Eddie Gerba and Corrado Macchiarelli

Is globalization reducing the ability of central banks to control inflation?

Report

DIRECTORATE GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Is globalization reducing the ability of central banks to control inflation?

IN-DEPTH ANALYSIS

Abstract

Since the beginning of the crisis, inflation rates have shown a clear downward trend in many advanced countries and have fallen well below the targets of their respective monetary authorities. Despite strong monetary action, inflation expectations are slow to pick up. In some countries, the recovery is quite strong and unemployment rates have decreased, yet price pressures and wage development continue to remain subdued. Do central banks seem to have (partially) lost their ability to control inflation rates? Against the backdrop of fluctuations in global commodity prices and growth, together with the ongoing structural changes related to globalization wielding pressure on prices and wages, this paper focuses on the implications of globalization for domestic inflation and its expectations and the possible consequences for national monetary policies.

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AUTHOR

Eddie GERBA, London School of Economics
Corrado MACCHIARELLI, London School of Economics

RESPONSIBLE ADMINISTRATOR

Dario PATERNOSTER
Policy Department A: Economic and Scientific Policy
European Parliament
B-1047 Brussels
E-mail: Poldep-Economy-Science@ep.europa.eu

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ABOUT THE EDITOR

To contact the Policy Department or to subscribe to its monthly newsletter please write to: Poldep-Economy-Science@ep.europa.eu

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EXECUTIVE SUMMARY

Since the beginning of the crisis, inflation rates have shown a clear downward trend and have fallen well below the targets of their respective monetary authorities. Despite strong monetary action, inflation expectations are slow to pick up. In some countries, the recovery is quite strong and unemployment rates have decreased, yet price pressures and wage development continue to remain subdued.

Much of the debate about globalization has revolved around the flattening of the short-term Phillips curve over time. However, a number of studies have challenged the idea that the evidence of a flattening of the curve reflect a mounting influence of foreign and global measures of economic and financial slack in domestic price changes, highlighting instead how the observed inflation "torpor" could rather be the result of different or simultaneous factors, such as better expectations' management, "good luck" (fewer adverse shocks before 2007), or structural reforms in several countries.

Regarding commodity prices, the observed surge in the real price of oil before the crisis was driven almost entirely by a sequence of unanticipated increases in the international demand for commodities, in particular from emerging Asia. Particularly, the resulting (net) oil price increases over the period 2003 – 08 reflected indeed a persistent shift in the oil's shortage. This shift left little scope for monetary policy authorities to mitigate the impact of the shock. Certainly, commodity prices have come off their peak recently, and this decline is projected to persist, given recent growth dynamics in China and the expected further slowdown in emerging economies. However, previous evidence suggests that this may not affect core inflation directly. Some preliminary evidence from the US says nevertheless that these dynamics in commodity prices may feed through expected inflation under the assumption that inflation expectations have not been fully anchored. Even there, central banks should not worry too much about commodity shocks in global demand, beyond making sure that inflation expectations remain anchored.

Regarding labour markets, there is sufficient evidence for wage moderation and decreased union bargaining power over the past two decades. But rather than a result of integration of labour markets themselves, it seems to be a consequence from capital and product market integrations, and international competitiveness pressures (or shocks) such as import penetration rates, mark-ups or capital flows.

On the finance side, we note that while the crisis highlighted how, in a globalized world, monetary policy interventions had to go beyond the domestic facility wielded in the past, this did not represented a change in the monetary policy stance. This crisis rather highlighted the need for a global coordinated in terms of regulation, supervision and control.

Our conclusion is that domestic monetary policy can still control domestic interest rates and so stabilise inflation (and output). No matter the pace of globalisation and how great its eventual extent may be, it should remain possible for a disciplined central bank towards a clear inflation target to achieve that goal without the impediment of having to coordinate excessively with other central banks. The only way in which globalization might matter for monetary policy is by increasing mutual sensitivity of the monetary transmission channel to changes in the exchange rate. This, however, does not mean that the degree of openness of an economy lacks significance for the conduct of monetary policy. Other important issues should be considered, such as the correct structural specification of models on which policy is built, the practical issues of defining domestic inflation, or the mutual financial interconnectedness and, certainly, the need for continued coordinated financial policy measures.

1. INTRODUCTION

Since the beginning of the crisis, inflation rates have shown a clear downward trend in many advanced countries and have fallen well below the targets of their respective monetary authorities. Despite strong monetary action, inflation expectations are slow to pick up. In some countries, the recovery is quite strong and unemployment rates have decreased, yet price pressures and wage development continue to remain subdued. Do central banks seem to have (partially) lost their ability to control inflation rates? The challenges to monetary policy in an increasingly interconnected world are a topic having long high-ranked on policy makers' agenda. Yet, the evidence that globalization may alter monetary policy transmission is not always conclusive. To the same degree, separating the effect of globalization on domestic inflation, though imported goods, from that of other factors – anchoring of expectations, economic slack, etc. – may prove difficult. Against the backdrop of fluctuations in world commodity prices and growth, together with the ongoing structural changes related to globalization wielding pressure on prices and wages, this paper review focuses on the implications of globalization for domestic inflation and its expectations and the possible consequences for national monetary policies.

2. THE "REAL-SIDE" IMPACT OF GLOBALIZATION

Theoretically economists have long recognized the importance of macroeconomic interdependence. The Mundell-Fleming models of open economies developed in the 1960s and the 1970s, as well as the modern two-country New Keynesian models that came later, amply described the effects that shocks to one economy may have on a representative foreign economy.[1] It had generally been understood, however, that the role of globalization is rather an empirical issue (for a review see Chudik, 2014).

Figure 1 – Real GDP Growth Volatility

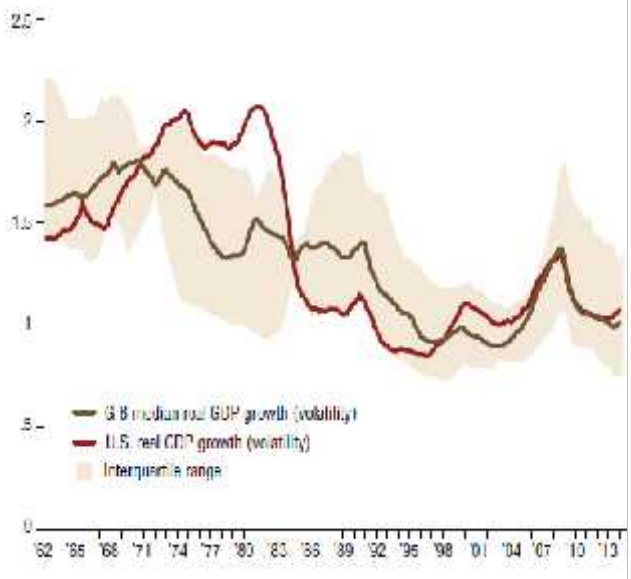
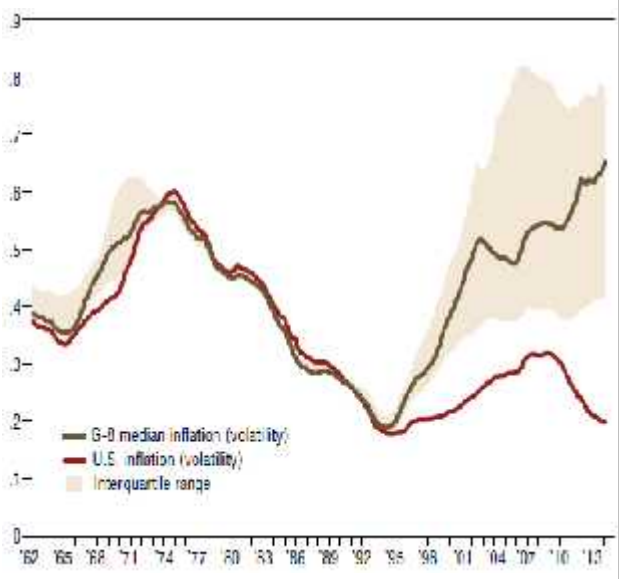


Figure 2 – Inflation Volatility



Source: Martinez-García (2014).

Globalization is typically analysed through the lenses of interconnectedness. The latter has substantially increased starting from the 1970s, as evidenced by a decline in the overall macroeconomic volatility around the mid-1980s; a period known as the "Great Moderation" in the US. Looking at the conditional standard deviation for the US and the G-8 (US, UK,

[1] Two country models are suitable to better describe the behaviour of a small open economy, rather than a larger and more closed economy such as the euro area, Japan or the US In addition, two country models have been recognized to be insufficient to study how real and financial shocks transmit across nations in a globalized world. Hence, multicounty-DGSE models have been developed, even if at the cost of lower transparency (see Chudik, 2014).

Canada, France, Germany, Japan, Spain and Italy) one could see that real GDP growth volatility has been mostly decreasing up until the end of the 90s, to later hit a peak in 2009 with the global financial crisis (Figure 1). Interestingly, the data also show a prevalent decline in inflation volatility between the mid-70s and the mid-90s, tailed by a similar rise afterwards. European countries in the catching up years – i.e. prior to the euro adoption – have been mostly affected by such a rise in inflation volatility. The latter remained fairly low in the US over the same period (Figure 2).

The mismatch between output and inflation volatility starting from the mid-1990s is a phenomenon known as flattening of the short term Phillips curve. Indeed much of the debate about globalization has revolved around the flattening of this short-term relationship over time. Findings of the Organization for Economic Cooperation and Development, among others, support the idea of a decline in the sensitivity of inflation to the domestic output gap (i.e. output in deviation from its potential) over time in many industrialized countries, including the US and the euro area (on the latter see also Anderton et al., 2009). As noted by Martinez-García (2014), Ball (2006), Ighir et al. (2007), a number of studies have nevertheless challenged the idea that the evidence of a flattening of the Phillips curve over time reflect a mounting influence of foreign and global measures of economic and financial slack in domestic price changes (e.g. Borio and Filardo, 2007), highlighting instead how the observed inflation "torpor" could rather be the result of different or simultaneous factors, such as better expectations' management (Bernanke, 2010), "good luck" (fewer adverse shocks before 2007), or structural reforms in several countries (Anderton et al. 2009).

Rather than looking at a steepening of the Phillips curve itself, one could also note that, theoretically, there are in fact a number of explanations for which structural changes in the slope of the Phillips curve through globalization, as well as the direct contribution of import prices to measures of domestic inflation, may not necessarily be linear. These include the degree and extent of openness with respect to other countries (see also Martínez-García and Wynne (2010); lower mark-ups and marginal costs, owing to competition driving inflation down and prices to be more flexible through imported goods' prices; measures of domestic economic slack (see e.g., Ball, 2006; Rogoff, 2006).

3. THE "FINANCE-SIDE" IMPACT OF GLOBALIZATION

While it goes beyond the scope of this analysis, one should recognize that there is also a finance-side of the globalization.

Deregulation of the financial services industry, starting from the 1980's, and the internationalization of financial market activity from 1990's have completely re-shaped the industry both in its shape and form. Banks, traditionally the core financial intermediaries of a country have grown into multinational universal banks, many of them operating in more than 100 countries. In addition, the traditional retail banking divisions have fused with more modern investment and derivative-trading activities. The result is a more integrated risk-management approach and a higher ability to perform regulatory arbitrage by banks.

The emergence of market-based financing institutions, MBFI (or shadow banks, as they are often called) has completely changed the fund-raising model of banks. Rather than relying on traditional deposits, banks have increasingly turned to the MBFIs for liquidity. Moreover, these institutions have also become core funders of derivative and other non-traditional investment products, often via special-purpose vehicles or conduits. The total effect of this 'revolution' is that market-based financial institutions have not only become the centralised liquidity supplier for banks in one country, but for much of the international financial market over the 2000's.

The equity markets have undergone a similar internationalization, both on the supply and the demand end. For investors, improved technology, the IT-revolution in the investment industry, and the removal of entrance barriers in stock markets has given unprecedented access to international investments, both in terms of reach and speed. For firms requiring financing, the internationalisation of the supply-chain and the business models coupled with

the removal of barriers to quote on other stock markets has meant that the share of financing coming from countries other than that of the headquarters has drastically increased. The impact has been an increased geographical portfolio diversification as well as a higher diversity in capital structure of firms.

There has also been a sharp re-balance in the FX-market and the currency reserves. First, the dollar reserves (or dollar-denominated claims) in China and Japan are now as high (or even higher) than the Federal Reserve's. The implication is that Fed's control over its currency's value is attenuated. Second, the rising importance of the Euro as an international currency, both in terms of its trade on the FX-market and as a reserve currency in other central banks, has increased its exposure to international shocks. Lastly, the volume of the FX market has markedly increased since the turn of the millennium. The market is de-centralised and over-the-counter (OTC) which has allowed it to globalize more than any other segment of the financial market.

For national central banks, the implications are several. On one hand, the financial supervisors have a tougher task to oversee bank activities outside their borders. Financial regulators have a more complex task to impose binding rules on the institutions. And for monetary policy, the trade-off between inflation and output is flattened and the ability to control (national) inflation is weakened.[2]

4. GLOBALIZATION AND MONETARY POLICY

There are a numbers of ways in which globalization constrain or simply interact with the ability of monetary authorities to achieve price stability. First, as countries become more integrated into the globalized world, their economic and financial conditions are likely to become more affected by external shocks. Secondly, globalization may alter the transmission channels of monetary policy itself. Working though the real side, and with trade becoming more important, monetary policy may have incentives to act through exchange rates and net exports and less through domestic aggregate demand (Kamin 2010). On the finance side, with long-term bond yields being increasingly priced in international markets, their responsiveness to short-term policy rates in control of monetary authorities may decline. This can be particularly the case in an environment of abundance of liquidity, and long term-interest rate convergence, as it was the case just before 2007 (OECD, 2013).

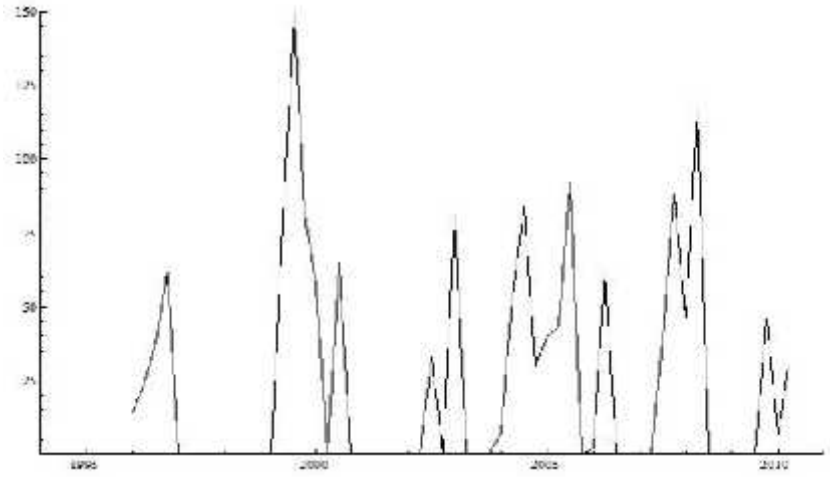
4.1. Real side: Oil price, global demand and expectations

OECD Staff estimates suggest that the integration of non-OECD economies over the period 1996-2005 into world trade has reduced annual domestic inflation overall. In particular, prior to the crisis, the advent of China and other Asian economies has reduced annual domestic inflation by 0.2 on average in the US and the euro area up until 2005 (Pain et al., 2006).

Over the last couple of years, globalization has also worked though world demand, mainly consumption. The increase in global consumption of food and other commodities, especially from China and other Asian economies, has resulted into higher food and energy prices globally, including oil prices. This effect has partially offset the lower prices globalization induced through imported goods and services (Stark, 2008). There is not much a central bank can do about changes in the relative prices of food and energy (the so called "core" inflation component) but to accommodate such first round effects on headline inflation. There is a consensus, however, that a central bank aiming at maintaining price stability should carefully monitor price and wage development to avoid second round effects, as well as ensure that inflation expectations remain well anchored (Stark, 2008).

[2] We just wish to outline some of the developments and processes in the financial industry since the 1990's. The topic is complex and large, requiring a separate analysis on the effects of financial industry internationalization on monetary policy. However, this is outside the scope of the current paper.

Figure 3 – Net Oil Price Increase Index



Note: The net oil price increase is computed as in Hamilton (1996), i.e. considering the price of oil price in the current quarter, relative to the maximum value for the level achieved during the previous four quarters. Last observation 2010Q2.

Source: Authors' calculations.

Talking about globalization and monetary policy, Woodford (2010), among others, argued that theoretically globalization does not necessarily imply a weakening of monetary policy in affecting the real side of the economy, i.e. output and inflation. Instead, the effect of globalization is to be expected on the trade-offs of monetary policy over time and the economic (and financial) environment in which monetary policy has to operate (Bernanke, 2007). In a changing environment, the relevant trade-offs must be recognized, particularly from a policy making point of view, when designing monetary policy effectively (see also Martinez-García, 2014). The question is however to which extent the observed changes are due to globalization?

One of the aforementioned trade-offs consists in the identification of inflation's long run trend dynamics, as opposed to the short run dynamics. As Stark (2008) puts it, central banks have to cope with the idea that the impact of surges in oil and commodity prices on output and inflation depends crucially on the reaction of economic agents (i.e. expectations), particularly participants in the product and labour market.

Importantly, expectations will have to do not only with the reaction of agents in response to the original shock (first-hand effect), but also with the economic agents' response to the monetary policy stance after the shock (second-hand effect). Second round effects will be stronger the larger the shock affecting headline inflation (hence, prompting a more decisive monetary policy reaction). The nonappearance of second-round effects following food and commodity shocks will depend indeed on inflation expectations remaining firmly anchored.

Worldwide, the observed oil prices fell in the 1990s (Figure 3) partly due to increases in non-OPEC oil production (Anderton et al. 2009). The observed surge in the real price of oil more recently – just before the crisis – was instead driven almost entirely by a sequence of unanticipated increases in the international demand for commodities. In particular, the latest oil price boom of 2008 was driven by unexpected growth in emerging Asia, as evidenced by the data on professional real GDP forecast errors shown in Table 1. What happened was not that OECD demand for oil and other commodities increased by much, but rather that additional unanticipated demand arose from Asia, given continued high demand from OECD countries (Kilian, 2009). Such global aggregate demand forces more than offset the increases in the production of crude oil over the same period, mainly

stemming from supply in newly opened areas (like the Caspian Sea).[3] The resulting (net) oil price increases in Figure 3 over the period 2003 – 08 reflect indeed a persistent shift in the oil's shortage. Once again this was mainly driven by unanticipated positive global aggregate demand shocks after 2003, as Figure 4 further illustrates.

Table 1 – Average Forecast Surprises

(Percentage points)

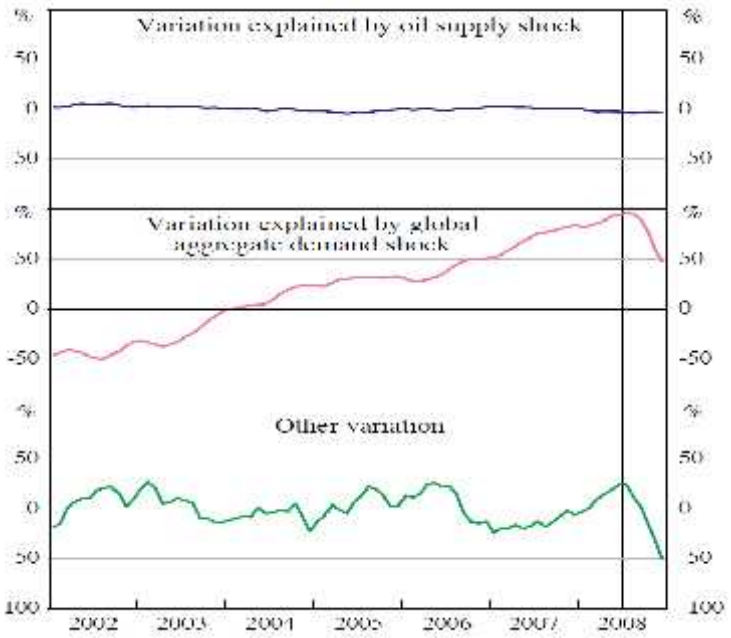
	December 2000–May 2003	June 2003–June 2008	July 2008–December 2008
Germany	–0.12	0.00	–0.33
Japan	–0.10	0.08	–0.27
United States	0.05	0.02	0.08
Brazil	–0.10	0.03	0.07
China	–0.04	0.12	–0.17
India	–0.06	0.03	–0.17
Russia	0.06	0.12	–0.42

Note: Average forecast surprises computed based on successive annual forecasts of real GDP growth reported by the Economist Intelligence Unit

Source: Killian and Hicks (2009).

This shift in the real scarcity of resources left little scope for monetary policy authorities to mitigate the impact of the shock. There is, moreover, no evidence that speculation or supply side shocks in oil markets significantly affected monetary policy indeed over the same period (for the US, see Kilian, 2009).

Figure 4 - Explanatory Power of Oil Supply and Oil Demand Shocks for the Real Oil Price

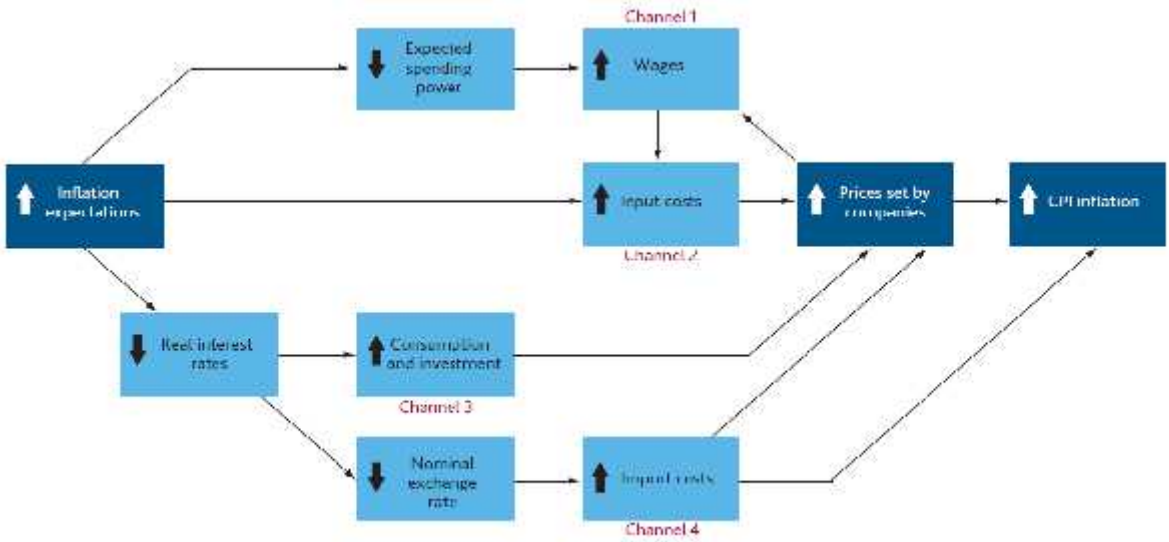


Note: The vertical line marks mid 2008 when global real economic activity peaked.

Source: Killian (2009a).

[3] This new production only partially offset declining rates of production in other geologically mature non-OPEC oil regions, such as the North Sea or the US.

Figure 5 – Channels through which inflation expectations could affect the persistence of inflation



Source: Maule and Pugh (2013).

Simulation results proposed in Anderton et al. (2009) for the euro and US show that, prior to the crisis, oil price impacts on inflation seemed to be weaker than in the past and it did not tend to feed into core inflation. This seemed to be indeed partly the result of anti-inflationary monetary policy, which has kept inflation expectations well anchored (the so-called "anchored expectations" hypothesis of Bernanke, 2010). In the same vein, Blanchard and Galí (2007) found that oil price shocks have progressively had smaller effects compared to the past on prices and wages also owing to an increase in the credibility of monetary policy, as well as a decrease in the share of oil in consumption and production. Cecchetti and Moessner (2008) also found that in recent years core inflation has not tended to follow headline inflation in response to food and commodity price shocks, implying that commodity prices do not now generally lead to second-round effects on inflation. Furlong and Ingenito (1996) showed as well how commodity prices generally fail to predict core inflation. Commodity prices have come off their peak, and this decline is projected to persist, given recent growth dynamics in China and the expected further slowdown in emerging economies. In the light of the evidence mentioned above, it seems highly unlikely based on the aforementioned results that the deflationary trend observed more recently is the result of first-hand effects (commodity prices to core inflation) from the recent sharp fall in oil prices.

Having excluded this hypothesis leave us with the other hypothesis that behind the deflation pattern observed in many countries is the loss of anchoring of expectations (i.e. central bank credibility); a scenario certainly difficult to assert at this stage. Consistent with this hypothesis, is the evidence from the US provided by Coibion and Gorodnichenko (2015). The latter shed light on the possibility that changes in household inflation expectations between 2009 and 2011 could be explained by changes in oil prices in the US. In other words, the latter authors highlight how commodity prices seem to have fed through inflation expectations, given that the latter were not fully anchored. In particular, given that inflation expectations clearly play an important role in determining the persistence of inflation itself (Figure 4), the latter findings – under the assumption that household expectations have not been fully anchored – could make us reconsider the relationship between commodity (oil) price and inflation. The general consensus is that there is nothing a central bank could or should do in response to shocks in commodities and global demand, beyond making sure that inflation expectations remained anchored. If

the anchoring of inflation expectations has been lost (Kilian, 2009; Stark, 2008), and commodity prices fed through the expectation channel, hence marking a shift with respect to the previous decade, it is difficult to say now. A preliminary look at the US evidence supports this idea, even if its assessment would certainly require a more thorough quantitative analysis. Should this be the case, central banks should avoid mixing signals, and facilitate instead communication with markets' participants, to reduce second-round effects.

4.2. Real side: Wages and the globalization of markets

Most empirical studies have shown that there has been a significant wage moderation going on since 1990's. While most of them show that one of the key underlying causes is the increased integration of product, capital (and to some extent) labour markets, or globalisation, there is little agreement on the exact mechanism at work. In a study of five EU countries (Germany, France, Italy, Belgium and the UK), Dumot et al (2006) find a negative effect of internationalization on union bargaining power, even in highly powerful labour union countries such as Germany and France. Their results are most significant for the latter half of the 1990's and 2000's. Coinciding with the period of largest wage moderation found in OECD countries during the same period (OECD, 2003), they conclude that this moderation has been caused by a decreased power of labour unions, rather than sticky wages or a decrease in labour demand, as proposed in Bhagawati and Deheija (1994).[4]

A firm-level study of Belgian enterprises in Abraham et al (2009) depicts a more detailed landscape. They find that in sectors with high mark-ups, the globalisation (defined as a simultaneous integration of product and labour markets) has resulted in an increase of the unions bargaining power. In sectors where competition from low-wage countries increased, on the other hand, the integration of markets has resulted in a significant decrease of the bargaining power. Stated slightly differently, in sectors with high import penetration rates, the mark-ups are lower, and so are the union bargaining power, resulting in an overall wage moderation (and positive employment effects).

In a theoretical (neoclassical trade model) study, Eckel (2003), on the other hand, finds that the key factor of whether wages moderate and unemployment rises as a result of globalisation is the direction of capital flows. In capital importing countries, the skills premium (and therefore wages) increase as a result of globalisation, meanwhile unemployment increases in capital exporting countries.

Most differentiated from the previous results is, however, the theoretical study by Felbermayr et al (2011), who argue that trade liberalisation only leads to a decrease in unemployment and an increase in real wages. The result holds as long as globalisation implies an increase in productivity defined as a decrease in variable trade costs or entrance of new countries into the trade-block permitting higher competition. Yet, as the authors admit, the proposition is limited only to multilateral trade liberalization amongst symmetric countries. Much of the progress in trade and market integration has been amongst asymmetric countries in bilateral deals. To conclude, there is sufficient evidence for wage moderation and decreased union bargaining power over the past two decades. But rather than a result of integration of labour markets themselves, it seems a consequence from capital and product market integrations, and international competitiveness pressures (or shocks) such as import penetration rates, mark-ups or capital flows.

[4] Abowd and Lemieux (1993) and Borjas and Ramey (1995) found similar evidence of falling rents in the US and Canada as a result of globalization. However, their studies do not include the distribution of rents between workers and employers, and therefore the bargaining power of unions cannot be determined (Harrison, 2002).

4.3. Finance side: Banking globalization

An important channel of monetary policy effectiveness passes through bank lending. This has clear consequences for influencing the real side of the economy as well (i.e. output and inflation) as well as expectations. In a previous paper (Gerba and Macchiarelli, 2015) we noted that how banks concentration (a feature highly present in Europe, as noted by Panetta, 2014) makes banks' lending decisions less dependent on the monetary policy stance (see, e.g., Kashyap and Stein, 2000). Banks with high liquidity and diversified portfolios will be able indeed to adjust their credit flow more gradually, based on the internal finance, so to changes in the monetary policy stance (see, e.g., Brunnermeier and Pedersen, 2009; Adrian and Shin, 2010). A high level of concentration, with credit markets dominated by a limited number of large and liquid actors, would make it harder for monetary policy to affect the banking sector.

This is the case for global banks as well. In a seminal paper, Keyshap and Stein (2000), for instance, looked at the top 5% of banks in the asset distribution, to investigate the relationship between banks' size and their global network. They conclude that large global banks are indeed insulated from monetary policy shocks, as opposed to groups of large banks with domestic-only operations. Banks with significant operations in foreign countries will be able to smooth monetary impulses via an internal reallocation of funds between their head office and their foreign offices. This has certainly implication for monetary policy spillovers across countries. Indeed, global banks, by adjusting to monetary policy shocks via internal reallocations, will affect their foreign lending as well, hence increasing the likelihood of cross-border propagation of domestic liquidity shocks (Cetorelli and Goldberg, 2009). This may reduce the central bank's ability to control domestic inflation, even if there is no conclusive evidence on this. Looking at the recent experience during the crisis, a coordinated approach in-between central banks globally has been adopted, mainly to tackle the systemic risk associated with the cross-border externalities of banks operating globally.

Figure 6 – Spread of LIBOR over OIS (3-Month) Interest Rates

(Basis points)

Source: Kamin and Pounder (2009).

One of the most important challenges posed by the crisis was in fact the shortage of funding in foreign currencies experienced by several financial institutions operating globally. All such shortages were a direct result of the globalization of banking and asset

management (Kamin, 2009) and could not be addressed through standard monetary policy tools, but required "a more internationally coordinated approach among central banks to the lender-of-last-resort function" (Bernanke, 2008). The central banks' measures adopted by the Fed, the ECB, the BoJ and the BoE, mainly exploited the flexibility of the existing monetary policy framework, with the aim of supporting banks which would have otherwise faced a massive shortage in foreign funding; hence, not a change in the nationals' monetary policy stances. The effectiveness of these measured is evidenced by sharp decline in dollar Libor-OIS spreads, with credit spreads in interbank markets around generally returning to their pre-crisis levels after 2010 (Figure 6). While the effect on expectation is difficult to measure, these measures certainly helped restore confidence in the interbank and money market, avoiding a liquidity shortage at this early stage of the crisis.

Again, while the crisis highlighted how, in a globalized world, monetary policy interventions had to go beyond the domestic facility wielded in the past, this did not represented a change in the monetary policy stance. This crisis rather highlighted the need for a global coordinated framework in terms of regulation, supervision and control. The Financial Stability Board, bringing together the financial authorities of 23 countries, as well as the new Basel Committee on Banking Supervision, including – as of 2009 – representatives from 27 countries, are indeed examples of such a coordinated approach, beyond price stability (see also OECD, 2013).

4.4. Globalisation and monetary discipline

It has commonly been claimed in the literature that globalisation will inevitably lead to higher monetary discipline, since inflation expectations are lowered. The reason is the positive feedback loop between inflation expectations and interest rate movements. This works via multiple channels. First, economic agents understand that, as a result of globalisation, monetary authorities credibly commit to the primary objective of price-stability, resulting in a downward pressure on future inflation. Second, the lower actual inflation may have bolstered central banks' credibility, and so amplifying the inflation dampening effect of the original positive supply shock. Third, understanding globalisation as downward pressure on prices and wages, economic agents will take these movements into account and lower their expectations even further. This results in a flattening of the Phillips curve, and an increased incentive for the central bank to keep the monetary discipline and anchor the expectations of the economic agents even further (Gnan and Valderrama, 2006).

A recent theoretical study by Cavelars (2009) shows that these inter-temporal assumptions are flawed. First, the argument that increased openness enhances monetary discipline put forward by Romer (1993) is not fully robust since a lowering of import tariffs can make it more attractive to conduct expansionary monetary policy (to boost expenditure). Second, an increase in competition in the goods market may have an adverse effect on monetary policy. Cavelars shows that a decline in monopoly power of firms enhances the expenditure-switching effect of monetary policy; the latter result standing in contrast with Rogoff (2003, 2006). In other words, when competition is fierce, a change in the international relative price of goods gives rise to larger shifts in demand, prompting central banks to respond to these demand shifts (even if they don't have price effects). Hence, globalisation is not assurance for monetary discipline, or lower inflation expectations.

CONCLUSIONS

The challenges posed to monetary policy by an increasingly interconnected world to have been highly ranked on policy makers' agenda for some time. Yet, the evidence that globalization may alter monetary policy transmission is not always conclusive. Recent experiences have allured some to conclude that external factors such as commodity price movements, capital flows and international growth prospects are increasingly influencing domestic inflation. The discussion proposed in this paper is whether this has resulted in a weaker influence of national central banks on domestic inflation (i.e. a credibility issue), and whether the monetary discipline has directly increased as a result of the globalisation.

The answer is negative. As Mishkin (2009) points out, the exaggerated claim that greater openness of economies invalidates traditional economic models of inflation, and thus monetary policy's ability to stabilise it is not true. Globalisation does have the potential to be stabilising for individual economies and has been a key factor in promoting growth. However, globalisation has not led to a decline in the sensitivity of inflation to domestic output gap nor to domestic monetary policy. Domestic monetary policy can still control domestic interest rates and so stabilise inflation (and output). The only way in which globalisation might matter is by challenging central banks in keeping inflation expectations fully anchored nationally, and by increasing coordination of financial measures globally. The latter is particularly relevant given the presence of banks operating worldwide, hence increasing the likelihood of cross-border propagation of domestic liquidity shocks.

This does, however, not mean that the degree of openness of an economy is no significance for the conduct of monetary policy directly (Woodford, 2010). Monetary policies should indeed be increasing mutual sensitivity of the monetary transmission channel to changes in the exchange rate. Moreover, openness forces central banks to confront a variety of practical issues that would not be present in the case of a closed economy, such as whether to stabilize an index of domestic prices only, or an index of the prices of all goods consumed in the domestic economy (hence, calling upon a proper measurement of domestic inflation vs. import prices). Also, the need of correct quantitative specification of the structural models used in a central bank more has become more urgent. Overall, however, globalisation, even if expected to be rapid, does not justify the degree of alarm that some commentators have urged upon central banks. No matter the pace of globalisation and how great its eventual extent may be, it should remain possible for a disciplined central bank towards a clear inflation target to achieve that goal without any exceptional needs for coordination of monetary policy with other central banks, as the initial stage of the crisis has shown. The need for coordinated and detailed action lies instead in the financial (policy) sphere.

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