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Is Globalization Reducing the Ability of Central Banks to Control Inflation?

IN-DEPTH ANALYSIS

Abstract

Globalization influences inflation and the transmission channels of monetary policy in various ways. The effects of globalization on the ability of monetary policy to control inflation have been discussed intensively. However, in the light of recent experiences with extended periods of disinflation in many advanced economies, the question whether the ability of monetary policy to control inflation has suffered significantly from increasing globalization has become new relevance. This paper discusses whether globalization is reducing the ability of central banks to control inflation and draws conclusion for the current situation in the euro area.

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EXECUTIVE SUMMARY

- Globalization influences prices and price setting mechanisms in various ways and could potentially affect the ability of central banks to control inflation in a meaningful way. However, fundamental concerns about the efficacy of monetary policy to influence inflation have not been borne out.

- When assessing the impact of globalization on inflation, it is helpful to differentiate between globalization in international trade and financial globalization, between globalization (increase in international trade) and global factors (oil prices, global slack), as well as between temporary effects (decline in import prices) and structural changes (change in price mechanism due to higher competition).

- Globalization has dampened the relative prices of traded goods, e.g. by increasing the available pool of labour and competition. In principle, these factors dampen inflation temporarily but can be relevant for extended periods of time if globalization continuously intensifies. However, these factors do not reduce the ability of monetary policy to control inflation, and central banks can take account of them.

- With regard to structural changes, theoretical arguments and empirical evidence are ambiguous. On the one hand, increased international competition tends to reduce the ability of firms to change prices over the business cycle and thereby may also lower the systematic impact of monetary policy on inflation. Moreover, as the relevance of trade for business cycle fluctuations rises, the role of global slack for domestic inflation may become increasingly important, making it more difficult for central banks to control inflation.

- On the other hand, the increasing relevance of trade for business cycle fluctuations also increases the importance of exchange rates as far as inflation is concerned. As a consequence, to the extent that monetary policy can control exchange rates, the ability of central banks to control inflation could increase.

- Financial globalization exposes domestic financial systems to global financial cycles, inducing central banks to place greater emphasis on maintaining financial stability to the detriment of their attention towards their inflation targets. Moreover, financial globalization contributes to the co-movement of international business cycles and thereby may reduce somewhat the ability of monetary policy to control exchange rates and inflation.

- Overall, globalization may have reduced the ability of central banks to control inflation to some extent, but it has not eliminated it. In practice, increasing globalization may make it more appropriate for central banks to sometimes allow for deviations from their inflation targets for longer periods than they would do otherwise. In a large, relatively closed economy, such as the euro area, globalization is of less relevance to monetary policy than in small, open economies.

- Regarding the current period of low inflation in the euro area since 2012, the contribution from temporary global factors, such as the fall in oil prices, is more important than structural changes caused by globalization. A great deal of other factors, such as slow recoveries and long-lasting adjustment processes following severe economic crises as well as lower effectiveness of monetary policy following such crises, may have a huge impact as well.

1. INTRODUCTION[1]

Globalization affects inflation in various ways as inflation dynamics are more and more driven by international linkages through commodities, trade and finance. Moreover, globalization potentially affects the ability of monetary policy to control inflation in a meaningful way. Therefore, it is crucial for central banks to take these effects into account when they conduct monetary policy. It is reasonable to classify the aspects of globalization that are relevant for central banks into different categories. Some of the aspects are directly linked to globalization (such as the decline in relative prices of internationally traded goods) while other aspects (such as fluctuations in commodity prices and global slack) are better labelled as global factors, even though the strength with which these global factors affect inflation and monetary policy may be linked to the degree of globalization. Ultimately, the importance of the different aspects of globalization for central banks will be determined by the extent to which they impact the control of monetary policy on inflation and whether they have temporary or longer-lasting effects.

Globalization is not a new phenomenon but has been going on for centuries. The effects of globalization on inflation and monetary policy have been discussed intensively. However, in the light of recent experiences with an extended period of disinflation, in particular of the euro, the question arises whether the ability of monetary policy to control inflation has suffered significantly from increasing globalization. Overall, this seems unlikely as no pronounced shift in the degree of global integration occurred at the time in question; if anything, the pace of increasing globalization has slowed down since the global financial crisis. However, globalization may have hampered the ability of monetary policy to influence inflation, making it more difficult for central banks to reach their inflation targets in times of severe economic crises.

Against this backdrop, this paper takes a fresh look at how globalization affects inflation and monetary policy. In Section 2, we discuss various ways in which globalization affects inflation and the transmission channels of monetary policy. In Section 3, we discuss whether exchange rates may act as a buffer for the effects of globalization on inflation and monetary policy transmission mechanism channels. In Section 4, we discuss the effects of financial globalization (which has become increasingly important in recent decades) on monetary policy. In Section 5, we conclude and discuss the implications of globalization for the current situation in the euro area.

2. INTERNATIONAL TRADE, INFLATION, AND MONETARY POLICY

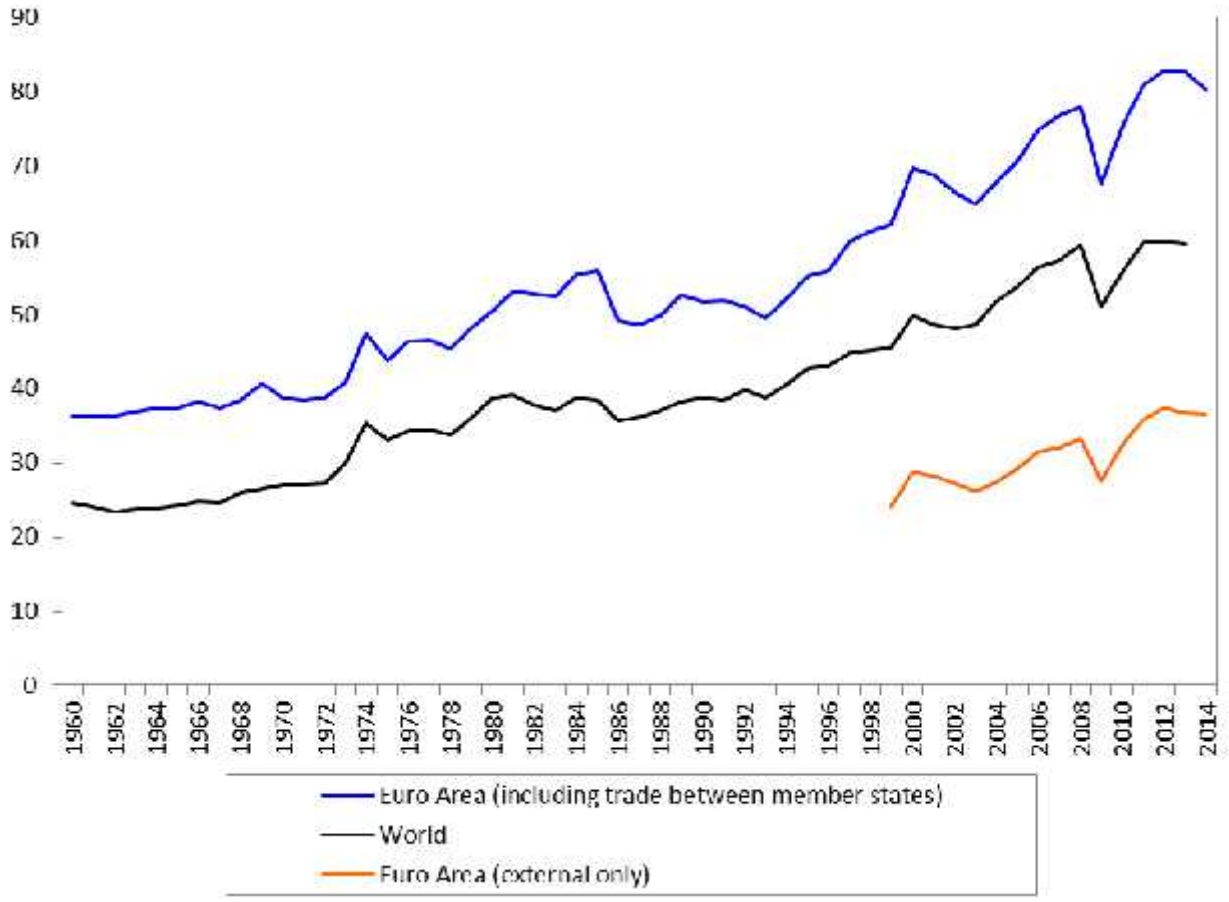
Globalization of trade affects inflation and the transmission channels of monetary policy in various ways. With increasing globalization, it has become more and more complicated for central banks to assess the relevance of all the different aspects affecting inflation and monetary transmission. When assessing the relevance to monetary policy, it is important to consider whether a specific aspect of globalization has transitory or permanent effects on inflation and whether specific aspects structurally change the way monetary policy can

[1] The authors thank Mewael F. Tesfaselassie for highly appreciated comments and discussions.

influence inflation. Since most central banks in advanced economies, including the ECB, target inflation rates with a medium-term horizon, unexpected non-repeating shocks, such as a change in oil prices, are not a major concern of monetary policy. Even if there are aspects of globalization that can persistently dampen inflation, central banks should, in principle, be able to take these into account and to continue to ensure price stability. More relevant for central banks would be structural changes that impair the transmission channels of monetary policy. But even such changes can be mitigated by central banks that anticipate them and change their policies accordingly. In this context, one should note that the deepening of international trade is not a new phenomenon but has been proceeding, some setbacks notwithstanding, for centuries. The most recent phase of trade globalization has been ongoing since the 1990s manifesting itself in rising trade to GDP ratios for the world as well as for the euro area (Figure 1).[2]

Figure 1: International Trade as Share of GDP

(Exports plus imports of goods and services in percent of GDP)



Sources: World Bank, Eurostat

Before discussing the relevant temporary and permanent effects that globalization in international trade may have on inflation (Section 2.2) and the relevant structural effects it

[2] While the euro area is relatively open with regard to cross-country trade (including trade between member states), it is relatively closed when the euro area is considered as one economic unit and only external trade is taken into account.

may have on monetary policy (Section 2.3), we start with some theoretical considerations based on the Phillips Curve to organize thoughts (Section 2.1).

2.1. Theoretical Considerations Based on the Phillips Curve

In its essence, a Phillips curve conceptualizes the connection between the rate of inflation and economic slack. In the original Phillips Curve, economic slack was measured via unemployment, but the output gap fulfills a similar role. The functional form of the Phillips Curve is important for central banks to learn about the trade-off between inflation and economic slack: it shows the required change in economic slack that is needed to achieve a given change in inflation (this trade-off is closely related to the so-called sacrifice ratio). A flattening of the Phillips Curve (implying that a larger change in economic slack or output is necessary to change inflation by the same amount) would imply that a central bank has lost some of its ability to control inflation. Obviously, there are a lot of other factors besides economic slack that may influence inflation, most prominently inflation expectations. However, the Phillips Curve relationship between inflation and economic slack is a very simple though convincing way of thinking about the ability of central banks to control inflation.

Empirical investigations of the Phillips Curve are complicated by the fact that different specifications of the Phillips Curves are plausible and that different measures for economic slack (which is unobservable) can be used. Moreover, there is strong evidence that the Phillips Curve relationship between output and economic slack varies over time and is non-linear in its nature (Snower 2015). This could be due to intrinsic problems such as adjusting inflation expectations that make the continued exploitation of the relationship impossible (Lucas' critique) or due to changing additional factors that exert their influence on inflation and economic slack over time (so that the data gathered no longer lends itself to "ceteris paribus"-comparisons).

Research seems to be favourable to the view that the Phillips Curve has flattened in the past decades (IMF 2006, Roberts 2006). However, the results depend to some extent on which specification of the Phillips Curve and which measure for economic slack are used (Gordon 2007, Gordon 2013). For the euro area, empirical results suggest that the Phillips Curve may have flattened somewhat in the past decades but steepened again since the Global Financial Crisis (Constâncio 2015). Several reasons have been discussed as to why the Phillips Curve may have flattened. One of the most prominent, globalization, we discuss in more detail below. Other reasons include a stronger anchoring of inflation expectations and downward rigidities of wages and prices that become more relevant when trend inflation is lower as it was the case throughout since the so-called Great Moderation.[3]

2.2 Transitory and Permanent Effects: Trade and Commodities

Globalization lowers the relative prices of internationally traded goods and thereby is associated with lower import prices. There are basically three effects that changes in import prices have on inflation:

[3] While a flattening of the Phillips Curve may make it more difficult for monetary policy to reach its inflation target, this is obviously not the case when the flattening is caused by a stronger anchoring of inflation expectations at the inflation target.

1. The direct effect on CPI inflation via changes in import prices. The consumer price index includes goods produced domestically as well as imported goods. Relatively cheaper imported goods and services have a direct impact on the import component of CPI inflation and will lead to a decrease in CPI inflation (see e.g. Mishkin, 2007)

2. The expenditure switching effect on domestic inflation. In addition to these direct effects on CPI inflation via import prices, there is also an indirect effect via demand substitution on domestic inflation. With imported goods and services becoming cheaper relative to domestic goods, consumers will demand relatively fewer domestic goods and relatively more imported goods. This is called the expenditure switching effect. Its strength depends on the substitutability of imported and domestic goods. The decrease in demand for domestic goods will lead - once prices adjust - to a decrease in domestic inflation. CPI inflation is also affected via the share of domestic goods in the consumer price index.

3. The effect of strategic price complementarities between domestic and foreign firms. Domestic firms will anticipate the expenditure switching effect. To the extent that they compete with foreign firms, they will also lower their prices in order to prevent a large loss in demand because of the lower prices of imported goods produced by foreign competitors. Hence, expenditure switching also leads via strategic price complementarities to direct effects on domestic inflation in addition to the indirect effects caused by changes in demand (see Cwik, Müller and Wolters, 2011).

In general, all of these effects have a transitory impact on inflation following a one-time change in import prices. However, when import prices continuously change due to globalization, e.g. caused by continuously increasing globalization in international trade, these effects can dampen inflation for extended periods unless monetary policy is adjusted accordingly.

Commodities

Fluctuations in commodity prices are an important determinant of the international co-movement in inflation (Carney 2015). In principle, changes in commodity prices have only transitory effects on inflation and are not a major concern of monetary policy as long as inflation expectations are well-anchored. Therefore, central banks could allow the variance of inflation to be relatively high – world commodity prices are quite volatile (see Anderton et al. 2009) – but keep the average rate of inflation unchanged and close to their target.

The impact of commodity prices on inflation is not the result of increasing globalization in recent decades, but is rather a global factor that is relevant to inflation. With regard to globalization, commodity prices are, however, also cited as a countervailing factor against deflationary pressures from emerging markets: growth in those countries would increase global demand for commodities and raise their prices (Pain et al. 2008), and thereby reduce the net effect of dampened goods prices. Following this line of thought, the overall impact of the integration of China into the world economy on global inflation could be quite low. However, recent experiences with the slump in oil prices show that the supply of commodities in response to price changes may also adjust after some time.

International Trade in Goods

Globalization has put downward pressure on the relative prices of internationally traded goods by increasing the available pool of labor and deepening the integration of international supply chains. A decline of important prices due to increasing globalization can have, as discussed above, three effects on domestic inflation, including increasing competition, which forces firms to accept lower mark-ups. All of these effects are transitory (because a one-time change in import prices will only temporarily affect inflation) and are therefore not of major importance for monetary policy.[4] When globalization increases continuously, as observed in recent decades, such effects are recurring and may dampen inflation for extended periods. However, central banks can learn about such trends and adjust their policy accordingly; this would simply imply that domestic prices would rise more rapidly during such periods to offset the downward pressure on inflation from imported goods. Only if increasing globalization were to come continuously as a surprise to central banks these effects could lead to permanently subdued inflation. Sometimes it is argued that relatively cheaper imports, which allow for higher domestic inflation (taking some overall inflation target as given), may even help central banks to control inflation because domestic downward rigidities (e.g., downward rigidities of wages) would be alleviated (Rogoff 2006).

2.3 Structural Effects of Globalization on Monetary Policy

Globalization may also have structural effects on price setting mechanisms and the monetary policy transmission mechanism. Such effects are of more concern for central banks than temporary effects on inflation; they are, however, also more difficult to gauge.

Price Setting Behaviour

While higher international competition tends to reduce the mark-up of firms and thereby temporarily inflation, it could also have a more structural impact on price mechanisms by impairing firms' ability to change prices over the business cycle. This would imply a flattening of the Phillips Curve and smaller effects of changes in the stance of monetary policy on inflation. However, with lower mark-ups, firms also may have to immediately adjust their prices to changes in their cost structure, implying a steepening of the Phillips Curve (see Carney 2015). In addition to firms, also unions may lose market power with increasing globalization (and an increasing pool of available labour) leading tendencially to more flexibility in wages and in turn in prices. However, the increasing supply chain integration and specialization across countries might act as a confounder: insofar as the demand for special skills rises in some country, the market power of the respective workers may also increase (Rogoff 2006). Moreover, lower wages for low-skilled workers can have other reasons apart from globalization, such as failures of the education system, increased low-skill immigration, or technology changes (Leamer 1996). Which effect dominates is an empirical question that is very difficult to answer. However, there is some evidence that higher competition due to globalization in tendency may lead to a flattening of the Phillips Curve (IMF 2006).

[4] An alternative way to interpret the effects of globalization in trade on inflation is to argue that the integration in international trade raises the productivity of a country. The increase in productivity in turn increases potential output leading to a temporary downward pressure on inflation.

Increasing Share of Internationally Traded Goods in GDP

Increasing globalization has been accompanied by an increasing share of internationally traded goods in GDP. Therefore, fluctuations in the global business cycle have become increasingly important, vis-à-vis domestic factors within the reach of domestic central banks, for fluctuations in the domestic business cycle and in inflation. For the Phillips Curve this would imply a flattening because changes in domestic slack may have a lower impact on overall inflation when, at the same time, global slack may have a larger impact. While this argument is theoretically appealing, the empirical evidence is mixed. Some empirical studies find that the importance of global slack has increased (Garcia and Wynne 2010), some are sceptical whether global slack has a significant impact on domestic inflation at all (Mishkin 2008). For the euro area, empirical evidence is scarce but the existing evidence suggests that global slack is not a major driver of inflation (Calza 2009). Empirical investigations are complicated by the fact that several different specifications of the Phillips Curve and several measures for slack are plausible. Moreover, it is hard to identify which role the increasing share of internationally traded goods has on domestic inflation because globalization affects inflation and monetary policy in various ways and it is difficult to distinguish empirically between all of them. When using a broader approach, there is some evidence that there are global factors that have a significant impact on domestic inflation in addition to fluctuations in commodity price (Ciccarelli and Mojon 2010).

Structural Effects of Globalization May Have Lowered the Ability of Monetary Policy to Control Inflation

Overall, the literature seems to slightly favour the view that the effects discussed in this section may have reduced the ability of monetary policy to control inflation somewhat. Central banks have to take more and more global developments into account, and changes in the stance of monetary policy may have lost some of their impact on inflation. This would by no means imply that central banks would not be able to ensure price stability any more. However, with increasing globalization it has become more difficult to gauge how global developments work through complex international supply chains and finally affect domestic inflation. Moreover, with increasing globalization, central banks may have to make use of their instruments more aggressively to reach their inflation targets (in a given period of time). However, central banks usually prefer to adjust the stance of their monetary policy only gradually, and larger changes may be inappropriate in times when uncertainty about the state of the business cycle and the optimal stance of monetary policy is high. Therefore, with increasing globalization central banks may, in practice, have to tolerate deviations from their inflation target for extended periods of time.

3. GLOBALIZATION AND THE EXCHANGE RATE CHANNEL OF MONETARY POLICY TRANSMISSION

Increased trade integration can have a potentially large effect on the exchange rate channel of monetary policy transmission. With respect to this issue, it is useful to distinguish between inflation measured by the consumer price index (CPI), which includes import prices, and domestic inflation. Let us consider for simplicity a contraction of monetary policy, though the arguments outlined below will also apply conversely to an

expansion of monetary policy. A contraction of monetary policy leads to higher domestic interest rates that will make it more attractive to invest in domestic currency compared to foreign currency. The domestic currency will appreciate. The exchange rate channel works via the relative price of imported goods. Depending on the degree of pass-through from exchange rate changes to import prices, a currency appreciation makes domestic goods and services more expensive relative to imported goods. This change in the relative price of imports can affect inflation in three different ways that haven been described in more detail above:

1. The direct effect on CPI inflation via changes in import prices.
2. The expenditure switching effect on domestic inflation.
3. The effect of strategic price complementarities between domestic and foreign firms.

All three transmission channels increase the effects of a given change in the interest rate on inflation. Channel 1 increases the effects on CPI inflation, but has no effect on domestic inflation. Channels 2 and 3 increase the effects on domestic inflation as well as, via the share of domestic goods in the consumer price index, on CPI inflation. Hence, the exchange rate channel makes monetary policy more effective in principle. Monetary policy's control over inflation increases since the output decline necessary to bring about a given reduction of inflation is smaller in open economies than in closed economies.

The strength of the exchange rate channel depends on three factors: the import share, the exchange rate pass-through and the degree of strategic price complementarities. The exchange rate channel works fully via the price of imported goods and services relative to domestic goods and services. Hence, the larger the import share is, the larger become the effects of the exchange rate channel. Therefore, the exchange rate channel is of particular importance in small open economies rather than in very large economies with a relatively small import share like the U.S. economy. Over the last decades, trade integration has increased, and some observers have identified this secular trend as an important manifestation of globalization. Hence, globalization can increase the importance of the exchange rate channel for monetary policy transmission and potentially increase monetary policy's control over inflation.

However, the effectiveness of the exchange rate channel also crucially depends on the pass-through of changes in the exchange rate into import prices. If the law of one price holds, then the exchange rate pass-through is complete. Any change in exchange rates will lead to a one-to-one change in import prices and, therefore, to large effects on CPI inflation and domestic inflation via the three transmission channels described above. If, however, producers are able to discriminate and set different prices across markets, then the effects of the exchange rate channel are smaller. In the extreme case of local currency pricing, there would be no immediate effect of changes in exchange rates on import prices and thus no effect of the exchange rate channel at all. In reality, some firms will price their goods and services in the currency of the producing country (producer currency pricing) and some firms will price their goods in the currency of the country where the goods and services are sold (local currency pricing). Thus, exchange rate pass-through will not be complete and limit the effectiveness of the exchange rate channel.

While the evidence for increased trade integration and thus increased import shares in many economies is clear, the evidence regarding exchange rate pass-through is much more uncertain. Several recent studies focusing on US import prices suggest that exchange rate pass-through has been declining over the last one or two decades (see e.g., Marazzi et al., 2005). However, the degree of exchange rate pass-through is not independent of the currency. Gopinath, Itskhoki, and Rigobon (2010) show that the degree of exchange rate pass-through is much lower for the average good priced in US dollars (25 per cent) than in other currencies (95 per cent). Campa and Goldberg (2005) find that the unweighted average of exchange rate pass-through to import prices for 25 OECD economies amounts to 60% in the short run. They estimate exchange rate pass-through to be lowest for the US economy (25%). For the euro area, Campa and Gonzalez Minguez (2006) find an exchange rate pass-through of about 60% in the short run for an unweighted average of 12 euro area economies. They also test whether the introduction of the euro has caused structural change in exchange rate pass-through but find no strong statistical evidence for this hypothesis. Some studies report a decline in exchange rate pass-through to import prices over recent years (see e.g. di Mauro, Ruffer and Burda, 2008, for the euro area). Such a decline might be connected to the increase in trade integration. Gust, Leduc and Vigfusson (2006) show in a theoretical model that increases in trade integration lead to more foreign competitors in the domestic market. This, in turn, leads to a higher volatility of mark-ups over costs and a decline in exchange rate pass-through to import prices. Gopinath (2015) shows that a good proxy for a country's inflation sensitivity to exchange rate fluctuations is the fraction of its imports invoiced in a foreign currency. Hence, U.S. inflation is very much insulated from exchange rate shocks, while for other countries the exchange rate channel might be much more important.

While for the direct effect on inflation and the expenditure switching effect (channels 1 and 2 above) the joint occurrence of a large import share and a large degree of exchange rate pass-through are sufficient, for the direct effects on domestic inflation (channel 3 above) in addition strategic price complementarities are necessary. Chen, Imbs and Scott (2009) provide evidence suggesting that increased exposure to foreign trade has a competitive effect that is reflected in firms' price-setting decisions. Hence, ongoing globalization might strengthen the effect of the exchange rate channel via strategic price complementarities.

Overall, our analysis shows that increasing globalization of trade can strengthen monetary policy's ability to control inflation via the exchange rate channel. The strength of this effect depends on the import share and on the pass-through of exchanges rate movements on import prices. An increase in the effectiveness of monetary policy in controlling inflation concerns in particular small open economies with flexible exchange rates. The euro area is a relatively large economy with an import share that has increased in past decades but that is lower than in many other smaller economies. The pass-through of exchange rates to import prices is, according to several studies cited above, higher than in the US. However, the strength of the exchange rate channel depends also on the ability of the central bank to influence the exchange rate. In recent years, we have witnessed a co-movement of business cycles and in turn a co-movement of policy rates limiting this ability. However, with the expected decoupling of interest rate cycles this situation might change and the European Central Bank's control over inflation might increase to some extent via the exchange rate channel.

4. IS INTERNATIONAL CAPITAL MARKET GLOBALIZATION REDUCING CENTRAL BANKS' ABILITY TO CONTROL INFLATION?

A substantial part of the phenomenon we now term 'globalization' is related to the ongoing integration of international capital markets. Economies across the globe have intensified their efforts to remove capital market barriers, aiming at gathering efficiency gains from improved capital allocation. As a result, gross capital flows have grown considerably since the early 1990s. Within the environment of a globalized capital market, the ability of a central bank to control inflation also depends on the extent to which the domestic economy can be shielded from global financial shocks. The standard textbook answer to this question is given by the so-called "open economy trilemma". It states that in the absence of capital controls, only flexible exchange rates allow central banks to conduct independent monetary policies (Obstfeld and Taylor, 2004). It is interesting to note that flexible exchange rates as a necessary precondition for monetary policy autonomy also have been taken as a sufficient measure. In particular, Woodford (2010) argues that it is hard to imagine a setup where globalization significantly impacts a central bank's ability to control inflation. However, the author's analysis explicitly excludes financial market imperfections and monetary policy objectives other than inflation targeting. In Section 4.1., we discuss to what extent real-world financial markets undermine the ability of flexible exchange rates to shield the economy from exogenous (financial) shocks and how this interferes with the central banks' ability to focus of their inflation target. In Section 4.2., we discuss to what extent an additional policy objective, i.e. financial sector stability, interferes with the central banks' ability to focus on their inflation target.

4.1. The Global Financial Cycle – Dilemma, not Trilemma?

Questioning Woodford's (2010) assumptions, the isolating effect of flexible exchange rates has been challenged. In particular, Rey (2013) suggest that the monetary policy pursued in the world's financial centres may predetermine monetary conditions in peripheral economies irrespective of the exchange rate regime. The starting point of this 'global financial cycle' is the observation that capital and credit flows turn out to be strongly pro-cyclical and contain centre economies' liquidity provision and global risk appetite as strong common components.

The recent developments on international capital markets provide anecdotal evidence in favour of this new view. After the financial crisis, safe haven flows to advanced economies in mid-2011 were followed by excessive liquidity provision in the United States and Europe. Within the respective quantitative easing programmes, ample liquidity migrated to emerging market economies in search of yield. This was followed by a strong real appreciation of emerging market currencies, leading to a loss of price competitiveness and inflation pressures. In May 2013, the Federal Reserve's announcement of a monetary policy "tapering" abruptly reversed capital flow directions in favour of the United States and other financial hubs. The resulting adjustments in emerging stock and foreign exchange markets pose a challenge to domestic policy makers, often described as a currency crisis or emerging markets crisis.

More rigorous empirical evidence is provided by Forbes and Warnock (2012), reporting that domestic factors are dominated by global factors in driving capital flows. Focusing on emerging market economies, Chung et al. (2014) document the importance of centre economy liquidity provision, which affects most prominently less liquid financial markets via global credit cycles. For a number of economies, these factors can lead to excessive credit growth leading to a domestic economic boom as well as abrupt contractions in crisis times. Gourinchas and Obstfeld (2012) and Schularick and Taylor (2012) indeed show that excessive credit growth is one of the best predictors of crisis phenomena. The empirical results reported in Jochem and Reitz (2014) support the hypothesis that in the recent past, global factors were dominating local asset prices and that emerging markets find it increasingly difficult to insulate the domestic economy. In particular, liquidity provision of the Federal Reserve turned out to be one of the major driving factors of emerging market asset prices. The empirical literature thus confirms the new view of a world with global financial cycles characterised by dominant capital flows leading to strong co-movements in international asset prices and business cycles.

Georgiadis and Mehl (2015) replicate the results for the euro area as well as for a broader set of economies, showing that domestic asset prices contain strong global components. The important contribution of the authors is to stress that increasing integration of an economy into world financial markets may also exert a counteracting influence on monetary policy effectiveness. The authors argue that countries maintaining large foreign asset positions show a strong wealth effect of a monetary shock. For example, if a contractionary policy shock causes the domestic currency to appreciate, residents suffer losses from their foreign investments and may reduce consumption spending. Since this wealth effect clearly depends on the exchange rate's flexibility to react, the authors claim that the exchange rate regime is still an important prerequisite of monetary policy. However, the wealth effect works in the opposite direction if the country maintains a large foreign liability position, thereby constituting an adverse effect of monetary policy. Thus, on a global level, wealth effects should be substantially dampened.

The conclusion to be drawn from this experience is that it is largely impossible for economies outside the financial centres to completely shield themselves from global financial trends. Strong interrelations with the monetary conditions of the centre economy, capital flows, and the leverage of dominant financial institutions imply that the classical open economy trilemma is being replaced by a 'dilemma' (Rey, 2013): Irrespective of the exchange-rate regime, fully independent monetary policy can only be achieved if barriers to capital flows are introduced. To what extent the global financial cycle binds domestic monetary policy clearly depends on the size of the country's financial markets. For small, open economies, such as emerging market economies, with less developed financial markets, a stronger co-movement with global factors can be expected. The euro area with deep and liquid financial markets is less vulnerable to global shocks.

4.2. The Monetary Policy Trade-Off in Globalized Capital Markets

The open economy trilemma originally emerges from the famous Tinbergen principle, stating that a policy authority needs one instrument for each policy goal to exactly meet the target value. In modern economies, however, central banks are in a less comfortable

position and have learned to deal with two targets, namely price level stability and full employment, with the monetary policy stance as the only instrument at hand. The way a central bank manages this trade-off is described by the Taylor rule and reflects a society's preferences for the respective monetary policy goals. Thus, in contrast to the Tinbergen case a gradual deviation from target values will be regularly observed (Obstfeld, 2014). Managing the policy trade-off is more complicated, and deviations from target values will be larger if a third goal, namely financial stability, is added to the list. For example, during the global financial crisis and particularly during the European sovereign debt crisis, the lack efficient macro-prudential instruments forced the European central bank to use its core monetary tools (liquidity provision) in order to restore the stability of the financial system. These liquidity measures are still in place, although in some countries of the euro area a return to more traditional monetary regimes would be desirable, pointing to a worsened policy trade-off.

In general, the following phenomena may divert monetary policy away from the traditional macroeconomic goal of price level stability if the economy becomes integrated into the global capital market.

- Global macro-prudential policy tools are typically less effective than their domestic counterparts. Obstfeld (2014), p. 38 argues that 'it may do little good to place restrictions on lenders within one's jurisdiction if foreign lenders can enter the market and operate without restriction. Moreover, direct limitation of residents' domestic foreign-currency borrowing is less effective if the same entities can issue foreign-currency debt in offshore markets.' Empirical evidence is reported in findings of Ostry et al. (2012) that domestic policy measures typically strengthen the financial stability in a panel of 51 emerging market economies between 1995 and 2008, but the efficiency of these tools suffer when agents can migrate to less regulated markets. As a result, the likelihood of domestic monetary policy to be engaged in financial stability programmes and driven away from traditional inflation targeting is higher in integrated capital markets.
- Short-term capital flows were blamed for further challenging monetary policy because of their myopic search for return. For example, in commodity-exporting economies like Australia, Canada, but also Brazil, overheating was observed due to strong global growth in the run-up to the financial crisis. The interest rate reaction of these central banks attracted funds from low-yielding currencies, thereby further boosting the economy. As a result, the effectiveness of monetary policy to control inflation is severely hampered in times of substantial swings in global liquidity.

CONCLUSIONS AND IMPLICATIONS

Conclusions

Globalization affects inflation and the transmission channels of monetary policy in various ways. Some aspects of globalization and global factors exert only temporary influence on inflation. Changes in commodity prices are an important determinant of the international co-movement of inflation rates, and the recent slump in oil prices has significantly

contributed to subdued inflation in many advanced economies in this period. By increasing the pool of available labour and international competition, globalization has led to price declines in internationally traded goods, thereby putting downward pressure on inflation. While this downward pressure is also temporary in nature, it could be relevant for long periods if globalization continuously intensifies. However, central banks can take these developments into account when conducting their monetary policy so that their ability to control inflation is not called into question.

Other ways in which globalization affects inflation are more structural in nature and thus of greater relevance to the ability of monetary policy to control inflation. Higher competition may reduce the ability of firms and workers to change their prices and wages over the business cycle, thus tending to reduce the effects of changes in the monetary policy stance on inflation. Moreover, with increasing relevance of traded goods to domestic business cycle fluctuations, fluctuations in the global business cycle, which are out of reach for national monetary policy, have become more relevant. The effects of global business cycle fluctuations on domestic prices are not only becoming more important; they are also increasingly difficult to gauge because they work through increasingly complex international supply chains. Overall, this development also tends to lower the effectiveness of monetary policy to control inflation and makes it more relevant for central banks to take international developments into account.

Deepening global trade integration may hurt central banks' ability to control inflation insofar as increasingly important global factors and developments elude their influence and are harder to keep track of, but higher trade shares also increase the importance of exchange rate movements for inflation. This strengthens the effects of monetary policy on inflation to the extent that it is able to influence exchange rates. However, when the international co-movement of business cycles is relatively high, the ability of monetary policy to impact exchange rates may vanish if all central banks take similar measures at the same time. Moreover, with increasingly intensifying financial globalization, central banks have to take more and more international capital flows and financial stability issues into account at the cost of distracting their attention somewhat from reaching their inflation target.

Overall, globalization in international trade and financial globalization in practice may have reduced the ability of monetary policy to control inflation in the short to medium term but have not eliminated it. As a consequence, central banks would be well advised to tolerate small deviations from their inflation targets for longer periods of time than they would otherwise consider in a world without globalization as long as inflation expectations are well-anchored. The impact of globalization on the ability of monetary policy to control inflation is strongest for small, open economies. The impact on the euro area as a relatively large economy, with a lower degree of openness than many small economies, is most likely more moderate but still noticeable.

Implications for the Euro Area

With regard to the period of disinflation in the euro area since 2012, several factors are at play but not globalization per se. If globalization had abolished the ability of the ECB to control inflation and thereby contributed to the period of disinflation, this would have

required an abrupt change in globalization after the global financial crisis. But this is not the case; if anything, the pace of intensifying globalization has declined since the crisis. Nevertheless, global factors have contributed to this period of disinflation. Most importantly, the slump in oil prices has significantly lowered inflation in the euro area. However, this is not a major concern for monetary policy because these effects will fade out relatively soon. Global slack may have contributed to subdued inflation in the euro area, too, but this effect is difficult to quantify.

Overall, there are several other reasonable explanations for the long period of subdued inflation in the euro area. Just to name a few, there is overwhelmingly strong evidence that financial crises have long-lasting dampening effects on output (Reinhart and Rogoff 2009) and that the ensuing recoveries are weak (Boysen-Hogrefe et al, forthcoming). This might subdue inflation for quite some time. Moreover, there is growing evidence that the effectiveness of monetary policy to control inflation is significantly lower in the aftermath of financial crises (Jannsen et al. 2015). Finally, the disinflation in the euro area after 2012 - sometimes labelled “surprisingly excessive” - is not as surprising as it might seem because the euro area (in contrast to other advanced economies) fell back into a recession due to the sovereign debt crises in this period. However, the beginning and the end of recessions are notoriously hard to predict (Dovern and Jannsen 2015). Consequently, the disinflationary period was not predicted ex ante but can be explained relatively well ex post facto (Constâncio 2015). Overall, the evidence suggests that the relatively long period of disinflation in the euro area is rather a normal outcome of the general circumstances than a failure of monetary policy. From this perspective, monetary policy may be well advised to tolerate inflation being below its inflation target for an extended period.

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