

1 The International Economy

A Modest Pickup In Global Growth In 2015

Global growth firmed in H2 2014, underpinned by a more decisive expansion in the G3 economies. The US economy kept up its momentum, and a stronger recovery in the Eurozone and Japan helped to offset sluggish activity in China. Domestic demand in Asia generally stayed resilient, but export performances were mixed. While economies geared to the US market saw their exports rise, those dependent on China and primary commodities experienced more subdued outturns.

In the quarters ahead, the G3 economies as a whole will likely be the main locomotive of global growth. The US economy has regained sufficient momentum for policy normalisation to proceed, while the Eurozone and Japan are set to benefit from highly accommodative monetary policies and more competitive exchange rates. In addition, lower energy prices should deliver a net positive boost to domestic demand in Singapore's key trading partners. However, tighter financial conditions and potential capital reversals from the impending normalisation of interest rates in the US could constrain the ability of Asia ex-Japan to fully leverage on the ongoing G3 recovery. On balance, only a modest improvement in the global economy is anticipated in 2015 and 2016, with overall growth expected to rise to 4.3% and 4.5% respectively, from 4.1% last year. (Table 1.1)

Global consumer prices have been on a disinflationary trend since Q2 2014, reflecting sharp declines in the prices of oil and other commodities, as well as subdued demand. Of a sample of 110 countries surveyed, a majority registered inflation rates below 2% in Q1 2015. In countries with room to ease monetary policy, dissipating inflationary pressures have afforded policymakers some flexibility for more accommodative policies to support growth.

Table 1.1
Global GDP Growth

	Q3 2014	Q4 2014	2014	2015F	2016F
	q-o-q SAAR		y-o-y		
Total*	4.8	4.5	4.1	4.3	4.5
G3*	1.6	1.7	1.3	1.9	2.2
US	5.0	2.2	2.4	2.9	2.8
Japan	-2.6	1.5	0.0	1.0	1.7
Eurozone	0.7	1.3	0.9	1.5	1.8
NEA-3*	4.8	2.4	3.0	3.0	3.2
Hong Kong	5.9	1.5	2.3	2.5	2.7
Korea	3.2	1.1	3.3	3.1	3.6
Taiwan	4.4	4.8	3.7	3.7	3.6
	y-o-y				
ASEAN-4*	4.5	5.0	4.7	5.0	5.2
Indonesia	4.9	5.0	5.0	5.4	5.7
Malaysia	5.6	5.8	6.0	4.8	5.0
Philippines	5.3	6.9	6.1	6.4	6.2
Thailand	0.6	2.3	0.7	3.7	3.9
China	7.3	7.3	7.4	6.9	6.8
India**	8.2	7.5	6.9	7.4	7.7

Source: CEIC, Consensus Economics and EPG, MAS estimates

* Weighted by shares in Singapore's NODX.

** Refers to fiscal year ending March.

1.1 G3 Economies

Growth Prospects Improve Amid Monetary Policy Divergence

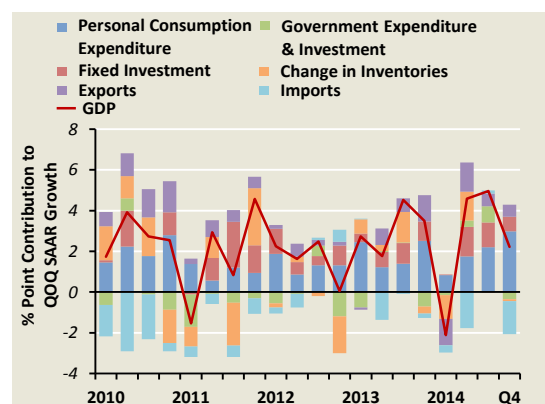
Despite a more moderate pace of expansion, the US remained the fastest growing economy among the G3 in Q4 2014. Meanwhile, the Eurozone and Japan registered an upturn in economic activity, with the former spurred by the positive effects of lower oil prices while the latter emerged from a technical recession. Yet, even as the growth disparity within the G3 continues to narrow this year, monetary policy settings look set to diverge further. With the Federal Reserve poised to normalise policy and the ECB and BOJ engaging in large-scale quantitative easing (QE), the substantial depreciation of the euro and yen against the US dollar should help to boost growth in the Eurozone and Japan. All in, GDP growth in the G3 as a whole is projected to rise to 1.9% in 2015 and further to 2.2% in 2016, from 1.3% last year.

A labour market upturn bodes well for US growth.

US GDP growth moderated to 2.2% q-o-q SAAR in Q4 2014 from 5.0% the quarter before. (Chart 1.1) For 2014 as a whole, overall output expanded by 2.4%. The slowdown in the last quarter can be attributed largely to renewed weakness in government spending and lower private investment growth. In particular, growth of non-residential fixed investment tapered as businesses held back on equipment spending. Nevertheless, other components of US private domestic demand were firm—private consumption expanded at its fastest pace since Q4 2010, as lower energy prices boosted households' purchasing power amid buoyant consumer confidence. Real disposable incomes rose by an average of 0.4% m-o-m SAAR in Q4 and a further 0.6% in Jan–Feb 2015. In line with stronger household spending, imports surged by 10.4% q-o-q SAAR in Q4 2014, while exports grew at a more measured pace. Consequently, net exports exerted a drag on overall growth in Q4. Meanwhile, the pace of residential investment also picked up. Housing stocks had continued to decline, resulting in greater demand for new residential construction.

In Q1 2015, US economic activity was likely tempered by an unusually cold winter, and port shutdowns on the West Coast due to labour disputes. However, recent economic indicators suggest that growth momentum will resume in the near term, albeit at a more subdued clip. The Institute of Supply Management manufacturing PMI averaged 52.6 in Q1 2015, compared with 56.9 in Q4 2014, while the non-manufacturing PMI slipped to 56.7 from 57.4 over the same period.

Chart 1.1
Contribution to US GDP Growth



Source: CEIC

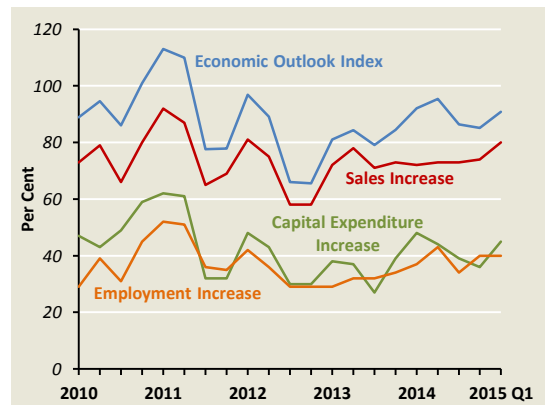
Concomitantly, labour market conditions in the US remain relatively sanguine. Even though payroll growth in March moderated to just 126,000 from 264,000 in February, the unemployment rate held steady at 5.5%. In addition, according to the latest *Job Openings and Labour Turnover Survey* in February, job openings increased by 168,000, suggesting firms' greater willingness to hire. Brighter employment prospects bode well for US wage growth and hence, private consumption. Further, CEOs of US companies have expressed optimism about the economic outlook, with increases in capital expenditure planned over the next six months. (Chart 1.2)

The strength of the US economy relative to the rest of the world, as well as expectations of policy rate normalisation, has contributed to US dollar appreciation since mid-2014. This, in turn, has fed back into softer export orders and production, which partly explains recent downward revisions to forecasts of US growth by the Federal Reserve. (Chart 1.3) The members of the Federal Open Market Committee currently expect y-o-y GDP growth in Q4 2015 to come in 0.3% point lower than previously thought, in the range of 2.3–2.7%. Indeed, simulations based on the Federal Reserve's FRB/US model indicate that a sustained 10% appreciation of the dollar may reduce real net exports by about 1% of GDP over a period of several years.¹ As a significant share of US corporate profits come from foreign earnings, a decline in profits in US dollar terms may also dampen planned expansions in capital expenditure by firms. The strengthening US dollar has further kept import prices subdued and consumer price inflation low. As a result, the Federal Reserve is now expected to raise interest rates only in the later part of 2015. Overall, US growth is expected at 2.9% in 2015 and 2.8% in 2016.

The Eurozone economy strengthened in Q4 ...

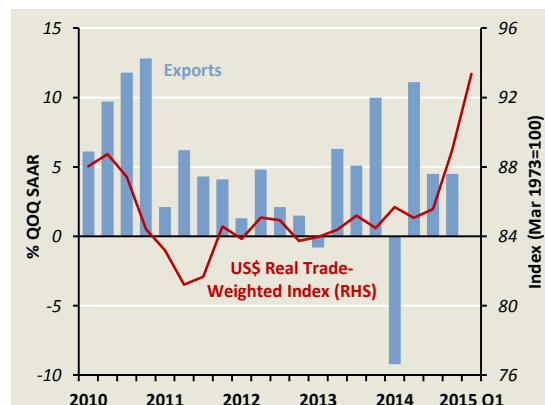
Eurozone growth firmed to 1.3% q-o-q SAAR in the last quarter of 2014, from a modest expansion of 0.7% in the preceding quarter. Germany and Spain led the advance, recording robust growth of 2.8% and 2.7% respectively, buoyed by strengthening domestic demand. Private consumption is on a sustained recovery path in both economies, supported by faster nominal wage growth in Germany and an increase in employment in Spain. In general, lower oil prices

Chart 1.2
US CEO Business Outlook



Source: CEIC

Chart 1.3
US Export Growth and the Exchange Rate



Source: CEIC

¹ Hooper, P, Spencer, M and Wall, M (2015), "Strong Dollar: Winners and Losers", *Deutsche Bank Research*, March.

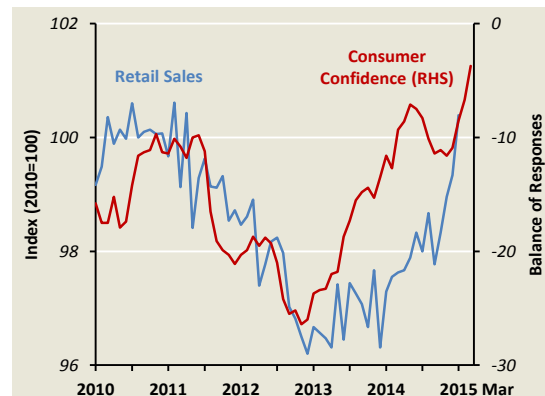
have raised real household incomes across the region and given a fillip to retail sales, amid improving sentiment. (Chart 1.4) However, France and Italy are still underperforming the rest of the Eurozone. The lack of reform progress in these two large economies has dented business confidence and investment spending. Nevertheless, the relative weakness of domestic demand was cushioned by a rise in net exports, aided by the depreciation of the euro.

... and is poised for stronger growth this year.

The overall growth outlook for the Eurozone is set to improve further. Chart 1.5 maps out the Eurozone economy's transition through different stages of the business cycle in recent years using the Economic Sentiment Index (ESI), which has a close historical relationship with GDP. In the early months of 2015, the ESI entered the expansion quadrant, signalling that both the level and rate of change of the index have turned positive.

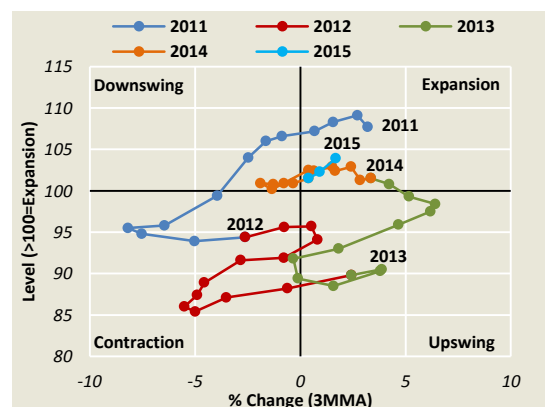
Apart from the fall in oil prices, the brightening outlook can be attributed, in large part, to the ECB embarking on a programme of sovereign debt purchases to complement existing private sector asset purchases. The QE programme commenced in early March and is worth a total of €60 billion a month. This unconventional monetary policy has had the effect of lowering bond yields across the region, thus reducing the debt servicing burden and lessening the need for additional fiscal consolidation, especially in the more highly-indebted countries. More critically, the announcement of QE has been accompanied by a further depreciation of the euro, which is expected to provide an additional stimulus to exports and growth. Since the beginning of this year, the euro NEER has fallen by a further 9%, on top of the 5% depreciation in 2014. According to the European Commission's QUEST model, a 5% depreciation of the NEER would lead to a 0.3% point rise in GDP growth in the first year and a further 0.2% point boost in the second year. On the downside, Greece's challenges in meeting its debt service payments remain a cause of concern for the region. The Greek government will need to come to an agreement with its official creditors soon to secure much-needed financial relief. In the event that the Greek debt situation is managed, growth in the Eurozone is projected to come in at 1.5% this year and 1.8% in 2016, a substantial pickup from the 0.9% last year.

Chart 1.4
Eurozone Retail Sales and Consumer Confidence



Source: Eurostat

Chart 1.5
Eurozone Economic Sentiment Index



Source: European Commission

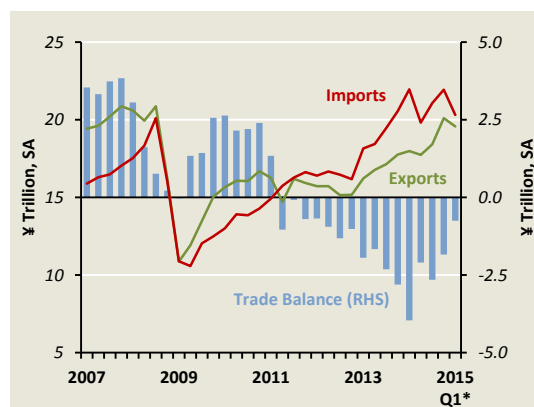
A gradual recovery is underway in Japan.

Japan's GDP growth rose to 1.5% q-o-q SAAR in Q4 2014, after a 2.6% contraction in Q3. Although this outturn was still below expectations, recent developments suggest that the economy is recovering steadily from the negative impact of the consumption tax hike in April 2014. Supported by improvements in labour market conditions, private consumption increased for two consecutive quarters in Q3 and Q4 2014, and should stay on an upward trend. Furthermore, the fall in Japanese private investment has levelled off, as residential investment started to bottom out. On the external front, net exports contributed to overall growth, mainly supported by buoyant shipments to the US. Furthermore, the nominal deficit in goods trade has shrunk sharply since Q4, on the back of a lower energy import bill, as well as the boost in exports. (Chart 1.6)

Japan's economy is expected to remain on a modest growth path in the near term. On the domestic front, healthy corporate profits are expected to spur domestic capital investment, and benefit households through wage increases and higher share dividends. (Chart 1.7) The large depreciation of the yen since December 2012 has helped to lift overseas earnings, and thus the profit-to-sales ratio of Japanese corporates, to a record high in Q4 2014. As a consequence, the annual wage negotiations traditionally held in spring are likely to result in more widespread increases in salaries this year. Indeed, major manufacturing firms have already agreed to the largest pay hikes in several years.

Apart from raising inflationary expectations, the stimulative impact of the Quantitative and Qualitative Monetary Easing policy undertaken by the BOJ since April 2013 has worked mainly through asset appreciation. In particular, there is evidence of positive wealth effects arising from stock market appreciation on household consumption, which have helped to mitigate decreasing real disposable incomes in the last two years due to higher inflation. (See Box A.) Going forward, the larger wage increases anticipated this year, coupled with the fall in oil prices, may reverse the declining trend in income and result in greater private consumption. On the whole, Japan's GDP growth in 2015 and 2016 is anticipated to come in at 1.0% and 1.7% respectively.

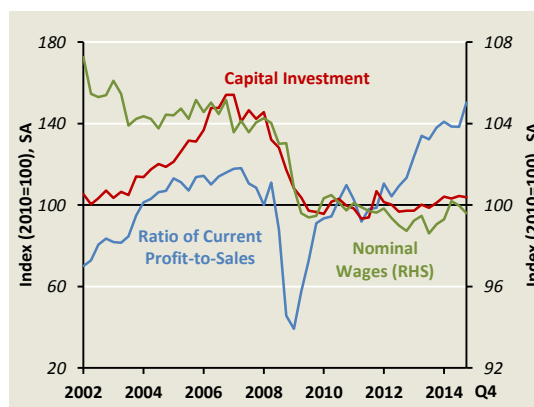
Chart 1.6
Japan's Goods Trade Balance



Source: CEIC and EPG, MAS estimates

* Based on Jan–Feb 2015 data.

Chart 1.7
Japan's Investment, Profit-to-Sales Ratio and Nominal Wages



Source: CEIC and EPG, MAS estimates

1.2 Asia

The Boost From Low Oil Prices Will Be Capped By US Policy Normalisation

Growth in Asia ex-Japan held steady in Q4 2014, although performances varied on account of country-specific factors. China's adjustment to a slower and less investment-fuelled growth path has put an end to regional resource-based export booms, while India appears to be on the cusp of a cyclical growth upturn. In the other economies, the impact of low oil prices has, on balance, been positive to the extent that lower energy prices have been passed on to households and firms, thus boosting purchasing power and consumer spending. The decline in energy prices has also helped oil importers, such as India, to secure current account stability. In addition, the moderation in inflationary pressures has given central banks greater space to ease monetary policy.

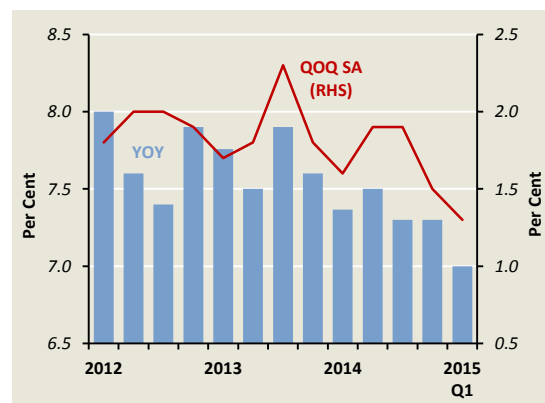
While the positive impact of low energy prices will continue to manifest in the coming quarters, the regional outlook may be clouded by several developments. The impending interest rate increase in the US and a potentially sharper appreciation of the US dollar pose downside risks for some Asian economies with high debt levels. These risks arise not only from higher interest servicing costs and potentially destabilising capital flows, but also from possible currency mismatches for countries with large US dollar-denominated borrowing. The structural slowdown in China's economy presents another headwind to the region's growth. On balance, Asia ex-Japan is expected to expand at a stable pace of 5.1% this year and 5.3% in 2016.

China is transitioning to a slower, consumption-led growth path.

In Q4 2014, the Chinese economy expanded by 7.3% y-o-y, unchanged from the previous quarter, which brought the full-year outcome to 7.4%. However, growth momentum weakened in sequential terms to 1.5% q-o-q SA in Q4, from 1.9% in Q3. (Chart 1.8) In Q4, growth in industrial production slipped to 7.6% y-o-y under the weight of softening demand and mounting inventories in heavy industry. Meanwhile, retail sales moderated as high-end dining and luxury spending were curtailed by the government's campaign against official extravagance. At the same time, fixed asset investment (FAI) growth decelerated to 15.7% y-o-y year-to-date in Q4, from 16.1% in Q3. Real estate and manufacturing FAI remained soft, although infrastructure construction provided some support.

More recently, China's economy lost further steam in Q1 2015 as domestic drivers softened, weighed down by sluggish gross capital formation. GDP growth fell to 7.0% y-o-y, its slowest pace since Q1 2009, while sequential growth declined to 1.3% q-o-q SA. On a year-ago basis, the expansion in FAI, industrial production and retail sales continued to ease, amid an 18.3% decline in aggregate financing.

Chart 1.8
China's GDP Growth



Source: CEIC and EPG, MAS estimates

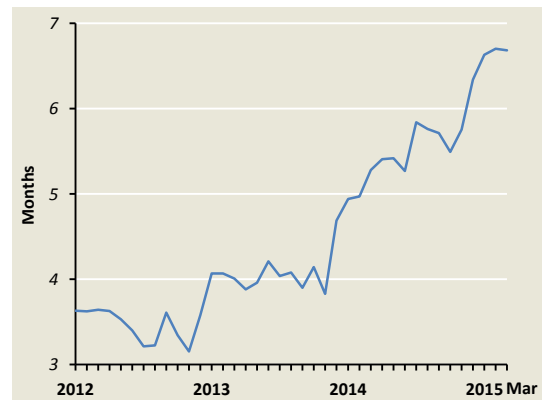
In the coming quarters, China's economy could slow due to persistent property market weakness, consolidation within heavy industry, and ongoing structural reforms. The large overhang of unsold properties and industrial goods will impede a near-term rebound in investment demand. According to EPG's estimates, China had 6.7 months' supply of unsold commodity real estate inventory in March 2015, compared to 3.6 months in Q1 2012. (Chart 1.9) In March, the authorities acted to lower minimum down-payments on second properties. A slew of fiscal and monetary easing measures will also provide welcome support to facilitate China's transition to a slower and more consumption-driven growth trajectory. Since November 2014, the PBOC has cut interest rates and lowered reserve requirements twice, while the central government has targeted a wider fiscal deficit of 2.3% of GDP this year. A mild recovery in consumer spending could materialise, contingent on a stable job market and resilient wage growth. Thus, China's growth is projected to slow to 6.9% in 2015, and further to 6.8% in 2016.

Beginning from last year, China's policymakers have taken decisive steps to address macroeconomic vulnerabilities arising from local government debt and the shadow banking sector. Fiscal reforms enacted last August have enabled local governments to issue debt, reducing maturity mismatches which have hitherto strained local governments' balance sheets, thereby improving transparency and debt sustainability. Since early 2014, Chinese authorities have also increased their oversight of shadow banking activities. Consequently, the economy's reliance on shadow banking channels for credit expansion has been vastly reduced—shadow credit comprised less than 10% of China's new aggregate financing in Q1 2015, compared with 30% in 2013. The implementation of fiscal reforms and tighter regulation of shadow banking activities should gradually reduce the risks to economic and financial stability posed in these two areas, and put the Chinese economy on a firmer footing in the medium term.

In India, growth prospects have brightened alongside improved macroeconomic stability.

Despite an increase in government spending, India's GDP growth decelerated to 7.5% y-o-y in Q4 2014 from 8.2% in the previous quarter, although the underlying momentum in economic activity remains intact.

Chart 1.9
China's Months of Unsold Commodity
Real Estate Inventory at Current
Seasonally Adjusted Sales Rate



Source: CEIC and EPG, MAS estimates

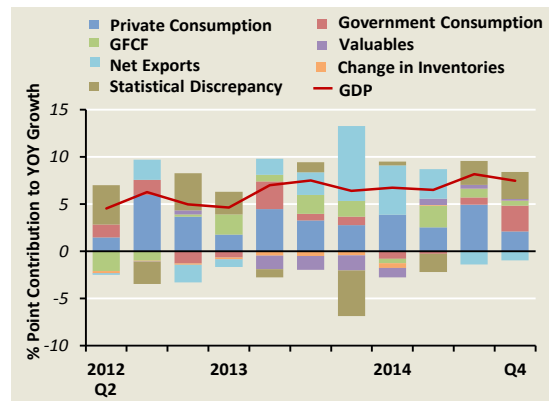
Private consumption growth eased from 8.7% y-o-y to 3.5% in Q4, while gross fixed capital formation (GFCF) also increased by a slower 1.6%. Exports contracted over the same period. (Chart 1.10) From a sectoral perspective, the growth moderation was due to weaker performances in the manufacturing, construction, and agriculture sectors. In comparison, public administration, defence & other services surged.

Over the past year, India's economy has gained a more stable macroeconomic footing. Decisive policy actions taken by the authorities, as well as the drop in global oil prices, have enabled the country to narrow the current account deficit, rein in inflation and improve its fiscal position. In the near term, domestic demand will be boosted by a confluence of factors. Softer global oil and commodity prices have significantly improved India's terms-of-trade and bolstered households' spending power. Concomitantly, lower inflation and reduced inflationary expectations have allowed the Reserve Bank of India to ease monetary policy in recent months. These measures are expected to help spur investment demand and lighten the debt burden of the corporate sector. Furthermore, the pace of fiscal consolidation has slowed in the latest budget to accommodate higher public investment, especially on infrastructure. There are also nascent signs that an easing of investment bottlenecks is underway, with a gradual pickup in investment projects, alongside a restarting of stalled projects. (Chart 1.11) Overall, India's GDP growth is forecast to increase to 7.4% in FY2015, before rising further to 7.7% in FY2016.

IT exports and low oil prices will support growth in the NEA-3 economies.

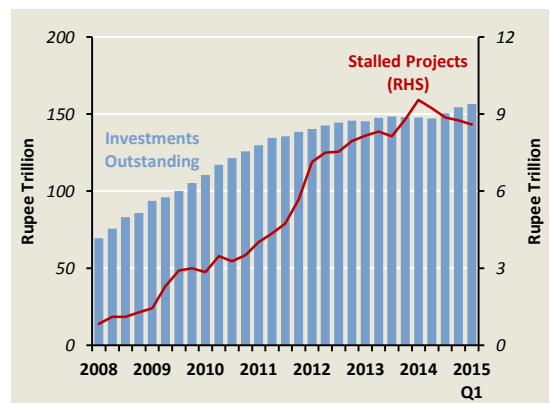
Growth in the NEA-3 economies eased to 2.4% q-o-q SAAR in Q4 2014 from 4.8% the previous quarter, as the pickup in private consumption and government spending eased. (Chart 1.12) After a strong expansion in Q3 2014, Hong Kong's economy grew by a modest 1.5% q-o-q SAAR in Q4, as net exports of goods and services flagged. Korea's growth fell to just 1.1% in Q4 from 3.2% in Q3 on account of a plunge in construction activity. In addition, consumption growth remained muted as households continued to grapple with high debt levels. In comparison, Taiwan's GDP growth held steady at 4.8% q-o-q SAAR in Q4 2014, as a slower rate of gross capital formation was offset by higher net exports.

Chart 1.10
Contribution to India GDP Growth



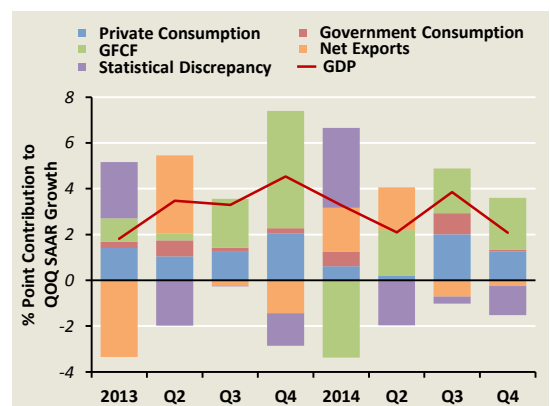
Source: CEIC and EPG, MAS estimates

Chart 1.11
India's Investment Projects



Source: Centre for Monitoring Indian Economy

Chart 1.12
Contribution to NEA-3 GDP Growth



Source: CEIC and EPG, MAS estimates

A modest improvement in the global economic environment will keep growth stable within the NEA-3 in 2015. Moreover, major launches of consumer IT products in Q2 will deliver an additional boost to production and trade. Given that the NEA-3 economies are heavy net importers of oil, subdued energy costs should also stimulate household consumption.

Nonetheless, there are some headwinds to growth. With elections due to take place in Hong Kong and Taiwan in 2016, businesses could adopt a wait-and-see stance until they have greater clarity on policies which could affect their investments. Growth in Hong Kong's tourism sector will also face downward pressure from a stronger Hong Kong dollar, a recent cap by Shenzhen on visits by multiple-entry visa holders, and the shifting preferences of Chinese tourists towards alternative destinations such as Korea and Japan. (Chart 1.13) Meanwhile, recent monetary policy easing in Korea should help to support domestic demand in the near term. However, the effects of lower interest rates in stimulating private consumption may be limited by the high debt burden of Korean households. On balance, GDP growth for the NEA-3 is expected to come in at 3.0% this year and 3.2% in 2016, compared to 3.0% in 2014.

Growth in the ASEAN-4 will be uneven.

GDP growth in the ASEAN-4 strengthened to 5.0% y-o-y on average in Q4 2014, from 4.5% a quarter ago. The outcomes at the individual economy level were mixed, however, depending on the relative strength of their growth drivers. (Chart 1.14) The Philippines and Thailand saw a significant pickup, underpinned by increased merchandise exports owing to stronger demand from the US and the NEA-3, as well as a recovery in tourist arrivals in Thailand. Although Malaysia shipped more IT products, overall export growth eased due to the slump in global commodity markets, especially oil. Nevertheless, the slowdown in exports was more than counterbalanced by an uptick in domestic demand, reflecting a surge in private investment activity as well as the frontloading of consumption ahead of the implementation of a 6% GST in April this year. Similarly, in Indonesia, increased investment helped to offset a contraction in exports, due in part to weak Chinese demand.

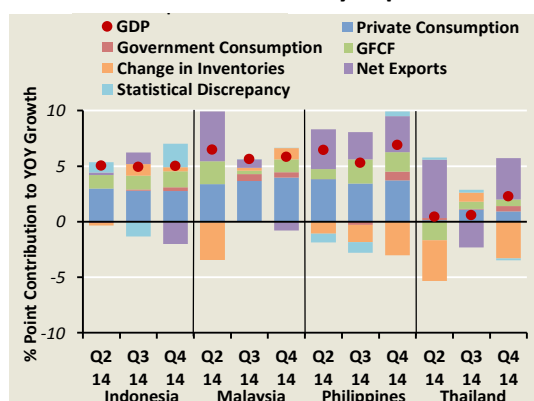
Chart 1.13
Growth in China Tourist and Resident Flows to Hong Kong



Source: CEIC and EPG, MAS estimates

Note: Resident departures refer to the number of Chinese mainland residents travelling to all overseas destinations, including Hong Kong, Macao and Taiwan.

Chart 1.14
ASEAN-4 GDP Growth by Expenditure



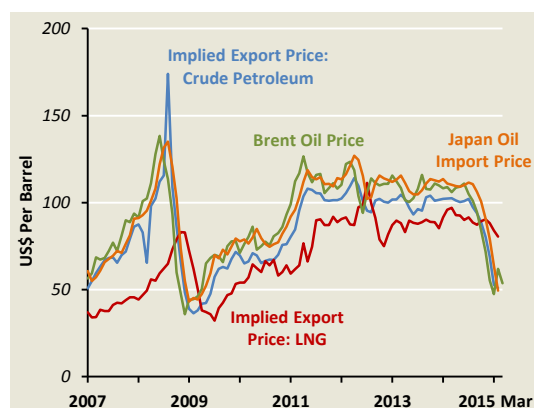
Source: CEIC and EPG, MAS estimates

The ASEAN-4 economies as a whole are projected to expand by 5.0% in 2015 and 5.2% in 2016, up from 4.7% last year. The factors influencing growth in late 2014 will continue to hold sway, with the Philippines and Thailand expected to reap the biggest gains from stronger external demand. Both countries will also benefit from depressed oil and gas prices, given their net oil importer status. Meanwhile, as the region's only net oil and gas exporter, Malaysia will be negatively affected. LNG prices typically follow oil price movements with a 3–5 month lag, and while they have only softened slightly thus far, could decline further later this year. (Chart 1.15) This will have significant effects on Malaysia, given its considerable LNG trade surplus (Malaysia's net gas exports total 5.6% of GDP in 2014). In addition, private consumption in Malaysia will be dampened by weak farm incomes, high household indebtedness, and the implementation of the GST in April. In Indonesia, exports will be held down by subdued commodity prices and weak demand from China. Nonetheless, growth will strengthen in the coming year as structural reforms begin to bear fruit and investment spending increases, even as private consumption remains firm.

The pickup in ASEAN-4 GDP growth owing to a recovery in the G3 is expected to be relatively muted this year, compared to previous episodes. This is due in part to the slowdown in China, but also reflects the effect of high levels of debt. Overall debt-to-GDP ratios have trended up in Malaysia and Thailand since the Global Financial Crisis (GFC), mostly due to greater borrowing by households and, to a lesser extent, an increase in government debt. (Chart 1.16)

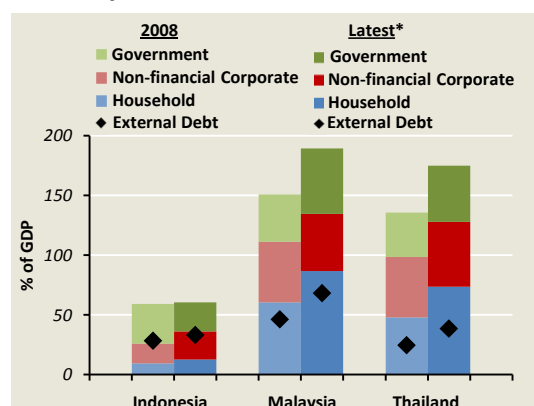
The recent debt build-up raises some concerns. First, as global liquidity conditions tighten with the eventual normalisation of interest rates, countries with large debt burdens will face higher servicing costs, and potentially destabilising capital flows. Even in the absence of financial stress, increased interest costs would constrain domestic spending in the presence of highly leveraged private sectors. Second, the expected appreciation of the US dollar over the medium term could result in significant currency mismatches in countries with substantial exposure to US dollar-denominated debt. Third, the sizeable debt burdens in some countries have added to the complexity of monetary policy management at the current juncture. Earlier this year, lower inflation rates provided room for some central banks to reduce interest rates to bolster domestic demand.

Chart 1.15
Global Oil Prices vs. Malaysia's Implied Export Prices of Crude Oil and LNG



Source: Bloomberg, CEIC and EPG, MAS estimates

Chart 1.16
Debt by Sector, Selected ASEAN Countries



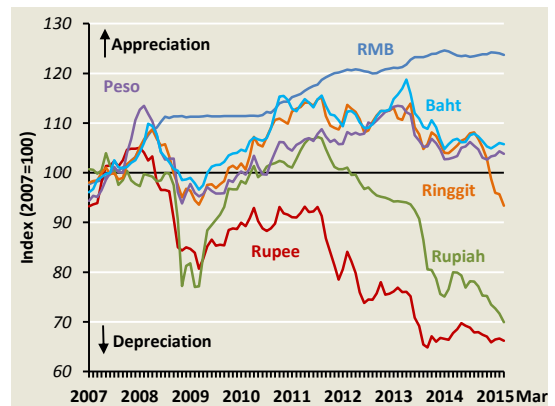
Source: Bank for International Settlements, CEIC, IMF, World Bank and EPG, MAS estimates

* Indonesia and Thailand: Q3 2014; Malaysia: 2013.

From a financial stability standpoint, however, this could encourage further accumulation of debt and could raise financial risks, especially since monetary policy would likely need to be tightened later this year when US monetary policy normalisation commences.

Receding inflationary pressures, as well as the negative terms-of-trade shocks experienced by oil and commodity producers, have been accompanied by some easing of Asian ex-Japan currencies. These exchange rate developments are taking place amid a general strengthening of the US dollar, after a period of upward pressure on regional currencies stemming from large capital inflows, and will facilitate the ongoing adjustment to higher global interest rates. (Chart 1.17) From a policy perspective, moderate currency depreciation is consistent with output and price stabilisation under flexible inflation-targeting regimes. A weaker exchange rate would help support the revenue streams of exporters in local currency terms in the short run, even as gradually strengthening external demand is expected to provide a stronger boost to exports towards the latter part of the year.

Chart 1.17
Selected Asian Exchange Rates
vis-à-vis the US Dollar



Source: IMF and EPG, MAS estimates

1.3 Global Inflation

Global Headline Inflation Has Fallen

Global headline inflation has eased significantly in recent periods, reflecting a confluence of sharp declines in the prices of oil and other commodities as well as general weakness in global economic activity. Still, the spectre of deflation, as a persistent and generalised decline in the overall price level, should be kept at bay. Core inflation has remained stable globally and there have not been large negative output gaps in Asia. Going forward, future increases in oil prices will likely be gradual. Global inflation is expected to come in at 0.9% in 2015, down from 1.9% in 2014, before rising to 2.1% in 2016.

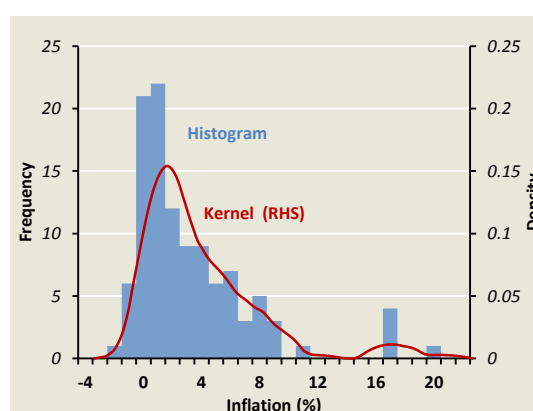
Inflation outcomes are skewed to the downside.

In the last two quarters, many economies around the world have experienced disinflation as measured by the headline CPI. The histogram in Chart 1.18 illustrates the distribution of these inflation rates across a sample of 110 countries worldwide, derived by averaging rates for the latest three months of data up to March 2015. The majority of countries in the sample experienced inflation of less than 2%, indicating that low inflation is a global phenomenon. Reflecting this, the smoothed curve in the chart shows that the distribution of global inflation is heavily skewed towards low inflation outcomes.

In the G3 economies, inflation rates have declined in tandem, mainly on account of falling oil prices. (Chart 1.19) Headline inflation in the US fell by 0.1% y-o-y in Q1 2015, after rising by 1.2% in Q4 2014, reflecting the delayed effect of the steep decline in energy prices in the latter part of 2014. While disinflationary pressures are not expected to intensify, since oil prices have stabilised, inflation in the upcoming quarters is likely to remain weak.

Nonetheless, core inflation in the US has been stable, at 1.7% y-o-y in Q1 2015, as domestic demand conditions remain firm. In the Eurozone, inflation has fallen below zero and averaged -0.3% in Q1 2015. It is forecast to rise mildly and come in at 0.1% for the whole of 2015. Meanwhile, in Japan, headline CPI inflation declined to 2.5% y-o-y in Q4 from 3.3% in the preceding quarter, weighed down by cheaper oil and sluggish demand. Excluding the direct effects of the consumption tax hike, headline and core CPI inflation over the Jan–Feb period were 0.3% and 0.1% respectively. Overall, G3 inflation is projected to fall to 0.2% in 2015, from 1.3% last year.

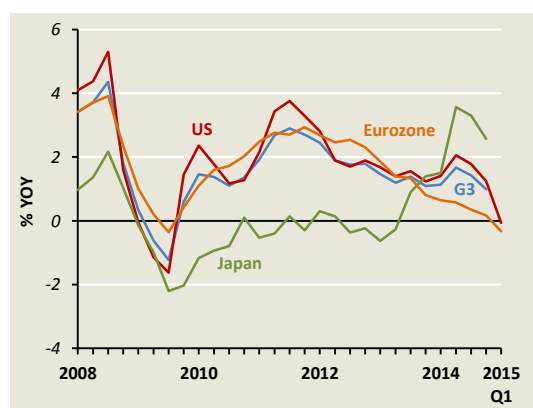
Chart 1.18
Distribution of Global Inflation



Source: Datastream and EPG, MAS estimates

Note: The kernel density estimation above is the estimated probability density function of global inflation, based on inflation rates for a sample of 110 countries.

Chart 1.19
G3 Inflation



Source: CEIC and EPG, MAS estimates

Asia ex-Japan inflation will fall in 2015.

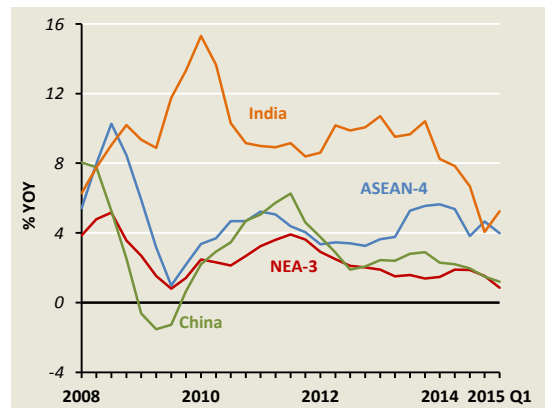
Headline inflation in China plummeted to 1.2% in Q1 2015, from a peak of 6.3% in Q3 2011. (Chart 1.20) The fading of headline inflation has been accompanied by an intensifying contraction in producer prices, which fell by 4.6% y-o-y in Q1 2015. Producer price index deflation, which began three years ago, has been led by excess capacity and inventory overhangs in certain heavy industries, largely resulting from over-expansion during the post-GFC period. The industrial slack is expected to weigh on headline inflation, bringing the rise in the CPI to 1.4% in 2015, from 2.0% last year.

India's CPI inflation picked up to 5.2% y-o-y in Q1 2015 from 4.1% the quarter before, mostly due to dissipating base effects, as food and fuel prices held steady. In the year ahead, a combination of lower energy prices, a more robust inflation-targeting policy framework, and a reduction in consolidated government spending, should keep inflationary pressures in check.

Within the NEA-3, inflation slipped to 0.8% in Q1 2015, from 1.5% in the previous quarter. Inflationary pressures in Taiwan and Korea eased amid soft energy prices. Hong Kong's composite inflation was elevated at 4.4% in Q1, on account of a significant rise in utility and housing costs, as the effects of past subsidies dissipated. Nonetheless, price increases in the region are expected to be mild in 2015, averaging 1.1%.

ASEAN-4 inflation surged to 4.7% in Q4 2014, owing to a temporary spike in Indonesia's inflation rate following the removal of retail fuel subsidies, but has since eased to 4.0% in Q1 this year. Price pressures are expected to moderate in 2015, reflecting low energy-related costs, which are likely to filter through to households more rapidly with the virtual elimination of retail fuel subsidies in Indonesia and Malaysia. Nevertheless, inflation in Malaysia is projected to rise temporarily in Q2 following the GST implementation, although second-round effects are expected to be relatively muted in the face of slowing domestic activity. For ASEAN-4 as a whole, inflation is forecast to come in at 4.1% in 2015, down from 4.9% last year.

Chart 1.20
Asia ex-Japan Inflation



Source: CEIC and EPG, MAS estimates

Lower inflation in Asia ex-Japan is mainly due to changes in relative prices.

One of the concerns arising from very low inflation, or outright deflation, is that it will raise the real debt burden, a particularly damaging prospect for highly-indebted economies. Further, expectations of deflation, once entrenched, may be difficult to reverse, and can cause consumers to defer their expenditures. The effectiveness of monetary policy can also be curtailed by the constraints posed by the zero lower bound on policy rates. However, a number of mitigating factors suggest that fears of deflation—a persistent and generalised decline in the overall price level—are exaggerated.

Most importantly, core inflation in the region has been relatively stable, averaging about 2.5% in March 2015. This lends support to the notion that the recent disinflation reflects a sharp change in the relative prices of oil, food and other non-oil commodities, such as metals, rather than “generalised price declines” in the economy. Notably, from Q2 2014 – Q1 2015, food and fuel prices together contributed 1.3% points to the average 1.7% points decrease in Asia ex-Japan inflation. Furthermore, at the macroeconomic level, the recent fall in CPI inflation in the region has not been associated with the opening of large negative output gaps. Indeed, EPG’s fixed effects panel estimation suggests that the contributions from output gaps to H2 2014 inflation outcomes were negligible, while the average contribution from the fall in the price of oil was about 70%.² As base effects due to the oil price decline wash out in the next few quarters, inflation rates should gradually move up again.

² Inflation rates for 10 economies (China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand) were regressed on their output gaps and oil prices over the period Q1 2000 to Q4 2014.

Box A

Did Abenomics Raise Household Consumption In Japan?^{1/}

Introduction

In December 2012, the government of Shinzo Abe introduced a new policy package aimed at ending two decades of economic stagnation and deflation in Japan. Dubbed “Abenomics”, the package consists of three “arrows”—monetary easing, fiscal stimulus, and structural reform. Since the high fiscal deficit limits the amount of fiscal stimulus, and structural reform is a gradual process, the centrepiece of Abenomics has therefore been the aggressive monetary easing carried out by the BOJ. In April 2013, the BOJ committed to double the monetary base and began an open-ended purchase of assets, including Japanese government bonds (JGBs), exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs), in a bid to achieve a 2% inflation target.

Abenomics has had some initial success, as the monetary policy measures boosted consumer and investor confidence and the stock market. The Tokyo Stock Price Index (TOPIX) rose by 51% in 2013, and a further 8% in 2014, alongside an increase in the aggregate stock holdings of households. The economy expanded by 1.6% in 2013, nearly twice the average growth rate in 2000–12. Headline and core CPI inflation turned positive in June 2013 and rose further to 1.6% and 1.3% y-o-y, respectively, in December. More recently, growth has slowed largely on account of the consumption tax-induced weakness in domestic demand, while inflation has fallen as well due to the decline in global oil prices.

To what extent are the higher growth and inflation outcomes in the earlier phase of Abenomics attributable to expansionary monetary policy? Hausman and Wieland (2014) provided a preliminary evaluation using a variety of approaches, and showed that Abenomics could have boosted growth in 2013 by 0.9% to 1.8% points, while monetary easing alone could have contributed up to 1% point, mainly through positive effects on private consumption. According to the IMF (2013), wealth effects lifted private consumption and output by 0.3% and 0.2% point, respectively. However, the increase in consumption might be limited to higher-income households, as equity holdings tend to be concentrated in these households. Moreover, Saiki and Frost (2014) have also pointed out that monetary easing was likely to have widened income inequality through the portfolio channel.

This Box examines the effects of Abenomics on household consumption in Japan, allowing for the differential wealth effects on households with varying income levels. This is done by estimating consumption functions for different groups of households, after taking into account the effects of population ageing on life-cycle consumption. In this study, a quarterly panel data set that includes information on disposable income, household consumption expenditure and the types of financial assets held by households is utilised.^{2/} The cross-sections of the panel are split into five quintiles according to the annual income of the household, while the time series dimension covers the period from Q2 2002 to Q3 2014. The data is seasonally adjusted using the X-12 method.

Empirical Model and Long-run Estimation Results

To investigate the extent to which wealth effects influenced the consumption of households in Japan, an augmented life-cycle specification is adopted:

$$\ln C_{it} = \alpha + \beta_1 \ln Y_{it} + \beta_2 \ln W_{it} + \beta_3 \ln R_t + \beta_4 \ln Age_{it} + \varepsilon_{it} \quad (1)$$

^{1/} This Box was contributed by Kei Fujimoto, who is on secondment to MAS from the BOJ. None of the views expressed here should be attributed to the BOJ.

^{2/} The data is obtained from the Family Income and Expenditure Survey (FIES), which has been made available by Japan’s Ministry of International Affairs and Communication at <http://www.stat.go.jp/english/data/kakei/index.htm>.

where $i = 1, \dots, 5$ indexes the income quintile, C is household consumption expenditure, Y is household income, W is household holdings of financial assets, R is the real interest rate, and ε is a classical error term.^{3/} All variables are expressed in real terms, after being deflated by the headline CPI. Age is a variable that records the age of the household head and is included to capture the impact of demographic change on household spending. This consumption function is similar to, albeit more richly specified than, the function used in Horioka (1996) to study the impact of net capital gains on household consumption expenditure in Japan.

Unlike most studies, which use aggregate financial holdings, the FIES data set enables Japanese households' asset holdings to be broken down into the following categories: (1) securities; (2) equities, including investment trusts (hereafter equities); and (3) public and private corporate bonds, including bond investment trusts (hereafter bonds).^{4/}

As a preliminary step, panel unit root tests were applied to all the variables. The results of the ADF-Fisher χ^2 test suggest that C , Y , Age and bond holdings are $I(1)$, while securities and equity holdings are $I(0)$. Although the null hypothesis of a unit root in R cannot be rejected at the 10% significance level for both its levels and first differences, the Im *et al.* (2003) test strongly suggests that it is at most $I(1)$. Thus, R is assumed to be $I(1)$ in this analysis.

Taking into account the degree of integration of the variables, tests for cointegration among C , Y , R , Age and the components of W were undertaken, one at a time. The results of the Engle-Granger test, based on Pedroni (1999, 2004), rejected the null hypothesis of no cointegration at the 1% level for all components of W , suggesting that a long-run equilibrium relationship exists among these variables, regardless of the type of financial asset included. The corresponding cointegrating vectors obtained by the method of Dynamic Ordinary Least Squares (DOLS) on the pooled data indicate that capital gains from securities and equities appreciation lead to increases in consumption expenditure in the long run. (Table A1) Furthermore, the Age variable is statistically significant at the 1% level, suggesting that population ageing causes a structural change in household consumption behaviour.

Table A1
Estimates of the Cointegrating Vectors

	$W = \text{Securities}$	$W = \text{Equities}$	$W = \text{Bonds}$
Y	0.84***	0.85***	0.76***
R	-0.01***	-0.01***	-0.01***
W	0.02*	0.02*	0.01
Age	0.44***	0.43***	0.43***
Adjusted R^2	0.99	0.99	0.99
No. of Observations	246	246	246

* Statistically significant at the 10% level.

*** Statistically significant at the 1% level.

Error-correction Model

Based on the long-run findings above, the following error-correction model (ECM) is estimated to examine the impact of short-term fluctuations in each of the determinants of household consumption:

$$\Delta \ln C_{it} = \alpha_i^* + \beta_1 \Delta \ln Y_{it} + \sum_{i=1}^5 \beta_{2i} \Delta \ln W_{it} \times d_i + \beta_3 \Delta \ln R_t + \beta_4 \Delta \ln Age_{it} + \delta Tax_t + \gamma EC_{t-1} + \varepsilon_{it} \quad (2)$$

^{3/} The real interest rate is an ex-post measure derived by deflating the three-month Tokyo Interbank Offered Rate, or TIBOR, by the headline CPI.

^{4/} Equities and bonds are subsets of total securities holdings.

where α^* are fixed effects, d_i denotes a dummy variable for the i -th quintile of income earners, and EC_{t-1} is the error-correction term derived from the residuals of the relevant DOLS regression. For example, if securities were the wealth component in the model, then the estimates in the second column of Table A1 would be used. In addition, Tax is a dummy variable which captures the negative impact of the consumption tax hike implemented in April 2014, and is operative for the two quarters Q2–Q3 2014.

The ECM results are shown in Table A2 below.^{5/} The estimated coefficients on Y , R , Tax and the error-correction term are all statistically significant and have the correct signs, and their magnitudes are similar regardless of the type of household financial wealth included. In comparison, Age is insignificant, implying that it does not have much short-term impact on consumption. Interestingly, fluctuations in the value of household security holdings are only significant for the highest income quintile (Group 5), with no discernible impact on the rest. This can largely be attributed to differences in the extent of asset ownership between income groups. As Chart A1 shows, households in the highest quintile hold significantly larger amounts of financial assets, which enhance the wealth effects from asset appreciation. Further, a small but statistically significant effect of changes in stock market valuation is also detected for the second quintile (Group 2), while no wealth effects from bond holdings are significant for all groups.

Table A2
ECM Estimation Results

Variables	W = Securities		W = Equities		W = Bonds	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
<i>Constant</i>	-1.06***	-11.89	-1.05***	-12.17	-0.78***	-11.76
<i>EC(-1)</i>	-0.71***	-11.90	-0.72***	-12.18	-0.71***	-11.76
ΔY	0.44***	6.95	0.45***	7.14	0.41***	6.58
ΔR	-0.03***	-3.20	-0.03***	-3.25	-0.02***	-2.87
ΔW	-0.02	-0.79	-0.02	-1.14	0.00	0.47
$\Delta W \times \text{Group 1}$ (Lowest Income Group)	0.03	1.11	0.02	1.19	0.01	0.38
$\Delta W \times \text{Group 2}$	0.02	0.94	0.03*	1.82	-0.01	-0.45
$\Delta W \times \text{Group 4}$	0.01	0.29	0.02	0.66	0.00	-0.25
$\Delta W \times \text{Group 5}$ (Highest Income Group)	0.08**	2.47	0.07**	2.53	0.02	1.53
ΔAge	0.21	1.44	0.20	1.42	0.19	1.26
<i>Tax</i>	-0.02***	-3.11	-0.02***	-3.45	-0.02***	-3.32
Adjusted R^2	0.43		0.43		0.42	
F-statistic	14.29		14.68		14.05	
Durbin-Watson Statistic	2.11		2.10		2.06	
No. of Observations	250		250		250	

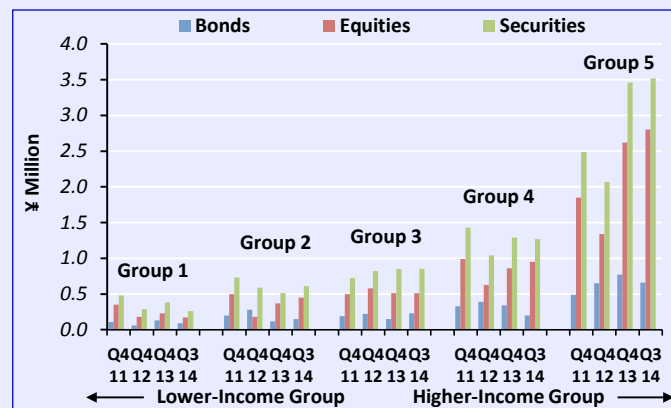
* Statistically significant at the 10% level.

** Statistically significant at the 5% level.

*** Statistically significant at the 1% level.

^{5/} F and χ^2 tests validated the inclusion of fixed effects in the ECM. Wealth effects on the different income quintiles are measured with respect to Group 3.

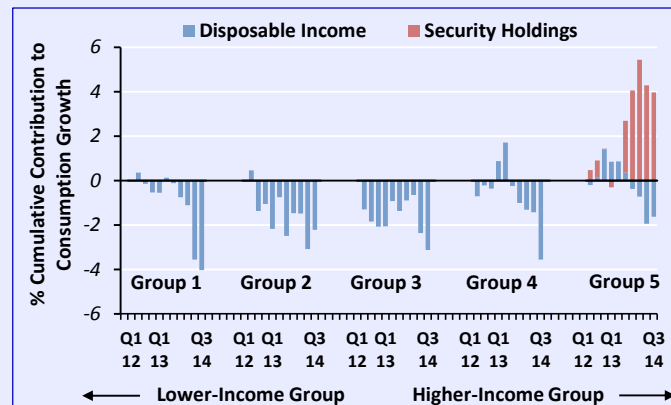
Chart A1
Household Ownership of Financial Assets by Quintile of Annual Income



Source: Japanese Ministry of International Affairs and Communication

The estimated wealth effects allow the impact of recent stock price increases on Japanese household consumption to be computed. Chart A2 shows the cumulative contributions of changes in disposable income and security holdings to household consumption growth since Q1 2012 and it suggests that, whereas a declining trend in real disposable income has weighed on the consumption of all income groups in recent quarters, the increase in the value of equities has more than offset the fall in income for the highest income-earners.^{6/}

Chart A2
Cumulative Contributions of Stock Price Increases to Household Consumption, by Income Group



Source: Japanese Ministry of International Affairs and Communication

Sum-up

This Box has estimated the wealth effects from the monetary stimulus implemented under Abenomics using cointegration and ECM analysis. To take account of differences between income groups, households in Japan were split into five quintiles using data from an extensive government survey. It is found that consumption has a long-run relationship with financial asset appreciation, disposable income and the real interest rate. Consumption also depends in the long run on population ageing, suggesting that demographic changes can cause a corresponding structural change in household consumption behaviour. Finally, the results from the ECM show that, while the rise in the value of security holdings may have boosted household consumption in the highest-income group, there is little impact on other groups.

^{6/} Lise *et al.* (2014) show that inequality in household earnings increased during the period 1981–2008. Inequality in consumption also worsened over the same period, though to a lesser extent.

Positive and significant wealth effects from equity holdings imply that a further rise in stock prices alongside favourable expectations of economic growth may only lift consumption of higher-income households in Japan. For wealth effects to be more pervasive, policies should be aimed at promoting greater ownership of securities, instead of bank deposits. In this regard, Nippon Individual Savings Accounts, or NISAs, which were introduced in January 2014 to encourage Japanese households to invest in financial assets through a waiver on taxes, could help to increase household security holdings. The findings also suggest that real wage increases are even more crucial for raising consumption, as the fall in real disposable incomes due to higher inflation in 2013 and 2014 actually depressed household consumption. Hence, the recent nominal wage increases coupled with lower oil prices can be expected to provide stronger support to aggregate household consumption.

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