents and may be carried out through either of the three channels- equity, debt and immovable property. Investment in equity can be further categorized as foreign direct investment (FDI) and foreign portfolio investment (FPI). Similarly, debt-creating flows can be further classified as contracted debt, marketed debt, and bank deposits.

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[1] The official purpose of FEMA is, "to consolidate and amend the law relating to foreign exchange with the objective of facilitating external trade and payments and for promoting the orderly development and maintenance of foreign exchange market in India".

First, amongst all capital flows, FDI is the most preferred and accordingly has the most liberal regime. In line with the policies adopted over time by the Government of India (GoI), there exist practically no restrictions on FDI, barring certain restrictions in sectors like defense, print media, and real estate. The extent of foreign entry in these sectors has been restricted enthused by the social, strategic or stability interests. The regulations that have evolved have envisaged attracting FDI encouraging foreign firms and entities into long-term relationships with the hope of technology transfers and influences on management practices. Nevertheless, certain restrictions have been imposed from time to time to ensure that FDI, comprising primarily of equity instruments, is not camouflaged as a debt instrument. Although FDI inflows have not been as robust as expected and the need for richer instruments to meet the sector specific requirements [2] have come up, the regulations about FDI have been quite encouraging over the years.

Second, the foreign portfolio investments (FPI) regime has also been quite liberal and well defined for foreign investors. There exist only minimal restrictions [3] consistent with international norms, which have also been progressively relaxed[4] in due course of time in accordance with the macroeconomic conditions and volume of capital flows. Another significant development was to encourage the FPI into debt instruments with a longer maturity. This has been done as a risk hedging strategy to prevent mere interest rate arbitrage, considering that FPI is usually considered as hot money with inherent risk and exhibits high volatility.

Another area of focus is the foreign currency borrowing, which is predominantly the prerogative of the corporates. RBI has categorized the foreign currency borrowing into four categories, namely, external commercial borrowing (ECB), foreign currency convertible bonds (FCCB), preference shares and foreign currency exchangeable bonds (FCEB). The regulations

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[2] For instance, the infrastructure sector has typical cash flows, markedly different from the other sectors or the start-up sector, which requires greater flexibility in valuation.

[3] The only major constraint is that an individual investor cannot invest more than 10% of the outstanding stock of a company and aggregate portfolio investment cannot exceed 24% or the limit predefined by the concerned company and subject to sectoral caps wherever applicable.

[4] Additional KYC requirements for opening bank accounts for portfolio investors was relaxed; limits for investment in fixed-income markets were steadily increased

governing the ECB also govern the remaining areas in addition to the provisions of the FEMA, 1999. The current ECB framework has evolved over the years undergoing several changes to accommodate the dynamic contours of external financing ecosystem without compromising on the principles of prudent debt management. The extant framework encompasses a wide area from who can borrow and lend, to the modes of capital inflow, permissible end uses, the maturity of loans, repayment mechanisms to liability management through risk hedging. However, it is worth noting that the regulators have envisaged aiding the Indian corporates to augment the domestic resources with additional sources of external financing, albeit keeping the regulatory regime secured. In India, ECB can be raised through two broad channels-automatic route, where no prior approval is required and the approval route, where prior approval of RBI is necessary and has sectoral restrictions. The table below summarizes the key aspects of the extant regulatory regime.

[Table 3.1 to come about here]

Although, ECB norms have been progressively liberalized to aid the corporates seeking overseas funding and in response to the specific requirements of various sectors, the complex system of regulations have been kept to control indiscriminate borrowing, which impacts financial stability. The regulatory norms can be considered to have the four broad overarching principles:

(i)   Encouraging long term borrowing and restriction on short term (less than three years) borrowing

(ii)   Encouraging flow in the priority sectors and barring flow into sensitive sectors as the print media and the real estate.

(iii)   To address the adverse selection problem, the regulators have kept a cap on the overall cost of borrowing and

(iv)   Monitor the overall aggregate limit on foreign currency liability.

Although the ECB regime has taken great strides in terms of volume, infrastructure, and participants, the regulations governing them were considered too perspective, complex and discretionary. Hence, the regulators felt that it was necessary to consolidate and simplify the

regulations. The Sahoo Committee was formed to address these issues and strengthen the existing framework.

3.1. Sahoo Committee report on ECB

The Ministry of Finance (MoF), Government of India (GoI), formed a high-level committee in September 2013 (Chairman Mr. M.S. Sahoo), to review the existing framework of access to domestic and offshore capital markets and related aspects. The framework encompassed Indian depository receipts (IDRs), ECB and Foreign Currency Convertible Bonds (FCCBs), direct and dual listing of Indian companies. It encompassed residence-based and source based taxation, and covered the relationship between authorities in India and those in foreign jurisdictions. The third report of the committee submitted to the ministry in February 2015 pertained to ECB framework in India.

As many of the recommendations of the Sahoo Committee govern the contours of the current regulatory regime, it may be useful to have a look at the recommendations in some detail. The main objective of the committee was to advance the then existing framework to enable the Indian corporates easier access in the domestic and overseas capital markets. The committee's major recommendations primarily concentrated on limiting the possibilities of market failure arising from increased unhedged borrowings of Indian corporates. The committee further pointed out that

> *"….the extant framework is complex, prescriptive, discretionary and not neutral and has outlived its utility. The regulations lack clear legal and economic principles relevant today. Lack of predictability of regulations and ceilings on ECB makes it hard for corporations to plan to borrow, and even to service old loans that need to be refinanced. This creates added uncertainty and risk, and drives up the cost of financing."[5]*

In this context, the committee undertook a comprehensive review of the then existing guidelines and put forward its recommendations. These recommendations aimed at simplifying the regulations not only to enable the Indian corporates easier access to overseas borrowing

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[5]See Report of the Committee to Review the Framework of Access to Domestic and Overseas Capital Markets, Ministry of Finance, Government of India. (Sahoo committee report),2015

but also to bring about transparency in the system and thus permit better monitoring by the RBI. Another key recommendation was regarding the need for hedging by Indian firms to cover their exchange rate risk and thus avoid any potential adverse effects on the Indian economy.

The committee analyzed the foreign borrowings and the hedges by Indian firms using data from the Prowess database maintained by Centre for Monitoring Indian Economy (CMIE) and categorized the firms based on their hedge coverage into three categories high, low and none. Their analysis revealed that the naturally unhedged borrowing exceeded that of naturally hedged borrowing and there was an increasing need of financial hedging by Indian firms. The committee further compared the Indian scenario with its comparable peers (BSST countries) and recommended to make the ECB framework contemporary and in accord with global best practices. The major recommendations are summarized as follows:

1. Simplification of controls on ECB and eradication of numerous restrictions pertaining to borrowing, maturity, enduse, repayment of the loans. The committee views these as unnecessary and does not address the concerns of negative externalities and market failure.

2. Irrespective of nature and the purpose all borrowing firms to hedge a minimum specified percentage of currency exposure.

3. The specified currency hedge ratio to be met by natural hedge or through a financial hedge or a combination of both.

4. The regulators must factor in the volatility in global risk, development of onshore currency market, financing requirements of the firms while determining the minimum hedge ratio. However, the ratio is subject to periodical review and may be altered as deemed by the regulators.

5. The committee also stressed on the need to develop the on the shore currency derivatives market.

6. The committee suggested that the rupee debt market as an alternative overseas borrowing and hence proposedstrengthening the Indian rupee debt market.

7. The ECB policy to address only the concerns arising from foreign currency borrowing and not to pursue other objectives.

The committee was of the opinion that adoption of such practices would help to address the systemic risk concerns stemming from overseas borrowing besides simplifying the borrowing by the corporates and enhancing better regulation.

3.2 Recent Policy Changes

The RBI has already adopted several recommendations of the Sahoo Committee on ECB and implemented various changes in the revised framework. These changes pertain to rupee denominated borrowing, monitoring and regulating the unhedged exposures and reforms in the financial sector laws and regulations (Patnaik, Shah, *et. al*. 2016). The RBI has adopted a more liberal approach, with fewer restrictions on end use, higher all-in cost ceiling and for INR denominated ECBs where the lender bears the currency risk. It has also relaxed the norms regarding the lenders and has taken a liberal approach for infrastructure companies. The new framework envisages encouraging the long term ECB denominated in foreign currency and INR. The new framework thus comprises of three tracks differentiated by minimum average maturity (MAM) and amount of borrowing. Track I consists of medium term ECB in foreign currency with MAM OF 3/5 years. Track II includes long-term foreign currency denominated ECB with MAM of 10 years, and Track III consists of INR denominated ECB with MAM of 3/5 years.[2] The RBI has also tightened the reporting mechanism for firms availing ECB. Such reporting enables RBI to monitor closely the unhedged currency exposure of the borrowing firms (Patnaik, Shah, *et. al.* 2016). Furthermore, RBI has announced new guidelines pertaining to incremental capital and provisioning requirements for banks having exposure to firms with unhedged currency exposure. This has been done to discourage unhedged borrowings by Indian corporates and thus mitigate the systemic risk arising from overseas borrowings.

On September 29, 2015, RBI allowed the Indian corporates to raise funds through rupee denominated bonds. Although RBI has adopted a liberal attitude, some restrictions like the minimum maturity period of five years and the borrowings above USD 750 million to be routed through the approval route are still in place. Finally, the regulators have tried to address the issues regarding the foundations of sound governance in the new framework. In this endeavor, they are adopting the 'FSLRC handbook' of elements concerning ECB, drafted by the Ministry of Finance. The FSLRC has prepared the Indian Financial Code, a comprehensive framework for

establishing the rule of lawrelating to finance in India (Patnaik, Shah, et al. 2016). The new transformations are likely to bring in more transparency, reduce costs and establish the rule of law.

To summarize, the revised framework of ECB will help the Indian corporates raise funds from abroad, with lesser number of restrictions now placed on the end use of the corporates. RBI encourages long-term foreign borrowing and promotes risk hedging by the borrowing firms to limit the systematic risk inherent in ECB. The introduction of the facility to raise ECB through INR denominated bonds, where the lender bears currency risk is likely to facilitate and enhance ECB by Indian firms. RBI has also made sustained efforts in simplifying the procedures and bringing transparency in the ECB framework. These have resulted in reduced cost of borrowing and paving way for quality borrowers.

However, the scope for further development remains as issues concerning to housing sector have remained unsolved. Further, the ailing infrastructure sector's access to foreign funds has been eased; permitting borrowing under Track I but a cap of USD 750 million has been placed under the automatic route. While it appears that the lending segment of the ECB has been significantly liberalized, reforms pertaining to the borrower segment needs to be reviewed.

4.   ECB: Trends and Composition

Capital flows to emerging market economies dipped in the latter part of the 1990s, following the successive crisis in Mexico (1994), Russia (1998), East Asia (1997) and the dotcom bubble (2000) and the contagion effect thereof.[6] However, the capital flows recovered gradually with the turn of the century, following the steady liberalization of investment regulations leading to the increased integration of EMEs with the international economy. The growth differential and interest rate differential between the EMEs and the advanced economies and the steady recovery of the crisis-hit currencies fueled the renewed momentum

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[6]After the East- Asian crisis in 1997, the net private capital inflows to EMEs fell sharply by about one-third of the pre-crisis levels.

that set off in 2002 and reached the peak in 2007 when the capital flows to EMEs was about $400 billion[7]. However, following the global financial crisis, the capital flows fell abruptly.

While capital flows exhibited cyclicality with the growth patterns in the EMEs, few dimensions of such flows evolved since the start of the century. First, unlike the previous episodes (the early 1990s), the capital flows were not utilized to supplement the low savings, rather for the higher capital formation and the savings ratios in EMEs surpassed those in the industrial economies (Table 4.1).

[Table 4.1 to come about here]

Second, official flows reduced to insignificant levels, and the private capital flows to EMEs assumed the main channel of transfer of funds to the EMEs. Third, in the post-crisis period, among the private capital flows, debt flows like bank lending and private capital have gained prominence over equity flows like FDI. This is a new development as FDI, and other equity flows were dominant channels of capital flows in the pre-crisis period[8].

Table 4.2 summarizes India's debt position in comparison to other low and middle-income countries in the recent period. It is evident that although both the long term (LT) and short-term (ST) flows receded following the crisis, they recovered shortly and reached new heights in 2014.

[Table 4.2 to come about here]

The debt stock (both long-term and short-term) for LMI countries increased considerably till 2014. However, the rise in short-term debt stock (about 186 percent from 2007) was more than twice the growth in the long-term component (about 91 percent). However, in 2015, although both the components receded, the fall in the short-term debt stocks (18.06 percent) were much more than the long-term debt stock, which fell only marginally (0.1 percent).

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[7]Annual average capital flows to EMEs during 1993-96 was $280 billion, which fell to $269 billion in 1997-2001 and again rose to $951 billion for 2002-07.
[8]According to the IIF (Institute of International Finance) nomenclature, the capital flows can be divided into four categories, FDI, portfolio investment, bank lending and other private lending. While the former two together constitute the equity capital flows, the latter two form the debt capital flows.

However, between 2007 and 2015, the rise in India's long-term debt stock (135 percent) surpassed the growth in short-term debt (126 percent). The short-term debt stocks for India has been falling since 2012, and between 2012 and 2015, it decreased by more than 12 percent.

The debt flows on the other hand, although followed similar broad trends, were much more volatile during this period. The long-term debt flows for India peaked in 2014 ($49.27 billion) increasing by about 52 percent from 2007 levels. Nevertheless, India's share in the long-term debt flows amongst the LMI countries remained almost constant (around 11 percent). In 2015, the long-term debt flows to India, as in all EMEs decreased significantly, but India's share amongst the LMI countries increased to about 14 percent, suggesting that the retreat affected India, less compared to its peer nations[9].

The short-term debt flows, on the other handhad witnessed a continuous fall since 2007, (except for a short span between 2009 and 2011, when it recorded a more than 675 percent increase) and India's share amongst the LMI countries fell from about 6 percent in 2007 to about 1 percent in 2015. This is perhaps because of the constant monitoring by the regulators, who over the years have encouraged long-term flows over the short-term flows, keeping in mind the inherently volatile nature of the short-term flows, which have their macroeconomic implications. The composition of India's external debt portfolio and the successive crises (the global financial crisis and then the Euro-zone crisis) might have guided the regulators in adopting a more cautious approach.

An examination of India's external debt account (Table 4.3) reveals a significant increase in the share of short-term external debt, particularly in the post crisis period although the long-term external debt accounts for the major share of India's total external debt. The average contribution of short-term debt in India's external debt surged by almost 2.5 times to 20.5 percent for the period 2007-08 to 2014-15, up from 8.35 percent for the period 2000-01 to 2006-07. Amongst the components of long-term external debt, another key development is the

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[9]In 2015, while the long-term debt flows fell by 50 percent for all EMEs, it fell by 40 percent for India.

dominance of ECB, which, over the years has gained prominence and as of 2015, ECB alone accounted for 38 percent of the total external debt.

[Table 4.3 to come about here]

The broad trends in ECB flows to India (chart 4.1) reveals an increasing trend between 2000 and 2008 and a decreasing trend in the post crisis years. Nevertheless, the average contribution of ECB to India's external debt portfolio has increased in the post crisis period from the pre-crisis period[10]. This indicates the growing importance of ECB in India's external sector dynamics.

[Chart 4.1 to come about here]

To get an incisive view of the ECB flows to India, it may be useful to study such flows vis-à-vis other key macroeconomic indicators.

Regarding India's Balance of Payments (BoP), the importance of ECB can be gauzed from the inter-temporal trends in Capital Account (KA) (Table 4.4), which reveals the rising importance of ECB in India's BoP.

[Table 4.4 to come about here]

Chart 4.2 shows the trends in the main debt-creating flows in India's capital account (KA), EA, ECB and STC plotted vis-à-vis the capital account (measured along the right axis). An interesting pattern that has evolved is the steady decline in the capital account over the years, starting from 2008-09, since the outbreak of the global financial crisis. Among the three components, the increasing importance of ECB vis-a-vis EA and STC in India's capital account is also explicit (Chart 4.2).

The declining trend in capital account is in accordance with the major trends prevalent in the EMEs, where there was a continuous reversal of private capital flows and moved to the negative since late 2014. This is one of the longest phases of capital outflows from EMEs since 2001. The reversal appears to be broad based across a wide range of flows. The ECB flows to

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10Between 2000-01 and 2007-08, the average contribution of ECB to India's external debt was about 22.4 percent, which rose significantly to 32.2 percent for the next period, i.e. 2008-09 to 2014-15

India, also receded accordingly, resulting from the gradually weakening rupee. The weakening is especially prominent since mid-2014 when the dollar strengthened in expectations of a tightening of US monetary policy.

[Chart 4.2 to come about here]

[Chart 4.3 to come about here]

Trends of the three components of foreign loans, viz., external assistance, commercial borrowing and short –term credit indicates the growing importance of ECB and STC, although STC has exhibited erratic movements, much due to its inherent volatile nature. Another significant finding is the diminishing role of EA over the years, which is similar to the experience of the other emerging economies. This declining role of EA is also in line with the emergence of India as a major global economic power among the emerging market economies. In fact, in the Indian context, since commercial borrowing (medium & long term), and short-term borrowing is generically similar, often these two together is considered as ECB, primarily due to lack of segregated data at the firm level. The sum of ECB and STC exhibits much greater prominence over EA (Chart 4.4).

[Chart 4.4 to come about here]

Regarding another important macroeconomic aggregate, the GDP, these variables exhibit similar trends (Chart 4.5). Further analysis of the three components, namely external assistance (EA), ECB and STC reveals that while EA to GDP bottomed out in the initial years of the century, it rose in 2004-05 and then remained almost constant. ECB to GDP and STC to GDP exhibited similar trends (Chart 4.5). They declined steadily until about 2004-05, then continued to rise until about 2007-08, when it peaked, which also coincides with the high growth phase of the Indian economy. However, following the crisis both fell. Nevertheless, they recovered in 2010-11, but since then they have been on a declining trend. Chart 4.4 shows the trends of the three components, EA to GDP, ECB to GDP and STC to GDP.

The growth of the Indian economy has witnessed a downward trend since 2010, led by both, domestic structural issues and worsening external factors like changes in oil prices and global risk aversion. However, the growth rate in the advanced economies started to stabilize

since early 2013, causing narrowing of the growth differential. The average quarterly growth differential between India and the world (US) decreased from 1.7 percentage points for 2004-10 to 1.07 percentage points during 2011-15. The deteriorating external factors like changes in oil prices and global risk aversion and the narrowing of the growth differential, which is a key driver of capital flows, also resulted in the diminishing of ECB flows to India since 2011.

[Chart 4.5 to come about here]

ECB routes

Figure 4.6 shows the broad trends of weighted average maturity of ECB (in years) and the weighted average margin over six month LIBOR or reference rate for floating rate loans. Figure 4. 7 depicts the broad trends of weighted average maturity of ECB (in years) and the weighted average margin over six month LIBOR or reference rate for floating rate loans juxtaposed against the total values of ECBs measured along the right axis. The increasing maturity of the loans over the years is evident. This is perhaps due to the increase in investor confidence resulting from the robust growth conditions of the Indian economy compared to the rest of the world and the increasing integration of the Indian economy with the global economy. On the other hand, the RBI regulations, which have encouraged long-term borrowing, may also have resulted in this trend.

[Chart 4.6a and 4.6b to come about here]

The increasing trend of weighted average margin over six month LIBOR, particularly during 2007-08 to 2011-12[11], implies the RBI's policy to discourage debt flows, at a time when there were excess flows in the capital account. However, in the more recent period (2013-14 to 2015-16) the although the rates have been softened to facilitate corporate borrowing, the same has not shown any significant improvement [12], perhaps due to the lack of willingness on the part of the corporates resulting from the moderated growth rate and other macroeconomic indicators.

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[11] The weighted average margin increased from 0.92 in 2007-08 to 2.89 in 2011-12, an increase of over 200 percent

[12] From 2.89 in 2011-12 the margin was slashed to 1.45 in 2015-16, a fall by almost 100 percent. Nevertheless, the total ECB borrowings remained in the negative region (see graph 4.4 above)

On analyzing the ECB flows to India via the two channels, viz. the automatic route and the approval route, an increasing trend of ECB through the former route is prominent (Figure 4.7b). This is indicative of the liberal attitude adopted by the RBI to facilitate overseas borrowing by the Indian corporates.

[Chart 4.7a and 4.7b to come about here]

Fig 4.7a, which shows ECB by values, clearly demonstrates an increasing trend. This is particularly significant in case of approval route; perhaps it has been dominated by large size loans[13]. However, in case of automatic route, both the number of cases and values has witnessed a surge. This perhaps potentially increases the vulnerability of foreign currency borrowing, particularly if a significant proportion of the loans remain unhedged.

This also draws our attention to the fact that perhaps this arena has been the prerogative of only a handful of corporates and RBI has to usher in more reforms to make ECB more accessible to a greater number of players, albeit monitoring the risk emanating from overseas borrowing, specifically unhedged and short term borrowing.

5.   The Determinants of ECB

5.1.   Variables and their measurement

The determinants of capital flows in an economy can be classified into two broad set of factors - the country-specific (or push) factors and the global (or pull) factors (Calvo *et al.*, 1993, Classens *et al.*, 1995; Chuhan *et al.*, 1998; Gordon *et al.*,2003; Chakraborti 2006). The country-specific factors (or the pull factors) impacting overall capital flows are domestic real activity, exchange rate, interest rate and inflation in the domestic economy, the country risk parameter/premium, capital account openness and ease of regulations. The global (or the push factors) determining overall capital flows include the global liquidity condition, growth rate, inflation and interest rate of the world economy. Since ECBs represent a subset of overall

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[13] The rise in value clearly outpaces the rise in number of loans through the approval route.

capital flows into an economy, one can conjecture that flow of ECB into an economy is impacted by a similar set of domestic and global factors.

Calvo *et.al.* (1993) found the global factors to be dominant in their study on capital flows to Latin American countries. Fernandez-Arias (1996) study thirteen middle-income countries from Asia and Latin America. Their study revealed that private capital flows were mainly influenced by the credit worthiness of the recipient economies, which in turn was influenced by the decline in the global interest rates. However, Chuhan *et.al.* (1998) showed that both push and pull factors were important in determining capital flows to Latin American countries, while in case of East Asian countries pull factors emerged as more important.

Gordon and Gupta (2003) emphasize that both, the push and the pull factors were influential in determining the portfolio flows to India. From the literature pertaining to capital flows and/or ECB in the Indian context, certain domestic factors like activity in the real sector, liquidity constraint in the domestic economy, the differential between Indian and the global interest rates (Singh, 2007; Verma and Prakash, 2011), real exchange rate (Chakraborty, 2006) emerged significant in determining ECB flows. The external credit shocks were also found to be prominent during crisis periods (Singh, 2009).

Extant literature on ECB in the Indian context have found that interest rate differential, leading to arbitrage opportunities and an underdeveloped domestic corporate bond market has induced Indian corporates to seek external funding (Singh 2009; Verma *et. al.*, 2011). Other studies like Ralhan (2006) examining the determinants of capital flows to eight countries including India has however found the world interest rate to be inconsequential in determining capital flows. Evidence being mixed; it may be worthwhile to re-examine whether interest rate differentials determine ECB flows to India, covering the post crisis period.

Similarly, the movements in the exchange rate have asignificant impact on the real interest rate differentials, and as per the interest rate parity condition[14], the movements in the

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[14]As per this theory, arbitrage ensures $1+r = (E^e / E) (1+r^*)$, where, E^e is the exchange rate that is expected to prevail after one period, E is the current exchange rate, r and r^* are domestic and international interest rates respectively. An important implication of the uncovered interest rate parity is that rates of interest on comparable assets may not be equalized between countries even under perfect capital mobility.

exchange rate would ultimately nullify the interest rate differential. The emerging economies have always endeavored to complement their scarce resources with foreign capital, but foreign capital inflows lead to real exchange rate appreciation. Jongwanich (2010) and Combes *et al.* (2011) have shown that irrespective of the exchange rate regime followed, excess capital flows always leads to an appreciation of the domestic currency. Hence, it may be worthwhile to examine how inflation adjusted interest rate differentials and exchange rate influence the behavior of foreign loans to India.

The pace of activity in the domestic and international markets has a significant bearing in determining the capital flows as well (Bhanumurthy *et al.*, 2014; Calvo *et al.*, 2003). Singh (2007) studying the determinants of ECB flows in the Indian context, used the index of industrial production (IIP) to measure the pace of activity in the real sector of the Indian economy. His study has found this to have a significant bearing on the ECB flows to India. Verma *et al.*, (2011) showed that higher growth rate of OECD countries was associated with higher capital flows to India. Hence, it may be of interest to understand whether and how the growth rate of Indian economy vis-à-vis the world economy influences the ECB flows.

Singh (2007) showed that liquidity constraint in the domestic economy prompted the Indian corporates to seek international funding. Singh (2009), studying the contours of capital flows to India, further points out that external credit shocks were dominant during periods of crisis. A similar finding by Akyuz (2013) in the context of the recent crisis in advanced economies lends credence to the findings. Since this study, unlike the previous studies on ECB, encompasses the crisis period, it is worthwhile to examine the effect of international liquidity on ECB flows to India.

This paper, while analyzing the determinants of ECB in the Indian context, goes beyond the factors identified in the extant ECB literature and tries to identify factors, which may be critical in explaining the overseas borrowing behavior of the Indian corporates.

One such factor is the impact that capital account openness could potentially have on ECB flows. Various measures of capital account openness as the Chinn-Ito index (2008) and the

Schindler's index (2011) which are based on the International Monetary Fund's (IMF) Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) reports[15], suggest India be closed compared to the other contemporary large emerging economies. Empirical studies concerning capital flows and capital controls have found that the composition of flows was significantly impacted by the capital controls in India (Habermeier *et al.*, 2011; Pradhan *et al.*, 2011).

Since the liberalization of the Indian economy in 1991, India adopted a cautious approach in liberalizing the capital account, albeit remaining within a partial convertible regime. The policies sought to shift the composition of capital flows from debt to non-debt creating flows and thereby restricting the ECBs, especially the short-term credit (Mohan *et al.*, 2009; Gopinath 2011). The idea was clearly to restrict too much borrowing by Indian corporates, especially the unhedged borrowings and thereby increase resilience in the economy. However, some studies point out that such measure might not be effective always and on the contrary, might encourage unhedged borrowings in a situation of low currency volatility (Habermeier*et al.*, 2011; Pradhan 2011). Indian experience reveals that with low exchange rate flexibility, currency exposure of Indian firms' increases and vice-versa (Patnaik *et al.*, 2010). Thus, while capital controls are deemed necessary for reducing the vulnerability of firms, whether or not they have restricted the borrowings of the firms is an issue of interest to be explored.

Another factor, which has not been considered in analyzing the ECB flows is the impact that a country's sovereign risk ratings. Generally, itis accepted that improving a country's transparency, information control, and sovereign risk is likely to increase the capital flows into the country. Reinhart *et al.* (2004) provide evidence of increased capital flow from developed to emerging economies were significantly influenced by sovereign risk ratings. Bhanumurthy *et al.* (2014) in modeling India's external sector has shown that the credit ratings significantly influenced long term capital flows. Gordon *et al.* (2003) found similar evidence from their study on portfolio flows to India. The literature on sovereign risk ratings across countries has found evidence that sovereign credit ratings capture various aspects of a country's debt position and

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[15] AREAER reports gives the rules and regulations a particular country uses to govern the current and capital account transactions.

macroeconomic strength (Afonso 2003; Mora 2006). Hence, sovereign credit ratings can be considered as a true reflection of country risk. Thus, while there is some evidence of sovereign credit ratings influencing other capital flows, it becomes imperative to explore whether it also affects ECB flows. The table below summarizes the choice of specific explanatory variables, their description and the expected relationship with the dependent variable, ECB.

[Table 5.1 to come about here]

5.2.   The Empirical Framework

A review of extant literature in section 5.1 suggests that both domestic and global factors influence ECB flows to a country. We are interested in analyzing whether and how these factors influence the ECB flows to India. Thus, based on these analytical underpinnings we specify an econometric model to establish any relationship between ECB and the factors that are supposed to influence the flow of ECB.

The above discussion suggests that ECB can be modeled as follows:

$$ECB_t = f(x_t^d, x_t^f) \quad ………………………………………………………… (1)$$

Where, x_t^d and x_t^f represents the vector of the domestic and global variables respectively and t denotes the time-period. For the purpose of the study, we have taken quarterly data from 2000 to 2015 (i.e. 2000Q1: 2015Q4), implying t assumes 64 data points.

The determinants of ECB may be deciphered with the help of an error correction (ECM) and cointegration model. The error correction model may be stated as follows:

$$\Delta y_t = \alpha + \theta_1 \Delta x_{t-1} + ….. + \theta_p \Delta x_{t-p} + \pi e_{t-1} + v_t ……………… \quad (2)$$

Where, y_t is the demand for ECB and x is the vector of the explanatory variables or the determinants of ECB. θ and π are the vectors signifying the short run coefficients and the long-run adjustment path respectively. Δ denotes the first difference operator and v is the white noise.

This paper focuses its attention on two primary sources of foreign loans, viz., commercial borrowing (medium & long term), and short-term borrowing (trade credit). In fact, since commercial borrowing and short-term borrowing is generically similar when considered as a whole, the sum of ECB and STC is often considered as ECB due to lack of segregated data at the firm level (Patnaik *et al.*, 2016). Hence, in our study, we denote ECB by the sum of ECB and STC. Further, as this measure comprises of both short term and long-term credit, it would be a better reflection of international commercial borrowing by Indian firms.

The explanatory variables as discussed in equation (1) will be a combination of both domestic and global factors. The explanatory variables are exchange rate between India and the US, international liquidity, real interest rate differential between India and the international market, the growth differential between and the rest of the world, the capital account openness indicator in India and the sovereign country ratings for India. Following some studies (Calvo, 1993; Mody et al. 2001; Ying et al. 2001) we have taken the US as a representative of international markets while analyzing the impact of certain factors on the exchange rate, international liquidity and the growth differential between India and the rest of the world on ECB flows to India. Hence, for exchange rate, we have taken the spot exchange rate between India and the US. To denote international liquidity, we have adopted M2 US and the growth differential between India and the US representing the growth differential parameter adopted in the study. The London interbank offer rate (LIBOR) is used as a measure of international interest rates, and the weighted average call money rates are the measure of domestic interest rate.

For capital account openness measure, we have adopted the dataset formed by Fernández et al. (2015). This data set builds on the one by Schindler (2009) and later expanded by Klein (2012) and Fernandez et al. (2014), but includes more countries, more asset categories and covers a longer time period. This new data set reports the presence or absence of capital controls, on an annual basis and captures more information compared to the recent measures[16]. An important feature of this data set is that it includes information on capital

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[16]For instance, the measure of capital account openness developed by Chinn and Ito (Chinn-Ito index), shows India's capital account openness to be constant from 1995 onwards and fails to capture the measures adopted in liberalizing the capital account

controls disaggregated by both inflows and outflows, and by ten different categories of assets. Hence, this study comprises detailed analysis of capital controls involving co-movements of controls on inflows and outflows (Fernández *et al.* 2015).

For sovereign country ratings, we have taken sovereign credit ratings published by Moody's, one among the 'Big Three' credit rating agencies in the world, having wide acceptance amongst academicians, policy makers, and analysts.

Data

Quarterly data from 2000 to 2015 have been usedfor the study. The data for ECB flows to India is taken from the RBI database. The data for exchange rate[17] and growth rates of India and the US is obtained from OECD database, while data pertaining to M2 US and interest rate is procured from the FRED database. The data pertaining to sovereign credit ratings have been obtained from Moody's database and the measure of capital account openness, which is primarily openness indicator based on the restrictions imposed on inflows. The same is adopted from the dataset prepared by Fernández *et al.* (2015). The Eviews 9 statistical package is used for analyzing the data.

6. Results

6.1. Baseline Model

Since the objective of this paper is to investigate the determinants of ECB flows to India, we analyze the long run behavior of ECB flows by investigating a cointegrating relationship between the variables under study. First, it is necessary to check the stationarity of the dependent and the independent variables under study and determine their degree of integration. For this purpose, we have used the Augmented Dickey Fuller (ADF) test. The null hypothesis of the presence of unit root is tested against the alternative hypothesis of no unit root in the series. If the null hypothesis is accepted, we proceed by taking first difference of the

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in India, albeit remaining within a partial convertible regime. Similar is the case with Schindler (2009), which includes data only up to 2005

17 Here, exchange rate is the spot exchange rate and signifies rupees required for 1 USD.

variable and test the stationarity as before. We see that neither the dependent nor the explanatory variables are stationary at their level form, but exhibit stationarity at their first difference. Except for growth differential between India and rest of the world (gr_diff), which is stationary at the level form, i.e., I(0).This implies that the variables or a linear combination of the variables are integrated of the same order, i.e., I(1), and we can proceed further to test the long run cointegrating relationship.

The basic idea of cointegration is that two or more variables are considered to be in a long run relationship if they are associated closely in the long run, although they may drift apart in the short run. Here, we adopt the technique suggested by Johansen (1988) and later improved by Johansen and Juselius (1990), which is a powerful test compared to its predecessors, viz. the Engle Granger two step methodology (Banerjee et al. 1986) and overcomes the drawbacks of the two-step procedure. The Johansen test is based on the Vector Autoregressive (VAR) framework and gives the maximum likelihood estimates of all cointegrating vectors for a given set of variables. Before we proceed with the Johansen test, it is necessary to determine the optimum lag order. The optimal lag order criterion is used to determine the optimal lag length of the model (table 6.1). From the results, we select the optimal lag order to be one based on the HQ criteria.[18]

[Table 6.1 to come about here]

[Table 6.2 to come about here]

Next, we proceed with the Johansen cointegrating test. The results of Johansen cointegrating test (table 6.2) relating to Trace and Maximum Eigen value statistics suggest that there is a single cointegrating vector among the variables under study.

As the study investigates the long run behavior of ECB contingent upon the explanatory variables under study, the long-run cointegrating vector normalized to the dependent variable (ECB) represents the long run cointegrating relationship. The table below (table 6.3) summarizes the said relationship.

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[18]Sometimes the values of AIC, SBC and HQC may not be uniformly similar at a particular lag length. In that case we choose HQC. This is because, in general, AIC gives a long lag structure, SBC chooses a very short lag length and HQC falls in- between the two. Hence, it is preferable.

[Table 6.3 to come about here]

It is apparent from the above table (table 6.3) that all factors except the sovereign credit ratings (RAT_DV) for India have a significant long run impact on ECB. All the variables are positively related to ECB except the international liquidity (M2 US), exchange rate (EX_IN_US) and the sovereign credit ratings (RAT_DV). The sign or direction of association also corroborates our initial hypotheses formed (table 5.1), except for international liquidity (M2 US).

Given the above long run association of the variables, the short run deviations of the variables from the long run cointegrating path are given below (table 6.4).

The coefficient of the error correction term in the error correction equation of D (ECB_STC (-1)), suggest that there is a rapid and complete adjustment to the long run cointegrating path following any disturbances in the short run.

[Table 6.4 to come about here]

Although, the equation in table 6.3 suggests a negative relationship between international liquidity and ECB, which is counter intuitive, its magnitude of impact on ECB is minimal as is evident from the size of the coefficient (0.002689). It implies that the impact of international liquidity on ECB flows to India is very small although statistically significant. This may be explained by the significance of another factor, capital account openness (KAI)[19], which is representative of the restrictive measures adopted by the RBI to regulate capital inflows from time to time. In fact, in India, capital controls were often used as tools of macroeconomic policy during periods of the capital surge (Patnaik *et al.*, 2012).

In the early 2000s when there was a capital surge to emerging economies, India was one of the primary destinations. Capital flows increased several times, from about USD 10 billion a year in the initial years to about USD 100 billion in early 2008. During the initial years of capital inflows, the regulators responded by tightening the capital flows, particularly the debt inflows were severely regulated. Capital flows were regulated with the objective of avoiding adverse impact on primary liquidity growth and inflationary pressures (Reddy 2006). After

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[19] Here, we measure the openness in terms of inflows only as provided in Fernández, Klein, Rebucci, Schindler and Uribe in (2015)

2006, Indian regulators imposed several restrictions on capital account transactions, including easing of outflows and tightening the inflows. Further, in 2007, a new restriction was imposed on foreign currency borrowing limiting foreign currency borrowing for import of capital goods only. Although the capital control measures introduced in India could not prevent the surge in capital flows, they were very effective in managing and restricting foreign currency debt inflows to India (Patnaik et al., 2012). Thus, even higher liquidity in the international market, which generally increases capital flows to the emerging markets, the same has not been in case of ECB in the Indian context. The strict monitoring by the RBI to prevent firms from over borrowing in the international market have limited the flows during such periods. Thus, the lower significance of the international liquidity in influencing the ECB flows to India.

The findings pertaining to capital account openness is a new finding, especially with regard to ECB in the Indian context. Although many studies have studied the interrelationship of capital account openness and capital flows, this aspect has not been studied in regards to ECB. This is a particularly interesting finding with potentially deeper insights for the ECB regulations.

Exchange rate constitutes a major risk of cross-border borrowing by the corporates. If the local currency (INR in our case) is expected to appreciate vis-à-vis the international currency (US dollar here), then the effective cost of servicing the debt goes down, and the corporates tend to borrow more. The result obtained here for the exchange rate is negative and significant (-2219241). This is in accordance with our expectations. In recent times, there were some devaluations of the Indian rupee, which made the repayment of loans in foreign currency expensive and hence turned out to be costly for the corporates.

The sovereign credit rating variable (RAT_DV), although is not significant has a desirable sign (negative). India has had almost stable ratings as per the Moody's country ratings is concerned, except for 2005 when there was a downgrade. Hence, the effect of ratings is not reflected in the results.

The other two variables, growth differential, and interest rate differential have the desirable sign (positively associated with ECB). The results relating to interest rate differential

conforms to the previous studies on ECB (Singh, 2007; Verma and Prakash 2011). Theoretically, the interest rate differential must be eliminated with increasing inflows of capital. However, such a thing do not occur perhaps because of the RBI intervention and monetary tightening to contain the inflationary pressures and the liquidity effects arising from increased capital flows into the economy.

The growth differential factor is a new aspect encompassing the growth aspects of both countries. Although it stresses on the growth potential of the domestic economy, the growth is considered relative to the global economy. The results obtained are similar to the earlier studies (Singh, 2007; Verma and Prakash 2011) which focused exclusively on the growth potential of the domestic economy. However, the impact of international liquidity, sovereign credit ratings, the role of regulators (capital account openness) and exchange rate on ECB flows were not studied in the earlier papers.

We thus extend the debate on the relative importance of the domestic vis-à-vis external variables in the context of ECB, and the above discussion suggests that the domestic factors seem to be potentially dominant than the external factors in influencing ECB flows in the long run. While, additionally, the increased role of RBI in regulating the capital account transactions majorly influences ECB flows, needs to be reviewed in details. While it appears that, there is scope for further liberalization and simplifications of regulations as suggested by the Sahoo committee, the hedging aspect has to be factored in to control the susceptibility from foreign borrowing, which again has necessary cost implications for the borrowing entities. What impact the regulations concerning hedging has on the borrowing firms paves the way for further research. Furthermore, a country wise (from the originating country) composition of ECB would also enable us to develop more accurate measures, especially those relating to inflation, international liquidity, and growth differential.

6.2. Robustness Checks

6.2.1. Variance Decomposition and Impulse Response

Variance decomposition yields information on the relative importance of each of the factors in explaining the shocks. Table 6.5 gives the results of the error variance due to each shock in a

VAR setup over a ten-quarter horizon, covering the entire study period, 2000: Q1 to 2015Q4. ECB is explained mostly by its own shocks (67.54 percent). Real interest rate differential (REAL_RD), growth differential (GR_DIFF) between India and the rest of the world are the two most important factors accounting for about 15.2 and 8.2 percent respectively. The capital account openness variable (KAI) and exchange rate (EX_IN_US) account for about 4.7 and 3.9 percent respectively. However, international liquidity (M2_US) and sovereign credit ratings of India (RAT_DV) are rendered almost insignificant.

[Table 6.5 to come about here]

The results are in congruence with our initial findings in the baseline model. The results lend credence to our finding that the domestic factors appear to be more important in influencing ECB flows.

The impulse response functions (chart 6.1) reflect the effect of a shock on factors on ECB for the entire study period, 2000: Q1 to 2015Q4. It shows the response of ECB due to a one standard deviation shock on the factors identified in the model. The results also support our initial finding of the relatively more importance of domestic factors in explaining the ECB flows.

[Chart 6.1 to come about here]

6.2.2. Tests for Serial Correlation and Heteroscedasticity

The results for serial correlation, the LM test revealed no serial correlation (table 6.6). The null hypothesis of no serial correlation is not rejected, which implies no serial correlation of the residuals. Similarly, the test of heteroscedasticity suggests absence of any heteroscedasticity (table 6.7). The Chi-square statistics with 448 degrees of freedom is not significant (probability 0.1350). Thus, the null hypothesis that errors are both homoscedastic and independent of the regressors is not rejected. Hence, there is no heteroscedasticity.

[Table 6.6 to come about here]

[Table 6.7 to come about here]

6.2.3. Model with Seasonal Dummies

We develop a model by incorporating seasonal dummies (table 6.8) and carry out the exercise as before. Here, as all variables are I (1), we proceed with the OLS incorporating three seasonal dummies. Since we have quarterly data, to avoid dummy variable trap we incorporate three dummy variables. It is evident from the results that the seasonal dummy variables are not significant.

[Table 6.8 to come about here]

6.2.4. Detecting Instability in the Relationship: CUSUM Test

The CUSUM test (Brown, Durbin, and Evans, 1975) is based on the cumulative sum of the recursive residuals. This test plots the cumulative sum together with the 5% critical lines. The results indicate stability of the parameter estimates if the cumulative sum resides between the critical lines and parameter instability is suggested if it goes beyond the area between the critical lines.

The CUSUM test for stationarity reveals stability of the parameter estimates (Figure 5.1) as the cumulative sum resides within the upper and lower bounds (5 percent critical lines).

[Chart 6.2 to come about here]

7. Conclusion

Acknowledging the growing importance of ECB in India's external debt, the study focused on the trends and determinants of ECB taking into account both domestic and global factors. The study identified a set of factors, not considered in the extant literature on ECB flows in the Indian context, which could potentially influence ECB flows. Employing a Johansen cointegration and the error correction model, we found that the domestic factors dominate the global factors in influencing the ECB flows to India. We thus extend the debate on the relative importance of the domestic vis-à-vis global variables influencing ECB flows in the Indian

context. Various tests like the variance decomposition, impulse response, and the CUSUM established the robustness of the results.

One of the key findings of the paper pertains to capital account openness, indicative of the role of the regulatory regime, was found to be significant. This is particularly interesting and gives a new insight, relating to the interventions by the regulators in influencing the capital flows. Since India moved from the FERA to the FEMA regime in 1999, there has been steady liberalization of the capital account norms, albeit remaining within a partial convertible regime. However, following the global financial crisis and then again, after the euro zone crisis, the regulators intervened to insulate the Indian economy from the contagion effects. As an outcome of several restrictions that were imposed following the crises, the capital flows, particularly the debt inflows were hindered. Thus, though these measures helped to negate the contagion, the ECB flows to India were adversely impacted, despite excess global liquidity.

Another significant finding was the significance of the growth differential between India and the international economy, suggesting that the domestic fundamentals assume critical importance in the inflow of ECB flows. As the results of the study suggest the growth differential between India and the international economy will be a key driver influencing ECB flows to India. Sound economic policies, supporting sustained economic growth, addressing the domestic vulnerabilities, and fostering financial sector development will be the key, especially when the growth prospects in the advanced economies are not bright. Moreover, the recent institutional shifts that have taken place, viz. the emergence of pension funds and sovereign wealth funds, provide alternative investment opportunities for the international investors. These funds have attracted decent funding over the years, and the gross capital outflows from the EMEs since 2010 can partially be attributed to this. Hence, development of financial markets, which help to stabilize the net capital flows is of paramount importance.

Further, as India moved to inflation targeting in 2015, with partially flexible exchange rates, the reducing interest rate structure to encourage the domestic credit growth can further discourage ECB flows. The exchange rate management needs to be flexible and accommodate the international borrowers, especially in the absence of a developed capital market and a reeling banking sector.

The sovereign credit rating of India was relatively stable, barring a downgrade in 2005. Hence, the sovereign credit ratings of India, another variable investigated, as expected did not have any significant impact on ECB flows. However, what impact the credit ratings of individual firms along with the other financial parameters is the scope for a future study. The risks and costs associated with mitigating these risks at a firm or industry level, in conjunction with the sector specific regulations are other areas to be explored. Segregated country wise data on ECB originating countries will help consolidate the study further by adopting comprehensive measures for exchange rate and international liquidity, thus enabling better insights.

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	Paper	Time Period	Findings
No.			
1	Chakraborty (2006)	1993-2003	• FDI and ECB were not volatile but portfolio flows exhibited high volatility. • A cointegrating relationship exists between capital inflows, interest rate differential and real exchange rate, perhaps due to the periodic interventions by the RBI. This could have prevented volatility of the real exchange rate in spite of highly volatile capital inflow
2	Singh (2007)	1993-2007	• Domestic demand, interest rate differentials and credit conditions primarily influence the demand for ECB
3	Singh (2009)	1950 to 2008	• Global credit market shocks had significant impact besides the domestic factors • Whereas demand shocks affected overseas borrowing during normal times, external credit shocks were prominent during crisis periods • Among the debt creating flows ECB relatively stable
4	Verma and Prakash (2011)	1998-2010 (FDI and FPI) and 2000-2010 (ECB and NRI deposits).	• Whereas FDI and FII were interest rate insensitive, debt creating flows like ECB, FCNR (B) deposits etc. responded significantly to changes in interest rate. • Capital flows to India to be exogenous in the long run and independent of interest rate differential
5	Akyuz (2013)	1995-2012	• Financial spillovers affect other countries' capital flows, exchange rate and asset prices. • Suggests overdependence on foreign capital must be reduced.
6	Bose (2013)	1991-2012	• Procyclical nature of capital flows dominating economic cycles in emerging economies • Development of endogenous fragility in the system with smaller margins of safety in the balance sheet. • Situation worsens further during recessions
7	Kaminisky (2005)	1991-2004	• Contends with empirical evidence that during recessions capital flows receded on a systematic basis.
8	Bhanumurthy et. al. (2014)	1991-92 to 2012-13	• Capital inflows in India to be exogenous in the long run be independent of interest rate differentials and relative costs. • Procyclical nature of international capital flows • Future prospects of a country significantly influence FDI and cross border lending.

Table 0.1: Macro-level Studies of ECB

	Table 0.2: Micro level studies on ECB		
No.	Paper	Time Period	Conclusion
01	Hiroko Oura (2008)	1993-94 to 2005-06	• Increasing dependence of Indian firms on ECB. • The inefficiencies in the debt financing system in channelizing the funds. • The firms that depend on ECB tend to grow more slowly.
02	Patnaik and Shah (2008)	1993 to 2007	• The moral hazard hypothesis is supported, which is, firms are reluctant to hedge their foreign exchange exposure in case of a low currency flexibility.
03	Ye et al. (2014)	1991 to 2013	• The countries with non- floating exchange rate have higher exposure compared to firms in countries with floating exchange rates. • The exchange rate system matters at both micro and macro level • A non-floating arrangement fails to protect firms from exchange rate risk.
04	Patnaik et al. (2016)	2004 to 2015.	• Highlighting the liberal attitude of the regulators in encouraging the ECB. • They point out the systemic risk emanating from the unhedged borrowings of the corporates

Table 0.3: The extant ECB framework as of December 2016		
Parameter	**Automatic Route**	**Approval Route**
Eligible Borrowers	Companies, NBFCs (except financial intermediaries), SIDBI, NGOs, SEZs, MFIs and others.	Includes larger set of borrowers, mostly banks and NBFCs. These are under approval route probably because of their systemic importance.
Recognized Lenders	Several internationally recognized lenders like international banks, international capital markets, and multilateral financial institutions and foreign equity holder under certain specific conditions.	Broadly similar to automatic route. Relaxed norms for borrowing from foreign equity holders.
Amount	Specifies the maximum amount that can be borrowed by each category of eligible borrower. The maximum amount that can be raised by a corporate other than those in the hotel, hospital and software sectors is USD750 million.	It is possible to borrow amounts exceeding the permissible amounts for different categories of borrowers under the automatic route.
Maturity	Minimum average maturity of 3 years for ECB up to USD 20 million in a financial year; Minimum average maturity of 5 years for ECB from USD 20 million to USD 750 million in a financial year	Cases falling outside the purview of the maturity periods under the automatic route.
All-in-cost ceiling	350 basis points over 6 months LIBOR for ECB with maturity of 3 to 5 years; 500 basis points over 6 months LIBOR for ECB with maturity beyond 5 years.	Same
Permitted end-use	Import of capital goods, modernization or expansion of existing production units in the real sector, including infrastructure, and overseas direct investment in joint ventures and wholly-owned subsidiaries.	Broader end-uses permitted including working capital for civil aviation sector. Repayment of Rupee loans permitted for certain sectors.
Prohibited end-use	On-lending or investment in capital markets or acquiring a company (or part thereof) in India by a corporate; real estate; general corporate purposes with some exceptions; other than the purposes specifically permitted.	Broadly similar.
Guarantees	Guarantees by entities from India not permitted.	Not normally permitted unless specifically approved.
Prepayment	Prepayment upto $ 500 million.	Prepayment beyond $ 500 million.
Refinancing of existing ECB	The existing ECB may be refinanced by raising a fresh ECB subject to conditions.	Similar.
Hedging	Holding Companies or Core Investment Companies (CICs); NGOs engaged in micro-finance; MFIs; NBFCs-IFCs; certain IFCs; NBFCs-Asset Finance Companys (AFCs); SIDBI.	SIDBI; Holding Companies or CICs; Developers of low cost housing projects; Housing Finance Companies (HFCs).
Source: Ministry of Finance, Government of India		

Table 4.1: Macroeconomic aggregates: Comparison of EMEs and AEs							
Year	GDP growth [1]		Savings / GDP [2]		Investment / GDP [3]		Fiscal balance [4]	
	EME	AE	EME	AE	EME	AE	EME	AE
1993-96	3.9	2.7	24	22	26	22	-3.2	-4.0
2004-07	7.6	2.9	30	20	27	21	0.7	-0.3

AE = Advanced Economies; EME = Emerging Market Economies (IMF definition)

[1] GDP average real growth from 1993 to 1996 and from 2004 to 2007 respectively

[2] Savings = gross national savings. [3] Investment = gross fixed capital formation. [4] As a percentage of GDP.

Source: Adapted from Report submitted by the Committee on the Global Financial System, Reserve Bank of India, 2009.

Table 4.2: External Debt Position: India vis-à-vis Low and Middle Income countries					
Year	Country	External debt stocks		External debt flows	
		Long term debt	Short term debt	Long term debt	Short term debt
2007	LMIC	2491	770	290	189
	INDIA	167	36	32	11
		(6.7)	(4.7)	(11.2)	(5.8)
2008	LMIC	2742	787	216	16
	INDIA	182	44	15	8
		(6.6)	(5.6)	(7.0)	(47.3)
2009	LMIC	2886	820	96	34
	INDIA	203	47	16	3
		(7.1)	(5.7)	(16.4)	(8.1)
2010	LMIC	3133	1248	260	433
	INDIA	228	56	24	10
		(7.3)	(4.5)	(9.4)	(2.3)
2011	LMIC	3574	1570	370	325
	INDIA	250	78	21	22
		(7.0)	(5.0)	(5.6)	(6.6)
2012	LMIC	4005	1721	446	148
	INDIA	293	93	29	15
		(7.3)	(5.4)	(6.4)	(10.3)
2013	LMIC	4438	2072	450	353
	INDIA	328	93	41	-1
		(7.0)	(4.0)	(9.0)	(0.0)
2014	LMIC	4754	2204	419	130
	INDIA	366	86	49	-7
		(7.7)	(3.9)	(11.8)	(-5.5)
2015	LMIC	4750.0	1805.6	209.2	-398.4
	INDIA	392	82	29	-4
		(8.3)	(4.5)	(13.8)	(1.0)
LMI: Low and Middle Income Countries					
All figures in USD billion and figures in parentheses denote India's share amongst LMI countries					
Source: The World Bank International Debt Statistics and authors' calculations					

Year/ Components	Multilateral (1)	Bilateral (2)	IMF (3)	Export Credit (4)	ECB (5)	NRI Deposits (6)	Rupee Debt (7)	Long Term Debt (1 to 7) A	Short Term Debt (Original Maturity) B	Total External Debt (A+B)
2000-01	30.7	15.8	0	5.8	24.1	16.4	3.7	96.4	3.6	100
2001-02	32.3	15.5	0	5.4	23.6	17.4	3.1	97.2	2.8	100
2002-03	28.6	16	0	4.7	21.5	22.1	2.7	95.6	4.4	100
2003-04	26	15.5	0	4.2	19.8	27.9	2.4	96	4	100
2004-05	23.8	12.7	0.8	3.8	19.7	24.4	1.7	86.8	13.2	100
2005-06	23.4	11.3	0.7	3.9	19	26.1	1.5	85.9	14.1	100
2006-07	20.5	9.3	0.6	4.2	24	23.9	1.1	83.6	16.4	100
2007-08	17.6	8.8	0.5	4.5	27.8	19.5	0.9	79.6	20.4	100
2008-09	17.6	9.2	0.5	6.5	27.8	18.5	0.7	80.7	19.3	100
2009-10	16.4	8.7	2.3	6.5	27.1	18.3	0.6	79.9	20.1	100
2010-11	15.2	8.1	2	5.9	31.6	16.3	0.5	79.6	20.4	100
2011-12	14	7.4	1.7	5.3	33.3	16.2	0.4	78.3	21.7	100
20012-13	12.6	6.2	1.5	4.3	34.2	17.3	0.3	76.4	23.6	100
2013-14	12	5.5	1.4	3.5	33.5	23.3	0.3	79.5	20.5	100
2014-15	11	4.6	1.2	2.7	38	24.2	0.3	82	18	100

Table 4.3: Composition of India's External Debt

Notes: PR: Partially Revised   *All figures in percentage*

Source: Authors' calculations from GoI, Ministry of Finance - Report on India's External Debt, Various Years

Table 4.4: Intertemporal Trends of India's Capital Account				
Year / Item	EA % of KA	ECB % of KA	EA % of Loans	ECB % of Loans
2000-01	4.64	48.68	7.79	81.74
2001-02	13.06	-18.54	-88.58	125.69
2002-03	-28.86	-15.61	81.25	43.95
2003-04	-17.08	-17.48	65.49	67.03
2004-05	6.86	18.54	17.63	47.61
2005-06	6.68	9.85	21.52	31.71
2006-07	3.93	35.62	7.25	65.75
2007-08	1.98	21.21	5.2	55.62
2008-09	32.98	106.3	29.33	94.54
2009-10	5.6	3.87	23.22	16.06
2010-11	7.75	19.08	16.96	41.74
2011-12	3.39	15.27	11.89	53.58
2012-13	1.1	9.5	3.16	27.26
2013-14	2.12	24.14	13.29	151.66
2014-15	1.93	1.76	54.18	49.31
Source: Authors' calculations from RBI Handbook of Statistics, Various Years				

			Table 5.1: Variables affecting ECB	
Sl.No.	Variables	Expected Relationship	Rationale	Measure
1	International liquidity	Positive (+)	Higher liquidity in the international market enables greater access to international funding for the domestic firms.	(M2 US)
2	Real interest rate differential	Positive (+)	Higher interest rate differential between India and the world interest rates will induce the Indian corporates to seek international funding.	Interest rate differential adjusted for inflation between India and the US.
3	Exchange rate	Negative (-)	Appreciating domestic currency (Indian currency) vis-à-vis the US dollar encourages greater ECB flows. For this study, we have taken the spot exchange rate between India and the US; Hence, a negative relationship is likely to emerge.	The spot exchange rate between India and the US, i.e. amount of dollars required for 1 INR.
4	Capital account openness	Positive (+)	The data set used measures the capital controls. It shows the degree of openness of the capital account. As easing of controls is likely to facilitate the borrowing, we hypothesize a positive relationship.	Openness of capital account with respect to restrictions on inflows only.
5	Credit rating of domestic economy	Negative (-)	Higher credit rating makes it easier for the corporates to access the international market. Since the overall credit ratings have remained stable, and only in 2003 there was a downgrading in ratings. To incorporate this we have used dummy variables to demarcate this year from the other years. Since, the dummy variable is associated with a downgrading; we expect a negative relationship to emerge.	Moody's Sovereign credit ratings.
6	Growth of the domestic economy vis-à-vis the international liquidity	Positive (+)	Higher activity in the domestic economy will induce greater demand for funds by the corporates. On the other hand, better fundamentals will also encourage and give confidence to the international investors. Hence, a positive relationship should emerge.	Difference in GDP between India and the US.

Table 6.1: Lag-length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1290.880	NA	1.45e+10	43.26266	43.50700	43.35823
1	-905.9980	667.1284	201318.2*	32.06660	34.02132*	32.83120*
2	-869.9809	54.02565	331042.9	32.49936	36.16447	33.93299
3	-821.4781	61.43683	400871.7	32.51594	37.89142	34.61859
4	-754.4599	69.25214*	316813.7	31.91533*	39.00120	34.68700

*indicates lag order selected by the criteria

LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 6.2: : Johansen Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CEs	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.631149	143.7176	125.6154	0.0025
At most 1	0.429640	81.88113	95.75366	0.3045
At most 2	0.285353	47.06894	69.81889	0.7583
At most 3	0.186090	26.23903	47.85613	0.8814
At most 4	0.125028	13.47288	29.79707	0.8688
At most 5	0.048614	5.191949	15.49471	0.7881
At most 6	0.033338	2.102179	3.841466	0.1471

Trace test indicates 1 cointegratingeqn(s) at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CEs	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.631149	61.83648	46.23142	0.0006
At most 1	0.429640	34.81219	40.07757	0.1740
At most 2	0.285353	20.82990	33.87687	0.6969
At most 3	0.186090	12.76615	27.58434	0.8974
At most 4	0.125028	8.280936	21.13162	0.8857
At most 5	0.048614	3.089770	14.26460	0.9406
At most 6	0.033338	2.102179	3.841466	0.1471

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

Notes:

 * denotes rejection of the hypothesis at the 0.05 level

 **MacKinnon-Haug-Michelis (1999) p-values

Table 6.3: Long run Cointegrating Vector						
1 Cointegrating Equation:				Log likelihood	-941.1347	
ECB	EX_IN_US	GR_DIFF	KAI	M2_US	REAL_RD	RAT_DV
1.000000	-2219241.	11863.37	160914.5	-0.001972	1097.509	-1919.623
	(457197.)	(1285.78)	(47628.7)	(0.00058)	(252.645)	(2656.58)
	[-4.85402]	[9.22663]	[3.37852]	[-3.37124]	[4.34408]	[-0.72259]
Normalized cointegrating coefficients; standard error in parentheses () and t statistics in [ ]						

Table 6.4: Error Correction: Short-run Dynamics	
Variables	Coefficient of EC term
D(ECB_STC(-1))	-0.185368 (0.15294) [-1.21206]
D(EX_IN_US(-1))	284856.6 (666020) [0.42770]
D(M2_US(-1))	-0.010561 (0.00511) [-2.06681]
D(REAL_RD(-1))	-69.32527 (184.665) [-0.37541]
D(KAI(-1))	-14879.51 (30091.8) [-0.49447]
D(RAT_DV(-1))	-836.4566 (2051.52) [-0.40773]
D(GR_DIFF(-1))	487.0784 (441.418) [1.10344]
Normalized cointegrating coefficients; standard error in parentheses () and t statistics in [ ]	

Table 6.5: Variance Decomposition of ECB_STC:							
Period	S.E.	ECB_STC	EX_IN_US	KAI	GR_DIFF	M2_US	RAT_DV	REAL_RD
1	2585.967	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	3072.069	91.88070	0.890017	0.022447	6.800870	0.015375	0.015639	0.374954
3	3235.466	88.85396	1.304318	0.099752	7.151730	0.076511	0.019478	2.494249
4	3346.356	84.64499	1.880532	0.341796	8.044089	0.143208	0.021914	4.923471
5	3434.373	80.73979	2.353187	0.841094	8.303108	0.209698	0.021389	7.531734
6	3514.823	77.14377	2.780164	1.519268	8.454018	0.264362	0.020451	9.817966
7	3587.665	74.04384	3.131943	2.311252	8.457981	0.306839	0.020817	11.72733
8	3652.751	71.43703	3.424732	3.133397	8.407701	0.337813	0.023438	13.23588
9	3709.578	69.28983	3.664247	3.930175	8.325649	0.359617	0.028613	14.40187
10	3758.262	**67.54257**	**3.860552**	**4.663996**	**8.235515**	0.374405	0.036071	**15.28689**

Table 6.6: Test for Serial Correlation: LM Test		
Lags	LM Stat	Prob
1	47.028	0.553
2	51.512	0.376
Probs from chi-square with 49 df.		

Table 6.7: Test for Heteroscedasticity		
Joint Test		
Chi-sq	Df	Prob.
443.770	448	0.548

Table 6.8: OLS with seasonal dummy variables				
Variable	Coefficient	Std. Error	t-statistic	Prob.
C	46190.64	21363.65	2.162114	0.0351
EX_IN_US	-668.7183	85.12882	-7.855369	0.0000
GR_DIFF	-548.4265	335.1179	-1.636518	0.1075
KAI	-25905.36	22286.74	-1.162366	0.2502
M2_US	0.001635	0.000267	6.122886	0.0000
RAT_DV	-1789.037	1304.684	-1.371241	0.1760
RD	96.52389	241.2733	0.400060	0.6907
@QUARTER=1	255.7818	924.5619	0.276652	0.7831
@QUARTER=2	108.5775	917.3655	0.118358	0.9062
@QUARTER=3	124.0986	912.4802	0.136001	0.8923
R-squared	0.570		F- statistic	7.942
Adjusted R-squared	0.498		Prob (F- statistic)	0.000
Durbin-Watson stat	1.038			

Chart 4.1: Trends in External Commercial Borrowing
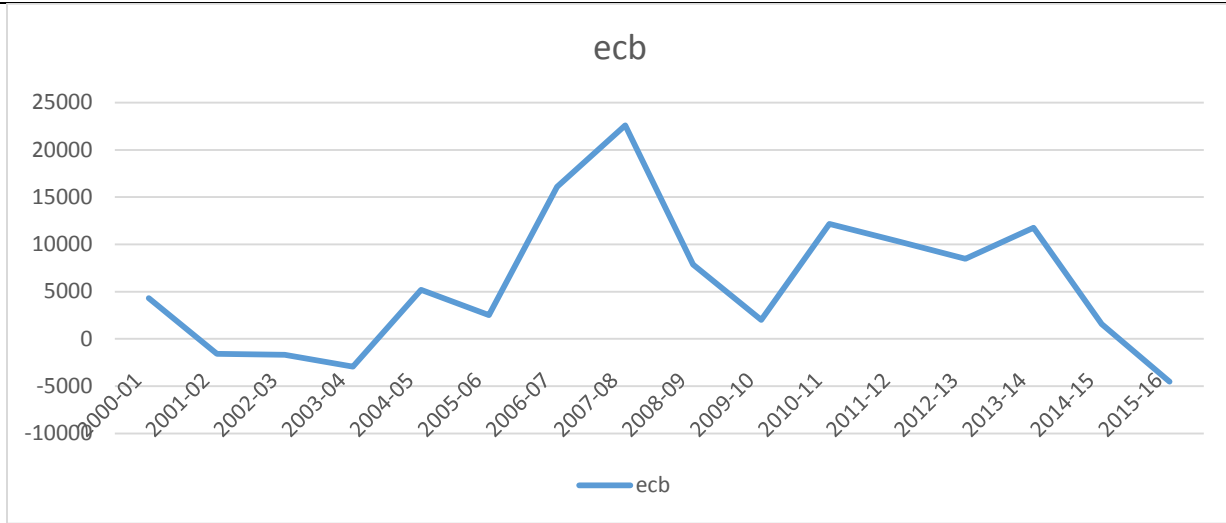
Source: Authors' calculations from RBI data

Chart 4.2: Movement of components of debt creating flows vis-à-vis the capital account
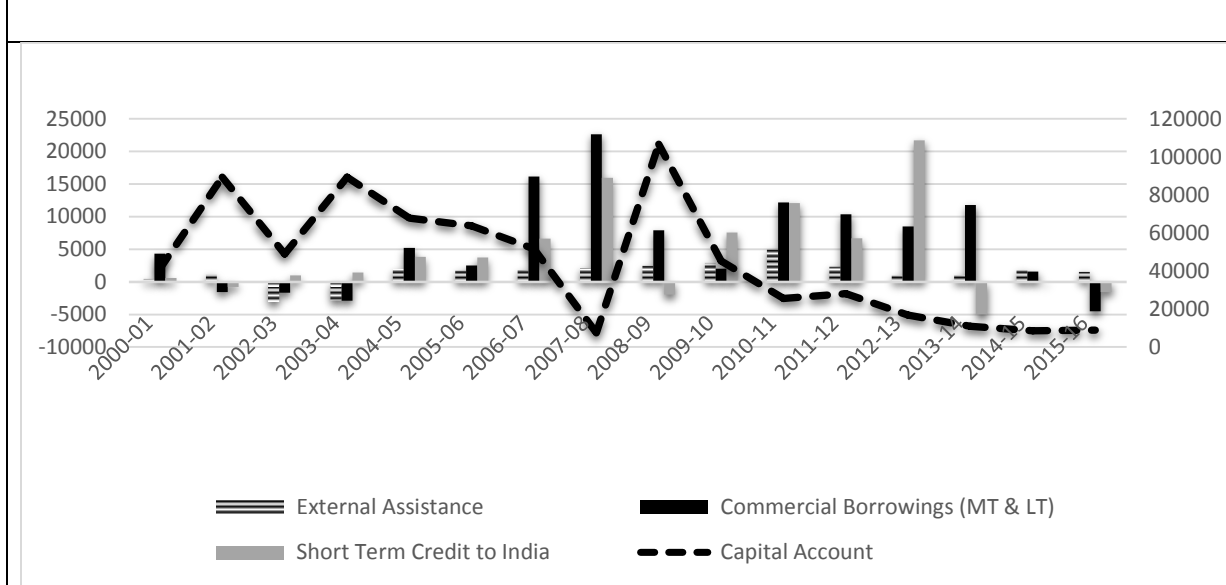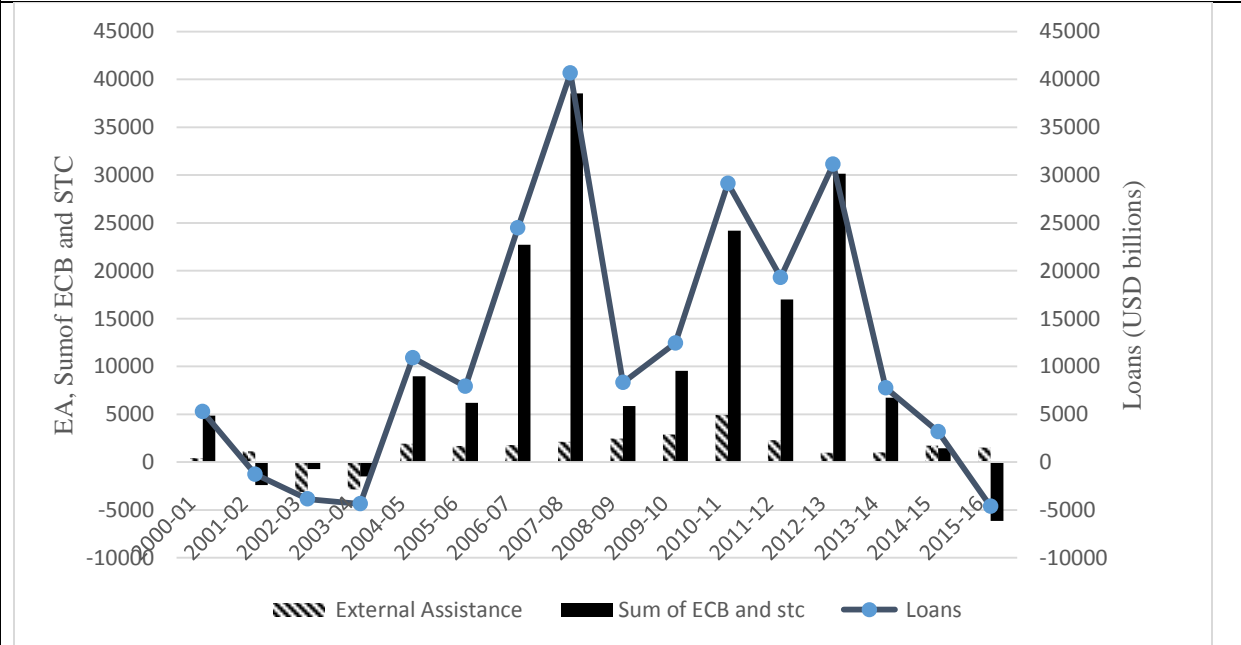

Source: Authors' calculations from RBI data

Chart 4.3: Components of FL as percentage of KA vis-à-vis total foreign loans as percentage of KA
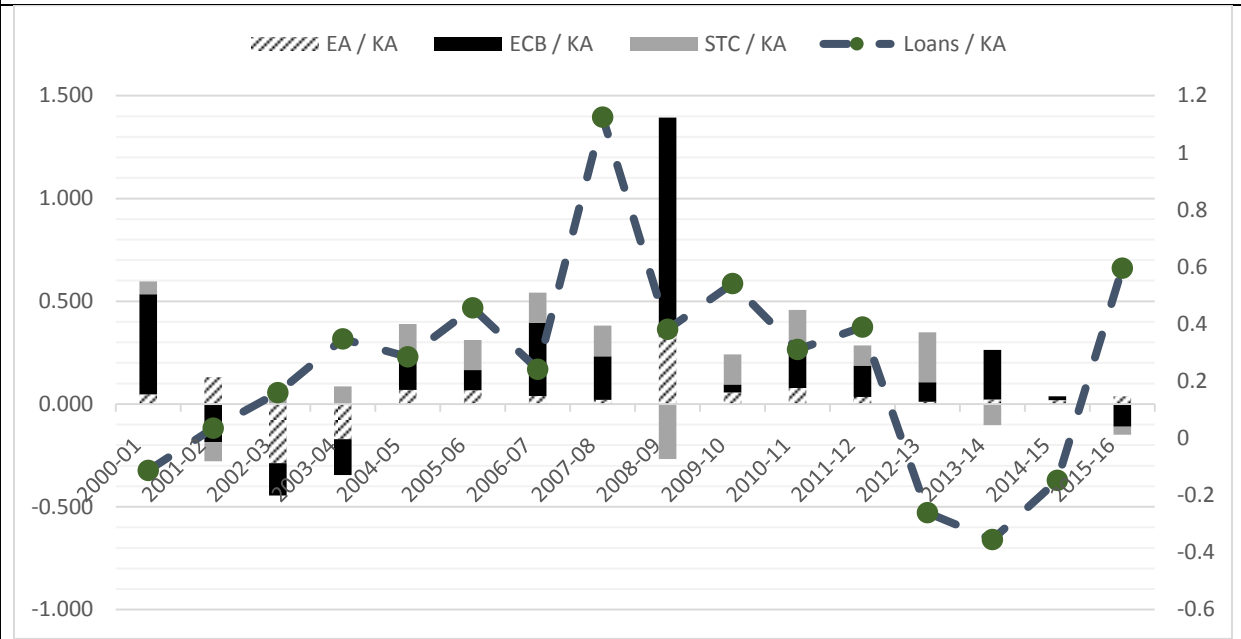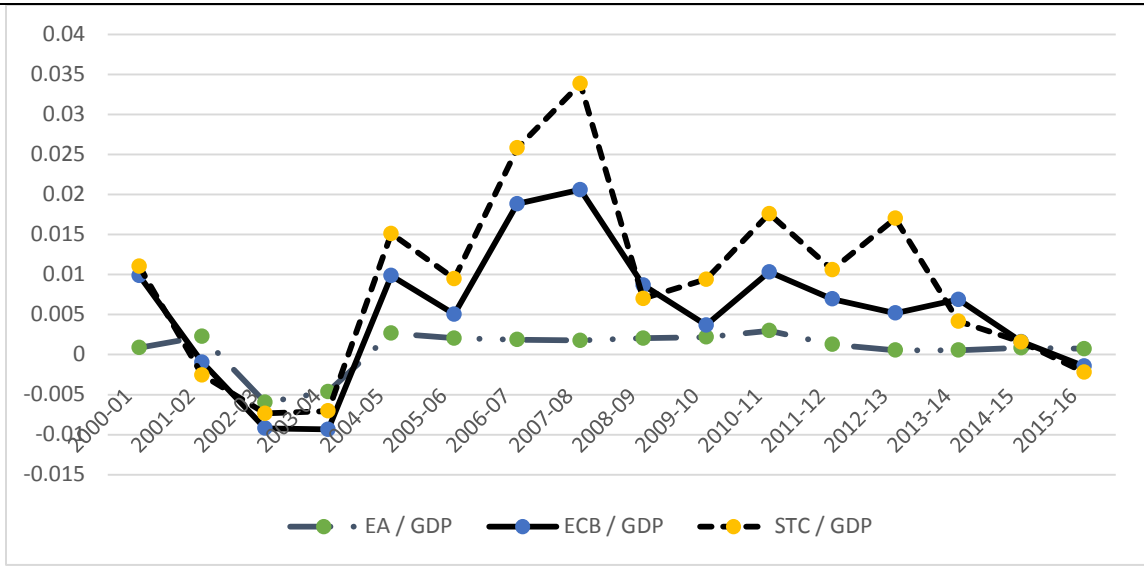
Source: Authors' calculations from RBI data

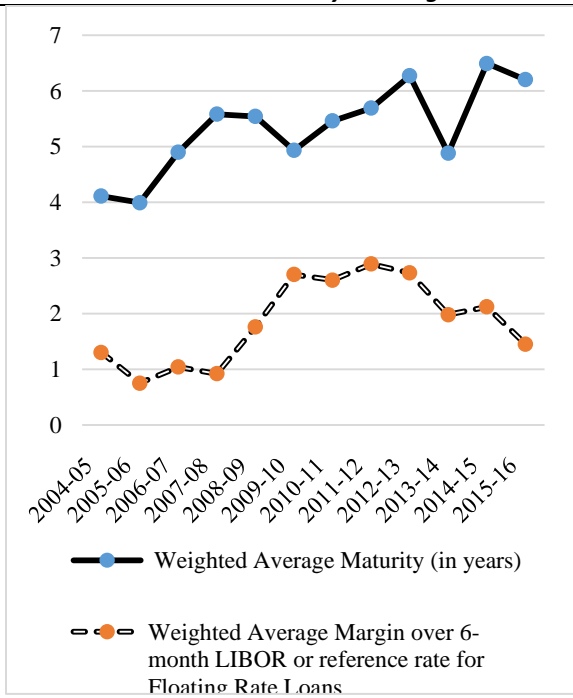**Chart 4.4: Movement of EA and sum of ECB and STC**

Source: Authors' calculations based on RBI data

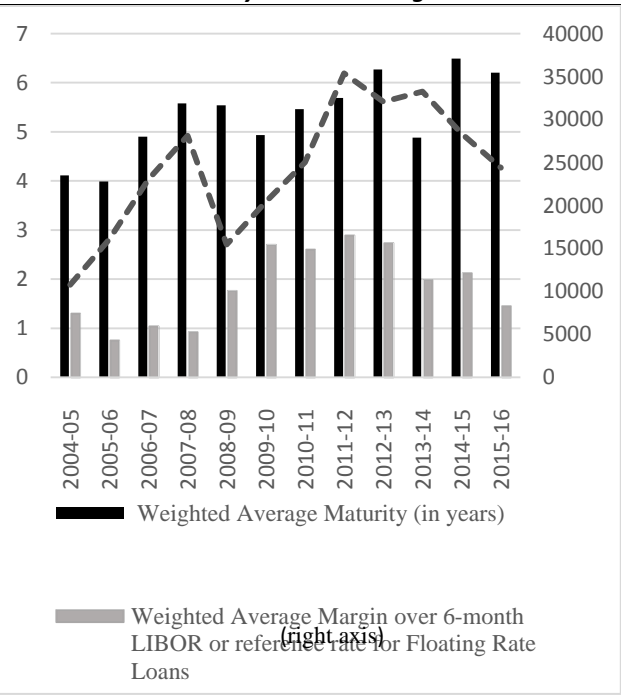**Chart 4.5: EA to GDP vs ECB to GDP vs STC to GDP**

EA / GDP   ECB / GDP   STC / GDP

Source: Authors' calculations based on RBI data and World Bank data
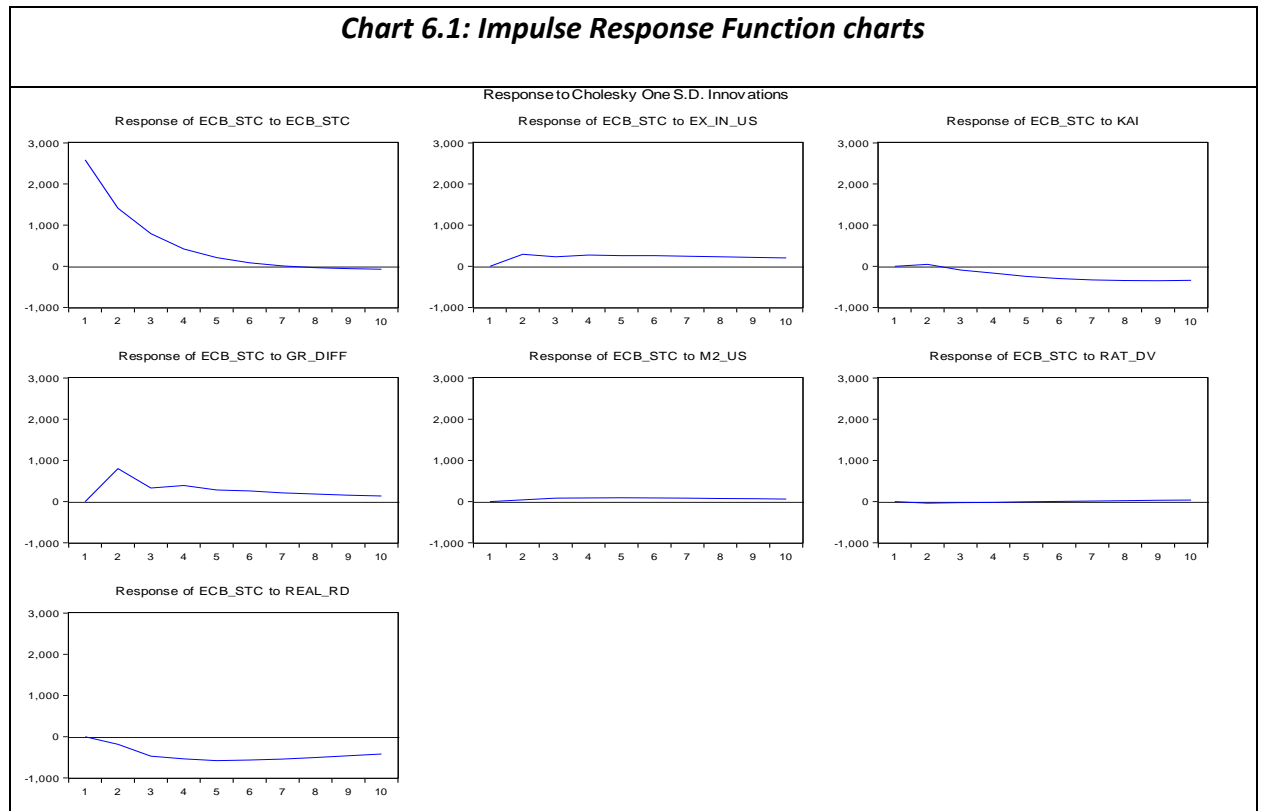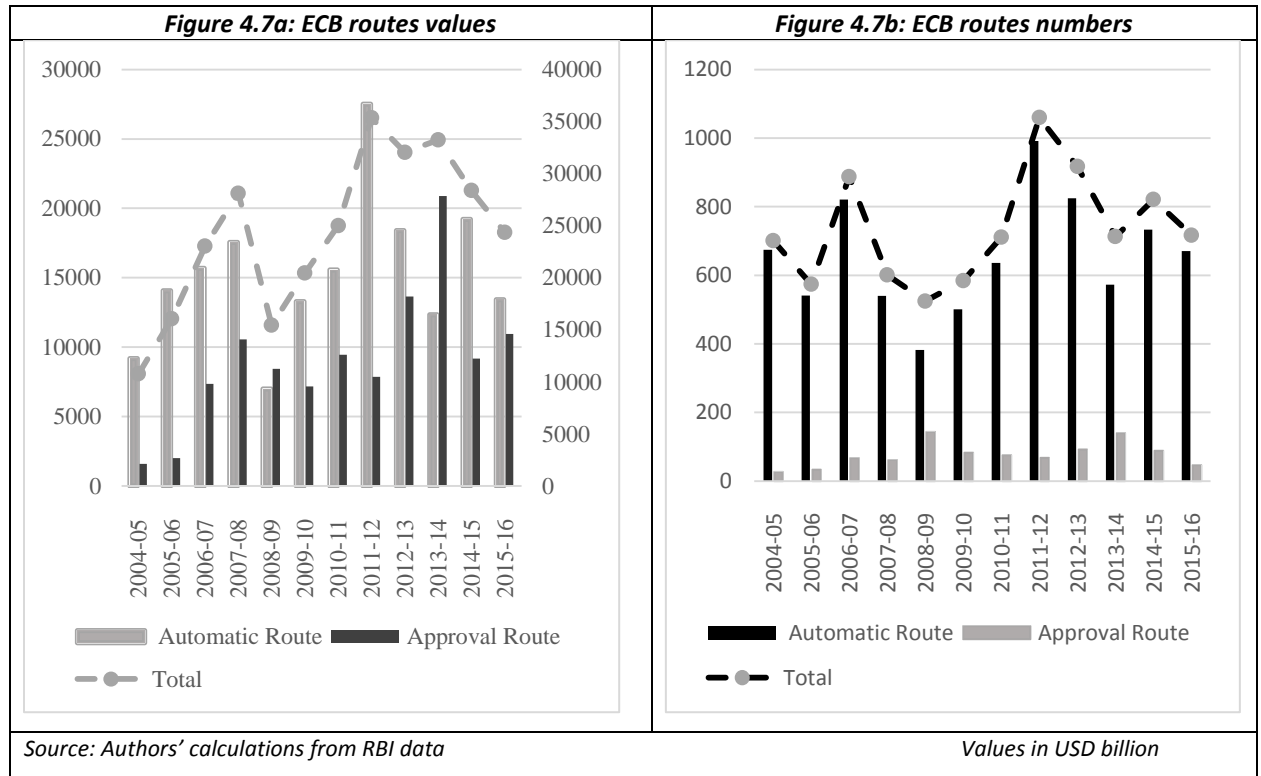
Chart 4.6a: Maturity vs Margin

Weighted Average Maturity (in years)

Weighted Average Margin over 6-month LIBOR or reference rate for Floating Rate Loans

Source: Authors' calculations from RBI data

Chart 4.6b: Maturity vis-a- vis Margin vis-à-vis ECB

Weighted Average Maturity (in years)

Weighted Average Margin over 6-month LIBOR or reference rate for Floating Rate Loans (right axis)

Values in USD billion

Figure 4.7a: ECB routes values	Figure 4.7b: ECB routes numbers

Figure 4.7a: ECB routes values

Figure 4.7b: ECB routes numbers

Source: Authors' calculations from RBI data   *Values in USD billion*

Chart 6.1: Impulse Response Function charts

Response to Cholesky One S.D. Innovations

Chart 6.2: CUSUM Test
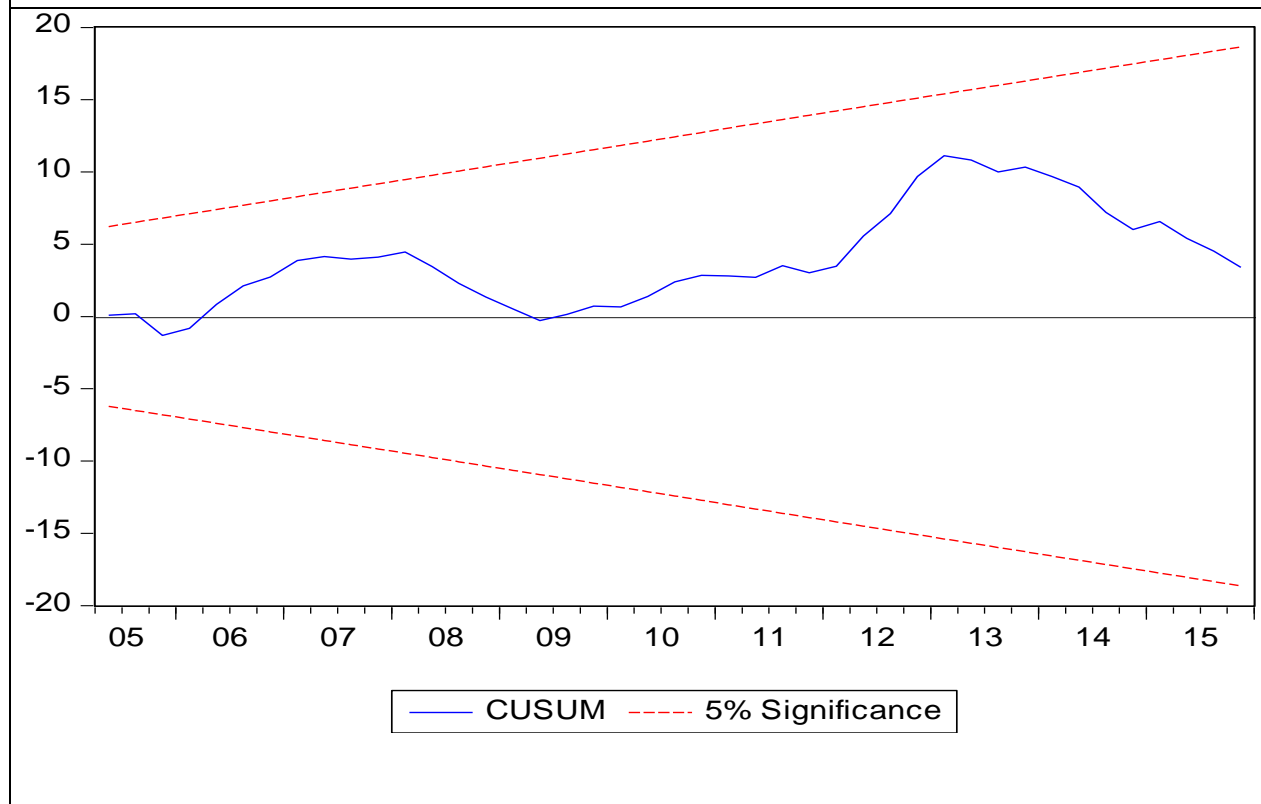
Appendices

Table A-1: Minimum Average Maturity Period		
Track I	Track II	Track III
i. 3 years for ECB upto USD 50 million or its equivalent. ii. 5 years for ECB beyond USD 50 million or its equivalent. iii. 5 years for eligible borrowers under para 2.4.2.vi, irrespective of the amount of borrowing. iv. 5 years for Foreign Currency Convertible Bonds (FCCBs)/ Foreign Currency Exchangeable Bonds (FCEBs) irrespective of the amount of borrowing. The call and put option, if any, for FCCBs shall not be exercisable prior to 5 years	10 years irrespective of the amount.	Same as under Track I.
Source: RBI Master Circular 2016		

Table A-2: Eligible borrowers		
Track I	Track II	Track III
i. Companies in manufacturing and software development sectors. ii. Shipping and airlines companies. iii. Small Industries Development Bank of India (SIDBI). iv. Units in Special Economic Zones (SEZs). v. Export Import Bank of India (Exim Bank) (only under the approval route). vi. 8 Companies in infrastructure sector, Non-Banking Financial Companies -Infrastructure Finance Companies (NBFC-IFCs), NBFCs-Asset Finance Companies (NBFC-AFCs), Holding Companies and Core Investment Companies (CICs).	i. All entities listed under Track I. ii. 9Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (INVITs) coming under the regulatory framework of the Securities and Exchange Board of India (SEBI).	i. All entities listed under Track II. ii. All Non-Banking Financial Companies (NBFCs) 10coming under the regulatory purview of the Reserve Bank. iii. NBFCs-Micro Finance Institutions (NBFCs-MFIs), Not for Profit companies registered under the Companies Act, 1956/2013, Societies, trusts and cooperatives (registered under the Societies Registration Act, 1860, Indian Trust Act, 1882 and State-level Cooperative Acts/Multi-level Cooperative Act/State-level mutually aided Cooperative Acts respectively), Non-Government Organisations (NGOs) which are engaged in micro finance activities[1]. iv. Companies engaged in miscellaneous services viz. research and development (R&D), training (other than educational institutes), companies supporting infrastructure, companies providing logistics services. v. Developers of Special Economic Zones (SEZs)/ National Manufacturing and Investment Zones (NMIZs).

Source: Same as above
Notes:
1. Entities engaged in micro-finance activities to be eligible to raise ECB: (i) should have a satisfactory borrowing relationship for at least three years with an AD Category I bank in India, and (ii) should have a certificate of due diligence on 'fit and proper' status from the AD Category I bank.

Table A-3: Recognized Lenders / Investors		
Track I	Track II	Track III
i. International banks. ii. International capital markets. iii. Multilateral financial institutions (such as, IFC, ADB, etc.) / regional financial institutions and Government owned (either wholly or partially) financial institutions. iv. Export credit agencies. v. Suppliers of equipment. vi. Foreign equity holders. vii. Overseas long term investors such as: a. Prudentially regulated financial entities; b. Pension funds; c. Insurance companies; d. Sovereign Wealth Funds; e. Financial institutions located in International Financial Services Centers in India viii. Overseas branches / subsidiaries of Indian banks[2]	All entities listed under Track I but for overseas branches / subsidiaries of Indian banks	All entities listed under Track I but for overseas branches / subsidiaries of Indian banks. In case of NBFCs-MFIs, other eligible MFIs, not for profit companies and NGOs, ECB can also be availed from overseas organisations[3] and individuals[4].

Source: Same as above
Notes:
2. Overseas branches / subsidiaries of Indian banks can be lenders only under Track I. Further, their participation under this track is subject to the prudential norms issued by the Department of Banking Regulation, RBI. Indian banks are not permitted to participate in refinancing of existing ECBs.

3. Overseas Organizations proposing to lend ECB would have to furnish to the authorised dealer bank of the borrower a certificate of due diligence from an overseas bank, which, in turn, is subject to regulation of host-country regulators and such host country adheres to the Financial Action Task Force (FATF) guidelines on anti-money laundering (AML)/ combating the financing of terrorism (CFT). The certificate of due diligence should comprise the following: (i) that the lender maintains an account with the bank at least for a period of two years, (ii) that the lending entity is organised as per the local laws and held in good esteem by the business/local community, and (iii) that there is no criminal action pending against it.

4. Individual lender has to obtain a certificate of due diligence from an overseas bank indicating that the lender maintains an account with the bank for at least a period of two years. Other evidence /documents such as audited statement of account and income tax return, which the overseas lender may furnish, need to be certified and forwarded by the overseas bank. Individual lenders from countries which do not adhere to FATF guidelines on AML / CFT are not eligible to extend ECB.

Table A-4: All in Cost Ceilings		
Track I	Track II	Track III
i. The all-in-cost ceiling is prescribed through a spread over the benchmark as under: a. For ECB with minimum average maturity period of 3 to 5 years - 300 basis points per annum over 6 month LIBOR or applicable bench mark for the respective currency. b. For ECB with average maturity period of more than 5 years – 450 basis points per annum over 6 month LIBOR or applicable bench mark for the respective currency. ii. Penal interest, if any, for default or breach of covenants should not be more than 2 per cent over and above the contracted rate of interest.	The maximum spread over the benchmark will be 500 basis points per annum. ii. Remaining conditions will be as given under Track I.	The all-in-cost should be in line with the market conditions
Source: Same as above		

Table A-5: End-use prescriptions		
Track I	Track II	Track III
ECB proceeds can be utilised for capital expenditure in the form of: a. Import of capital goods including payment towards import of services technical know-how and license fees, provided the same are part of these capital goods; b. Local sourcing of capital goods; c. New project; d. Modernisation /expansion of existing units; e. Overseas direct investment in Joint ventures (JV)/ Wholly owned subsidiaries (WOS); f. Acquisition of shares of public sector undertakings at any stage of disinvestment under the disinvestment programme of the Government of India; g. Refinancing of existing trade credit raised for import of capital goods; h. Payment of capital goods already shipped / imported but unpaid; i. Refinancing of existing ECB provided the residual maturity is not reduced. ii. SIDBI can raise ECB only for the purpose of on-lending to the borrowers in the Micro, Small and Medium Enterprises (MSME sector), where MSME sector is as defined under the MSME Development Act, 2006, as amended from time to time[5]. iii. Units of SEZs can raise ECB only for their own requirements[5]. iv. Shipping and airlines companies can raise ECB only for import of vessels and aircrafts respectively[5]. v. ECB proceeds can be used for general corporate purpose	1. The ECB proceeds can be used for all purposes excluding the following: i. Real estate activities ii. Investing in capital market iii. Using the proceeds for equity investment domestically; iv. On lending to other entities with any of the above objectives v. Purchase f land	NBFCs can use ECB proceeds only for: a. 14 On-lending for any activities, including infrastructure sector as permitted by the concerned regulatory department of RBI; b. providing hypothecated loans to domestic entities for acquisition of capital goods/equipment; and c. providing capital goods/equipment to domestic entities byway of lease and hire-purchases 2. Developers of SEZs/NMIZs can raise ECB only for providing infrastructure facilities within SEZ/ NMIZ.3. NBFCs-MFI, other eligible MFIs, NGOs and not for profit companies registered under the Companies Act, 1956/2013 can raise ECB only for on-lending to self-help groups or for micro-credit or for bonafide microfinance activity including capacity building.4. For other eligible entities under this track, the ECB proceeds can be used for all purposes excluding the following: i. Real estate activities ii. Investing in capital market iii. Using the proceeds for equity investment domestically; iv. On-lending to other entities with any of the above objectives; v. Purchase of land

Table A-5: End-use prescriptions		
Track I	Track II	Track III
(including working capital) provided the ECB is raised from the direct / indirect equity holder or from a group company for a minimum average maturity of 5 years. vi. 11NBFC-IFCs and NBFCs-AFCs can raise ECB only for financing infrastructure. vii. 12Holding Companies and CICs shall use ECB proceeds only for on lending to infrastructure Special Purpose Vehicles (SPVs). viii. ECBs for the following purposes will be considered only under the approval route[5]: a. Import of second hand goods as per the Director General of Foreign Trade (DGFT) guidelines; b. On-lending by Exim Bank.		
Source: Same as above Notes: 5. The respective conditions will be applicable for all three tracks.		

Table A6: Moody's Sovereign Credit Ratings for India			
Year	Senior Unsecured (Domestic)	LT Issuer Rating (Domestic)	LT Issuer Rating (Foreign)
1998	Ba2	Ba2	Ba2
1999	Ba2	Ba2	Ba2
2000	Ba2	Ba2	Ba2
2001	Ba2	Ba2	Ba2
2002	Ba2	Ba2	Ba2
2003	Ba2	Ba2	Ba2
2004	Ba2	Ba2	Ba2 +
2005	Ba2	Ba2	Baa3
2006	Ba2	Ba2	Baa3
2007	Ba2	Ba2	Baa3
2008	Ba2	Ba2	Baa3
2009	Ba2	Ba2	Baa3
2010	Ba2	Ba2	Baa3
2011	Ba2 +	Ba2 +	Baa3
2012	Baa3	Baa3	Baa3
2013	Baa3	Baa3	Baa3
2014	Baa3	Baa3	Baa3
2015	Baa3	Baa3	Baa3
2016	Baa3	Baa3	Baa3
Source: Moody's Ratings			