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Themes in the Global Economy in 2016 and Beyond

Foreword

Eurobank Research is resuming the publication of Economy & Markets under the supervision of Dr. Tasos Anastasatos, Deputy Chief Economist. This publication intends to provide in-depth analysis of structural issues concerning both the Greek and the global economy, of longer-term interest, beyond the conjecture. Issues are presented in a rigorous manner, yet accessible to a wider audience of economically proficient readers. Economy & Markets has a track record of significant, cutting-edge contributions, which influenced public dialogue since 2006. Our aim is to abide by the high quality standards set by the title's history.

In this Issue:

This issue features an analysis of some of the main themes that will set the framework for the course of the global economy in the months and years to come. The list is selective, not exhaustive; from the themes that occupied the attention of policymakers and market participants recently, we focus on those that we think will have a more important impact beyond the medium term.

Recent months have seen a culmination of a discussion among policy makers, market participants and the wider public of the risks surrounding the global economy. Related concerns were triggered by signs of weakness in the recovery following the financial crisis and the Great Recession of previous years. In developed economies, the ongoing process of repairing the balance sheets of households, corporates and governments from previous years' financial excesses acts as a drag to growth, which is only partially counterbalanced by –the slow progress of- structural reforms aimed in boosting productivity. Emerging markets face the challenge of coping with turbulence in commodities and oil markets, while at the same time reforming their growth model in the direction of achieving a better balance between contributions from exports and domestic demand. Furthermore, there are voices suggesting that it is likely that Governments and Central Banks of developed and developing countries alike have already used most available weapons in their arsenal in order to boost growth and there are not many more things they can do in case the outlook takes a turn to the worse. The picture is blurred even further by Brexit, an aggravation of geopolitical tensions and an evolving refugee and migration crisis. The combination of these factors has led many international organizations and investment houses to downgrade their forecasts for global growth in 2016 with a slow improvement foreseen for 2017.

Hence, questions of weakness in the medium-term horizon have been generalized to a debate regarding the ability of the current globalized growth model to sustain the current potential growth rates in the longer-term horizon. This is especially so given that a host of important structural factors come into play in the years to come and are expected to challenge the way we think about global growth. These include, inter alia, climate change, ageing in developed economies, exhaustion of natural resources and over-indebtedness.

This article aims in contributing in this dialogue by examining certain issues that we think will have a more lasting impact on the global economy, while also raising awareness of certain other important themes. In detail, this issue includes:

Section 1: The Slowdown of the Chinese Economy and Spillovers. After reviewing the economic model of China in historical perspective, we examine policy challenges that the Chinese authorities have to deal with in their effort to switch, from an export-led model of growth, to a new model that has a more substantial contribution from domestic demand. This has to be done while, at the same time, address the macroeconomic and financial imbalances of the previous model, deter a hard landing of growth, and complete the unfinished transition of the Chinese economy into a market economy. Our analysis includes an econometric test of consistency for official GDP growth figures from high-frequency indicators and calibration of scenaria for the evolution of growth in China in 2016 and 2017. Subsequently, we evaluate the potential for spillovers from the slowdown of China in the global economy, and describe channels of contagion. The section concludes with brief market guidance.

Section 2: The Implications of Expansionary Monetary Policy. This section examines the effort of monetary policy authorities worldwide to deal with sluggish growth and low inflation, while in parallel reigning in concerns about stability of the financial system. In particular, we focus on two interrelated topics, the divergence in the stance of monetary policy between the Fed and the ECB, and the implications of the negative interest rates policy.

Section 3: The Oil Price Decline: Causes, Repercussions and Outlook. This section begins by investigating the main factors that contributed in the recent slump in oil prices, namely rapid supply growth, easing concerns over the impact of geopolitical tensions on oil supply, and a change in OPEC's strategy. While we also find demand-side factors to have contributed, it appears that the decline was primarily supply-driven. In accordance to the nature of the phenomenon, we examine the expected impact of lower oil prices on economic activity and their differentiation between oil-producing and oil-importing countries. The section concludes with a note for the outlook of global oil prices and the expected sustainability of the price declines in the medium term.

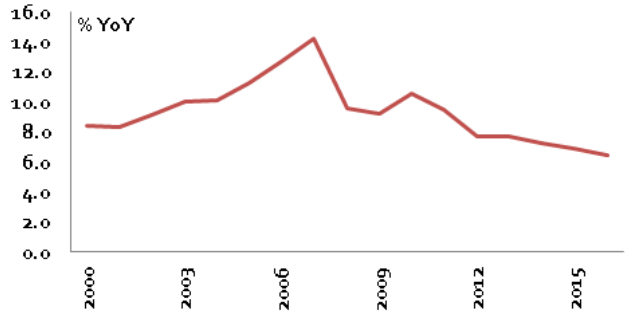
Section 4: Other Important Themes. This section briefly describes other topics, which we believe market participants should bear in mind in the months and years to come, as a way of raising awareness. These include the implications of Brexit for the UK, the EU and the global economy; geopolitical tensions and related risks; mega-trends, i.e. issues that can cause structural shifts in the global economy in the very long term.

1. The Slowdown of the Chinese Economy and Spillovers

1.1 Introduction

After two decades of unprecedented economic growth, which led China to become the second largest economy in the world, the growth of the Chinese economy is demonstrating in recent years signs of a slowdown, spurring fears of a hard landing. The officially quoted average GDP growth rate of China stood at ca 7.8% per annum in 2011-2015, a gear down from 10.3% in 2000-2010 (Figure 1.1). Economic growth in China, while still impressive by international comparison, has been on a downward trend since 2007, with real GDP expansion decelerating to a 25-year low of 6.9% in 2015, from 7.3% in 2014, albeit close to the official target of "around 7.0%". Growth stabilization has become a priority policy concern, supported by further fiscal and monetary easing measures. Although the Chinese government has recently lowered the GDP growth target to a range of 6.5-7.0% for 2016, in the annual National People's Congress meeting in 5 March 2016, it actually highlighted that the minimum average growth rate to be achieved in 2016-2020 is 6.5%.

Figure 1.1: Real Rates of GDP Growth, China, 2000-2016



Source: IMF, Eurobank Research

Several analysts have expressed reservations in the past as to the extent that officially announced growth rates depict an accurate picture of Chinese growth. Notwithstanding, the most important policy question is whether the kind of growth rates achieved in the recent past are sustainable in the future. This is intertwined with the question of whether the previous growth model has reached its limits and new directions need to be explored. In other words, the slowdown might be the outer symptom of China's transition of growth paradigm, from a model based on cost efficiency and exports, to a new one, more balanced between domestic demand and export performance. This switch is dictated by both a desire to reduce dependence upon weakened global demand, as well as domestic socioeconomic developments, such as, inter alia, an increase in wages, the enlargement of the middle class, need to conform to environmental and social rights standards. Achieving this transition without acute shocks is even more difficult if one considers that, at the same time, China has to put a lid to credit, whose rapid expansion fueled growth in recent years.

The implications are multidimensional; this section attempts to offer a concise analysis. We begin with a retrospect of the economic model of rapid growth and the distortions that were carried along. We offer a quantitative assessment of the consistency of official growth statistics; calibrations point to an expected growth deceleration. Subsequently, we ask what will be the spillovers to the peripheral and global economy. We conclude with brief market guidance.

1.2 The economic model of China in historical perspective

Entering the WTO in 2001 was a game changer for China. It signaled the country's departure from a strictly centrally planned and closed economy paradigm and its closer integration into the world economy. This development coincided with China's switch to a high growth path. Certain authors relate China's WTO accession to the Chinese leadership's drive to promote integration into the world

economy structures.[1] Since then, a lot of catch up of the living standards to those of developed economies has been achieved. By 2010, China became the world's second largest economy. Per capita GDP (in 1990 US dollars, PPP terms) climbed from $2,648 in 2000 (or 9% of the relevant US per capita GDP) to $5,732 in 2007 (18% of the US equivalent) and further to $10,568 in 2015 (32% of the US equivalent). This transition from a low-income to a middle-income economy was driven by exports and investments, mainly in heavy manufacturing. The model of specialisations was based on the abundance of low-cost medium-skill labour.

As is the case historically with all fast growing developing countries, eventually Chinese growth started exhibiting diminishing returns. However, the idiosyncratic way the expansion was achieved has raised additional concerns about its long run sustainability from early on. China's export-driven economic model first came in the spotlight in 2004. The Chinese communist party embraced formally the goal of rebalancing the economy as early as December 2004 at the annual Central Economic Work Conference. In March 2007, Premier Wen reiterated the goal of making domestic consumption a much more important source of China's economic growth.2 To that end, the Chinese leadership decided to pursue a number of economic reforms that would transform the economic model of the country from investment- and exports-driven to a paradigm with a more substantial contribution from consumption. On the supply side, the transformation of the economic model entails the shift from manufacturing to services. This is partly the result of the regularity observed in all societies that as the per capita GDP rises, the share of services in consumption increases as well, given services' higher income elasticity. In addition, ageing started overturning favourable demographics, which supported the previous model of specialisations, and overinvestment accumulated excess production capacity. Now China is called to invest more in upgrading its human capital in order to counterbalance these changes and switch to higher added value activities. While the Chinese government has in recent years increased funding for education, health care, student nutrition and early childhood development, more needs to be done in order to converge to developed countries' standards.[3]

These are long-term processes of economic transformation, yet the pursuit of a new economic model acquired a renewed sense of urgency during the global economic crisis when the vulnerability of the Chinese economy to dips in external demand was further exposed. However, evidence on the progress of the rebalancing process is so far inconclusive. In fact, official statistics occasionally point to the exact opposite direction, if viewed from the demand side: the share of total consumption (private and public) to GDP declined, from 62% in 2001 to 50.6% in 2007 and edged up to 51.4% in 2014. While government consumption was also contained (13.6% in 2007 from 14.7% in 2001, relatively flat thereafter), the bulk of the decline came from private consumption, with its share in GDP coming down, from 45.8% in 2001 to 37.0% in 2008, only to edge up to 37.9% in 2014. At the same time, gross capital formation continued to expand, from 35.9% of GDP in 2001 to 40.7% in 2007 and further to 45.9% in 2014. These numbers point to a structure of the economy markedly different from that of most advanced and emerging economies, in which consumption accounts for around 65% of GDP and investments' ratio is way below 30% on average. On the other hand, from the supply side, the share of services to GDP is estimated to have climbed to

[1] Hui Feng (2006) argues that WTO accession was the result of a state-led, leadership driven, top-down political process in which a determined political leadership partly bypassed and partly restructured a largely reluctant and resistant bureaucracy.

[2] His exact statement was "China's economic growth is unsteady, unbalanced, uncoordinated and unsustainable" at his press conference following the close of the annual meeting, see http://www.piie.com/publications/chapters_preview/4174/06iie4174.pdf

[3] Heckman (2002) estimates that, at the time, China was spending about 2.5% of its GDP on investment in schooling vs 30% of its GDP on physical investment. For a comparison, in the U.S., these figures were 5.4% and 17% respectively.

48.3% in 2014, while the share of the industrial sector has come down to 42%.

The declining current account surplus is an illustration of the Chinese economic paradigm reaching its limits instead of a successful rebalancing taking place. China has been running current account surpluses every year since 1994. The current account surplus rose, from 1.3% in 2001, to 3.6% in 2004; after peaking at 10.1% of GDP in 2007, it started narrowing and hovered around 2% in 2011-2014. This trend reflects the impact of the global economic slowdown and the rising labor input costs for the Chinese industry.

1.3 The unfinished transition to a market economy and Policy Challenges

The investment-driven model was largely the result of intentional choices of the economy's central planner. Despite the successive waves of reforms since 1978, China is still to a large extent a centrally planned economy, not allowing market forces to operate fully. As a result, a number of distortions are in place in the labour and capital markets. A transition to a fully-fledged free market economy would require the Chinese leadership to decide to eliminate those distortions through liberalization of domestic markets and acceleration of structural reforms. While reforms would boost Total Factor Productivity and subsequently long-term growth, they entail social costs, short-term in nature but painful. However, failure to act bears the risk of existing vulnerabilities causing a major crisis, such as the bursting of asset bubbles, predominantly in real estate, which would derail the economy. More importantly, this has to take place against an unfavorable external environment in which China has come under the increased scrutiny of international markets. The key issues that the Chinese leadership has to deal with are:

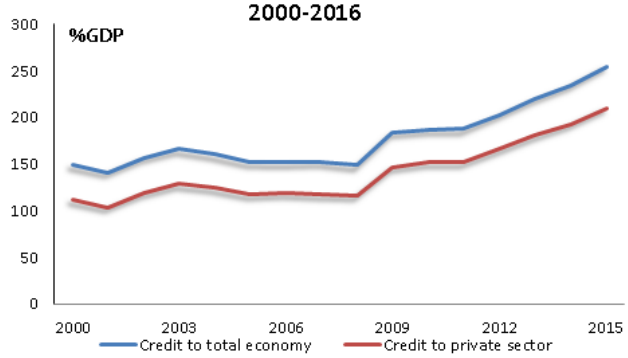
- **Fiscal policy implications**: Fiscal policy has been extensively used as a tool to support growth. Authorities are targeting a fiscal deficit of 3% of GDP in 2016, the largest target ever, compared to 1.5% in 2015. Still, the official budget reporting system underestimates the degree of fiscal policy's intervention in the economy as this is also taking place through off-budget and quasi fiscal channels. The authorities announce the official target and publish also results on the "actual" fiscal deficit, which is not directly comparable with the target. IMF publishes its estimate of the augmented fiscal deficit, which incorporates also the results of the state and social security funds, and the fiscal performance of local governments. Thus, a more representative indicator of fiscal performance is the general government financing requirement; this rose to 7.3% of GDP in 2014, up from 6.5% in 2012. The central government debt levels appear to be moderate at 20% of GDP. At the same time, the debt of the local governments has climbed, from less than 20% of GDP in 2007-2008, to an estimated 38% of GDP in 2015. The rising sovereign risk is mitigated by the domestic currency denomination of the debt and the large government FX-denominated assets. However, attention is also due to the efficiency of fiscal policy and the high contingent liabilities mirroring the implicit state guarantees for them. The bulk of fiscal impulse is carried out by the local governments and state-owned enterprises whose efficiency and ability to finance profitable (infrastructure) projects is highly questionable. Fiscal stimuli have to become more focused on supporting structural adjustment instead of providing short-term boost of demand, in order not to replicate the existing model.
- **Exchange rate regime:** Several analysts believe that China utilized the FX regime for much of the 2000s in order to subsidize the price competitiveness of exports. It is not easy to prove whether the course of the exchange rate was reflecting fundamentals or it was managed by interventions. It is true that, according to IMF data, the CPI-based real effective exchange rate depreciated by 11.5% between 2001-2006, albeit it cannot be easily deduced whether the exchange rate in 2001 was already

undervalued (the real exchange rate appears relatively stable since 1990 but the nominal exchange rate depreciated by 32% between 1990-2001). An indication is given by the course the exchange rate followed since 2005, when limited flexibility has been allowed, with the peg to USD being replaced by a managed float system against a trade-weighted basket of foreign currencies: between 2006-2016, the REER appreciated by more than 52%. Overall, the RMB is no longer considered to be undervalued. RMB has been relatively stable throughout 2015 and fell slightly in the first months of 2016. The convertibility, the liberalization of the capital account and further integration of RMB in the international financial system are issues requiring further investigation.

- **Overcapacity & High corporate indebtedness**: Chronic overcapacity is observed in manufacturing and real estate industries, where a number of overleveraged state-owned enterprises (SOEs) operate. Resolution or restructuring of those loss-making SOEs would be a politically sensitive decision with social costs and negative balance sheet effects in the short-term.

  Financial sector: IMF has done extensive work on the required reforms of the financial system. China's financial system was developed to allocate credit according to the priorities of the old investment-driven growth model. Lending from official sources has grown aggressively in recent years and exceeded 254% of GDP in 2015 (credit to the private sector at 210% of GDP), from 150% of GDP in 2000 (Figure 1.2). Correspondingly, M2 growth approached yearly rates in excess of 20% at times, before moderating to ca 15% yearly in recent years. In addition, according to IMF (2015), the system features implicit state guarantees covering financial institutions and corporates (particularly SOEs), which gives easier access to credit to entities perceived to be backed by the government.

Figure 1.2: Credit as a % of GDP, China, 2000-2016



Source: Bloomberg, Eurobank Research

The preferential access to the financial system and the distortions in the deposit rates' ceilings, which have only recently been abolished, have allowed for a shadow banking system to flourish, instead of favoring the creation of domestic capital markets where ample savings would be channeled. The development of the shadow system accelerated after 2008 mirroring the scarcity of credit induced by the international crisis and/or the inability of domestic banks to fund certain industries due to regulatory constraints. There is a range of estimates[4] regarding the size of shadow banking in China, depending on the definition of shadow banking and estimates of some important statistics. Generally speaking, the Chinese shadow banking system is not considered to be too large by international comparison. Brookings (2015) compiled in a table the different estimates of shadow banking. Those range from 31% of 2013 GDP (Financial Stability Board) to 81.2% of 2013 GDP (JP Morgan). IMF's most recent country report (IMF, 2014) has calculated this to have risen to nearly 53% of GDP, with annual growth rates of ca 30% during 2012-13. The rise of the shadow banking system entails systemic risks for the Chinese economy, as a disorderly implosion could carry along a recession, a banking crisis or both.

[4] See Brookings (2015) and FSB (2015).

- **Real Estate:** The real estate industry has been a key growth driver of the Chinese economy in the past decade, an important source of employment with multiple linkages in a number of other sectors. According to IMF calculations, real estate investment grew rapidly, from about 4% of GDP in 1997 to 15% of GDP in 2014. More specifically, residential investment accounts for approximately 2/3 of total real estate investment and 15% of fixed assets investment; it generates 15% of total urban employment and concerns 20% of total bank lending. From a historical point of view, residential real estate investment at its peak (2013) stood at 10.4% of GDP, second only to that of Spain (12.5% in 2006). Years of overinvestment in the industry have resulted in an accumulation of residential real estate inventories. The oversupply is more apparent in the Tier 3 & 4 cities, which have an unsold supply of 3 years' duration of demand and account for half of the real estate investment. The softening of real estate activity since 2014 has been reflected in a slowdown in prices, contraction in transactions, new starts and falling investment. These developments have raised concerns that the impact of the industry's correction on economic activity could exacerbate the downturn. Research on the topic has focused on the investigation of both supply and demand side distortions in the market. On the supply side, the focus has turned to the local governments' policy to finance spending by land sales. On the demand side, attention has turned to the attractiveness of real estate assets as a result of the lack of alternative investments on financial assets.
- **Liberalization of goods & services markets:** The government has to allow for liberalization in several goods and services' markets to foster competition and a more efficient reallocation of resources within the economy. This is needed both because the composition of domestic demand is changing, as well as, due to sluggish external demand for heavy manufacturing and technological products that the previous growth model was centered around.
- **Ageing of working age population:** A rapid demographic transition is taking place, which results in the ongoing decline of the working-age population. The ageing population has largely been the result of the one child policy, firstly implemented in 1979, which has now been abolished. The fertility rate declined from 5.8 births per woman in 1964 to 1.6 in 2012. The ageing population has a direct impact on the size of the Chinese labor force, thus putting a break on the access of industry to low cost labor. According to Brooking (2012) calculations, the population's share of people aged above 60 could reach 20% by 2020 and 27% by 2030. The ageing population, not only undermines productivity and the long term growth potential of the economy, but it is also expected to further increase the share of consumption over GDP and the subsequent further rise of the services sector. Rise of consumption means an expected decline of the national savings rate, which fueled investment in the past.[5] The government has made progress in building a safety net of social services that covers 95% of the population, which limits the necessity for precautionary savings. Yet, ageing will further increase health and social security expenditure.

1.4 An econometric model to forecast GDP growth in China from high-frequency indicators

China's economic deceleration in 2015 to its lowest rate of growth since 1990 reflected longer-term imbalances described above, magnified by the unfavourable international environment of the conjecture. Main symptoms were a continuous correction in the property sector, industrial activity softness, and weaker growth in non-traditional credit. Concerns over the pace of the slowdown and the risk of a hard-landing were amplified in the second half of 2015 by the equity market collapse in

[5] According to IMF data, gross savings were above 48.8% of GDP in China in 2014 vs. 17.9% in USA. Albeit to a large extent this was coming from firms' savings, the savings ratio of urban households was also high, at more than 30% of disposable income.

China in July and the practical difficulties in the rebalancing process of the Chinese economy. Albeit concerns about a hard landing seem to have receded recently, considerations about the repercussions of the longer-term rebalancing process remain, given China's importance for the global economy.

Conducting forecasts on the medium and long-term growth performance of any economy is a precarious task. This is even more so for an economy for which several analysts have expressed concerns regarding the accuracy of its officially announced statistics. Yet, for the purpose of identifying and dating business cycles and growth cycles in China it is important to have a timely reading on the overall strength of the Chinese economy. A way to do this is to construct a measure of economic activity that is based on high frequency data. This method implicitly tests the consistency of GDP measures with indicators that are known by international experience to be highly correlated with it and thus overcomes data limitations. In particular, we use an OLS regression for the period 2005Q1-2016Q1 in order to investigate the statistical relation between annual real GDP growth on a quarterly frequency and a set of monthly activity indicators from both supply and demand sides of the economy. These include macroeconomic indicators, such as industrial production, fixed asset investment, exports and retail sales. The econometric model also includes activity-based indicators, such as electricity output, total freight traffic volume, as well as the survey-based purchasing managers' manufacturing index (see Box 1.1).

In general, the estimated index exhibits a relatively strong historical correlation with China's quarterly real GDP. Nevertheless, a slowdown in estimated growth has become more evident since the first quarter of 2015, when the deviations from official GDP growth rate has also started to widen.

Using the estimates presented in Box 1.1, we utilize our econometric model and three different scenarios for our explanatory variables to calibrate projections for real GDP growth in China over the next couple of years under a baseline, an adverse and an optimistic scenario, given specific assumptions for the explanatory variables.

Our **baseline scenario** is consistent with a drop in real GDP growth rate to **6.4% in 2016** and **6.2% in 2017** from 6.9% in 2015. The baseline scenario is based on the assumption that the explanatory variables stay in 2016 around their 2015 level, while there is a slight deterioration in 2017. In more detail, the assumptions are as follows:

- *Industrial value added* has been increasing by an average of roughly 12.5% on an annual basis since the series started in 1998; after reaching a peak of 20.2%YoY in Q1 2010, it has slowed to about 6.5%YoY in 2015. We assume that the said explanatory variable stands around 6.5% in 2016, and slows further to 6.0% in 2017.
- *Retail sales* have been trending downwardly since 2009, after reaching a peak of 23.2%YoY in Q3 2008. We assume retail sales will average about 11.0%YoY in 2016 and deteriorate somewhat to ca. 10.0%YoY in 2017.
- *Total investment in fixed assets* has slowed from an annual growth of ca. 30.0% in mid-2000s to almost half that growth in 2015. Our central scenario assumes that the variable averages around 11.5%YoY in 2016, before falling to about 9.5%YoY in 2017. It should be noted that monthly data show that fixed asset investment has already slowed to 9.0%YoY in June 2016 from 10.7%YoY three months ago.
- *Electricity production,* has also been on a downward trend since Q4 2009, when it reached a record high of 23.3%YoY; it is assumed to hover around levels of -1.0%YoY in 2016 and move further down to -2.0%YoY in 2017.
- Regarding the *PMI manufacturing index*, after hitting a high of 56.6 points in Q4 2009, it has been gradually declining to an average of about 50.0 points during 2012-2015. Hence, we assume that the said index stays around levels of 50.0 in 2016 and falls marginally to an average of 49.5 in 2017.

- *Rail freight volume*, which has a long-term average of 1.3%YoY over the last decade, has plunged to a historical low of -16.8%YoY in Q3 2015. Our baseline scenario assumes that rail freight volume hovers around levels of -13.5%YoY in 2016 and around -15.0%YoY in 2017.

Our **adverse scenario** is in line with a drop in real GDP growth rate to **5.6% in 2016** and **5.4% in 2017**. In such a case, there is a significant deterioration in industrial output and private consumption growth, while investment is cooling further, led by a reduction in residential real estate growth:

- *Industrial value added* declines from an average of 6.3%YoY in 2015 to 5.5%YoY in 2016 and to 5.0%YoY in 2017.
- *Retail sales growth* deteriorates from roughly 11.0%YoY in 2015 to 10.0%YoY in 2016 and 9.0%YoY in 2017.
- *Total investment in fixed assets* decelerates from 11.5%YoY in 2015 to 9.5% in 2016 and 8.5% in 2017.
- *Electricity production* slips further into negative territory to -2.0%YoY and -3.5%YoY in 2016 and 2017, respectively, from -0.8%YoY in 2015.
- The *PMI manufacturing index* experiences new historical lows of 48.0 points in 2016 and 47.0 points in 2017, from an average of roughly 50.0 points in 2015.
- *Rail freight volume* falls deeper into negative territory to -15.0%YoY in 2016 and -18.0%YoY in 2017 from -14.0%YoY in 2015.

On the flipside, our **optimistic scenario** results in a real GDP growth rate of **6.9% in 2016** and **7.5% in 2017**. Should this positive scenario materialize, supply-side indicators, like industrial value added and electricity production, will accelerate significantly. Adding to this, firm demand indicators, such as rising real estate construction and real personal consumption, will reflect improving labor market conditions amid the ongoing transition to more skilled labor-intensive growth. In such a case:

- *Industrial value added* increases from an average of 6.3%YoY in 2015 to 9.0%YoY in 2016 and to 11.0%YoY in 2017.
- *Retail sales growth* accelerates from roughly 11.0%YoY in 2015 to 12.0%YoY in 2016 and 13.0%YoY in 2017.
- *Total investment in fixed assets* rises from 11.5%YoY in 2015 to 12.5% in 2016 and 13.5% in 2017.
- *Electricity production* turns positive to 1.5%YoY in 2016 and 2.5%YoY in 2017 from a negative annual growth rate in 2015.
- The *PMI manufacturing index* increases to 52.0 points in 2016 and 54.0 points in 2017, from 50.0 points in 2015.
- *Rail freight volume* accelerates to -5.0%YoY in 2016 and 0.0% in 2017 from roughly -14.0%YoY in 2015.

1.5 Spillovers from the slowdown in China – channels of contagion

China plays an increasingly important and influential role in the global economy. According to IMF's estimates, China's GDP was $11.0 trillion in 2015, converted in USD by the use of nominal exchange rates, or about 60% the size of the US economy and 15% of world GDP. A more accurate measurement is to use exchange rates based on a country's actual purchasing power relative to the US dollar in order to account for differences in the prices of goods and services across countries. The purchasing-power-parity (PPP) exchange rate measurement (IMF data) increases the estimated size of China's economy, with 2015 GDP accounting for 17.1% of world GDP, compared to 16.9% for the European Union and 15.8% for the US.

BOX 1.1: A model to forecast GDP growth in China from high-frequency indicators

The industrial value added indicator has been widely used by almost all organizations in constructing coincident economic indicators for China, including OECD and The Conference Board. The indicator of retail sales also serves as an additional indicator of economic activity as it captures demand for consumption. For approximating investment, we use the primary indicator, which is available on a monthly frequency, total investment in fixed assets (TIFA); this is actually the basis for, but not equal to, the gross fixed capital formation in the Chinese national accounts. Furthermore, Ozyildirim and Wu (2012) argue that electricity production is a less biased proxy for real economic activity as electricity cannot be stored and moves with production, consumption and investment; in addition, this variable is sensitive to market changes. The PMI manufacturing index is a leading indicator of the economic health of the manufacturing sector; it comprises five major sub-indices: new orders, inventory levels, production, supplier deliveries and the employment environment. Last but not least, rail freight volume is considered a leading indicator for overall economic performance in China, gauging goods-producing and goods-consuming economy.

The OLS regression we use is the following:

$$GDP_t = c + b_1*ELPR_t + b_2*INV_t + b_3*RET_{t-1} + b_4*IP_t + b_5*FR_t + b_6*PMI_t + \varepsilon_t$$

where GDP_t refers to real GDP annual growth rate at time t, c is the constant term, INV_t refers to fixed asset investment's annual growth rate at time t, RET_{t-1} refers to retail sales' annual growth rate at time t-1, IP_t refers to industrial production annual growth rate at time t, FR_t refers to freight traffic volume's annual growth rate at time t, PMIM refers to the official PMI manufacturing index at time t and ε is the disturbance term. The model uses Heteroskedasticity and Autocorrelation Consistent Covariances; sample (adjusted) is 2005Q1 2015Q4. We find an adjusted R^2 equal to 0.87, which means that 87% of total variation is explained by our regression line. Results are:

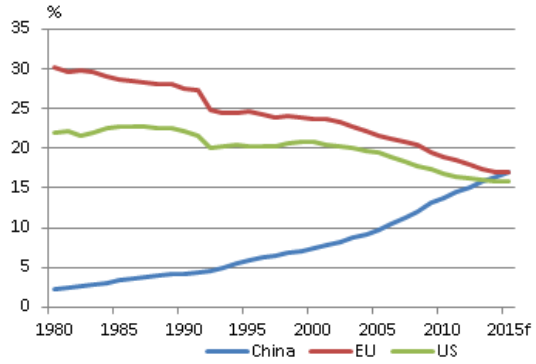
Dependent Variable: GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.48	3.12	-1.76	0.0872
ELPROD	0.12	0.05	2.54	0.0153
INVEST	0.14	0.03	4.15	0.0002
IP	0.38	0.05	7.10	0.0000
FREIGHT	-0.13	0.05	-2.50	0.0170
PMIM	0.15	0.07	2.28	0.0284
RETAIL(-1)	-0.11	0.05	-2.19	0.0346

China's share of global GDP on a PPP basis has been steadily increasing over the past 35 years, from 2.3% in 1980 to 17.1% in 2015, while the US and the EU shares of global GDP on a PPP basis have been falling by roughly 6ppts and 13ppts, respectively (Figure 1.3). This is an impressive overturn, given that in 1980 China's GDP in PPP terms was only one-tenth that of the US. The IMF estimates that by 2021,

China's share of world GDP will have reached roughly 20.0%, while the respective figure for the US and the EU will have declined to 14.6% and 15.3%, respectively. Given the emergence of China as a global pillar in the world economy in recent decades, any significant slowdown in the Chinese domestic economic activity could potentially have sizeable spillovers to other systemic economies and China's trading partners, as well as emerging market commodity exporters. The remainder of this section briefly examines the main channels through which a possible downturn in China could have global repercussions.

Figure 1.3: GDP based on purchasing-power-parity (PPP) share of world total



Source: IMF April 2016

Transmission channels:

a. The Trade Channel

Fluctuations in a country's levels of economic activity affect the economies its trading partners' (or competitors) both directly, through impact on demand for their products and services, and indirectly, through the impact on world prices for specific goods that the said country imports, thereby affecting other countries' exchange rates and asset markets.[6] Trade linkages can be decomposed into three distinct channels by which an economy can be affected by significant economic fluctuations elsewhere in the world:[7]

i. Competitiveness effect:[8] the depreciation of a currency reduces the relative price of the country's exports and, therefore, shifts demand away from goods and services that compete with those exports.

ii. Income effect or domestic demand effect:[9] A negative (positive) demand shock in a country affects its income level and output growth rate, which in turn reduces (increases) that country's demand for imports and thus a shift in demand for countries that export directly to the specific country

iii. Cheap-import effect, or bilateral trade effect, or supply effect: a devaluation of a country's currency makes its exports relatively cheaper, i.e. improves the terms of trade in its trade partners, allowing these countries to increase consumption for any given level of disposable income and, therefore, affects those countries' welfare positively.

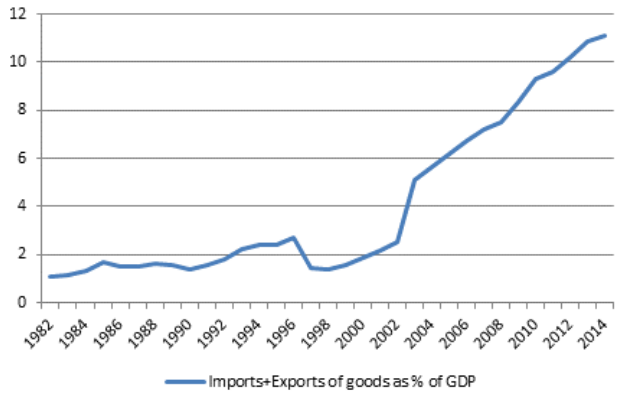
China is the third largest importer worldwide, behind the euro area and the US, and between the top 10 trading partners of more than 100 economies that account for about 80 percent of global GDP. According to the World Bank's database, China's purchases of goods from abroad accounted for more than 10.0% of global goods' imports in 2014, compared to about 23% for the euro area (including intra euro area imports) and 13% for the US. China's role as a source of final demand has increased markedly over the past decade, with a large part of its imports concerning final capital and consumption goods from the United States and Europe. As far as both exports and imports of goods are concerned, China accounted for about 10.0% of world trade in 2014. The openness of the Chinese economy, as approximated by the sum of imports

[6] IMF WEO, April 2016

[7] Forbes (2002)
[8] Corsetti et al. (2000)
[9] Wincoop and Yi (2000)

and exports over GDP, increases significantly over time (Figure 1.4). China's size, its increasing degree of its openness, the high investment rate and the high import content of its investment and exports, highlight the importance of the trade transmission channel in episodes of fluctuations in China's domestic economic activity.

Figure 1.4: Openness of the Chinese economy



Source: World Bank

According to IMF (2016) estimates, a 1 percentage point investment-driven drop in China's output growth would reduce Group of Twenty (G20) growth by ¼ percentage point. Furthermore, IMF staff analysis suggests that countries which export to China a large share of their value added exports tended to experience larger declines of export growth in 2015 relative to 2012–14. Cashin et al (2016), which estimated the effect of a negative GDP shock in China on global economic activity, found similar results. Using a GVAR model over the period 1981Q1 to 2013Q1, the authors found that following a one percent permanent negative Chinese GDP shock, global growth declines by 0.23 percentage points in the short-run. Finally, the European Commission (2015) quantified the direct trade impact of slower Chinese growth on the euro area and concluded that a slowdown in Chinese GDP growth of 1ppt relative to its central forecast for 2016 and 2017 (from 6.5% to 5.5% for 2016 and from 6.2% to 5.2% for 2017) would result in a reduction in euro area output by 0.2% in 2016 and 0.3% in 2017 (0.1% and 0.3%, respectively, for the remaining EU countries).

b. The Financial Channel

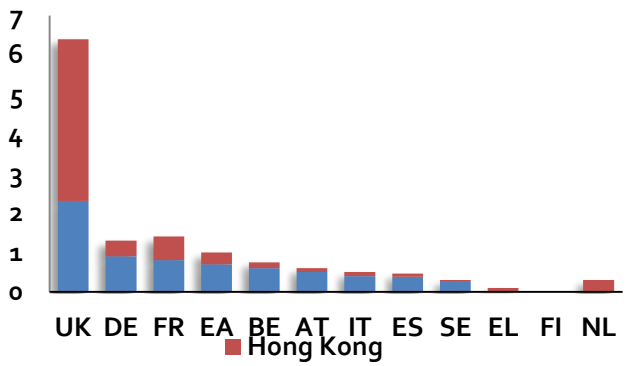
Analysis has showed there is a positive relation between the degree of development of the financial system and economic growth, albeit there are conflicting views regarding the underlying causal mechanisms. Financial markets constitute an important source of finance for investment, and can have an important effect on private consumption through wealth and confidence links. Therefore, the cross border transmission of shocks between different financial markets could explain some of the correlation in economic activity between different countries. Reasons for cross-border financial links include the dependence of equity market valuations of multinational corporations on their global profitability, portfolio investment in foreign equity markets for diversification purposes and cross-border asset price arbitrage (on the grounds that comparable risks should be priced in a similar way across different countries). Brooks and Catao (2000) highlight the increasing importance of global factors, compared to country specific factors, in explaining movements in equity prices since the mid-1990s.

Apart from the equity markets, linkages between major international bond markets can have substantial effects on the countries' business cycles. The presence of a world price of risk, the tendency for international diversification of bond holdings, the presence of global factors that determine real rates, and the possibility that there is a "flight to quality" in times of financial stress, are factors that can lead to an increase in the co-movement of interest rates across countries. Clare and Lekkos (2000) highlight that

the linkages between major bond markets are significant during times of financial stress.

Concerns about cross border exposure to Chinese credit risk have been on the rise, given that China has reported a sharp rise in its total debt-to-GDP ratio since the financial crisis. More specifically, private sector borrowing as a percentage of GDP expanded from 116% in 2007 to 237% in 2014. Non-financial firms in particular, increased their indebtedness considerably, with debt-to-GDP ratio increasing from 72% of GDP in 2007 to 125% in 2014.[10] Nevertheless, immediate cross border direct transmission through financial markets will probably be relatively limited, partly due to the remaining restrictions to international capital mobility in China (cross-border financial transactions, investment and banking activities). Bank of International Settlements (BIS) data show that international financial claims on Chinese banks, private and public sector are relatively low (Figure 1.5). Meanwhile, an analysis by the European Commission suggests that the largest European banks have moderate exposures to China compared to their balance sheet size and as a share of total revenues. FDI exposure is also relatively small, with FDI stocks in China representing only 2.0% of total EU outward FDI.

Figure 1.5: Financial claims in Mainland China and Hong Kong (% of total foreign claims)



Source: BIS, Eurobank Research

c. The Commodity Price Channel

China is a major source of final demand for both commodities and manufactures, especially energy commodities and metals. Mirroring the sharp expansion of the industrial sector, China's metal and energy consumption tripled during 2000-14, with metal demand accounting currently for more than half of total global demand for metals, and primary energy consumption accounting for about 23% of the global demand.[11] China's investment slowdown and the deceleration in Chinese demand for commodities have had a profound impact on prices of those commodities closely related to investment activities. Indeed, metal prices have gradually declined by nearly two thirds from their peaks in early 2011. This has resulted in considerable excess capacity in mining sectors and forced exporters to adjust to lower revenues (IMF, WEO, October 2015). As far as manufactures are concerned, excess capacity in some segments of the Chinese manufacturing sector can lead to lower prices of specific manufactured products (i.e. steel) and, consequently, affect China's competitors by reducing their profits and possibly investment rates. On the flipside, although China's demand for oil remained strong in 2015, its role regarding oil price developments remains relatively modest, given that China currently accounts for only about 11.0% of world oil consumption. Although a more pronounced slowdown in China's economic activity could potentially exert downward pressure on commodity prices (especially metals), it is likely that the main downward adjustment in many commodity prices has already occurred.[12]

[10] McKinsey Global Institute, MGI Country Debt database.

[11] World Bank, Global Economic Prospects, January 2016

[12] European Economic Forecast, Autumn 2015

d. The Confidence and the Exchange rate Channels

Consumer and business confidence can transmit macroeconomic shocks across borders as they can have a significant impact on private consumption and investment, respectively. Nevertheless, although the confidence channel is significant, it is rather hard to estimate econometrically. There is no comparable past evidence of an economic recession in China since it only recently acquired such a significant weight on global economic and financial markets. This carries risks of generating bouts of market anxiety and volatility, tipping financial markets into recession.

Regarding the exchange rate channel, the CNY real exchange rate has appreciated sharply over the past couple of years, pulled up by the peg to the US dollar. Nevertheless, at the beginning of August 2015 the Chinese authorities announced changes to their exchange rate regime in order to allow the level of the CNY to more closely reflect market forces. From 11 August to end-October 2015, the CNY depreciated by more than 2% against the US dollar and by more than 8% against the euro. The future course of the CNY is not easy to assess, as it heavily depends on the Chinese Central Bank's determination to defend the currency's central parity against the US dollar and stabilize expectations. According to European Commission's estimates, a 10% appreciation of the euro in nominal effective terms would lead to around 0.5 ppts lower GDP growth in the first year. Hence, a further depreciation of the CNY would have a measurable impact on real economic activity of European countries, given that China's weight in the euro's broad nominal effective exchange rate (NEER42) is about 15%. The effect varies across member states, as France and Germany have significantly larger nominal effective exchange rate weights for the CNY, in contrast to the Baltics, Ireland, Slovakia and the Netherlands that have a significantly smaller weight.

1.6 Conclusion

There is no doubt that the Chinese economy matters to the rest of the world. As the Economist[13] puts it, investors are right to be nervous given that a slowing China can drag down emerging markets, commodities and countries. China accounts for a significant portion of global demand for many commodities, while economies such as Germany and SE Asian countries, have significant direct trade links with it (not the case for the US). The Chinese economy is at a crossroads for some years now, with its leadership facing the enormous challenge of rebalancing the economy towards a more sustainable growth path, with a larger contribution from consumption, thereby avoiding a destabilizing collapse.

For the time being, concerns about a Chinese downturn have gone to the background as other issues of global interest (e.g. BREXIT, Terrorism attacks, European Banking system stress tests) have captured international markets' attention. Even though the probability of a hard landing at this point seems low, investors' concerns could easily remerge at the sight of a disappointing data release from Chinese statistics or a geopolitical event in the South Sea or even an inadequate policy response from the Chinese leadership. In that case, investors should be aware that excessive volatility in the international financial markets could resurface. On these grounds, caution must be exercised in the selection and holdings of emerging markets' assets of any kind against a background of relatively low world growth.

[13] http://www.economist.com/news/leaders/21662544-fear-about-chinas-economy-can-be-overdone-investors-are-right-be-nervous-great-fall

2. The Implications of Expansionary Monetary Policy

2.1 Introduction

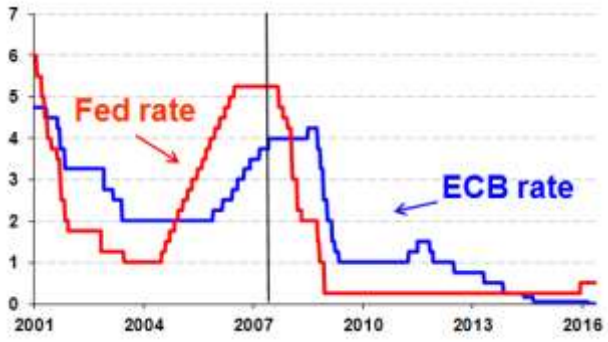
In the aftermath of the international financial crisis of 2008, all major Central Banks have followed an unusually expansionary stance in their monetary policy with the aim to accommodate the recovery of the real economy, provide time and financial space for the healing of the balance sheets of households and companies and, in some countries, allow the necessary fiscal consolidation to proceed in a more favourable environment. In this effort, Central Banks used a range of conventional (e.g. ultra-low or negative interest rates) and unconventional (e.g. outright quantitative easing) means of monetary policy. Policies have recorded varying degrees of success, depending also on the nature and extent of problems that had to be dealt with in various countries, exact mix of measures and timing of implementation. However, despite unprecedented monetary expansion, there are concerns that global growth remains sluggish and underlying imbalances have not been cured, most prominent among them being the over-indebtedness of households, firms and sovereigns, as well as the excessive leverage and exposure in derivatives of financial systems in some countries. Furthermore, there are concerns that expansionary monetary policy has generated conditions that favor the creation of bubbles in several markets. As a result, several analysts argue that monetary policy has approached its limits and other policies should be called to complement the effort for invigorating growth, including a supportive to growth fiscal policy, in countries where there is fiscal space, and structural reforms to boost productivity. Arguably, the still weak prospects for global growth do not allow for a swift unfolding of extraordinary measures. In addition, authorities globally face the problem of how to improve the framework of macroprudential supervision in order to mediate risk-taking from financial organizations and interrupt the banks-sovereign interconnection, while at the same time not incurring undue increases in regulatory and funding costs of banks, which would harm economic growth.

The current note focuses on two aspects of this discussion, discrete yet complementary: the divergence of monetary policy stance between FED and ECB, and the implications of negative interest rates on economic activity.

2.2 Divergent monetary policy stances by the Fed and the ECB

The global financial crisis has led central banks in developed countries to decrease their monetary policy interest rates close to zero or even to slightly negative territory. Both the US federal Reserve Bank (Fed) and the European Central Bank (ECB) have been keeping their monetary policy rates at significantly low levels since 2009 (Figure 2.1).

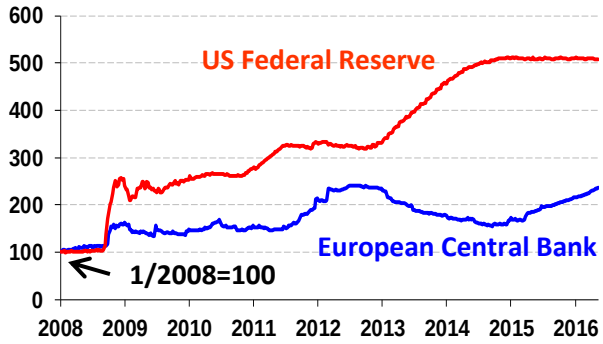
Figure 2.1: Fed and ECB, Main Policy Rates, 2001-2016



Source: Bloomberg, Eurobank Research

With rates close to a zero lower bound, both Central Banks adopted several unconventional monetary policy measures to help restore macroeconomic and financial stability. In particular, they expanded their balance sheets by executing Asset Purchases Programmes, i.e. Quantitative Easing, with the Fed being more aggressively initially than the ECB (Figure 2.2).

Figure 2.2: Fed and ECB, Total Assets, 2008-2016



Source: Bloomberg, Eurobank Research

However, the Fed announced in June 2013 a "tapering" of some of its quantitative easing policies, contingent primarily upon a continued improvement in labour market conditions. In October 2014, the Fed ended its asset purchase program. After a year of interest rate stability at the 0-25bps target range for the federal funds rate, the Fed raised the target for its key policy rate by 25bps to 25-50bps in 16 December 2015. Continuously improving economic conditions, including a declining trend in the unemployment rate, an expected uptrend in inflation towards its 2% medium-term target, and a closing output gap, were considered to be sufficiently robust to withstand an interest rate hiking cycle. Latest developments, including Brexit and projections for slower global growth, have caused concerns to the Fed as to whether the hiking cycle should proceed at the initially planned pace or be delayed.

ECB on the other hand, is at the inverse mode of expanding the scope and extending the duration of its measures on the back of weaker prospects for a Euroarea recovery and near deflation readings in the CPI. In 10 March 2016, the ECB announced a bold package of monetary easing measures, including a cut in all key interest rates aiming to boost domestic economic activity and counteract heightened risks on its price stability objective. More specifically, the interest rate on the main refinancing operations of the Eurosystem and the interest rate on the marginal lending facility were decreased by 5bp each to a historic 0.00% and 0.25%, respectively, while the deposit facility rate was lowered by 10 basis points to -0.40%, all effective from 16 March 2016. Furthermore, the monthly QE purchases were increased by €20bn to €80bn starting in April 2016 and scheduled to run until March 2017, taking the total size of the asset purchase programme to €1,740bn. In addition, the issuer and issue share limits for the purchases of securities issued by eligible international organizations and multilateral development banks were both increased from 33% to 50%. To facilitate the increase in monthly QE purchases, the ECB decided to include investment grade euro-denominated bonds issued by non-bank corporations in the pool of eligible assets in the QE programme starting in June 2016. Last but not least, the ECB decided to launch a new series of four targeted longer-term refinancing operations (T-LTRO II), each with a maturity of four years, starting in June 2016, with the aim of supporting SME loans. The interest rate under T-LTRO II will be fixed at the main refinancing operations rate prevailing at the time of the allotment, although for banks whose lending exceeds a benchmark, the said rate could be as low as the deposit facility rate. Counterparts will be allowed to borrow a total of up to 30% of non-mortgage loans provided to euro area non-financial corporations and households as at the end of January 2016.

It is apparent that there is a divergence in the monetary policies of the ECB and the Fed, dictated by the different phase of the recovery cycle in which the respective economies are, although both Central Banks continue to implement expansionary policies. The question that arises concerns the kind of repercussions the protracted expansion will have, taking also in mind the aforementioned divergence. This concerns, not only the respective domestic economies, but also the global economy and the international flow of funds and investment choices as the effects of these two Central Banks' policy actions are transmitted internationally. Empirical evidence suggests that the international spillovers of US monetary policy are considerable, strongly affecting

the euro area as well as emerging markets. Georgiadis and Grab (2015) and Ehrmann & Fratzschre (2009) highlight that the magnitude of spillovers depends highly on country characteristics, with countries with relatively liquid and open financial markets being affected more substantially. Examining the international effects of US monetary policy shocks, Kim (2001) finds that US monetary expansion typically has a positive spillover effect on real GDP and industrial production in developed economies with a lag of approximately 1-2 years. By contrast, Neri and Nobili (2010) conclude that an unexpected increase in the fed funds rates depreciates the value of the Euro currency relatively quickly. Consequently, economic activity in the euro area is enhanced following Fed's monetary tightening implementation, with the maximum response taking place about 1 year after the shock. There is also evidence that Fed's monetary policy has international effects, not only on macroeconomic fluctuations, but also on asset prices, with Ehrmann and Fratzscher (2009) indicating that a US monetary policy tightening of by 1 ppt is associated with a 2.7% fall in stock markets outside of the US.

Focusing on the Euroarea, **Spillover Channels** from prospective Fed tightening in combination with continuing ECB laxity can be described in more detail as following:

Financial Linkages: further monetary tightening in the US could lead to an increase in general risk aversion, with an associated decline in bank lending and cross-border credit flows (Borio and Zhu, 2012). Given that US banks constitute the most important lender from outside the monetary union, the Fed's tightening cycle that started in late 2015 could potentially result in a retrenchment in bank-intermediated capital flows from the US to the euro area. Moreover, large and internationally active euro area banks could lower their leverage in response to increased perceived risks, partly counteracting ECB's efforts to provide ample liquidity to the euro area member states.

Exchange rate effects: ceteris paribus, further tightening by the Fed can cause further USD appreciation, also due to reductions of bank-intermediated capital flows. This was the case in in H2-2015 when the US dollar strengthened significantly prior to the Fed's decision. Georgiadis & Mehl (2015) point out that if the net foreign currency exposure of a country is large, tighter monetary conditions in the US would lead to a depreciation of the domestic currency. For the euro area, Georgiadis & Mehl (2015) conclude that a 10% EUR depreciation implies an increase in the average net foreign asset position of about 2.8 pps.

Price channel: A depreciation of a currency could lead to higher inflation, as prices of imported consumption goods and imported inputs increase, leading to higher domestic production costs, as well as higher prices of domestic final goods with a lag of several quarters (Campa and Minguez, 2006; DeBandt and Razafindrabe, 2014). According to ECB's staff estimates,[14] the pass-through of the 20% euro devaluation from Q2 2014 until Q2 2015 had its maximum effect on prices at the end of 2015, adding approximately 0.8pps to euro area inflation. Given that the EUR/USD has been on a downward trend in H2 2015, inflationary pressures are likely to persist over the next couple of years, partially offsetting recent disinflationary trends in the euro area.

Interest rate channel: In view of higher expected returns in the US, international investors may draw capital from other countries and shift towards US assets, creating upward pressure on yields elsewhere in the world. Furthermore, according to Gürkanyak and Wright (2011), Fed's decision to embark on an interest rate hiking cycle may signal that the Central Bank has some private information about the state of the global economy, urging market participants to update their expectations about future monetary policy actions of their domestic central banks. At the same time, the inflationary pressures induced to non-US prices through an appreciating USD may lead to increases in non-US interest rates. Eichenbaum &

[14] ECB (2015b)

Evans (1995) highlight that long-term yields across countries increase following a contractionary US monetary policy shock.

2.3 Negative interest rates policy and their implications

The negative interest rate policy is a controversial issue and it has caused a heated public debate regarding its potential impact on macroeconomic variables. This section attempts to describe this policy, the arguments in favour and against it, the transmission channels, and its impact so far. World Bank (2015), IMF (2016b), BIS (2015, 2016), and several investment banks (eg. Goldman Sachs, 2016) have done extensive work on the issue. Negative interest rate policy is an unconventional monetary policy tool utilized by Central Banks in order to provide additional monetary stimulus, through setting short-term nominal interest policy rates to a negative value, below the theoretical lower bound of zero percent.

The essence of this policy is for a Central Bank to make it costlier for commercial banks to hold their excessive cash reserves with the Central Bank, thus stimulating lending or providing incentives to the private sector to spend more instead of saving. On the other hand, opponents of this type of policy argue it could have the exact opposite results. The arguments against this policy focus on the possible reluctance and/or inability of banks to pass on the additional cost to their depositors since this provides an incentive for depositors to withdraw their money from banks and hold on to cash. This, not only magnifies safety concerns, but also deprives the banking system from important liquidity. In the opposite case, in which the banking system is willing to absorb the cost of negative interest rates, that squeezes the net interest margin (NIM) and bank profitability. Inter alia, that could make the banking sector more reluctant to extend new lending.

According to BIS (2015), there are five channels through which negative interest rates aim to lift short-term growth: by boosting credit to the real economy *(the credit channel)*, by lifting asset prices *(the asset valuation channel)*, by forcing investors away from safe assets towards riskier ones *(the portfolio balance and risk-taking channels)*, by lowering the exchange rate *(the exchange rate channel)* and by attempting to nudge inflation up towards objectives with a view to warding off a so-called deflationary spiral *(the reflation channel).*

Up until mid-2014, the experience with negative interest rates has been limited. Only three Central Banks had used negative interest rates in an effort to deter speculative inflows and counter appreciation of their respective currencies: Switzerland (SNB) ran a de facto negative interest rate regime in the early 1970s, Sweden (Riksbank) in 2009-2010 and Denmark (DNB) in 2012. Since mid-2014, six central banks have moved their policy rates into negative territory: ECB (since June 2014), SNB (since December 2014), DNB (again since September 2014), Swedish Riksbank (since July 2014), and more recently Bank of Japan-BoJ (since February 2016).

By and large, the effectiveness of this policy may be too early to judge. The pass-through effect of central bank rates to wholesale funding is documented (see IMF, 20016b); interbank rates have declined in line with Central Bank rates since the time of application of negative rates. The decline of the wholesale funding cost has affected primarily those who had access and made use of money markets, ie. large corporates. However, the pass-through to retail banking lending rates has not been universally proportional; in the case of Denmark lending rates actually increased. Lending rates have declined more in those banking systems with a higher proportion of variable rate loans, shorter loan maturities, or high levels of competition among banks. In all aforementioned cases, bank deposit rates have declined less than lending rates, thus squeezing net interest margin and banks' profitability. This is an especially important finding for the Eurozone, which

aims in enhancing internal capital generation in its banks.

Policymakers' concerns focus on the impact of the negative interest rates policy in the case it becomes more broad-based and be applied for a more prolonged period. It is feared that if rates stay at ultra-low or negative levels for a prolonged period, uncertainty could increase. In addition, BIS (2016) categorized the longer term risks into five main categories:

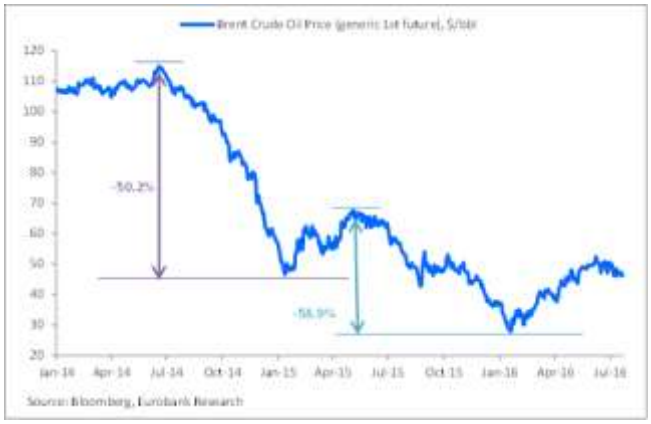
- **Disincentive** to fiscal consolidation as governments have less incentive to reduce their debt
- **Distraction** from the economic policy challenges of raising potential GDP and productivity through structural reforms
- **Distortion** of asset prices beyond economic fundamentals as Central Bank decisions become the main driver for prices in global markets
- **Disruption** in the business models of financial institutions -not limited to banks but also extended to insurance companies, pension funds, money market funds- implying substantial risks to financial stability.
- **Disillusion** about the perceived -by market participants- ability of Central Banks to achieve the promised and desirable levels of employment and growth with a negative impact on their reputation; disillusion for households, which are more likely to increase their savings as they put more effort in building up retirement savings, instead of increasing their spending.

3. The Oil Price Decline: Causes, Repercussions and Outlook

3.1 Introduction

Despite a recovery witnessed in H1 2016, global oil prices have fallen sharply over the last couple of years. The downtrend started in mid-2014, with the price of Brent Crude oil declining by approximately 50% by the end of the year, from a 3-year high near $116/bbl that summer. A second-leg decline followed about a year later, with the downtrend being prolonged into early 2016. A steeper drop, of ca 60%, was recorded this time around, with Brent Crude oil prices plummeting to below $28/bbl in 20 January 2016 (Figure 3.1), marking the lowest level hit in more than a decade. The unusually large scope of these movements in oil prices, as well as their insistence, has spurred a debate among academics, policy makers and market participants. This section addresses three main questions in this dialogue. First, what are the exact causes of the phenomenon, whether it is supply- or demand-driven in particular. Second, what are the possible repercussions for global growth as a whole and how these repercussions are allocated among producer nations and importers. Third, in relation to its causes, what is the expected outlook of oil prices in the medium, as well as in the longer-term.

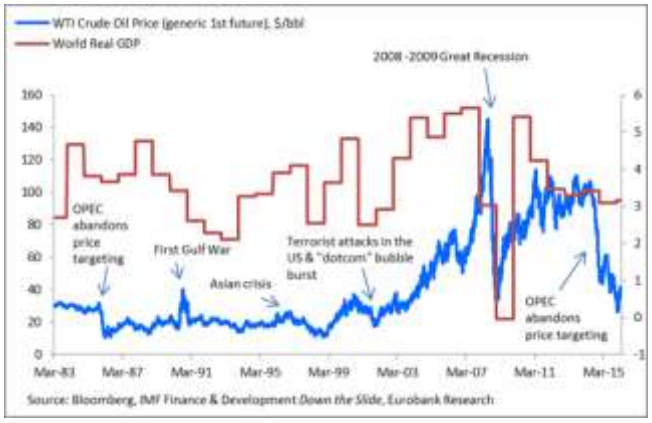
Figure 3.1:H2 2014 & H2 2015 declines in oil prices



3.2 Causes of the Oil Price Declines

From a historical perspective, there are five other notable episodes of significant declines in oil prices since mid-1980s (Figure 3.2). The decline since mid-2014 is the second steepest after the global financial crisis episode in 2008-9. At a first glance, it appears that the current oil price downtrend has characteristics similar to the 1985-86's incident (Baffes, Kose, Ohnsorge and Stocker, 2015). In that instance, the drop was primarily led by strong oil supply, particularly from non-OPEC countries, and a change in OPEC policy following a period of an oil price boom. At the same time, global growth remained relatively well supported. This apparent similarity motivates many analysts to argue that the current incident too is supply-driven.

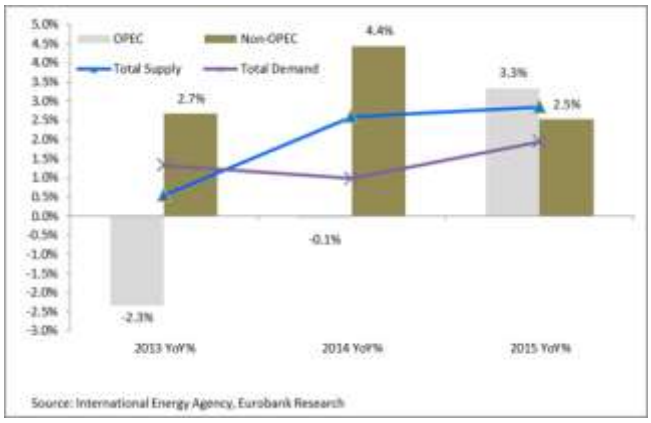
Figure 3.2: Recent decline follows five other episodes of significant drops in oil prices



By definition, long-term trends in corresponding prices are governed by underlying oil supply and demand conditions. In the short-run, market sentiment and expectations may also prove highly influential. However, during this latest episode, a number of different components coincided. Revisions in supply and demand expectations occurred in tandem with changes in OPEC objectives, ebbing concerns over the corresponding impact of geopolitical risks, deteriorating market sentiment and a stronger US dollar (Baffes et al, 2015). This multiplicity complicates the verdict on involved causalities. A closer investigation of involved factors is warranted. In more detail:

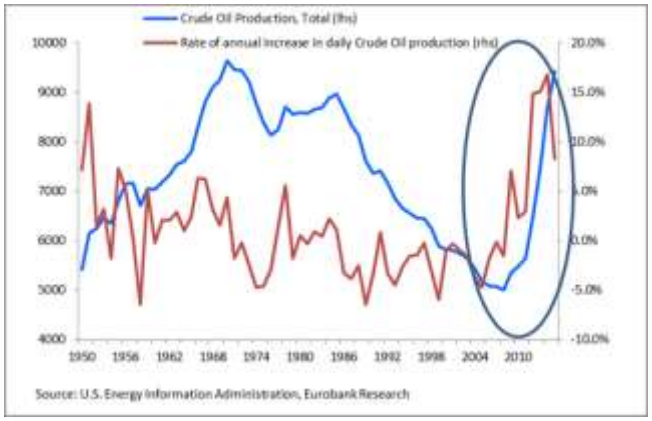
- ***Rapid supply growth***. Supply from non-OPEC countries has markedly increased in recent years (Figure 3.3), while OPEC output recovered in 2015 following negative annual growth in the prior two years.

Figure 2.3: Non-OPEC supply has increased significantly in recent years (YoY)



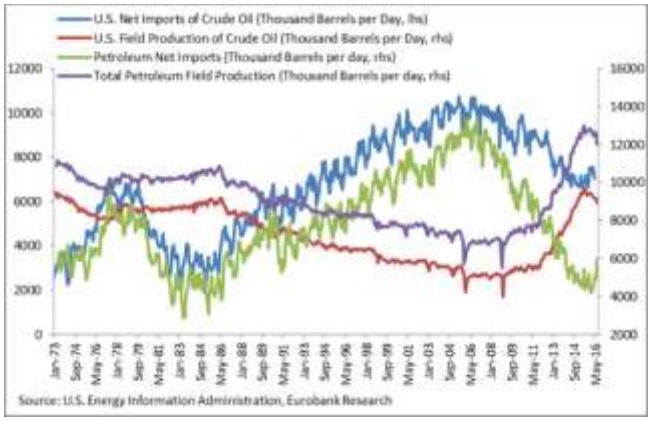
Oil production in the US has undergone fundamental changes in the past decade, as previously high oil prices necessitated the search for new sources of production and enhancement of efficiency (Executive Office of the President of the United States, 2015). This led to a boom in unconventional oil production, such as shale, in the US. According to data from U.S. Energy Information Administration, the country's crude oil output rose by more than 88% between 2008 and 2015 to 9.4 million b/d, primarily on the back of technological advances (Executive Office of the President of the United States, 2015). In 2015 alone, it rose by 8.3%, marking the seventh consecutive year of annual increases (Figure 3.4). Since October 2013, oil production in the US has consistently exceeded net imports (Figure 3.5), a development happening for the first time since early 1996, with the country currently being amongst the top world producers (Executive Office of the President of the United States, 2015).

Figure 3.4: US Crude Oil production rose significantly over the past decade (in thousand barrels per day)



Albeit the US remain among the top net importers of oil (International Energy Agency, 2015), increased production in tandem with lower consumption domestically has resulted in a reduction of net petroleum imports. Hence, a sizeable amount of excess supply has been released into the global oil market. An additional rise in supply also came from oil sands exploitation in Canada. The country's total output reached 4 million b/d in 2014 from 3 million b/d in 2004. Biofuels production has also risen over the last fifteen years, reaching nearly 1.4 million b/d of oil equivalent in 2014, amounting to 1.5% of total global oil consumption (Baffes et al, 2015).

Figure 3.5: Increased oil production and weaker consumption in the US resulted in lower net imports



- ***Easing concerns over the impact of geopolitical tensions on oil supply***. Prior to the oil price collapse in mid-2014, oil prices had apparently remained artificially supported thanks to an OPEC pricing regime and concerns that geopolitical tensions posed significant risks for production (Baffes et al, 2015). Until then, oil prices had largely backed the broader downtrend witnessed in commodity prices, driven by weak global demand and ample supply. However, in mid-2014, some of Libya's ports and oilfields that had been closed due to domestic unrest reopened. As a result, oil production in the country, which had been severely disrupted by the civil war that began in 2011, partially recovered. With Libya's output rising and unrest in Syria and Iraq proving to be having a rather limited impact on the region's oil production, there was a significant scale-down in expectations that geopolitical factors would deal a large blow in global oil output.[15] In addition, the effects stemming from Western sanctions on Russia in view of the country's conflict with Ukraine seemed to have also been relatively muted in oil and natural gas markets. As a result, investors rushed to rebalance a record long position in crude-linked futures and options constructed on the basis that mounting geopolitical tensions in oil producing regions would significantly disrupt supply (Figure 3.6). Expectations for higher supply from Iran following the waver of sanctions in early 2015 added further downside pressures on oil prices, as did the global risk-off sentiment in H2 2015.

[15] In response to the opening of ports and oilfields in mid-June 2014, Libya's production doubled to 500k b/d in Q3 2014 from a quarter earlier, though remaining well below the 1.8mn b/d produced prior to the civil war. Albeit the volume of the said recovery was small compared to global oil production, amounting to less than 1% of daily world demand, the impact appeared to be significant in terms of expectations (A Brief History of the Oil Crash, World Bank Group, Policy Research Note, The Great Plunge in Oil Prices: Causes, Consequences)

Figure 3.6: Speculators' net bets on rising crude oil prices hit a record high in June 2014

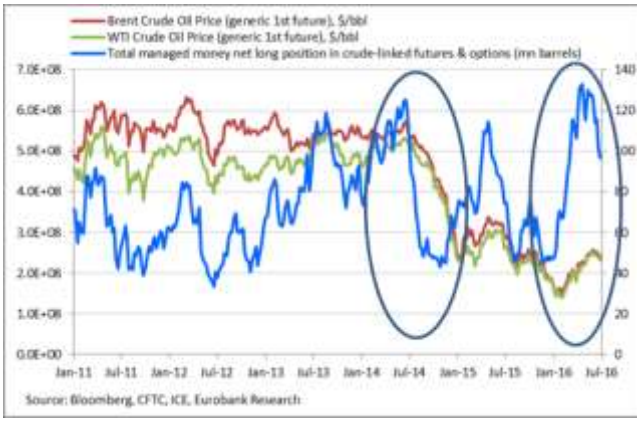
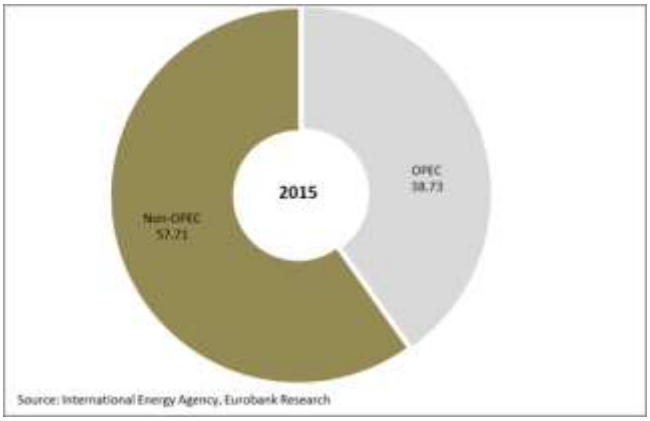


Figure 3.7: World oil output of OPEC & non-OPEC countries (in percent of total production)



- ***A change in OPEC's strategy.*** Further downside pressures on oil prices came after the November 2014 OPEC meeting in Vienna, where members decided to maintain the production ceiling at 30 million b/d as agreed in December 2011. This announcement marked a turning point on the organization's policy. For decades OPEC, which boasts for 40% of total oil supply (Figure 3.7), had been twitching production volumes in order to manage prices within a desired range. However, in the said meeting, member states left output unchanged indicating the abandonment of a price-targeting regime in favor of maintaining market share at times of growing competition. This intention was evident even before the November 2014 meeting, when some OPEC members offered in Q3 2014 discounts to Asian oil importers (Baffes et al, 2015).

- ***Demand-side factors***. Softer than anticipated oil demand due to weaker global growth prospects has also been at play (Baffes et al, 2015). Growth in China, the world's second largest economy and among the top net importers of oil globally, has slowed down considerably in recent years, as discussed in Part 1. Real GDP rose by 6.9% in 2015, marking the lowest pace of increase in more than two decades. Decelerating demand from developing economies is estimated to have a proportionally more significant impact on oil demand due to the higher oil-intensity of production in these countries compared to their developed peers.[16] In addition to the aforementioned, a firmer US dollar may have also had some impact on global oil demand as it may be reflected in higher oil costs in countries with currencies not linked to the USD (Figure 3.8). In a similar vein, an unusually warm winter in key heating oil markets may also be behind some weakening in oil demand.[17]

[16] According to Fournier et al (2013), a 1ppt increase in OECD countries' real GDP is estimated to add 0.5pps to oil demand over the medium term to long-run, while a similar increase in non-OECD members would render double that impact.
[17] International Energy Agency, Oil Market Report, March 2016.

Figure 3.8: Firming USD trend coincides with falling oil prices

Against this backdrop, total world oil supply rose by 2.6% and 2.8% to 93.8 and 96.4 million barrels per day respectively in 2014 and 2015. At the same time, total demand for oil posted smaller concomitant increases of 1.0% and 1.9%, also coming in at correspondingly lower levels of 92.8 and 94.6 million barrels per day.[18]

Recent literature mostly argues that the supply overhang accounts for most of the decline in oil prices over the last couple of years. Indicatively, in the Global Economics Prospects of January 2015, the World Bank assessed that, although it is difficult to estimate the exact contribution of the factors affecting fluctuations in global oil prices, most of these changes can be attributed in supply-related factors. According to Arezki and Blanchard (2014)[19] demand-related factors account for only 20-35% of the oil price decline in H2 2014, with the rest being attributed to the supply glut and the shift in OPEC's policy. In a similar vein, Societe Generale (2016)[20] noted that as the vast majority of the current oil price fluctuations is explained by supply. Aasim M. Hussain et al (2015) attribute the sharp drop in oil prices on both supply and demand, though noting that the former "played a somewhat more prominent role". In the April 2015 World Economic Outlook, the IMF highlighted that both demand and supply were behind the 2014 oil price collapse, with the initial reaction mostly influenced by the former and the rest by the latter, attributing 58% of the drop from mid-October 2014 to early January 2015 to supply and only 42% on demand.

3.3 Impact of Lower Oil Prices on Economic Activity

Sustained oil price trends tend to influence growth and inflation in an economy. The impact is primarily propagated via three main channels: input costs, shifts in real income and potential monetary and fiscal policy responses (World Bank, Global Economic Prospects, January 2015). Lower oil prices translate into cheaper costs of production, which may, in turn, be reflected into higher consumption and investments. Consumption will also likely be boosted by the positive shift in real incomes which ensues from lower energy bills. In addition, movements in oil prices have been positively correlated with inflation (Baffes et al, 2015). In this context, a decline in oil prices that is passed through to inflation may trigger Central Bank policy responses such as monetary easing which also bodes well for economic activity.

In general, identifying the underlying factors behind the oil prices downtrend is a prerequisite for investigating the expected impact on global economic activity rather than an academic exercise. A demand-side led drop may indicate potential deterioration in global economic fundamentals and thus signal weaker global growth prospects ahead. In fact, it might serve as a leading indicator. On the other hand, a supply-driven fall is likely to bear an expansionary impact on global economic activity via increased consumption and investments.

Associated utility effects are also a function of the extent of the pass-through of lower oil prices to households and corporates, as well as on the end-users' propensity to spend. Moreover, the sustainability of the decline in oil prices is also a key component in determining the magnitude of the impact on the global economy. Another important

[18] International Energy Agency data.
[19] IMF blog, Seven Questions About The Recent Oil Price Slump
[20] Commodities Review, Supply more than you demand, March 2016.

aspect is that the linkage associated will be asymmetric cross-border. Idiosyncratic factors are mostly at play here, namely, a country's oil-export/import dependence and energy intensity.

Recent literature confirms that sustained oil price fluctuations bear macroeconomic repercussions of the kind mentioned above (Table 1). Some arguments have been made that the effect is higher when price changes are driven by supply- rather than demand-related factors and when prices go up rather than down (World Bank, Global Economic Prospects, January 2015).

Yet, each country around the globe will experience the effects of lower global oil prices in a different way, depending on whether it is primarily an oil exporter or importer. When an oil price decline is predominantly supply side-driven, as it appears to be the case with the recent incident, oil-importing countries will gain from it, without the negative second round effects from weakening global demand that a demand side-driven shock would imply. For energy importing economies, an oil prices drop, ceteris paribus, means lower inflation dynamics, higher real income, and thus a boon to consumption. In addition, lower costs of production will likely favour profit margins and investments as well as external and, possibly, fiscal positions. Still, the distribution of the impact across these countries will vary, depending on a number of factors.[21]

For oil-producing countries, however, the direction of the impact depends on the trade-off between lower price per unit and increase in volumes. Oil exporters are faced with lower oil-related income, both in the private and public sectors, as oil price declines may weigh on the profitability of energy-related firms. For those highly leveraged, their debt-repayment capacity may be negatively affected. Additionally, fiscal balances as well as rising external vulnerabilities may deteriorate. The spillover impact of lower oil prices will vary across countries as well as over time. Countries with weak fiscal positions are likely to be more affected than those with strong fiscal buffers. In this context, lack of policy action masks risks of higher inflation and depreciation pressures on the domestic currency (Arezki and Blanchard, 2014).

Table 3.1

Impact of a 40% drop in oil prices on real GDP & inflation (in pps)			
	Euro Area	USA	World
Impact on the level of GDP			
Azreki and Blanchard (2014)	0.5	0.5	
Barrell and Pomerantz (2004)	0.5	0.6	
Carabenciov et al (2008)	0.2	0.8	
Cashin et al (2014) Supply Shock	0.3	0.3	
Cashin et al (2014) Demand Shock	-0.2	-0.3	
EC (2008)	0.2	0.0	
Hervé et al (2010)	0.8	1.2	
IMF (2015) Full Pass-through	0.4	1.6	1.2
IMF (2015) Limited Pass-through	0.4	1.6	0.8
Jimenez-Rodriguez and Sanchez (2004)	0.0	1.6	
Kilian and Vigfusson (2014)		0.8	
Kirby and Meaning (2015) Permanent Fall	1.8	3.2	
Peersman and Van Robays (2012) Supply Shock	0.3	1.8	
Peersman and Van Robays (2012) Demand Shock	-2.2	-2.0	
Average impact of studies simulating oil supply shocks	**0.5**	**1.3**	
Impact on the annual rate of inflation			
Barrell and Pomerantz (2004)	-0.4	-0.7	
Carabenciov et al (2008)	-0.6	-1.1	
Cashin et al (2014) Supply Shock	-0.2	0.0	
Cashin et al (2014) Demand Shock	-0.2	-0.1	
EC (2008)	-0.5		
Hervé et al (2010)	-1.2	-1.6	
IMF (2015) Full Pass-through			-2.8
IMF (2015) Limited Pass-through			-2.0
Average impact of studies simulating oil supply shocks	**-0.5**	**-0.7**	
Source: Bank of England (2015), Riksbank (2015)			

3.4 Oil Price Outlook: Is the Decline in Global Oil Prices Sustainable?

The sustainability of the current downtrend in global oil prices in the coming years will continue to heavily depend on future OPEC policy decisions and on potential adjustments in global investment and production. On the former, an announcement of lower production by OPEC seems rather unlikely in the near future as alternative and cheaper means of production already appear to pose a threat on OPEC's market share. This view was confirmed at the April 2016 OPEC meeting in Doha, where participants failed to reach an agreement to freeze production.

[21] Seven Questions About The Recent Oil Price Slump

On the latter, low oil prices will probably lead to an eventual decrease in supply and a partial recovery in prices (Arezki and Blanchard, 2014).

The International Energy Agency assesses that oil prices will likely remain near the current low levels in the short to medium term, expressing belief that the global oil supply glut will continue through to 2017. The Agency anticipates ex-OPEC oil supply to decline this year and remain stable in the next before recovering in 2018, primarily driven by weaker production of light, tight oil in the US. Meanwhile, the significant accumulation of stocks will also hinder a meaningful recovery in global oil prices in the imminent future.

As has been the case in the recent past, other factors are also likely to influence the trend in oil prices, namely geopolitical factors or a steeper than anticipated decline in US shale production, which would result in a swifter depletion of stocks. Weaker than currently anticipated global growth, and thus demand for oil, or stronger oil supply would hinder any meaningful recovery in related prices. In the same fashion, another bout of mounting risk aversion may also weigh.

4. Other Important Themes

As mentioned in the Forward, the list of important market and policy themes is selective, not exhaustive. The current period is rich in risks and there is a multiplicity of other important issues that are expected to have a lasting impact on the global economy. Although these topics deserve an in-depth analysis of their own, we add a brief note to raise awareness for some factors we believe market participants should bear in mind in the months and years to come.

4.1 Brexit

Following the statements of the new UK PM Theresa May that the decision of the British people should be respected, Brexit should be considered irrevocable, albeit with a still uncertain time schedule of execution and nature of post-exit relationships of the UK with the EU. Brexit is expected to have important repercussions for the UK itself, the EU and the global economy at large. Eurobank Research has published Reports analyzing some of those repercussions, with a special focus on Greece and the region.[22] Given that there are no exact precedents for such an event, predictions can only be suggestive and provisional but this is also a reason for increasing uncertainty in the markets. Generally speaking, we should expect the following:

- *The UK* itself is possible to experience limitations to its trade with the EU, decline of confidence and investment, drainage of skilled labour, bond and stock weakening, depreciation of the sterling and imported inflation, questioning of London's role as a financial hub and, overall, a decline of potential GDP. In view of these risks, the BoE decided in 5 August 2016 to reduce its policy rates for the first time since 2009 (to the historic

[22] See Global Economic & Market Outlook, "Brexit: a preliminary assessment of the implications for the UK, the EU and Greece, June 24", and "Brexit: potential implications for Greece, Cyprus and the CESEE region", July 4, Eurobank Research.

low of 0.25%, from 0.5% previously), and also expanded its asset purchase program. However, the extent of repercussions for the UK will depend heavily on the form of post-exit relationships with the EU and thus it may be more lenient than initially thought.

- *The EU* is also expected to experience a deceleration in its rates of growth, given its strong trade and financial linkages with the UK, albeit implications will vary by country; positive side-effects are also possible, such as diversion of trade, labour and financial services away from the UK and towards the EU.
- However, it is possible that *political economy repercussions* may prove more important than purely economic ones. In particular, it is possible that the integrity of the EU may be challenged by eurosceptics in other countries as well, in a time in which the EU is struggling to increase confidence in the markets about its economic prospects. For this reason, European leaders will likely deny the UK a deal granting both full access to the common market and lack of budgetary and regulatory commitments, in order to deter imitators. Notwithstanding, the EU will be called to take difficult decisions about its unification process, ie. whether to respond with an acceleration of its banking and political union, or take a step back towards intergovernmentalism. In both cases, centrist political powers will have to deal with a rise of populism from both extremes of the political spectrum. At the moment, there does not seem to be much appetite for deepening of integration or enlargement but rather for more flexibility in economic policy making (not necessarily accompanied by transfer of economic policy making powers back to the national level) in order for leaders to show "they got the message". However, an alternative model for EU policy-making is hard to imagine, let alone implement. Hence, many analysts argue that some form of the current model of intergovernmentalism (decisions coordinated among EU governments) will likely remain.
- Before proceeding to a full banking and fiscal union (with fiscal transfers), the EU will have to agree internally on strict fiscal and banking rules' implementation in order to address concerns in certain member-states about the size of liabilities which they might be called to guarantee upon mutualisation.
- Given, an already sluggish *global growth* rate post-crisis, and despite massive measures of monetary expansion in major economies, Brexit-related uncertainty and spill-overs are likely to further dampen global growth, as already depicted in the downgraded forecasts of international organisations.

4.2 Geopolitics

The continuing war in Syria, terrorist attacks by radical Muslims in Europe and the US, and the failed coup in Turkey underline very dramatically the rise of geopolitical risks, especially in the Middle East. Risks regarding the relationships of Russia with the West have passed to the background but are always present. Geopolitical risks, being by their nature hard to quantify, often escape the attention of markets and are not fully priced in, which is exactly the reason why they cause such turmoil if they materialize. Risks include:

- Shock in oil prices if conflict escalates.
- Destabilization of certain countries, which are crucial for strategic reasons and as corridors for the transportation of energy.
- Separatist movements and local wars.
- Influx of refugees and immigrants; while some view this as an opportunity for renewing Europe's aging labour, others focus on the difficulties of integrating those people in Western societies and the underemployment this causes in Western blue-collar classes; potential political implications of the latter.
- Use of weapons of mass distraction.

4.3 Mega-trends

There are some issues that can cause structural shifts in the global economy in the very long term, but which have already started to have important implications. Certain investors are already taking positions in order to capitalise on their respective views on these issues, while investors with shorter horizons are becoming increasingly alert. Indicatively, so called mega-trends include:

- Changes in the organisation of production, international work allocation and sectoral displacement caused by technological developments, especially in the IT industry.
- Structural shifts from climate change: conditions of living and agricultural production harmed in certain countries by global warming (including extreme weather events, floods and natural catastrophes), while others benefit from milder climate. Food crises, water crises and biodiversity loss, immigration and diseases.
- Slowdown of potential growth due to developed economies entering a maturity phase (also related to ageing), complemented by the inability to repeat excessive financial leveraging as in the past.
- Creation of a middle class in emerging countries, with consuming needs and habits that need to be catered.
- Tensions caused by increasing income and wealth inequality.
- Over-indebtedness (of both States and individuals) in the developed world.
- Challenges related to overpopulation and depletion of natural resources.

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