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Monetary Policy in Fossil Fuel Exporters

The Curse of Horizons

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Abstract

This paper examines the role of monetary policy in fossil fuel exporters at different horizons. The main argument is that central banks in these economies need to look beyond the horizon of the business cycle. In the short run, (independent) monetary policy should flexibly target inflation. In the medium run, central banks need to coordinate with fiscal authorities to ensure that monetary policy operates around a credible and sustainable fiscal anchor. In the long run, central banks should beware of the existential threats posed by new risks related to stranded assets.

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Monetary Policy in Fossil Fuel Exporters: The Curse of Horizons

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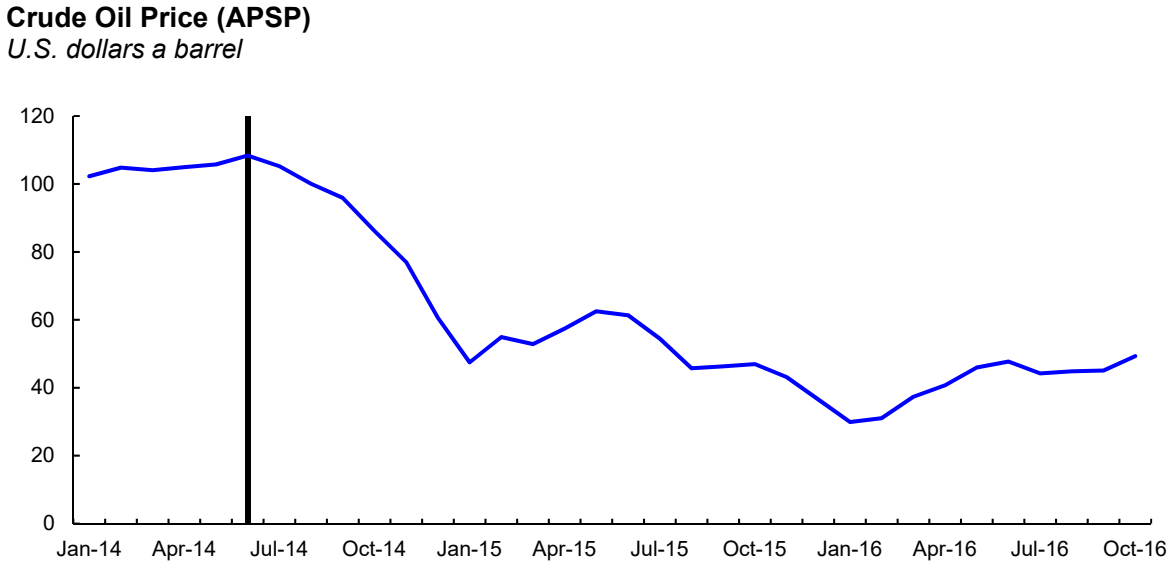
I. INTRODUCTION

Fossil fuel exporters are exposed to the vagaries of fossil fuel markets. The collapse in oil prices that started in June 2014 is a stark reminder about the challenges posed by the dependence on oil and other fossil fuels (Chart 1). While the literature on appropriate macroeconomic policies for fossil fuel exporters is extensive, much more attention has been paid to the role of fiscal policy. Part of the reason why monetary policy has been less subject to attention may have to do with the fact that most fossil fuel exporters have pegs or relatively fixed exchange rate regimes and hence have no independent monetary policy. There are however good reasons to take a fresh look at the issue of monetary policy in fossil fuel exporters. Traditionally, the horizon of monetary policy has been limited to that of the business cycle, typically 2-6 years. Considering the degree of wealth concentration, the strong complementarity between fiscal and monetary policies, and the emergence of new risks to fossil fuel assets, there is a need to rethink monetary policy in fossil fuel exporters. In the present paper, I specifically examine the role monetary policy should play at different horizons.

Chart 1 – 2014-2016 Oil Price Slump



Source: IMF, Primary Commodity Price System.
Note: APSP = average petroleum spot price—average of U.K. Brent, Dubai, and West Texas Intermediate, equally weighted.

In a 2015 speech, Governor Mark Carney weighed in on the debate as to whether monetary policy should look beyond the horizon of the business cycle.[1] Interestingly, part of his argument lies in the risk of financial instability that may result from the so-called "energy transition" that implies a move away from fossil fuels, ultimately turning the latter into stranded assets. That transition hence threatens the financial health of corporations, insurers and other financial corporations that are exposed to fossil fuel assets. While the overall exposure to fossil fuel in advanced economies like the United Kingdom may at first glance appear relatively small, the systemic risk that may result from stranded assets should not be underestimated—we should be reminded that the global financial crisis was triggered by developments in the relatively small subprime mortgage market in the United States. For fossil fuel exporters, the high degree of concentration of wealth (and risks) around fossil fuel assets makes for an even easier argument—than for diversified economies—to have monetary policy look beyond the business cycle horizon.

In this paper, I break down the role of monetary policy at different horizons. In the short run, central banks (CBs) in fossil fuel exporters should (flexibly) target inflation. The choice of the appropriate exchange rate regime is intimately linked to the issue of credibility. A peg is the appropriate regime if the country lacks credibility. I then make the case that CBs in fossil fuel exporters should look beyond the typical business cycle horizon. In the medium run, resource (fossil fuel) based rents typically lead to much more pronounced fiscal (and credit/asset price) cycles. There is thus a need to ensure that monetary policy is conducted around a credible and sustainable medium fiscal anchor and credit rules. In the long run, risks of stranded assets are an existential threat for fossil fuel exporters. That is not typical central banking but in fossil fuel exporters CBs cannot afford to ignore these risks.

The remainder of the paper is organized as follows. Section II discusses issues related to the role monetary policy in the short run. Section III then explores monetary policy in the medium run. In particular, it explores the complementarity between monetary policies on the hand, and fiscal and financial policies on the other hand. Section IV lays out the new risk that monetary policy must confront over the long run, namely, the risk of stranded assets. Section V concludes.

[1] See entire speech at http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx

II. Short run

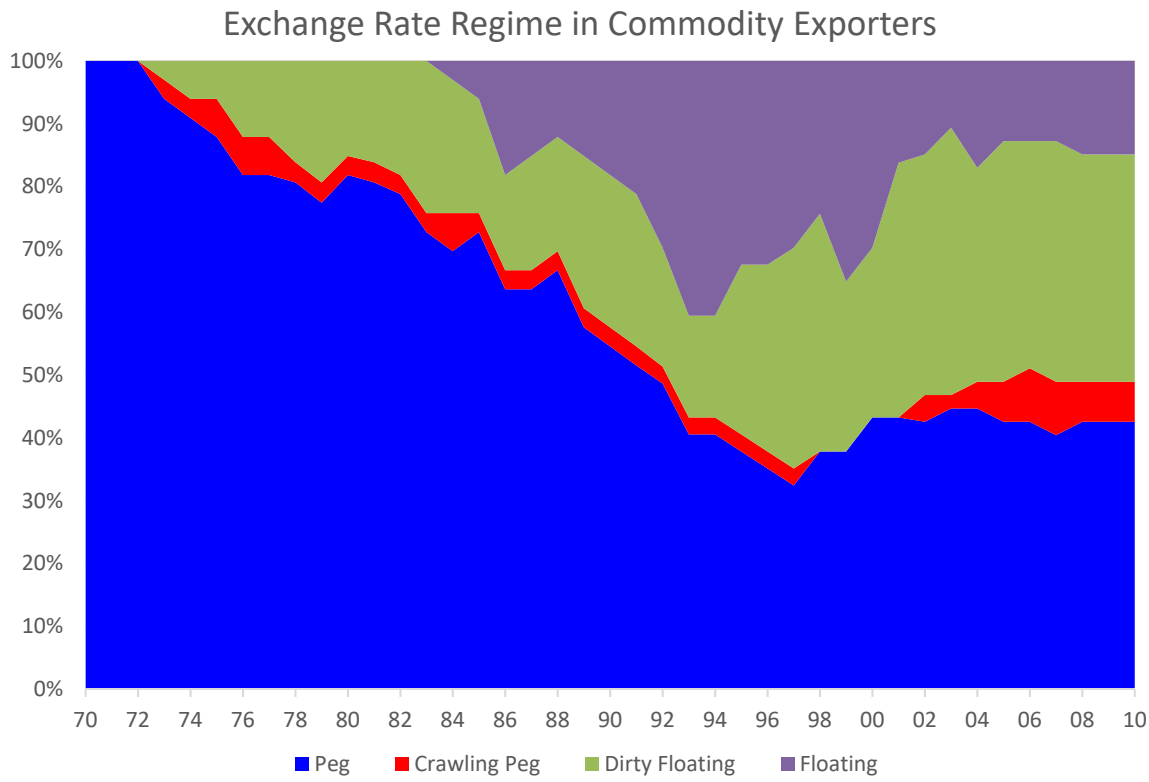
In this section, I explore the choice of appropriate exchange rate regime in fossil fuel exporters. I then discuss the polar views of (independent) monetary policy response to a drop in oil prices. I also touch upon the issue transmission of monetary policy.

Choice of exchange rate regime

Adopting a flexible exchange rate regime is appropriate in countries where inflation expectations are well anchored. That flexible arrangement allows for an instantaneous adjustment of the nominal exchange rate following a terms of trade shock resulting from, say, fluctuations in prices of fossil fuels.

In practice, we observe however that many commodity exporters are pegging to the currency of their main trading partners (dollar or euro) or have adopted a managed float (see Chart 2). There are two main reasons for that. First, a fixed exchange rate regime maintains the parity between the domestic currency and a foreign currency, thus limiting fluctuations in the price of imported goods and inflation—also considering domestic prices are often sticky. A fixed exchange regime also may contribute to building credibility for monetary policy by anchoring inflation expectations. Second, the lack of exchange rate flexibility has to do with the so-called "fear of floating" (Calvo et al. 2002). Indeed, currency mismatch can be fatal and lead to crisis. Hence, countries often fear to allow their currencies to float. That said, there are important *risks associated with adopting a fixed exchange rate regime, if the countries run pervasive external deficits* that often stem from internal deficits—so-called twin deficits.

Chart 2 – Evolution of exchange rate regimes over time



Source: Ilzetzki, Ethan, Carmen M. Reinhart and Kenneth S. Rogoff (2010) "Exchange Rate Arrangements Entering the 21st Century: Which Anchor Will Hold?"

Besides peg, many countries operate "managed floats". That arrangement allows them to choose how much of the adjustment to a TOT shock should come from exchange rate adjustment vs. domestic price adjustment. TOT shock amounts to a negative wealth shock, suggesting the real exchange rate has to adjust toward a new equilibrium level. A resource windfall is also typically associated with the so-called Dutch "Disease". In other words, a positive oil price shock leads to a relative price change between non-oil tradables and nontradables.

In the case of a pure float, a TOT shock leads to immediate adjustment of the real exchange rate through the nominal exchange rate when good prices and wages are rigid. Empirical evidence

suggests that flexible exchange rate regimes allow for a smoother real adjustment, that is, lower output volatility (Broda 2004; Aghion et al. 2009 on productivity growth).

In the case of a managed float, it might not be desirable to force such a speedy adjustment through the nominal exchange rate, so a managed float allows countries to make a choice between how much nominal exchange rate and (gradual) domestic price adjustment. This however could come at a cost to the credibility of policies. Fiscal policy could help counteract the effect of TOT shock and hence limit/spread the domestic price adjustment over time. There are also important issues associated with the "asymmetrical" nature of the Dutch Disease (Arezki and Ismael, 2013) stemming from downward nominal stickiness. It these circumstances, it may make sense to resist nominal appreciation and let inflation increase above target to facilitate this relative price change.

There are also issues associated with capital account openness and the conduct of monetary policy. Brazil is a good example of a country that has struggled with the consequences of a rapid exchange rate appreciation resulting from the surge in capital inflows during the boom in commodity prices.

Two polar views of independent monetary policy

A dilemma for fossil fuel exporters is that an oil price drop may lead to two polar views in terms of what the appropriate response of independent monetary policy should be. On the one hand, a central bank pursuing a (strict) inflation mandate would tighten monetary policy in the face of a drop in oil prices. Indeed, a drop in oil prices would lead to a depreciation in the exchange rate hence leading to a rise in inflation justifying a tightening of monetary policy. On the other hand, a central bank focused on stabilizing output would loosen monetary policy in the face of a drop in oil prices. Indeed, an oil price drop would lead to lower demand from the oil sector. That would in turn make the output gap of the non-oil economy rise hence justifying a loosening of monetary policy. The channels include large backward and forward linkages between the oil and non-oil sectors (e.g. Norway, the Russian Federation) and changes in government spending/taxes and credit channel.

In theory, the new Keynesian framework with wage or good price rigidity offers guidance on the correspondence between targeting inflation and targeting output. In a "closed economy", the so-

called divine coincidence—the equivalence between targeting inflation and output stabilization—holds under the assumption of limited frictions (Blanchard and Gali, 2005). In the context of so-called "commodity openness" (both consumption and production openness), there appears to be no divine coincidence under standard assumptions. Flexible inflation targeting is (constrained) efficient (Monacelli, 2013; Catao et al. 2013; Hevia et al. 2013; Ferrero et al. 2015). Some research has also shown that headline rather than core inflation targeting is more appropriate in the presence of credit constraints and large share (of food) in the consumption basket (Anand and Prasad, 2012). Some authors have argued for setting the exchange rate to the domestic currency price of commodity exports (Frankel, 2011). While that rule would be for government oil revenue in local currency, it has no clear welfare rationale.

In practice, most countries loosen monetary policy in the face of a drop in oil prices, suggesting that output stabilization is more important than strictly targeting inflation.

Other issues

Monetary policy in fossil fuel exporters should also be mindful about issues related to the effective transmission of monetary policy (see Prachi et al. 2013 for a discussion in developing countries). In fossil fuel exporters, excess liquidity indeed incapacitates the transmission of monetary policy. Structurally, the financial system in fossil fuel exporters is subject to a "financial curse" (Beck, 2011) in that its reach is limited. Banks are not in need for demand of re-financing but instead earn relatively high (zero-risk) return on securities issued for sterilization purposes. That situation hence incapacitates the traditional monetary policy tools (no base-rate to speak off).

All in all, a peg allows fossil fuel countries to stabilize (imported) inflation and build credibility if the country keeps fiscal discipline (avoids pervasive current account deficit). In the case of a float, the central bank should set an inflation target. If inflation expectations are anchored, the central bank can afford to also worry about output stabilization, that is, loosen monetary policy in a context of negative TOT shock. If inflation expectations are not well anchored (because of limited credibility) and if the share of imported goods in the consumption basket is large, a tightening of monetary policy in the face of a negative TOT shock may be warranted.

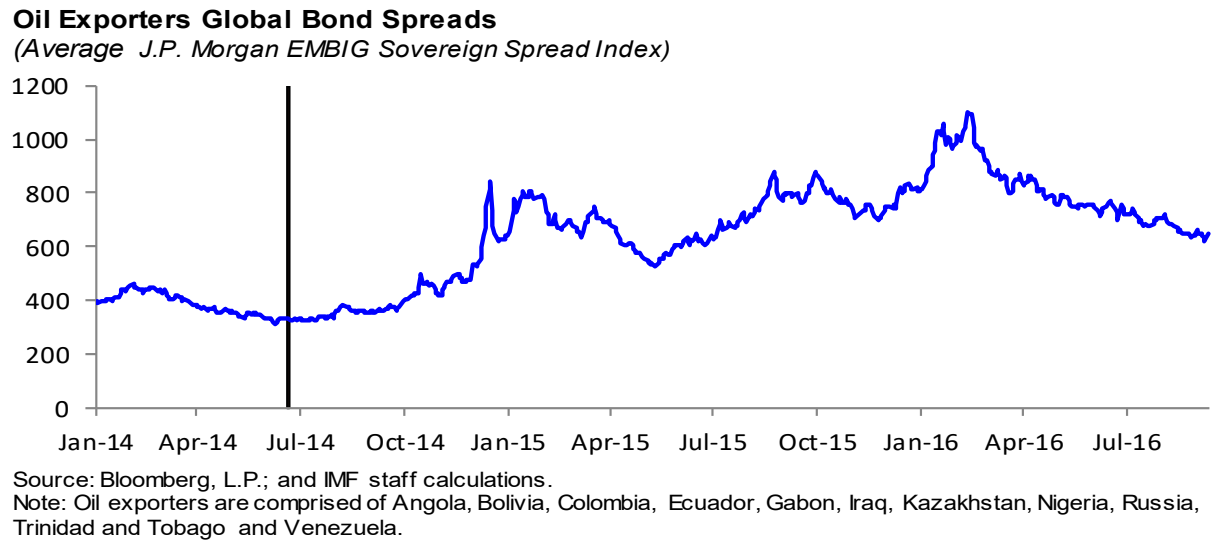
III. Medium run

In this section, I examine the role monetary authorities should play beyond the business cycle horizon. I first explore the issue of complementarity between fiscal and monetary policy in fossil fuel exporters. Then, I discuss the need for macro-prudential policies. I then draw lessons from the recent collapse in oil prices and the associated policy responses.

Complementary between fiscal and monetary policies

Commodity exporting countries in general—and fossil fuel exporters are no exception—tend to over-spend in good times leading to excessive indebtedness and crisis in bad times (Arezki and Brueckner, 2012a). The effectiveness of CBs' contribution toward stabilization thus rests on the existence of a credible/sustainable fiscal anchor. The cost of borrowing rises with falling commodity export prices (Chart 3) (Arezki and Brueckner, 2012b). Weaker political institutions typically make things worse considering the risk premium associated with the latter. There is a need for fiscal (and credit rules) to limit the amplification of the effect of TOT shock. Interestingly, many countries such as Chile have graduated from pro-cyclicality by setting up fiscal rules (Frankel et al., 2013).[2]

Chart 3. Rising sovereign bond spreads



Source: Bloomberg, L.P.; and IMF staff calculations.
Note: Oil exporters are comprised of Angola, Bolivia, Colombia, Ecuador, Gabon, Iraq, Kazakhstan, Nigeria, Russia, Trinidad and Tobago and Venezuela.

[2] Pieschacón (2012) compares the differentiated macroeconomic impact of oil shocks on Mexico and Norway. The latter country is at odds with the former considering the fiscal discipline to which it has subjected itself.

Chile provides an example of a commodity exporter that has set up a fiscal rule and graduated from pro-cyclicality. The set-up is such that an independent council of experts determines the "volume" of spending while members of parliament decide over the "composition" of spending—by picking projects that have been pre-screened by a fiscal authority. The presence of a fiscal rule in Chile has arguably supported the implementation of monetary policy and specifically inflation targeting (De Gregorio, 2011; Cespedes and Velasco, 2013). Short of building the needed constituency to set up and implement a fiscal rule, Mexico has settled for a large-scale hedging program against oil price volatility (Duclaud et al. 2012). The difficulty of course with hedging programs is the tension that may arise over the perceived excessive cost of the program during boom times. To allay that concern, the Mexican program has been designed to capture the uptick from high oil prices using Asian options. It should be noted however that both tools (fiscal rules and hedging programs) are often politically difficult to put in place and implement.

Macro prudential policies

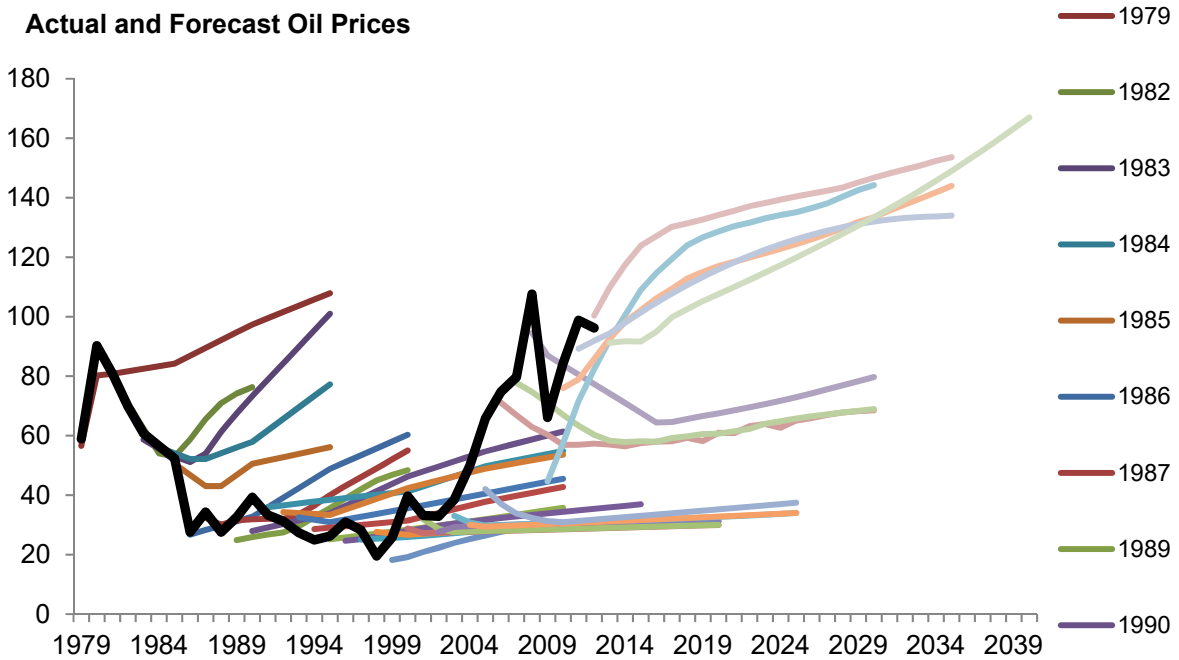
Credit and asset prices in commodity exporters tend to amplify macroeconomic fluctuations (see Sousha, 2016). The concentration of wealth in one sector makes the concerns over systemic risk much more prevalent in commodity exporters. Macro-prudential tools are thus all the more important in these economies to help limit the amplitude of boom and bust cycles in credit and asset prices (e.g. stocks, real estate prices) hence reducing the risk of financial instability.

The IMF (2014) recommends that the use of these tools—that are to a large extent commonly used separately—be coherently used to limit perverse and countervailing effects. The most common prudential tools include capital buffers, risk-based supervision, time-varying loan-to-deposit, and loan-to-value ratios. Sector specific tools aim to limit the sectoral exposure particularly for real estate and personal loans. Other efforts to limit systemic risk include liquidity management, the development of domestic interbank money and debt markets. The modernization of insolvency regimes and strengthening crisis management and resolution systems are also areas where progress is needed in many fossil fuel exporters.

Lessons from the 2014-16 oil price collapse

The policy response to the spectacular oil price collapse has been quite different across countries (Arezki and Blanchard, 2014; Obstfeld, Arezki, Ferretti, 2016). Conceptually, one needs to distinguish between countries that have buffers and those who have none. Those with buffers should use them to adjust gradually to the medium anchor. Those with no buffers have no choice and need to let the exchange rate depreciate. In practice, the differences in responses reflect different countries' circumstances including the presence of buffers but also the share of imported goods in total domestic demand (e.g. 11 percent for Russia compared to 40 percent for the Gulf Cooperation Council (GCC)). Russia and Azerbaijan have either devalued or let their currency depreciate early on (some with risks of currency mismatch). Inflation from imported goods in turn pushed the CB to raise rates. GCC countries have kept their peg unchanged reflecting their very large share of consumption concentrated around imported goods and their open capital account. On the fiscal front, many GCC countries have however embarked on an ambitious reform program (subsidy cuts) to reduce spending and also diversify their economy (e.g. Saudi 2030 plan). Nigeria had initially opposed to devaluate its currency and hence lost most of its reserves, leading to an explosion of the black market premium. The authorities recently opted for a devaluation and a (managed) float.

Chart 4 –Hard to forecast

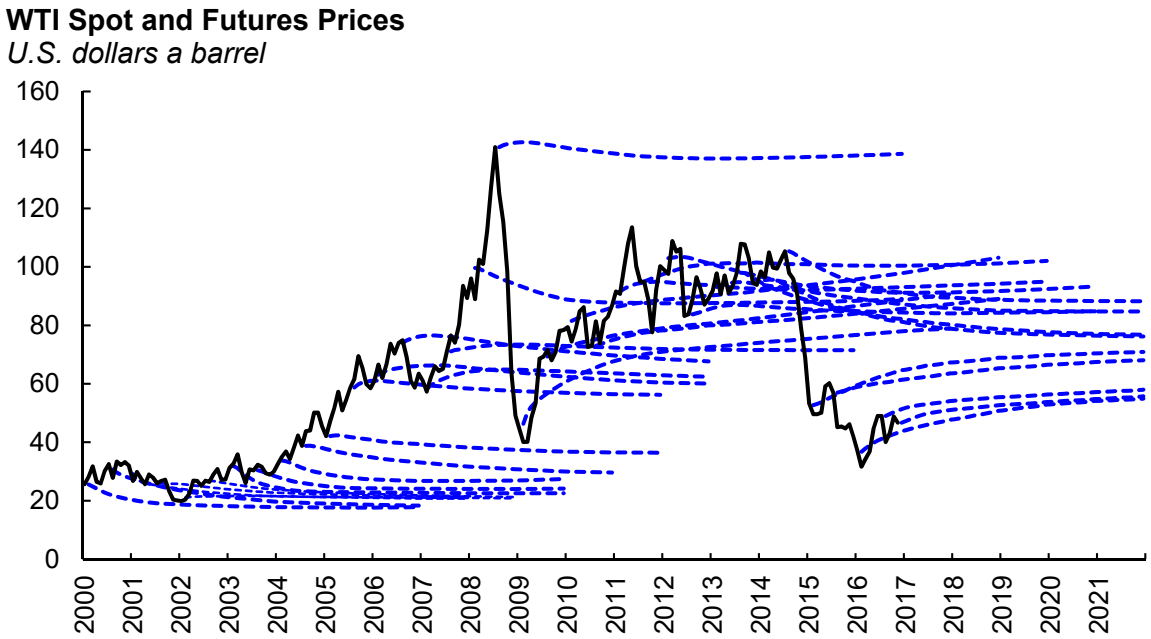


Source: Energy Information Administration.

Other issues

Another issue to consider when responding to commodity price shock is the nature of the shock especially the permanent vs. transitory aspects. It is of course hard to know a priori. Typically, one can distinguish between demand and supply. While monetary policy needs to respond swiftly, erring on the side of caution, assuming that part of the shock is temporary and part is permanent, is appropriate. Oil prices are notoriously hard to forecast (Chart 4). The market seems to learn only gradually as the evolution of futures curves (Chart 5). The uncertainty surrounding the nature of the shock calls for precautionary saving in the form of (fiscal and "financial") buffers. Hedging reduces the need for precautionary saving (Borensztein, Jeanne, and Sandri, 2013). It is often forgotten that uncertainty about oil price also has an independent effect that affects investment and consumption decisions.

Chart 5 – Oil prices and futures during 2000s



Source: Bloomberg, L.P.
Note: Updated from Leduc et al. (2015). WTI = West Texas Intermediate. Futures path as of first business day at 6-month intervals.

The key lesson in the medium run is that the choice of monetary policy is influenced by the structure of the economy including sustainability of fiscal policy (depleting reserves; share of imported goods in aggregate demand; credibility; polarization…). Considering the choice of exchange rate regime, fiscal policy can help buffer the shock and smooth the adjustment to a TOT shock. Macro prudential policies can help limit credit and asset price boom and bust, and currency mismatch.

IV. Long run

The historical COP21 agreement to keep global warming below 2 degrees Celsius and the technological innovation (declining cost of renewables; electric cars) have further boosted the energy transition away from fossil fuels (IMF, 2016). That means that giga tons of reserves will have to stay underground unexploited. That risk of stranded assets for fossil fuel exporters appears to be remote, it does pose an existential threat that monetary authorities cannot afford to ignore (van der Ploeg, 2016). It is not easy to define the contours of how monetary authorities should engage in these issues that appear structural in nature, but, considering they pose a systemic risk, it is urgent that they take up the challenge of rethinking their role in light of these new risks.

Stranded assets

To keep mean global surface temperature below 2 degrees Celsius, only 300 to 400 giga tonnes of carbon can still be burnt but reserves of private oil and gas majors only are at least three times as high. To abide by international commitments to limit global warming, a third of oil, half of gas, and 80 percent of coal reserves should be kept in the ground forever (e.g., McGlade and Ekins, 2015). This would mean keeping unburned one-third of oil reserves in Canada and the Arctic, 50 percent of gas and 80 percent of coal (mainly China, Russia, the United States). In the Middle East, reserves are three times larger than their "carbon budget". In other words, 260 billion barrels of oil in the Middle East cannot be burnt. In addition to stranded reserves, the structures and capital used in extraction and in exploitation of fossil fuel can become stranded.

Recent giant discoveries of oil and gas (Israel, the Arab Republic of Egypt, Lebanon, Mozambique, Senegal,) are expanding the list of countries that are faced with risk of stranded assets and capital (Arezki et al 2016). It is hard to reconcile this trend with the objective that planetary warming has to stay below 2 degrees Celsius. Nonetheless, the large number of countries that are increasingly exposed to stranded assets make it a priority for monetary authorities in concert with fiscal authorities to communicate and help adapt and mitigate these risks.

What to do about stranded assets?

Obviously, many fossil fuel exporters have been concerned with the need to diversify their economies. Very few have however successfully moved away from their dependence on fossil fuel (Venables, 2016). The regulatory and technological change sweeping the energy market may make it a more urgent priority. To help structural policies, working on the longer end of the yield curve would facilitate longer term investment and diversification. The response to the risk of stranded assets may have a bearing on the asset allocation of fossil fuel exporters. Many oil exporters have accumulated vast financial assets and the strategic asset allocation of the latter is all the more important considering the new risk. Investing away from financial assets that are based on fossil fuel assets is an obvious policy.

One implication of the spectre of stranded assets is that it could lead to a race to burn the last ton of carbon. That could in turn lead to the so-called green paradox whereby regulation aiming to limit carbon emissions ends up raising the latter at least in the short run (van der Ploeg, 2010). Some commentators have argued that the collapse in oil prices and deliberate attempt on the part of major oil exporters with low marginal cost of production crowd out higher marginal cost producers but also to delay the energy transition. There is indeed evidence that low fossil fuel prices can potentially delay the transition (Arezki and Obstfeld, 2015).

All in all, the risk of stranded reserves and capital is a much bigger risk for fossil fuel exporters than for advanced economies. Monetary policy needs to reflect and communicate on such existential threat and advocate that appropriate structural policies are adopted to diversify the economy. It also provides supportive financial policies to help the diversification and also adapt the strategic asset allocation.

V. CONCLUSION

This paper examined the role that monetary policy in fossil fuel exporters should play at different horizons. The central argument is that the concentration of wealth entails a concentration of risks that monetary policy needs to address. In the short run, monetary policy should (flexibly) target inflation. If CBs are not credible, a fixed exchange regime can help build such credibility. In the medium run, fiscal and credit rules are needed to limit the risk of macro financial instability in the face of TOT shocks. Coordination with fiscal authorities is needed to ensure a credible fiscal

anchor is in place. There is a need for macro prudential policies. In the long run, risks of stranded assets cause an existential threat to these economies. CBs need to communicate over the issue and over the need for structural policies to achieve diversification. Supportive financial policies and risk management strategy in the form of the choice of asset allocation are also appropriate.

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