Box 1

TOWARDS A GLOBAL CONVERGENCE OF NATURAL GAS PRICES?

Natural gas is an increasingly important source of global energy.[1] Over the past decade the outlook for natural gas markets has changed drastically, as technological advances have led to the exploitation of large volumes of shale gas that were previously uneconomical to produce, mainly in the United States.[2] This box discusses the effects of the US shale gas revolution on US gas prices and evaluates the implications for global gas price convergence.

Shale gas production in the United States increased more than 20-fold between 2000 and 2011 and is expected to account for about half of natural gas production in the United States by 2035. At these levels of production, it will more than offset the decline in conventional gas sources and the United States will become a net exporter of natural gas by 2022 (see Chart A). US gas prices fell following the 2008 financial crisis and the increase in US shale gas production has played a part in keeping prices at low levels, amid some volatility. Current US gas prices are almost 80% below the peak levels they reached in 2005 (see Chart B).

As gas markets are largely regional, the impact of the US shale gas revolution on gas prices in regions outside the United States has so far been limited (see Chart B). This global gas market segmentation is the result of transport difficulties, differences in regional price formation and regulatory factors. First, natural gas is more difficult to transport than oil, which is a liquid. If the distance is too large to bridge via pipelines, natural gas has to be transformed into liquefied natural gas (LNG) for transportation, for which the infrastructure is very costly. Second, concerning price formation, natural gas prices are determined by supply and demand conditions in regional gas spot markets in the United States, the United Kingdom and Australia. In contrast, in continental Europe gas is mainly imported through pipelines and sold on long-term contracts linked to the price of oil, although in some European countries market-based pricing is gaining ground.[3] Asia fulfils its gas needs by importing expensive LNG, with the trades being mainly settled through long-term contracts indexed to oil prices. Finally, regarding regulation, the construction and operation of natural gas export facilities in the United States, as well as US gas exports themselves, have to be approved by the regulatory authorities, which limits the ability of US facilities to respond rapidly to gas supply developments. As a result of these factors, arbitrage at the global level driven by regional gas price differences has so far been limited.

However, large divergences in regional gas prices combined with rapid growth in LNG markets could shift gas price formation towards a more market-based system, supporting the convergence of global gas prices. In this regard, the large differential between spot and oil-linked gas prices since 2009 has been putting pressure on gas suppliers to accept changes to the contractual terms. As a result, gas prices in Europe are increasingly linked to gas spot prices instead of oil prices, a growing share of globally traded gas is sold directly on a spot basis and the average length of contracts is tending to fall. In addition to the increased pressure on gas producers, a second factor likely to contribute to greater price flexibility and market integration is the increasing trade

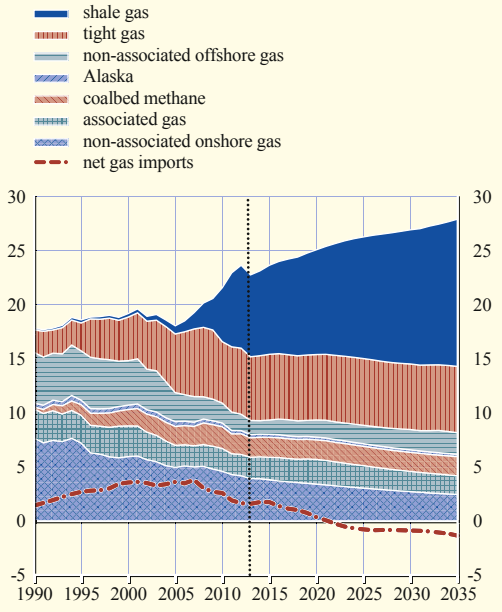
1 In 2010 natural gas accounted for around 20% of the global energy supply and 20% of total final energy consumption by OECD countries.
2 Shale gas is an unconventional source of natural gas trapped in permeable shale formations, which can be extracted using horizontal drilling techniques together with hydraulic fracturing.
3 Since gas spot markets are developing faster in north-west Europe, there is currently no single European gas market, as the degree of market-based pricing relative to long-term contract-pricing varies across countries.

in LNG. This is because LNG shipments do not require a physical link between the supplier and the customer, unlike in the case of a gas pipeline. Although currently only a small fraction of the LNG supply is freely tradable at the global level, trade in LNG has doubled in volume terms over the past decade as it has become more competitive compared with gas supplied by traditional pipelines. As a result, the prospect of increased LNG exports from the US driven by the country's shale gas revolution could foster global gas price convergence. The outlook for US natural gas is however subject to regulatory and political challenges. For example, US regulations prevent the rapid conversion of US LNG import facilities into export facilities as gas exports need to be approved on a case-by-case basis, and political debates concerning energy supply security and environmental issues further increase the uncertainties surrounding the outlook for US LNG exports.

Despite these uncertainties, global natural gas production is projected to increase steadily over the next two decades, mainly due to the shale gas revolution in the US, the potential of shale gas exploration in other regions and the discovery of a large gas field in Qatar. The rise in natural gas supply from conventional and non-conventional sources is expected to more than offset increases in natural gas demand. Depending on the degree of global price convergence, this is likely to keep gas prices competitive. The International Energy Agency projects natural gas prices in the US, Europe and Japan to reach respectively USD 8, 12 and 14 per million British thermal units

Chart A US natural gas production and net gas imports in the period 1990-2035

(trillion cubic feet per year)



Source: US Energy Information Administration's Annual Energy Outlook 2012.
Notes: Yearly data. The last observation refers to 2035. The dotted vertical line indicates the start of the projection period.

Chart B Regional natural gas prices and Brent crude oil prices

(USD per MMBtu and USD per barrel)

Sources: Bloomberg, Haver and Fame.
Notes: The Russian gas export price is a proxy for European long-term contract prices. MMBtu denotes one million British thermal units. For the monthly data on gas benchmark prices, the last observation refers to July 2013, except for LNG in Japan, which refers to May 2013. In the case of the quarterly data on Russia's gas export prices, the last observation refers to the first quarter of 2013.

(MMBtu) in 2035, which is fairly close to the levels at which gas in those regions is currently traded (see Chart B).[4] Due to relatively competitive natural gas prices, global consumption of gas will grow faster than consumption of crude oil over the next two decades and the share of natural gas in the global energy supply will continue to rise.[5]

4 See IEA (2012), "Golden Rules for a Golden Age of Gas".
5 In Europe, for example, oil demand over the period 2010-2035 is expected to decline on average by 1% year on year, whereas natural gas demand is projected to rise by 0.7%, see IEA (2012), "World Energy Outlook 2012".

1.3 DEVELOPMENTS IN SELECTED ECONOMIES

UNITED STATES

In the United States, real GDP growth accelerated in the second quarter of 2013. According to the second estimate by the Bureau of Economic Analysis, real GDP increased at an annualised quarterly rate of 2.5%, up from 1.1% in the first quarter. Real GDP growth was revised upwards by 0.8 percentage point compared with the advance estimate, mainly on account of upward revisions to the change in inventories and the contribution of net trade. The increase in the second quarter was driven by personal consumption expenditure, although the pace of growth was slower than in the first quarter, by strong private fixed investment, both non-residential and residential, and by an upturn in exports. The change in inventories added an annualised 0.6 percentage point to growth. In contrast, government consumption continued to be a drag on activity, although the decline in the second quarter of 2013 was relatively small, following two consecutive quarters of substantial declines. The contribution of net exports to GDP growth was neutral, reflecting buoyant export and import growth. Real disposable personal income rose by an annualised 3.2%, following a decline of 7.9% in the previous quarter, lifting the personal saving rate to 4.5%.

Looking ahead, the economic recovery is expected to gather pace in the second half of 2013, supported by improvements in business and consumer confidence, a gradual recovery in the labour and housing markets and reduced drag from fiscal policy and household balance sheet repair. Although banks have reported looser credit standards and increased demand for loans in the third quarter, there is a risk that financial conditions could continue to tighten in the coming months as a result of higher short and long-term interest rates, which could have a negative impact on economic activity. However, higher house and stock prices should help to offset the tightening in financial conditions to some extent. The latest releases provided mixed indications regarding the strength of the labour market in the United States. Job creation appears to have lost some momentum, as 162,000 jobs were created in July, which is the lowest level recorded since March, well below the average of around 200,000 jobs a month recorded over the last six months. By contrast, the unemployment rate declined further, to stand at 7.4% in July – its lowest level since the crisis. Resilient consumer confidence and significant positive wealth effects owing to the continued improvement in the housing market and rising stock prices are expected to support private consumption. On the supply side, survey-based business indicators point to a gradual strengthening of the momentum in manufacturing activity.

Annual CPI inflation rose by 0.2 percentage point to 2.0% in July, from 1.8% in June, which is the largest year-on-year increase since February 2012. The increase was primarily driven by a strong base effect stemming from energy prices, which rose by 4.7% in July, and by higher prices for transportation services. Food price inflation remained stable at 1.4%, whereas core inflation