

C Implications of dominant currency pricing for the global transmission of US and euro area shocks

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The US dollar plays a special role in the global economy. As emphasised by Gopinath (2015), it is the main currency used for trade invoicing.¹⁰⁵ Moreover, a large share of cross-border financial exposures involves assets and liabilities denominated in US dollars. Importantly, both for trade flows and financial exposures, a large share of transactions that do not involve the United States are denominated in US dollars.

This special feature assesses the role played by the US dollar in trade invoicing for the global transmission of US and euro area monetary policy shocks. It provides evidence on differences in shock transmission from the traditional perspective of producer-currency pricing and from the perspective of dominant currency (i.e. US dollar) pricing. In addition, it provides simulations from ECB-Global, the ECB's main structural macroeconomic model for the analysis of global spillovers.¹⁰⁶ It shows that dominant currency pricing amplifies the effects of US monetary policy on US and global trade. Moreover, the special feature shows that dominant currency pricing does not significantly alter the domestic effects of euro area monetary policy, but that it reduces the effects of euro area monetary policy on global exports.

The dominance of the US dollar in global trade invoicing

The US dollar is the dominant currency for trade invoicing globally (see **Chart 26**). In particular, emerging market economies invoice the bulk of their exports in US dollars, regardless of the destination. Similarly, their imports are also largely invoiced in US dollars, regardless of the source. This phenomenon is known as dominant currency pricing (DCP), in contrast to producer-currency pricing (PCP), and local currency pricing (LCP).¹⁰⁷ Under PCP, exports are priced in and export prices are sticky or rigid (i.e. do not adjust instantaneously to shocks) in the producer's currency, against the currency of the importer under LCP or the currency of a third economy, typically the US dollar, under DCP. The export pricing paradigm matters only if prices are sticky, insofar as fully flexible prices can adjust instantaneously to shocks regardless of the currency in which they are set.

Recent research has assessed the empirical relevance of DCP. In particular, Casas et al. (2017) provide evidence that is consistent with the predictions from DCP

¹⁰⁵ See Gopinath, G., "The international price system", *NBER Working Paper*, No 21646, 2015.

¹⁰⁶ See Dieppe, A., Georgiadis, G., Ricci, M., Van Robays, I. and van Roye, B., "ECB-Global: introducing ECB's global macroeconomic model for spillover analysis," *Working Paper Series*, ECB, No 2045, April 2017. US dollar-denominated debt is not covered in this special feature.

¹⁰⁷ Strictly speaking, the pricing paradigm depends on the currency in which export prices are sticky, rather than on the currency in which exports are invoiced. Empirically, however, there is a close correspondence between the currency of invoicing and the currency in which prices are sticky; see, for example, Gopinath, G. and Rigobon, R., "Sticky borders", *Quarterly Journal of Economics*, Vol. 2(123), 2008, pp. 531-575; and Fitzgerald, D. and Haller, S., "Pricing-to-market: Evidence from plant-level prices", *Review of Economic Studies*, Vol. 2(81), 2013, pp. 761-786, who document that prices are rigid for significant durations in their currency of invoicing.

using micro-data on trade for Colombia, which is that trade prices tend to respond more to variations in the bilateral exchange rate of the Colombian peso against the US dollar rather than against other currencies.¹⁰⁸ Specifically, Casas et al. (2017) document economically and statistically significant estimates of pass-through from variations in the bilateral exchange rate of the Colombian peso against the US dollar to Colombian export and import prices in peso terms. Importantly, when they control for the bilateral exchange rate of the peso against the US dollar, the estimate of pass-through from variations in the bilateral exchange rate of the peso against the currency of the export destination/import origin is neither economically nor statistically significant. Moreover, Casas et al. (2017) document that Colombian export and import quantities respond to variations in the bilateral exchange rate of the peso against the US dollar regardless of the trading partner, but not to variations in the bilateral exchange rate of the peso against the currency of the trading partner. Boz et al. (2017) generalise these findings by examining a bilateral dataset of trade flows and prices for 55 economies.¹⁰⁹ They also provide evidence that a multilateral appreciation of the US dollar reduces trade globally, even for trade that does not involve the United States.

¹⁰⁸ See Casas, C., Diez, F., Gopinath, G., and Gourinchas, P.-O., "Dominant currency paradigm: A new model for small open economies", *IMF Working Paper*, No 17/264, 2017.

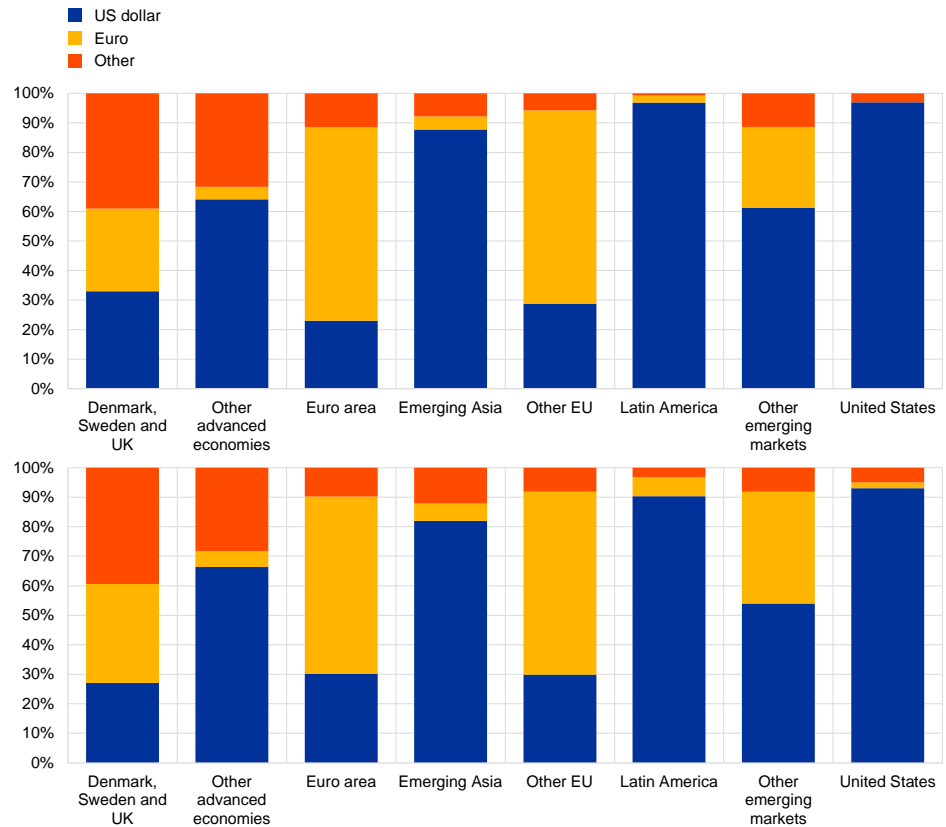
¹⁰⁹ See Boz, E., Gopinath, G., Plagborg-Møller, M., "Global trade and the dollar", *IMF Working Paper*, No 17/239, 2017.

Chart 26

The US dollar dominates global trade invoicing

Currency denomination of exports (top panel) and imports (bottom panel)

(percentages)



Sources: Gopinath (2015) and ECB calculations.

Notes: The estimates for the euro area include intra-euro area trade. Data for regional groups are aggregated using simple averages of country-level data.

Finally, Georgiadis and Schumann (2019) show that under DCP, output spillovers from a shock that leads to a multilateral appreciation of the US dollar depend on the differences between economies' shares of exports and imports invoiced in US dollars.¹¹⁰ Specifically, when the share of an economy's exports invoiced in US dollars is larger than the corresponding share of imports, then the appreciation of the US dollar depresses the economy's exports more strongly than its imports, thereby reducing net exports and hence GDP. Georgiadis and Schumann (2019) also provide empirical evidence for a sample of almost 50 advanced EU and emerging market economies that is consistent with this prediction. Output spillovers from positive US demand or as a result of a contractionary US monetary policy shock are negatively correlated with the difference between the share of exports invoiced in US dollars on the one hand, and the share of imports invoiced in US dollars of spillover-recipient economies, on the other hand. Moreover, this is the case even after controlling for other transmission channels and the role of commodity trade.

¹¹⁰ See Georgiadis, G. and Schumann, B., "Dominant-currency pricing and the global spillovers from US shocks", *Working Paper Series*, ECB, 2019, forthcoming.

The implications of export pricing paradigms in ECB-Global

We use ECB-Global to illustrate the differences in the transmission of shocks to the global economy under PCP and DCP.

ECB-Global is a rich semi-structural, multi-country model for the euro area, the United States, Japan, the United Kingdom, China, the rest of emerging Asia, oil-producing economies and the rest of the world featuring diverse real and financial cross-border spillover channels.¹¹¹ The evolution of the economies in ECB-Global is determined by a set of core structural relationships (e.g. Phillips and IS curves). The advantage of the structural elements of ECB-Global is that shocks have a clean economic interpretation, and that these facilitate tracking the domestic and international transmission of shocks. Reduced-form equations are added to enrich the core of ECB-Global. The reduced-form aspect of ECB-Global has the advantage that it facilitates modifying the model in a flexible manner so that it can be adapted relatively straightforwardly. Moreover, the additional reduced-form elements improve the empirical fit of ECB-Global.

To illustrate the implications of DCP in ECB-Global, we discuss below the global effects of US and euro area monetary policy shocks. Owing to space constraints, we do not discuss individually the effects on other economies modelled in ECB-Global.¹¹²

US monetary policy shocks

In ECB-Global, domestic output responses to a 25 basis points contractionary US monetary policy shock are almost identical under PCP and DCP

(see the left panel of **Chart 27**). A contractionary US monetary policy shock leads to an appreciation of the US dollar. Under PCP, this lowers the US dollar price of imports to the United States, which in turn encourages firms and consumers to switch to imports away from domestic production. In contrast, under DCP exports to the United States are priced in US dollars. The appreciation of the US dollar therefore implies US import prices are essentially unchanged in US dollar terms, which weakens expenditure switching from domestically produced goods in the United States to imports relative to PCP. This amplifies the contraction in US imports that results from the slowdown in domestic real activity owing to the tightening in monetary policy relative to PCP. Overall, however, as net exports account for only a small share of US GDP, the difference in output effects between PCP and DCP are small.

The differences in the implications of a contractionary US monetary policy shock across PCP and DCP for spillovers to the global economy in ECB-Global are significant for trade

(see the right panel of **Chart 27**). Consistent with the findings in Boz et al. (2017), the tightening in US monetary policy elicits a much stronger slowdown in global trade under DCP than under PCP; in fact, global imports decline almost twice as much and exports more than twice as much under DCP than

¹¹¹ For details see Dieppe, A., G. Georgiadis, M. Ricci, I. Van Robays and van Roye, B., "ECB-Global: introducing ECB's global macroeconomic model for spillover analysis", *Working Paper Series*, ECB, No 2045, 2017.

¹¹² For details see Georgiadis, G. and Möhle, S., "Introducing dominant-currency pricing in the ECB's global macroeconomic model", *Working Paper Series*, ECB, Frankfurt am Main, 2019, forthcoming.

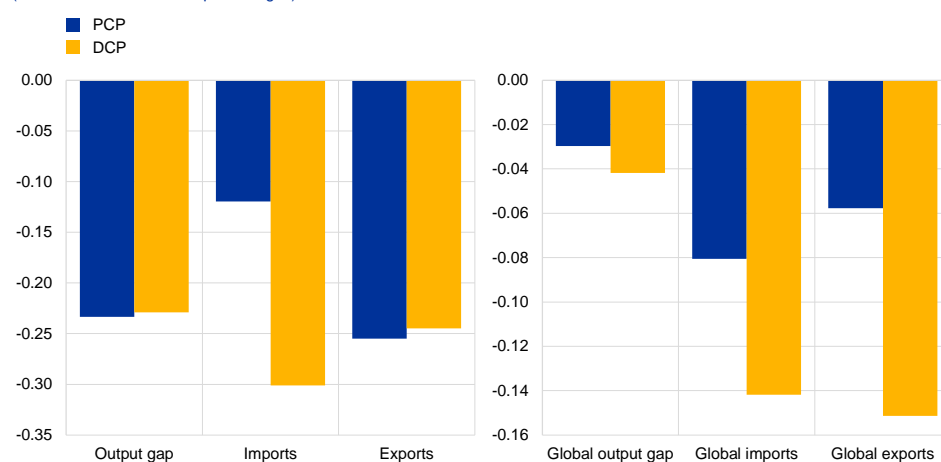
under PCP. The reason for this is that, under DCP, a large share of global trade prices are in US dollars, even if the related trade does not involve the United States. As a result, a large share of global imports becomes more expensive in local currency terms in response to a multilateral appreciation of the US dollar, which elicits expenditure-switching from imports to domestically produced goods. In contrast, under PCP, trade which does not involve the United States is not subject to expenditure switching, as non-US dollar bilateral exchange rates remain essentially unchanged in response to the US monetary policy contraction. The impact on global activity is more limited as economies' imports and exports fall in parallel.

Chart 27

DCP amplifies the effects of US monetary policy on US and global trade

Impact of a US monetary policy shock on the US economy (left panel) and the non-US global economy (right panel)

(deviation from baseline in percentages)



Source: ECB calculations based on ECB-Global.
 Note: The chart shows the average response over the first two years.

Euro area monetary policy shocks

In contrast, the global effects of a contractionary euro area monetary policy shock differ much less between DCP and PCP (see the right panel of **Chart 28**).

The only noticeable differences concern global imports, which are somewhat less sensitive to a monetary policy contraction in the euro area. The reason is that, under DCP, trade prices are sticky in US dollars and are therefore insulated from the appreciation of the euro triggered by a tightening of euro area monetary policy.

The domestic effects of a contractionary euro area monetary policy shock are also very similar under DCP and PCP (see the left panel of **Chart 28**). The only difference arises for exports, which fall – consistent with the findings in Casas et al. (2017) – somewhat less under DCP than under PCP. Again, the reason for this is that the prices of a non-negligible share of the euro area's exports are sticky in US dollar terms under DCP, which insulates these exports from the multilateral appreciation of the euro. Most importantly, the differences in the responses of imports and exports

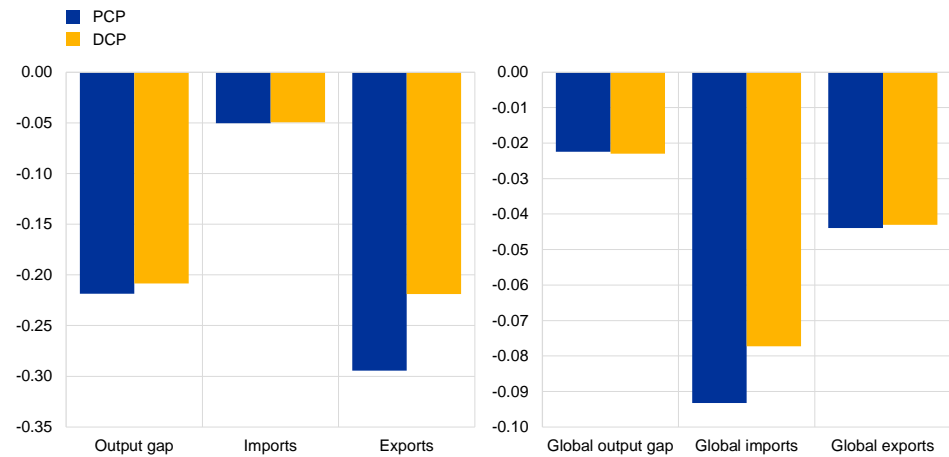
across DCP and PCP are too small to noticeably alter the domestic effectiveness of euro area monetary policy in terms of its impact on real activity.

Chart 28

DCP does not greatly alter the domestic effects of euro area monetary policy but does reduce the effects of euro area monetary policy on global imports

Domestic effects (left panel) and spillover effects (right panel) of a euro area monetary policy shock

(deviation from baseline in percentages)



Source: ECB calculations based on ECB-Global.
 Note: The chart shows the average response over the first two years.

Conclusion

Evidence suggests that DCP is an empirically relevant pricing paradigm in global trade. The nature of the transmission of shocks in systemic economies to the rest of the world under DCP differs from the cases of pricing paradigms traditionally considered, such as PCP or LCP. To better calibrate economies' policies in the future, it is therefore important to improve understanding of the implications of DCP.