

## Industrial Production Annex

### Recent economic developments

Unique exogenous shocks have affected industrial output throughout the year. The recovery in industrial output growth from the soft growth patch in the second half of 2010 was dampened earlier in 2011 by adverse weather conditions in Europe and the United States. Just as the impacts of adverse weather conditions were starting to ease, the shock to global supply chains from the Tohoku earthquake depressed industrial sector activity at the beginning of the second quarter, affecting in particular the auto and electronics sector.

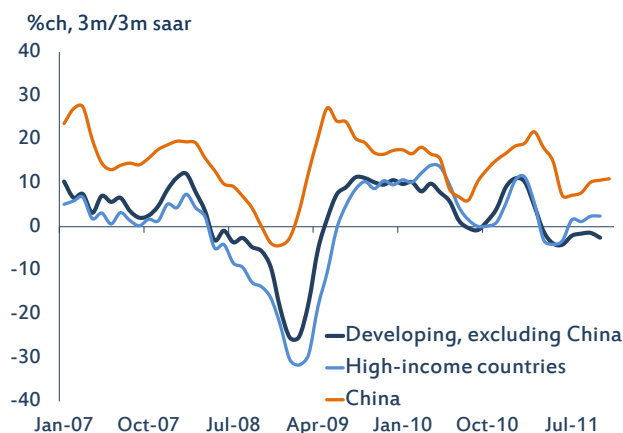
Industrial output growth began to strengthen again into the mid-year boosted by restoration of global supply chains and reconstruction efforts in Japan post-Tohoku, only to face further headwinds as a crisis of confidence engulfed high-income countries in the wake of the U.S. debt ceiling debate and the surfacing of the Euro area fiscal crisis. The heightened uncertainty related to the sovereign debt concerns in high-income countries started to shake investors and consumers' confidence, weighing on the industrial sector recovery as consumers delayed purchases of durable goods and businesses drew down stocks. The recent floods in Thailand have

disrupted some supply chains, although the magnitude of the impact is expected to be only a fraction of that induced by the Tohoku disaster. All these shocks and the rebound from them have impacted industrial output growth to different degrees and had a differentiated impact across regions and time (figure IP.1).

Reflecting the confluence of diverging forces affecting industrial production, global industrial output has been moving sideways since the start of the year, recording monthly growth in excess of 2 percent in May and August, followed by declines of about 1.2-1.3 percent in June and September and 0.1 percent in October (figure IP.2).

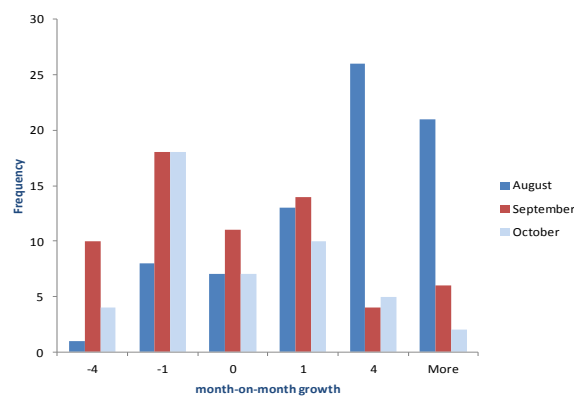
*Two-speed industrial production growth in high-income countries.* Growth in the industrial sector in the United States had proved resilient in the second half of 2011, with growth supported by revived consumer spending and relatively solid external demand. The relatively weaker pace of growth in the wake of the Tohoku disaster persisted however, even after the restoration of supply chains, with 3m/3m seasonally adjusted annualized rate of growth hovering around 3 percent in the second half of 2011. Industrial output advanced 0.7 percent in October month-

Figure IP.1 Industrial production moving sideways



Source: World Bank

Figure IP.2 Broad-based industrial output growth in August gives way to weak performance in September-October



Source: Datastream, World Bank.

on-month, supported by a 0.5 percent gain in manufacturing output on the back of strong increase in motor vehicle output and parts production, but growth dipped to 0.14 percent in November.

Industrial output in Japan staged a V-shaped recovery from the earthquake-induced plunge in industrial output. GDP posted a solid 5.6 percent quarter-on-quarter (saar) advance in the third quarter and industrial output expanded at more than 30 percent annualized rate in the three months to August, notwithstanding soft external demand, the strength of the yen, and the global slump in IT sector. Industrial sector growth remained strong through October (expanding 6.5 percent 3m/3m saar) and the supply disruptions from the floods in Thailand are expected to have only a short-lived impact on growth, with the auto sector impacted most severely. Growth in other high-income countries in East Asia and Pacific has also rebounded from the effects of the Tohoku supply chain disruptions, and it appears that the effects of weaker growth in the Euro area have been relatively limited so far and that confidence effects following the financial turmoil since August have also been less pronounced to date.

Overall, after growth decelerated throughout the first half of 2011, industrial sector performance in core euro area countries strengthened somewhat in the third quarter – reflecting a combination of strong growth in July and August and much weaker or even falling growth in September. Output in Germany was particularly robust, expanding at 7.2 percent annualized rate in the third quarter, and somewhat more subdued in France where it expanded at a 2.3 percent annualized rate. Growth in the industrial sector in core euro countries was supported by consumer spending and the post-Tohoku bounce back effect. Meanwhile industrial production declined 1.9 percent, 3.6 percent, and 2.8 percent in Italy, Spain, and Portugal, where consumer spending was affected by falling confidence. Despite a mild reacceleration in industrial output growth in the third quarter, Euro area GDP growth almost came to a standstill in the third quarter, advancing 0.2 percent relative to the

previous quarter. Growth would have been even weaker were it not for the 0.5 percent and 0.4 percent expansion in Germany and France.

The performance of the industrial sector in the Euro Area started to deteriorate however as the sovereign debt crisis intensified and the latest industrial sector data suggests a very weak fourth quarter. Industrial output declined 4.7 percent in the three months to November in the Euro Area, with output in Germany down 7.4 percent after robust growth in the previous quarters. Industrial output continued to decline sharply in Italy, down close to 12 percent during the same period. Meanwhile output continue to decline in most high-spread economies. It fell more than 15 percent in Greece, and more than 7 percent in Spain. Due to a particularly weak fourth quarter, industrial output in the Euro Area rose a mere 4.1 percent in the first eleven months of the year. Industrial output in Greece declined 8.4 percent year-to-date, while output in Spain and Portugal was down 1.2 percent during the same period. Germany recorded one of the strongest performances in the Euro Area, with industrial output up 8.3 percent.

*Events in high-income countries and domestic policies have impacted industrial production performance in developing countries.* Most recent data for the developing countries show a generalized slowing across regions, with the exception of Middle East and North Africa where output is rebounding from the disruption associated with the Arab Spring.

In East Asia and Pacific, excluding China, growth reaccelerated in the three months to November to 6.4 percent annualized rate, following a sharp deceleration in the wake of the Tohoku earthquake. The effects of Tohoku and policy tightening has contributed to a deceleration in China's industrial production growth starting in the second quarter of 2011, with growth easing to an average 7 percent annualized growth throughout much of the third quarter, down from 21 percent growth in the first quarter. Growth has reaccelerated to around 10.5 percent 3m/3m annualized rate, as output gained 0.8 percent month-on-month in November,

notwithstanding the drag on domestic demand from some cooling in the housing market. In Thailand the disruptions caused by flooding have brought to a halt the recovery in the industrial sector, with output plunging at a 71.6 percent annualized rate in the three months to November.

Europe and Central Asia, whose industrial sector is most reliant on demand from Europe, started the year strongly, with industrial output expanding at a 17 percent annualized pace, but growth has weakened significantly since March, and output contracted during much of the second and third quarters, in large part due to a sharp slowdown in Turkey. Since then industrial activity has recovered slightly, with output rising at a 6.8 percent annualized rate in the three months to November, bolstered by a bounce-back in industrial activity in Romania and Ukraine.

Output is also declining in the Latin America region, with industrial production contracting at an accelerated rate through October (3 percent annualized rate) following the deceleration of activity in the largest economies in the region. Monetary policy and credit tightening in conjunction with a stronger currency have caused industrial production in the largest economy to contract starting with May. Weakness in domestic demand that caused Brazil's GDP to stall in the third quarter also explains the decline in industrial output. Meanwhile growth in Mexico's industrial output has also dipped into negative territory in the three months to October.

Industrial production in Sub-Saharan Africa, where data is available for only a few countries (Angola, Gabon, Ghana, Nigeria, and South Africa) has contracted through most of the second quarter remained relatively flat in the three months to August. Nigeria has been the strongest performer in the region with growth reflecting rising oil production. Output in South Africa, the region's largest economy started to recover, reaching a 15 percent annualized pace in the three months to October. The decline in industrial output in both Latin America and Sub

Saharan Africa may reflect a pull back from the relatively higher demand for oil and metal and minerals resources in the first quarter of 2011.

Industrial activity in South Asia has been deteriorating for several months, as policy tightening and uncertainty about the implementation of proposed regulatory changes in India weighed heavily on industrial production, which was contracting at a 12 percent annualized pace in the three months to October. Meanwhile growth Sri Lanka continued at a robust pace, while in Pakistan industrial output recovered strongly in the third quarter, after a dismal performance earlier in the year.

Industrial output data for the Middle and North Africa are published with a considerable lag. In the aftermath of the political turmoil of the Arab Spring industrial activity in Syria, Tunisia, Egypt and Libya has fallen by 10, 17, 17 and 92 percent at its lowest point according to official data. Activity surged during the second quarter of 2011 as the negative effects of the political turmoil in Tunisia and Egypt faded and activity regained (and exceeded by more than 15 percent) pre-Arab Spring levels. Nevertheless Egypt's industrial output growth relapsed in the third quarter when growth turned sharply negative, and in Tunisia, where growth was slightly negative.

### **Weakening prospects for the industrial sector**

Given recent volatility in industrial output and the associated difficulties in extracting trend information from recent data, we rely on recent business surveys to gauge near-term developments in industrial output. In addition, uncertainties regarding the magnitude of the impact of supply-chain disruptions caused by the Thai floods further complicate the assessment of industrial sector outlook. There are indications however that these new supply disruptions are less damaging to global industrial output than the ones caused by the Tohoku earthquake, since factories elsewhere in Asia are able to make up for some of the lost Thai production.

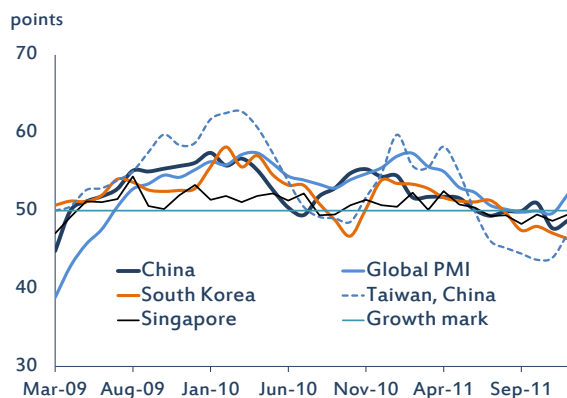
The recent business surveys suggest industrial activity will remain weak in the months ahead. The readings of the global manufacturing purchasing managers index (PMI), down a sharp 7.7 points as of November from its 56-month peak recorded in February 2011 suggest that global industrial output has likely contracted in the fourth quarter, notwithstanding the modest improvement recorded in December (figure IP.3). The PMI remains at weak levels, indicating that global manufacturing growth is expected to remain weak, on weak economic activity in the Euro area, a slowdown in growth in China in part due to weaker external demand, and partly due to cooling in the real estate market (figure IP.4). In addition policy tightening and tighter credit conditions contributed to a slowing in domestic demand in Brazil, while in India policy tightening and uncertainties about the implementation of proposed regulatory changes are dampening growth.

Small open economies that are highly synchronized with global business cycles also suggest that global industrial production growth will slowdown in coming months. Business sentiment was depressed in Taiwan, China in November, with the diffusion index down to a depressed 43.9 level, with weak external demand from the U.S. and Japan taking a toll on tech exports in particular. The high ratio of inventory to shipments increases the likelihood of an

inventory correction in the months ahead if external demand does not strengthen. The PMI has recovered sharply in December, rising 3.1 points to 47.1 but continues to point to contraction in output. The deterioration in business sentiment has been less pronounced in South Korea and Singapore, but sentiment remains depressed there as well. In South Korea both output and new orders PMIs have declined sharply, but other business surveys show a mild improvement in business sentiment (figure IP.3).

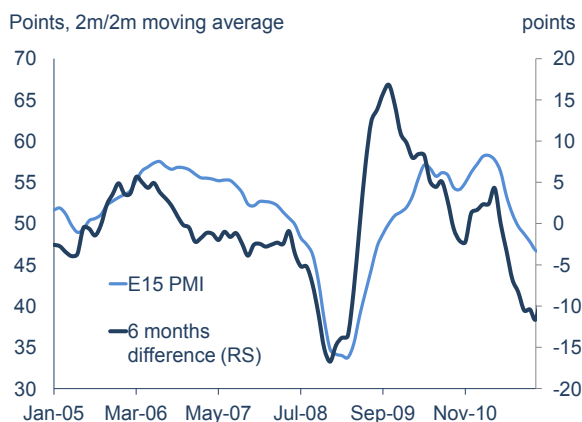
Industrial output in the Euro Area is likely have contracted in the fourth quarter. Indicators for Euro area industrial production are particularly weak, with the PMI for the Euro area sliding further below the 50 no-growth mark for the fourth consecutive month in November (46.4 pts nearing the level recorded in July 2009) and recovering only slightly to 46.9 in December (figure IP.4.). Business sentiment is lowest in Greece, Spain, and Italy. Business sentiment as measured by the PMI deteriorated in core countries in November, while those for high-spread countries remained stable or inched up slightly before improving almost across the board in December (figure IP.5). Business sentiment indicators suggests that German industrial output will stall in coming months, with the PMI index below the 50 no-growth mark for a third consecutive month, in December (figure IP.6).

**Figure IP.3 China’s PMI fell below the 50 no-growth mark**



Source: World Bank

**Figure IP.4 Euro area PMI points to recession**

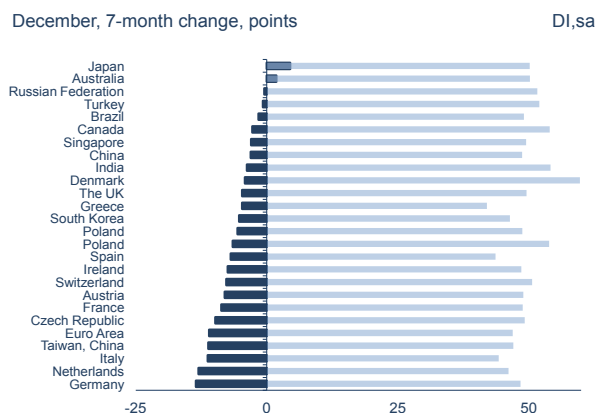


Source: World Bank

A 3.4 percent negative carry over from the third quarter, lingering weak business sentiment, weak consumer demand and continued fiscal austerity will depress industrial output in the Euro Area in the fourth quarter, and through the first half of 2012. Despite a modest recovery in the second half of 2012 industrial output is expected to contract in 2012.

*In the United States and Japan, the picture is somewhat more positive.* After falling in August industrial production in the US picked up in September and has increased 0.7 percent in October, the strongest pace since March, boosted by more robust retail sales and solid external demand. The Institute of Supply Management’s Manufacturing Purchasing Managers’ Index rose to 53.9 by December from 50.8 in October marking the 29th successive month of growth in manufacturing activity. The supply-chain disruptions from the Thai floods have weighed on the U.S. industrial output in the fourth quarter, with auto manufacturers having already announced lower output for November because of parts shortages. Indeed industrial production advanced only 0.1 percent in November from the previous month. Nevertheless with stocks at relatively low levels and US consumer and business spending remaining resilient amidst financial turmoil elsewhere, manufacturing output is likely to continue increasing in the months ahead with growth expected to be in excess of 3.5 percent, in the fourth quarter before weakening in the first half of 2012. Growth is

**Figure IP.5 Deterioration in business sentiment**



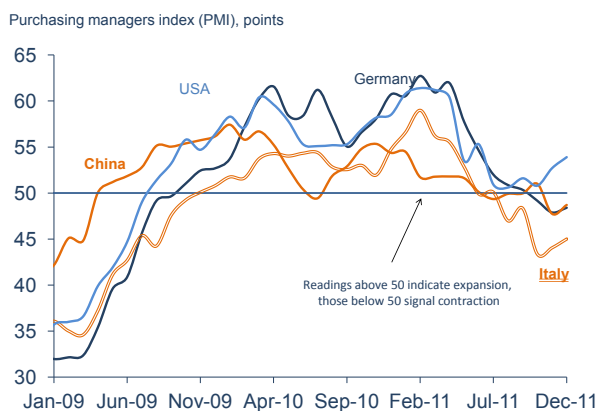
Source: World Bank

expected to average about 2 percent in 2012, about half the growth pace recorded in 2011.

Industrial output growth in Japan is expected to be more upbeat next year, although quarterly growth should decelerate somewhat after the speedy and impressive rebound in the aftermath of the Tohoku disaster (figure IP.7). Several factors will exert opposing pressures. On one hand increased public sector spending stipulated in the third supplementary budget, the easing of electricity shortages that hampered production during the course of the summer, and the replenishment of depleted auto inventories at Japanese overseas affiliates, and resilient personal consumption will support growth in coming months. The supply-chain disruptions from the Thai floods that have weighed on growth in the fourth quarter will ease early next year, but the strong yen and weakening external demand, in particular from the Euro area will limit growth. One source of weakness for next year is subdued growth in the auto sector as demand in major export markets, namely the U.S. and Euro area is expected to be weak.

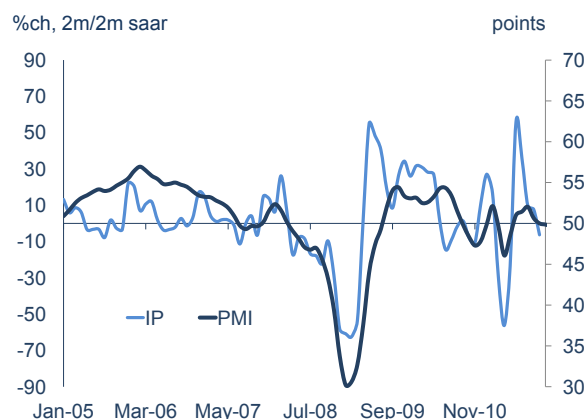
*Among developing regions the outlook is more upbeat than in high-income countries.* Led by China, developing country industrial production growth will remain stronger than high-income countries although growth will moderate due to weakness in external demand, and in particular

**Figure IP.6 Manufacturers’ business sentiment is consistent with weak output growth**



Source: Haver and World Bank

**Figure IP.7 Japan's industrial production bounces back**



Source: World Bank.

subdued demand from high-income countries, especially in the first half of 2012, as well as some policy-induced deceleration in growth.

China's industrial production growth shows signs of policy-induced deceleration in growth, with the PMI below the 50 no-growth mark in both November and December. The policy-induced correction in the housing market led to moderation in real estate investment and contributed to the slowdown in industrial output in related industries. Furthermore, concerns about funding conditions for small and medium enterprises have emerged recently, which together with softer global demand could moderate growth somewhat in coming months. In Thailand production will likely contract through the fourth quarter of 2011 and stage a modest recovery starting in the latter part of the first quarter of 2012. Given Thailand's importance as an auto parts hub, floods will likely affect output in other countries both within the East Asia region and outside, although some countries in the region could benefit as they will likely produce some of the parts and materials that used to be produced in Thailand.

In Europe and Central Asia, industrial output outlook has deteriorated, as the region is likely to suffer from the financial turmoil in Euro area. In Turkey after a marked deterioration in the first

part of 2011, sentiment has recovered somewhat with the PMI above the 50 no-growth mark since September. Similarly in Russia business sentiment improved since September, rising above the 50 growth mark in October.

Overall, global industrial output growth is expected to ease to around 2.0 percent in the fourth quarter, from 2.9 percent (saar) in the third quarter, and ease further in the first half of 2012, before reaccelerating in the second half of 2012, when the current headwinds will abate. The floods in Thailand, which are disrupting the global supply-chain, have created further headwinds and are likely to disrupt production for at least two quarters. Another headwind for global industrial production is the expected correction in the global inventory cycle in the near-term. Indeed, the inventory to shipment ratio in countries that provide timely and reliable data (South Korea, Taiwan, China) is still above long-term trends. Policy tightening in major emerging economies is also likely to contribute to the slowdown in industrial production over the short-term.

### Risks and vulnerabilities

Should the financial turmoil and deterioration in financial market confidence lead to a market-induced freezing-up in capital markets, and a tightening in global credit, the prospects for the industrial sector would deteriorate markedly. In the small contained crisis scenario global GDP growth could be 1.7 percent lower than the baseline in 2012, while in the scenario of a larger crisis economic activity could see a 3.8 percent decline relative to the baseline in 2012 (See Main text). In these two downside scenarios, economic activity in developing countries, including industrial sector growth, could be 1.7 percent and 3.6 percent lower than the baseline, respectively, in 2012, and 1.8 and 4.3 percent lower than the baseline in 2013, respectively.

In the event of an economic downturn similar to the one following the 2008 crisis sharp declines will likely occur in the demand for machinery, capital goods and durables, with countries that depend heavily on this type of production being

the most vulnerable to postponement in capital expenditures by investors and government and big ticket purchases by consumers. Countries that rely heavily on manufactures (China, India, Korea, Malaysia, The Philippines, Thailand, Taiwan, China, and Turkey) would be affected.

Another risk to industrial output growth is the possibility of domestic banking crises, as non-performing loan ratios are likely to increase with the deceleration in GDP growth in developing countries. A sharp slowdown in credit growth or outright contraction will have marked impacts on domestic demand, and industrial output.

Economies in Europe and Central Asia and Latin America could be vulnerable to possible deleveraging by European banks. There are already signs that many emerging country banks are tightening terms and standards of lending across all regions, and all types of loans (business, real estate, and consumer).