

On  
'Dollar Dominance in Trade:  
Facts & Implications'

by

**Prof. Gita Gopinath**

John Zwaanstra Professor of International  
Studies and Economics, Harvard University



 **एक्झिम बैंक**  
**EXIM BANK**  
भारतीय निर्यात-आयात बैंक  
EXPORT-IMPORT BANK OF INDIA

Centre One Building, Floor 21,  
World Trade Centre Complex,  
Cuffe Parade, Mumbai – 400005.

Phone: (91 22) 22172600  
Fax: (91 22) 22182572

[www.eximbankindia.in/cdal](http://www.eximbankindia.in/cdal)

#EXIMCDAL33    

 **एक्झिम बैंक**  
**EXIM BANK**  
भारतीय निर्यात-आयात बैंक  
EXPORT-IMPORT BANK OF INDIA

Export-Import Bank of India's

## 33rd Commencement Day Annual Lecture

on Thursday, December 21, 2017 at 6.00 pm

at Crystal Room,  
The Taj Mahal Palace Hotel, Mumbai



No part of this Lecture may be reproduced without the permission of Export-Import Bank of India. The views and interpretations in this document are those of the author and not ascribable to Export-Import Bank of India.

## Dollar Dominance in Trade: Facts and Implications

**Prof. Gita Gopinath**

John Zwaanstra Professor of International Studies  
and of Economics Harvard University

It is an honor to give the EXIM Bank of India's 33<sup>rd</sup> Commencement Day Lecture. I would like to especially thank the Managing Director, Mr. David Rasquinha, for inviting me to speak at this special event.

Given that this is the EXIM Bank lecture it feels appropriate to talk about international trade. The remarkable growth in international trade and finance over the last four decades has changed economics and politics. The global financial crisis over the last decade has challenged several of the existing paradigms in economics. In my lecture today I will speak about one such long-standing paradigm in international economics, the so-called "Mundell-Fleming paradigm," and the recent evidence that questions the general validity of this framework. This new evidence arises from work I have done over the last decade with co-authors that has led us to push for a new paradigm that we call the "Dominant Currency Paradigm."

It is important to get the paradigm right as it informs our understanding of several fundamental questions in international economics such as: How do exchange rate fluctuations impact inflation and trade? How does monetary policy in the U.S. transmit to the rest of the world? What exchange rate policy should emerging market central bankers

adopt? Why does the dollar have such a special role in financial markets?

I begin with describing the benchmark Mundell-Fleming paradigm (MFP). Next, I present the empirical evidence that disputes several of the assertions of MFP and instead supports the alternative, the “Dominant Currency paradigm (DCP)”. Lastly I describe the implications of DCP for domestic and international policy, including the questions I raised in the previous paragraph. I conclude by addressing the potential challenges to the dollar’s role as a dominant currency arising from the euro and more recently the Chinese yuan.

Robert Mundell won the Nobel Prize in 1999 for the Mundell-Fleming paradigm and its applications. Even if you have never heard of this paradigm, I believe you have absorbed its implications. For example if someone were to ask you what are the implications of a weaker currency, that is when a currency depreciates and loses value relative to its trading partners, your most likely response will be that this should expand a country's exports, reduce its imports, and raise inflation. I doubt you would alter your response if the currency that is depreciating were the Indian rupee or the U.S. dollar or the Japanese yen. This is a central prediction of MFP.

However, underlying this prediction is the crucial MFP assumption that exporters in each country set export prices in the currency of their own country, and importantly, that these prices change a lot less frequently than exchange rates

fluctuate. This is often referred to as 'producer currency pricing' because prices are 'sticky' in the producer's currency. To be concrete, according to this assumption, Indian exporters set prices in rupees and these rupee prices do not fluctuate as much as the exchange rate. This then implies that when the rupee depreciates relative to its trading partners the dollar price that U.S. importers face declines almost one to one with the exchange rate, similarly the price that Chinese importers of Indian products face in Chinese yuan falls by the magnitude of the exchange rate change, and so on for all countries buying goods from India. This lower price of Indian goods in world markets should then lead to a shift in world demand towards Indian exports and therefore an increase in export sales.

The mirror image of this from the importers perspective would be as follows: India imports goods from China that are priced in yuan, and imports goods from the U.S. that are priced in dollars, and these yuan and dollar prices change less frequently than exchange rates. In this case a weaker rupee should raise the price of U.S. and Chinese goods in Indian markets and lead to a drop in demand for foreign goods. An accompanying effect is that the weaker rupee raises inflationary pressures on the Indian economy. Overall therefore, from a trade perspective, a country whose currency weakens gains a competitive advantage in world markets and improves its trade balance with respect to the rest of the world.

It is precisely these arguments for competitive gains that have lead the U.S. to accuse China of manipulating its currency and of engaging in unfair trade practices. The same arguments generate calls for including 'currency manipulation' clauses in trade contracts to discourage countries from maintaining artificially weaker currencies which gives them an unfair advantage in trade. It is not just the U.S. but even developing countries that complain when their competitors weaken currencies. Brazil's finance minister Guido Mantega famously accused the U.S. in 2010 of engaging in 'currency wars' by keeping monetary policy exceptionally loose and weakening the dollar. There is therefore an interesting similarity in how policy makers around the world view the impact of currency movements, regardless of whether you are a policy maker of an advanced economy or of an emerging market.

Given the preponderance of the MFP in policy and academic discussions it is essential to confront the paradigm's assumptions with facts. A first central assumption in MFP is that exporters set prices in their *own currency*. As I describe, this is a poor approximation of reality. A more accurate description is that exporters overwhelmingly invoice in *dollars*. In my paper at the Jackson Hole Symposium in 2015 I reported statistics on trade invoicing for a sample of 43 countries. These countries represent 55% of world imports, and 57% of world exports. In contrast to the MFP, I document that the dollar's share, as an invoicing currency, is *3.1 times its share in world exports*. That is, many non-US exporters invoice their exports in dollars.

This in turn means that most world imports are also invoiced in dollars. Indeed the dollars share as an invoicing currency is estimated to be around *4.7 times its share in world imports*. To highlight how special the role of the dollar is it is useful to contrast this with the share of the other major global currency, the euro, in trade. The euro's share as an invoicing currency in world exports is *1.2 times* the share of euro country exports. In other words while some non-euro countries invoice exports in euros this is of a much smaller magnitude than the use of dollars.

Figure 1 plots for countries the share of its imports invoiced in dollars (black bar) next to the share of its imports from the U.S. (grey bar). Under MFP these two bars should have the same height. On the contrary, the dollar's share in invoicing outstrips its share in the country's imports. In the case of India, 86% of its imports are invoiced in dollars, while only 5% of India's imports originate in the U.S. Similarly 86% of India's exports are invoiced in dollars while only 15% of India's exports are to the U.S. While China makes up 16% of India's imports these are mainly invoiced in dollars.

In other words most countries do not use their own currency for exports. Table 1 reports the share of each country's exports and imports that are invoiced in their own currency. The vast majority of currencies rely heavily on foreign currency invoicing. The asterisk next to euro country names flags that this refers to their trade with 'non-euro' countries. It is interesting to note that in the case of Japan and U.K., whose



currencies are reserve currencies, only 40% of exports in the case of Japan and 51% in the case of the U.K. are invoiced in their own currency. The real exception here is the U.S. with 93% of its imports and 97% of its exports invoiced in its own currency. I also emphasize that this heavy dollar invoicing is not just about commodity prices like oil prices or copper prices that are denominated in dollars, but applies to a much wider set of goods. The MFP in fact applies only to goods whose invoice prices are 'sticky' relative to the exchange rate and consequently does not apply to commodity prices.

The fact that trade is so heavily invoiced in dollars, on the face of it, contradicts the main premise of MFP and suggests the need for an alternative paradigm. In my paper with Camila Casas, Federico Diez, and Pierre-Olivier Gourinchas we call this the “Dominant Currency Paradigm (DCP)”, to capture the idea that the vast majority of trade is invoiced in dollars making it the 'dominant currency'. According to DCP a large fraction of world exports are priced in dollars and importantly that these *dollar prices (as opposed to producer currency prices) are not very sensitive to the exchange rate.*

Just because exporters quote a price in dollars does not in and of itself violate MFP. Exporters could simply quote prices in dollars but these dollar export prices may fluctuate with the destination market currency exactly as predicted by MFP. It therefore needs to be established that this is not

the case. In a series of papers with co-authors we test the many predictions of MFP and DCP and show that DCP comes out strongly ahead in matching reality. I describe next some of the central findings of this research.

1. According to MFP, a 10% depreciation of the dollar raises import prices in the U.S. by close to 10%. According to DCP, a 10% depreciation of the dollar raises import prices in the U.S. by close to 0%.

The difference in prediction follows because in the case of MFP prices are sticky in the exporter's currency, while in the case of DCP prices are sticky in dollars. In Gopinath, Itskhoki and Rigobon (2010), we show that the evidence strongly supports DCP. For the 93% of U.S. imports that are priced in dollars a 10% dollar depreciation raises import prices at-the-dock by close to 0% in the first month and then cumulatively that number grows to 18% over two years. This is depicted in Figure 2. Overall for the U.S. imports pass-through is low at around 30%.

Consider at the other extreme a country like Colombia that has all its trade denominated in dollars. In line with DCP we should see high exchange rate pass-through into import prices. In Casas, Diez, Gopinath and Gourinchas

(2016) we document that this is indeed the case (see Figure 3). Similarly, a weaker rupee is more strongly inflationary for India than it is for the U.S. A simple take away is that pass-through into inflation is relatively weak for the U.S. and much more stronger for the rest of the world, especially for developing countries.

2. According to MFP, the quantity of exports should rise following depreciations. According to DCP, export expansions for non-U.S. economies, and especially developing countries should be weak. The reason for this is because export prices in dollars do not change much following the exchange rate depreciation. Consequently if a country's currency depreciates uniformly relative to all its trading partners there is almost no change in the destination currency price and therefore no change in demand and in export quantities.

There is a significant body of research documenting that indeed the response of exports following even large devaluations in emerging markets is weak, consistent with DCP, and contrary to MFP. Useful references include Alessandria, Pratap and Yue (2013) and Casas, Diez, Gopinath and Gourinchas (2016). Tourism is the one 'export' that grows following devaluations because its prices are indeed sticky in the producer's currency consistent with MFP.

3. According to MFP bilateral trade prices and quantities depend on *bilateral exchange rates*. According to DCP, bilateral trade prices and quantities depend on the *dollar exchange rate*. For example, the rupee price and volume of India's imports from China depends more on the rupee-dollar exchange rate than the rupee-yuan exchange rate if import prices from China are set in dollars. Recall that when prices are invoiced in dollars they tend to be sticky in dollars, which means that from India's perspective the rupee price moves with the rupee-dollar exchange rate and not the rupee-yuan exchange rate. In Boz, Gopinath and Plagborg-Moller (2017) we estimate that a 10% depreciation of an importing country's currency relative to the dollar raises the import prices of goods in its own currency by 7.8% even when there is no change in its bilateral exchange rate with its trading partner. On the other hand, a 10% depreciation relative to its trading partners' currency raises import prices by only 1.6%, when its exchange rate relative to the dollar is unchanged. *The strength of the U.S. dollar is therefore shown to be a key predictor of rest-of-world aggregate trade volume and consumer / producer price inflation.*

Given the strong evidence in favor of DCP it is reasonable to ask why trade has coordinated on a single currency? This can be understood as follows: Because most exporters use imported inputs for producing their product if these inputs are priced in dollars it implies that a significant fraction of an exporters costs are denominated in dollars which then incentivizes them to price in dollars.

Secondly, in a world where an exporting firm's competitors are pricing in dollars it is optimal for an exporter to also price in dollars to prevent excess variation in its price relative to its competitors prices and therefore to preserve market share.

Given the strong support for DCP in the data I now discuss the main policy implications of DCP:

1. Inflation Stabilization: A good rule of thumb for a country's inflation sensitivity to exchange rate fluctuations is the fraction of its imports invoiced in a foreign currency. The greater the fraction of a country's imports invoiced in a foreign currency the greater its inflation sensitivity to exchange rate fluctuations at both short (1 quarter) and long (2 year) horizons. For the U.S. with 93% of its imports invoiced in dollars the consequences are far more muted than for a country like India that has 97% of its imports invoiced in foreign currency (mainly dollars).
2. Export Competitiveness: When a country's currency depreciates the expectation is that it will stimulate demand for the country's products as it lowers the relative price of its goods in world markets. This is unlikely to be the case for many countries that rely on foreign currency invoicing for their exports. This does not imply that exporters in non-dominant currency countries do not benefit from a weaker exchange rate. They do, but it

mainly works through increases in mark-ups and profits even while the quantity exported does not change significantly. The benefits of higher profits in a world with financial frictions can of course be large and raise production and export capacity in the longer run. There therefore remains an argument for currency wars but the channels work very differently under DCP as opposed to MFP.

3. Monetary Policy Spillovers: There are asymmetries in monetary policy spillovers. A monetary policy tightening in the U.S. that is associated with a dollar appreciation generates inflationary pressures in countries that import primarily in dollar invoiced prices and this induces them to tighten monetary policy to address inflationary concerns. On the other hand monetary tightening in the rest of the world has a smaller impact on U.S. inflation through import prices given the dollar dominance of invoicing in U.S. imports and therefore requires less of a response from the U.S. central bank. Further still, U.S. dollar fluctuations drive world trade prices and quantities, and this influence far exceeds its share in world trade. The value of the dollar is more relevant than the bilateral exchange rate for predicting bilateral trade flows across country pairs despite the U.S. not being on either side of the trade transaction.

4. Exchange rate policy: Milton Friedman advocated for flexible exchange rates because he viewed the world through the lens of MFP. Under DCP the gains to flexible exchange rates are more limited, and given the other disruptive effects of sharply fluctuating exchange rates such as the negative impact on the balance sheet of corporations that borrow in dollars there is a good argument for developing countries to maintain a 'managed float' as opposed to a freely floating exchange rate.
5. Dollarization of International Finance: The dominance of the dollar is a phenomenon not only in trade but also in international finance. This is depicted in Figure 4. Non-U.S. firms that borrow internationally often do so by issuing dollar-denominated debt, more so than any other global currency, such as euros. According to the Bank for International Settlement, 60% of foreign currency local claims of banks are denominated in dollars. In my paper with Jeremy Stein we argue that the dollar's dominance in trade and finance are naturally connected. The large amount of trade invoicing in dollars generates demand for dollar safe assets that in turn depresses the dollar interest rates making it a cheap funding currency and therefore encouraging borrowing in dollars. The latter in turn encourages exporters to invoice in dollars to tap cheap dollar funding which then only reinforces the first effect.

To conclude, international trade is better viewed through the lens of DCP rather than the benchmark MFP paradigm. Doing so explains several puzzling features of the data

---

and leads to new policy conclusions. The heavy reliance on the dollar by emerging markets in their international transactions has even larger consequences for world dollar interest rates and U.S. monetary policy spillovers given their rising share in world GDP (See Figure 5). Individual country policies and global policies need to recognize the inherent asymmetries in the international monetary system.

The DCP framework applies to any environment with dominant currencies and does not require the dominant currency to be the dollar. The implications of course for the U.S. of losing its dominant currency status are dramatic. The question is whether and when this might happen. The main contenders for unseating the dollar are the euro and more recently the Chinese yuan. Despite the euro being in existence for close to twenty years it has had only a small impact on the dollars dominance, but that can of course change in the future. More recently the Chinese government has made a big push for internationalizing the yuan by invoicing more of its trade, especially with countries in Africa in yuan in exchange for loans that are also denominated in yuan. However, given the entrenched use of the dollar in both international trade and finance, and the strength of the U.S. monetary system, displacing the dollar will be a difficult and long-term endeavor.

\*\*\*\*\*

---

## References

1. Alessandria, G., Pratap, S., and Yue, V. Z. (2013). Export dynamics in large devaluations. International Finance Discussion Papers 1087, Board of Governors of the Federal Reserve System.
2. Boz, E., Gopinath, G., and Plagborg-Møller, M. (2017). Global trade and the dollar. Working Paper.
3. Burstein, A. and Gopinath, G. (2014). International Prices and Exchange Rates. In Gopinath, G., Helpman, E., and Rogoff, K., editors, Handbook of International Economics, volume 4, chapter 7, pages 391–451. Elsevier.
4. Casas, C., D'íez, F. J., Gopinath, G., and Gourinchas, P.O. (2017). Dominant currency paradigm: A new model for small open economies. Working Paper.
5. ECB (2017). The International Role of the Euro. Technical report, European Central Bank.
6. Gopinath, G. (2015). The international price system. In Jackson Hole Symposium, volume 27. Federal Reserve Bank at Kansas City.
7. Gopinath, G. and Itskhoki, O. (2010). Frequency of price adjustment and pass-through. Quarterly Journal of Economics, 125(2):675–727.

8. Gopinath, G. and Itskhoki, O. (2010). In search of real rigidities. In Acemoglu, D. and Woodford, M., editors, NBER Macroeconomics Annual, volume 25. University of Chicago Press.
9. Gopinath, G., Itskhoki, O., and Rigobon, R. (2010). Currency Choice and Exchange Rate Pass-Through. American Economic Review, 100(1): 304–36.
10. Gopinath, G. and Rigobon, R. (2008). Sticky borders. Quarterly Journal of Economics, 123(2): 531–575.

\*\*\*\*\*

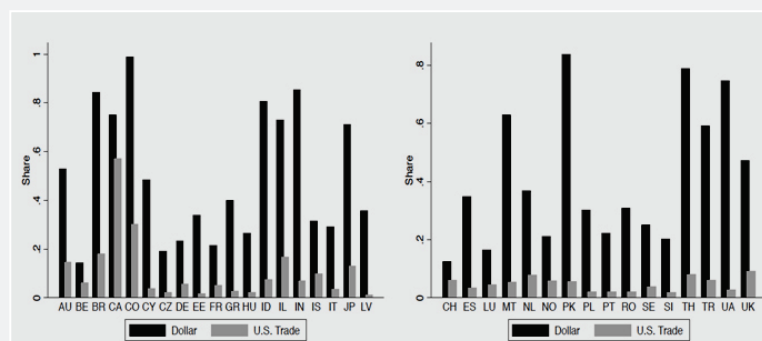


Table 1: Limited Own Currency Use in Trade, except for U.S.

Country	Imports	Exports	Country	Imports	Exports
United States	0.93	0.97	Canada	0.20	0.23
Italy*	0.58	0.61	Poland	0.06	0.04
Germany*	0.55	0.62	Iceland	0.06	0.05
Spain*	0.54	0.58	Thailand	0.04	0.07
France*	0.45	0.50	Israel	0.03	0.00
United Kingdom	0.32	0.51	Turkey	0.03	0.02
Australia	0.31	0.20	South Korea	0.02	0.01
Switzerland	0.31	0.35	Brazil	0.01	0.01
Norway	0.30	0.03	Indonesia	0.01	0.00
Sweden	0.24	0.39	India	0.00	0.00
Japan	0.23	0.39			

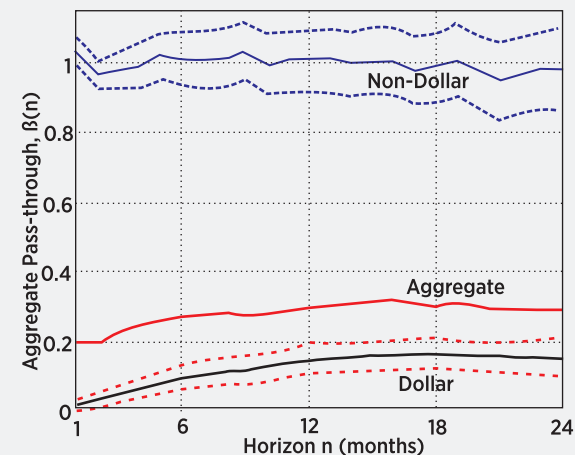
Source: Gopinath (2015)

Figure 1: Dollar Dominance in World Trade: By Country



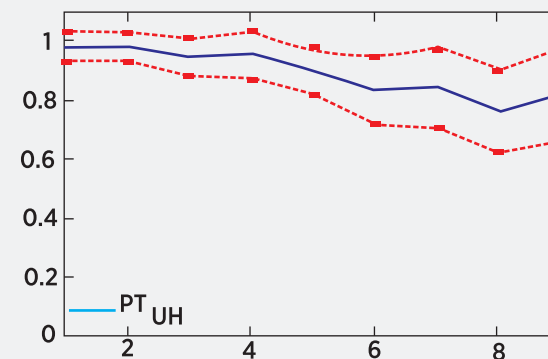
Source: Gopinath (2015)

Figure 2: ER Pass-through into the U.S. at monthly horizons



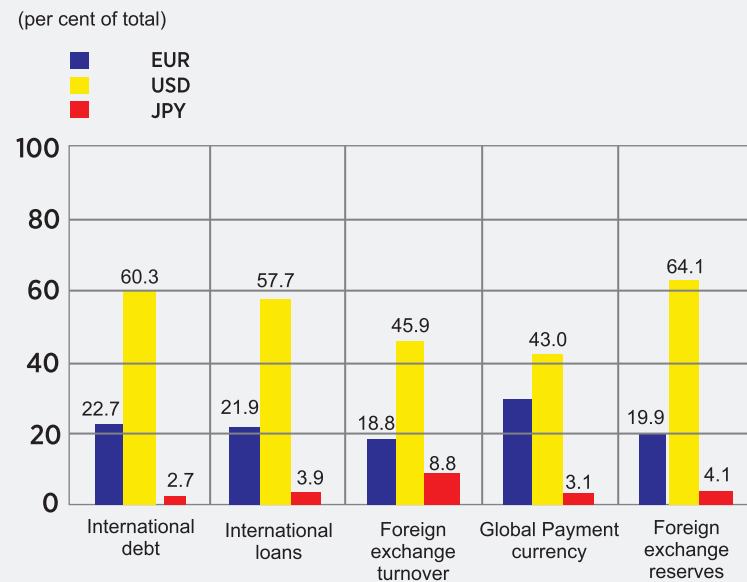
Source: Gopinath, Itskhoki and Rigobon, 2010

Figure 3: ER Pass-through into Colombia at quarterly horizons



Source: Casas, Diez, Gopinath and Gourinchas, 2016

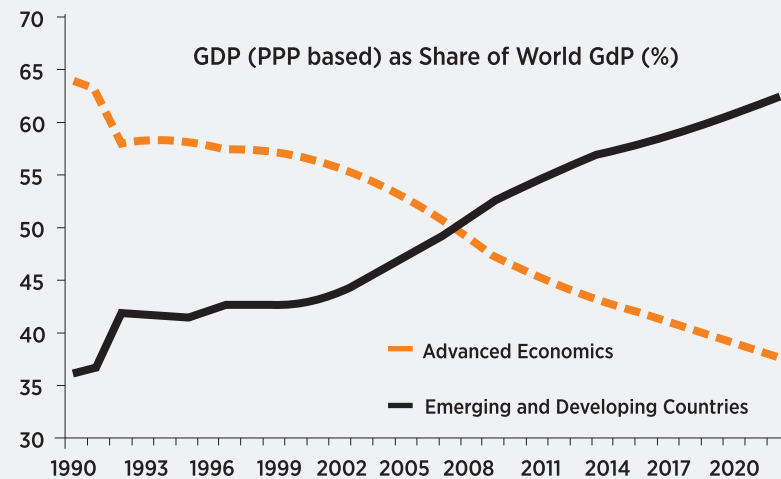
Figure 4: Dollar dominance in international finance



Sources: BIS, IMF, SWIFT, CLS and ECB calculations.

Notes: A comparison of selected international currencies, Data as at end-2015 or latest available.

Figure 5: The rising share of emerging economies in world GDP





**Prof. Gita Gopinath**

John Zwaanstra Professor of International Studies  
and of Economics Harvard University

Prof. Gita Gopinath is the John Zwaanstra Professor of International Studies and of Economics at Harvard University. Her research focuses on International Finance and Macroeconomics. She is co-director of the International Finance and Macroeconomics program at the National Bureau of Economic Research, a visiting scholar at the Federal Reserve Bank of Boston, member of the economic advisory panel of the Federal Reserve Bank of New York, Economic Adviser to the Chief Minister of Kerala state (India), a co-editor at the American Economic Review, co-editor of the current Handbook of International Economics and was managing editor of the Review of Economic Studies. She also served as a member of the Eminent Persons Advisory Group on G-20 Matters for India's Ministry of Finance. In 2011, she was chosen as a Young Global Leader by the World Economic Forum. In 2014, she was named one of the top 25 economists under 45 by the IMF. Before coming to Harvard, she was an assistant professor of economics at the University of Chicago's Graduate School of Business.