

UK Economics Weekly

QE Restarts, and More to Come

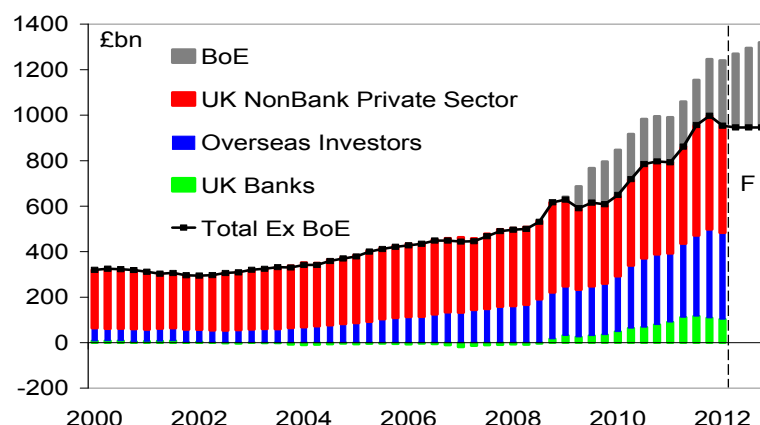
- The MPC's decision to restart QE is the logical follow-on from the Committee's abrupt recent change of tone, with official acceptance that the hoped-for economic recovery is not happening. The latest data and surveys suggest the economy remains sluggish, with falling corporate profitability and rising bank lending rates.
- We do not regard the continued expansion of QE as a sign that the MPC and UK government are engaged in financial repression to return the UK to fiscal sustainability (ie push gilt yields down through official purchases and forced purchases by banks, and then create a surge in inflation to reduce debt/GDP ratios). The MPC are doing QE in response to economic weakness and risks that inflation will undershoot, while the FSA are easing regulatory pressures on banks to hold gilts. The scale of QE is really quite modest, roughly keeping pace with gilt issuance, and it will give only a limited stimulus to the economy. But, every little helps given the depressed state of the economy. We continue to expect that the MPC will expand QE markedly further, reaching about £500bn, and this is likely to come alongside liquidity easing, credit easing and -- if the EMU crisis remains severe or escalates — emergency tax cuts to slow the planned fiscal tightening for 2013.

Figure 1. Citigroup Market Forecasts

	Base Rate	QE Target	10 Year Yield	Spread vs Bunds	\$/£	£/€
End 2012	0.50	£450bn	1.65	40bp	1.52	0.80
End 2013	0.50	£500bn	2.50	50bp	1.55	0.79

Source: Citi Research

Figure 2. UK — Distribution of Gilt Holdings, 2000-12



Sources: ONS and Citi Research

Michael Saunders

+44-20-7986-3299

michael.saunders@citi.com

Ann O'Kelly

+44-20-7986-3297

ann.okelly@citi.com

For all distribution enquiries regarding Citi Economics research, including access via Citi websites and via third party distribution channels, please contact michael.saunders@citi.com or jan.maguire@citi.com

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Citi Research is a division of Citigroup Global Markets Inc. (the "Firm"), which does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

QE Restarts, and More to Come

The MPC's decision to resume QE is the logical follow-through from their recent change in tone

The MPC's decision to restart QE is the logical follow-on from the Committee's abrupt change of tone in recent weeks, with the Governor's speech and June MPC minutes signalling that the MPC acknowledge that the economic outlook is far weaker than the Committee expected in May. The decision to expand QE by only £50bn (we had expected £75bn) may simply reflect worries that a larger amount of QE could markedly distort markets, given the likelihood that gilt market liquidity will fall sharply during the Olympics period. We continue to expect that the MPC will expand QE a lot further, reaching about £500bn, and this is likely to come alongside liquidity easing, credit easing and – if the EMU crisis remains severe or escalates — emergency tax cuts to slow the planned fiscal tightening for 2013.

Business surveys have worsened, and the economy faces powerful headwinds

The PMI surveys highlight the economy's lack of momentum, and easing inflation pressures. Moreover, the economy faces powerful headwinds from private sector deleveraging, poor credit availability, tight fiscal policy and the EMU crisis, highlighted in recent data on corporate sector finances and banks' interest rates.

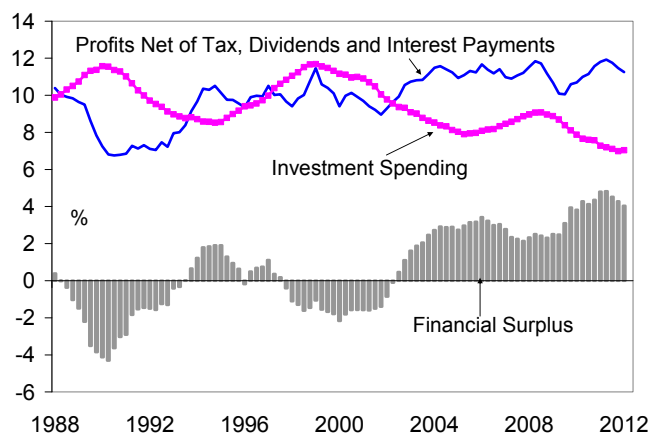
Corporate profitability is worsening...

The ONS report that the net rate of return on capital for UK nonoil non-financial companies edged down to 11.0% in Q1 from 11.1% in Q4-11, and the latest figure is the lowest since H1-10. With the cost of capital rising over the last year (eg the earnings yield on UK equities is up from 6.5% in Q1-11 to 9.4% in Q1-12 and 9.9% in Q2-12), in our view it is not surprising that business investment remains sluggish.

...and the large corporate sector financial surplus probably is not a precursor to an investment boom

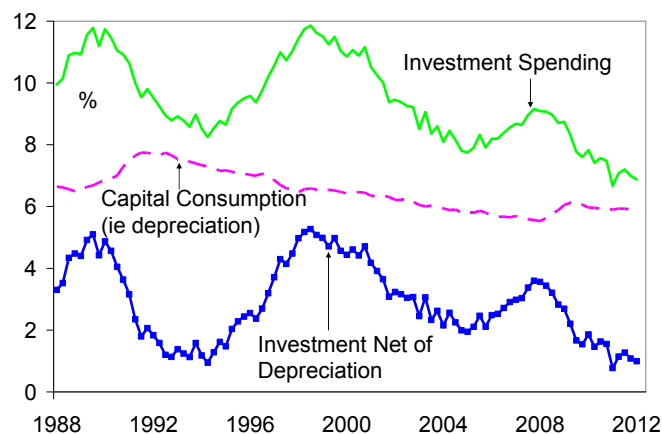
To be sure, the corporate sector continues to run a large financial surplus (ie the gap between retained profits earned in the UK and investment in the UK), which reached 4.9% of GDP in Q1-2012, up from 4.4% of GDP in 2010 and 4.3% of GDP in 2011. Indeed, corporate sector surpluses of recent years have been the highest of recent decades. However, we disagree with the notion that the large corporate surpluses are likely to trigger a surge in business investment in the UK. Rather, in our view, it would be more accurate to say that the large corporate sector surpluses have been caused by the collapse of business investment in the UK, and these surpluses are being used to finance expansion overseas.

Figure 3. UK — NonFinancial Corporate Sector Profits, Investment and Financial Balance, 4-Quarter Average as Pct of GDP, 1988-2012



Sources: ONS and Citi Research

Figure 4. UK — NonFinancial Corporate Sector Investment, Depreciation and Net Investment, Pct of GDP, 1988-2012



Sources: ONS and Citi Research

Corporate profits have been squeezed...

■ Unlike the US, aggregate corporate profits (ie the share of gross trading profits for nonoil non-financial companies in GDP) are relatively low. Even with savings from low interest rates and lower corporate tax payments, retained profits for

non-financial companies averaged 11.2% of GDP in the last four quarters, which is similar to the levels of recent years.

...and the large corporate sector financial surpluses chiefly reflect the collapse in business investment in the UK...

■ Business investment by non-financial companies has fallen from 11.7% of GDP in 1998 to just 6.9% of GDP in Q1-2012, only slightly up from the record low (6.7% of GDP) in Q1-2011 and the second lowest since data began in 1987. Indeed, net of depreciation, business investment (by nonfinancial companies) has fallen from 3.6% of GDP in Q1-08 to just 1.0% of GDP in Q1-12.

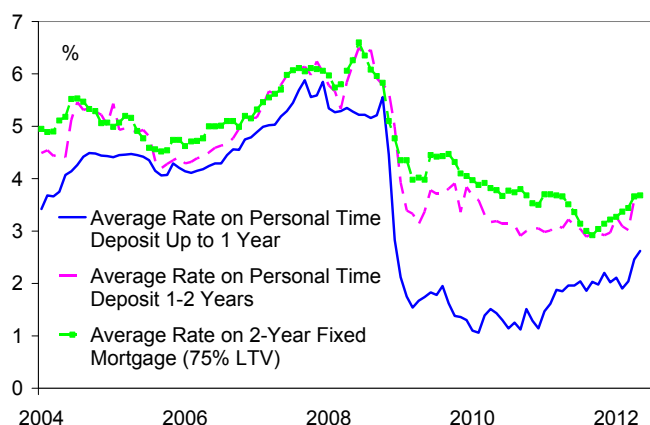
...and these funds are being recycled into investment overseas

■ The financial surplus created by low investment in the UK is not accumulating in the UK, but already has gone overseas. Since the start of 2007, the UK corporate sector has run a cumulative financial surplus of £271bn. Over that period, sterling deposits at UK banks have risen by £20.9bn, while FX deposits at UK banks have risen by £12.0bn, deposits at foreign banks have risen by £77.4bn and purchases of foreign equities (ie external M&A) have totalled £253bn. In aggregate, the UK is being used as a sort of “cash-cow”, generating the cash to fund expansion overseas in higher growth regions. This is likely to continue given the disparity between profit growth in the UK and opportunities elsewhere.

The BoE report that retail interest rates continue to rise, reflected in rising mortgage rates and worsening credit availability

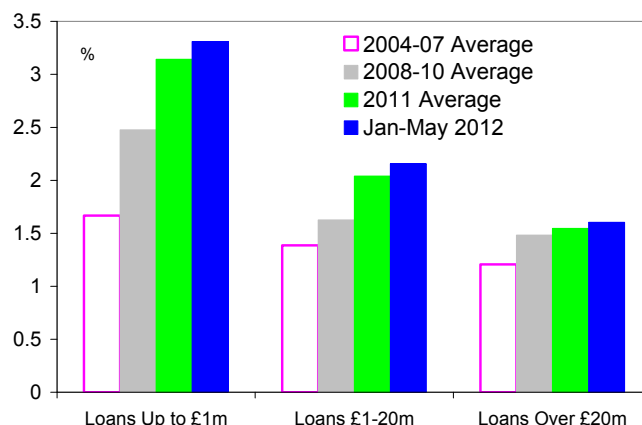
Moreover, the BoE report that retail deposit rates continue to trend higher, as banks scramble to cut reliance on wholesale funding. In turn, this is being reflected in rising interest rates on mortgages and business loans, with widening spreads for small business loans. Interest rates on retail time deposits (up to 1 year, 1-2 years) have risen by 60-70bp from their late-2011 levels, forcing a similar rise in the average interest rate on 2-year fixed mortgages. At the same time, the BoE report that the average spread (over Bank Rate) on new business loans up to £1m is up to 3.3% on average so far this year from 3.1% in 2011, 2.5% in 2008-10 and the pre-crisis average of 1.7%. Spreads on larger loans (over £20m) have risen far less (to 1.6% so far this year versus 1.2% on average in 2004-07), implying a marked deterioration in credit availability for smaller firms (who are likely to seek smaller loans).

Figure 5. UK — Interest Rates on Mortgages and Deposits, 2004-12



Sources: BoE and Citi Research

Figure 6. UK — Spreads (Over Bank Rate) On Business Loans, 2004-12



Source: Citi Research

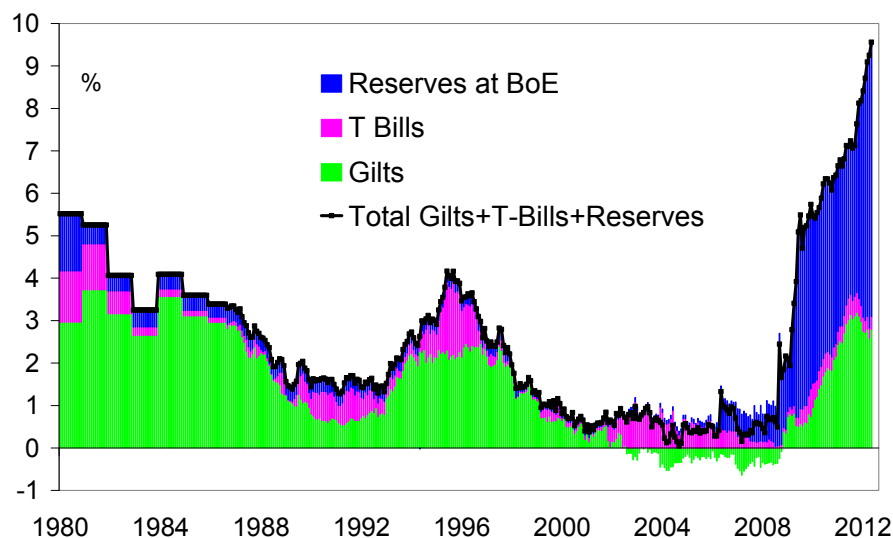
Financial Repression or Monetary Policy?

Is the UK pursuing monetary policy or financial repression?

We do not regard the continued expansion of QE as a sign that the MPC and UK government are engaged in a deliberate policy of financial repression as a means of returning the UK to fiscal sustainability (ie push gilt yields down through official purchases and forced purchases by banks, and then create a sharp rise in inflation

to reduce debt/GDP ratios)¹. To be sure, the current position has symptoms that hint at repression. For example, the BoE now holds about 26% of the gilt market (including index-linked) and this will rise to about 30% of the total by yearend. Moreover, with the positive yield curve and regulatory pressure, UK banks have raised their holdings of UK gilts and treasury bills from -£5.7bn in mid-07 (ie a net short position of £5.7bn) to £115.4bn in May this year. Indeed, UK banks' holdings of high-quality liquid assets are the highest, as a share of their total sterling assets, for over 40 years.

Figure 7. UK — Banks' Holdings of High Quality Sterling Liquid Assets as Pct Total Sterling Assets, 1980-2012



Sources: BoE and Citi Research

UK policy is being driven by the aim of reviving the economy rather than propping up the fiscal position

However, in our view QE and the regulatory-driven rise in banks' gilt holdings reflect policies aimed at promoting broad economic stability rather than seeking an inflationary short-cut to fiscal sustainability. The resumption of QE has been driven by the weakness of the economy and risks that inflation ultimately will undershoot the 2% target. In our view, this is a natural extension of normal monetary policy – aiming to cut riskless interest rates along the curve – now that Bank Rate is at zero. We trust the MPC's commitment to the inflation target will ensure they reverse QE and raise Bank Rate (ie tighten monetary conditions) if and when genuine upside inflation risks materialize. In addition, the FSA now are easing banks' liquidity requirements to try and ensure that they lend to the private sector rather than hoard ever-higher amounts of liquid assets. This will probably stem the rise in gilt holdings among private sector banks. These are not the actions of a system intent on financial repression.

The sharp rise in gilt holdings among overseas investors is not driven by UK financial repression

Indeed, in cash terms, gilt purchases by overseas investors have been larger than those by UK banks, with gilt holdings by overseas investors rising from £53bn in Q1-02 to £133bn in Q1-07 and £380bn in Q1-12. And while many overseas banks do face regulatory pressure to hold more high-quality government debt, one could not really regard overseas investors as being repressed into buying gilts, given the global alternatives.

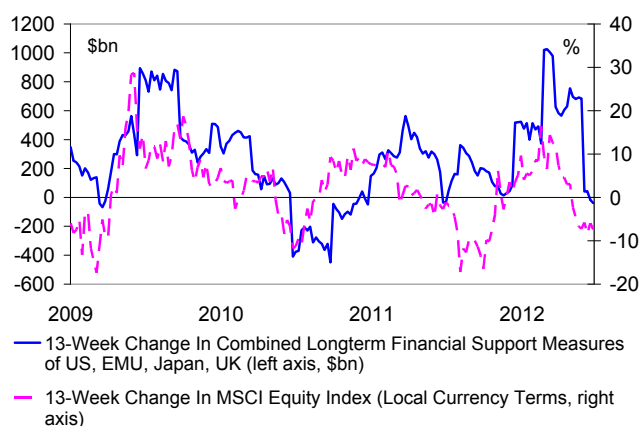
¹ See "The Liquidation of Government Debt", Reinhart and Sbrancia, March 2011, NBER.

What next?

QE probably delivers a modest net stimulus...

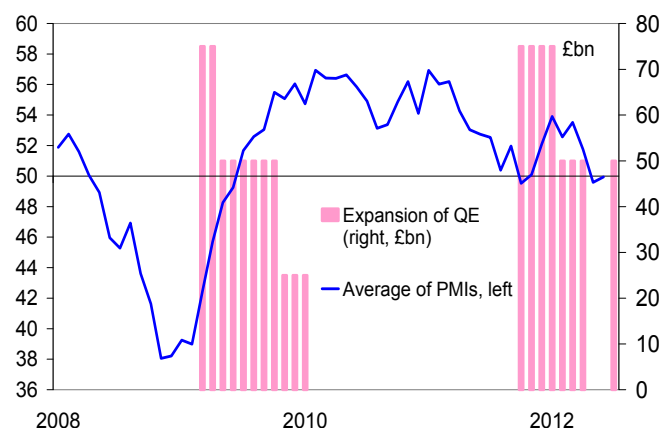
We still consider QE to be a modestly effective form of stimulus, and there is no convincing evidence that it has suffered from diminishing returns so far. The prior expansions of QE by the BoE, alongside other central balance sheet measures, were both associated with rallies in risk assets, with financial markets often anticipating central banks and hence moving slightly ahead of them. Moreover, both prior QE programmes were closely followed by a bounce in UK business surveys, evident in for example the PMIs, with a loss of momentum as QE ended. The effectiveness of QE could be enhanced if (as has been announced in Sweden, the Netherlands, Denmark and US) the Pension Regulator were to allow defined benefit pension schemes more freedom to use a non-gilt interest rate to discount pension liabilities, hence reducing the extent to which the QE-induced drop in gilt yields raises pension deficits and hence creates pressure for extra company contributions to pension funds. But even without this change, there probably is a net benefit from QE expansion, although it is modest.

Figure 8. UK — Central Bank Balance Sheet Measures and Risk Assets, 2009-12



Sources: Datastream and Citi Research

Figure 9. UK — PMI Surveys and QE, 2008-12



Note: We show the average of the manufacturing and service sector PMIs.
Sources: Haver and Citi Research

...but more will probably be needed, alongside liquidity easing, credit easing – and perhaps temporary fiscal loosening as well

Nevertheless, given the depressed state of the economy, we believe that a broad range of further stimulus measures is justified in order to reduce risks of a medium-term inflation undershoot and the waste of resources that comes from prolonged economic weakness. The MPC took care to note that the £50bn extra QE is needed even with liquidity easing and credit easing. Unless those measures – surprisingly – produce a sharp acceleration in economic growth or the EMU crisis fades, we suspect that further stimulus will be needed and anticipate that the MPC will expand QE further after this £50bn programme is complete. Indeed, if the drag on the UK from the EMU crisis remains severe, then temporary tax cuts (or extra public investment) may be on the agenda for the Autumn Statement, in order to soften the heavy fiscal austerity (about 1½% of GDP) that is planned for next year.

Economic Indicators

Tue 10 Jul	Industrial Production (May) Manufacturing Output (May)	Forecast: 0.1% MoM, -1.7% YoY Forecast: 0.5% MoM, -1.3% YoY	Prior: 0.0% MoM, -1.0% YoY Prior: -0.7% MoM, -0.3% YoY
The April data showed a sharp drop in manufacturing output (down 0.7% MoM) with industrial production flat because of a sharp rise in utilities output (linked to the unusually cold and wet weather). For the May data, we expect both effects to unwind, with manufacturing output rebounding 0.5% MoM and a sharp drop in utilities output. The overall effect, we expect, will be to leave industrial production roughly flat MoM.			
Tue 10 Jul	Trade Balance – Goods & Services (May)	Forecast: £-3.5 billion	Prior: £-4.4 billion
The trade deficit widened markedly in April, with exports to many regions falling back and, while we expect that exports to the euro area will suffer from the EMU crisis, we look for exports to other regions to regain a bit of lost ground this month. Nevertheless, the trade deficit is not improving, and the UK's ability to achieve export-led growth is being blocked by the EMU crisis.			
Tue 17 Jul	Consumer Prices (Jun) CPI Ex Food, Drink, Tobacco, Energy (Jun) Retail Prices (Jun) RPIX – Excludes Mortgages (Jun)	Forecast: 0.0% MoM, 2.8% YoY Forecast: 0.1% MoM, 2.6% YoY Forecast: 0.1% MoM, 3.1% YoY Forecast: 0.1% MoM, 3.2% YoY	Prior: -0.1% MoM, 2.8% YoY Prior: 0.0% MoM, 2.2% YoY Prior: 0.0% MoM, 3.1% YoY Prior: 0.0% MoM, 3.1% YoY
A further drop in petrol prices probably will keep the CPI roughly unchanged in June, despite adverse base effects from the very weak CPI of a year ago. The CPI fell 0.1% MoM in June 2012, the weakest June reading since 2003. CPI inflation is likely to fall further in coming months.			
Wed 18 Jul	Claimant Count Unemployment (Jun) LFS Unemployment (Mar-May)	Forecast: +5,000 MoM, 4.9% Rate Forecast: -70,000 QoQ, 8.1% Rate	Prior: +8,100 MoM, 4.9% Rate Prior: -51,000 QoQ, 8.2% Rate
The claimant count jobless total ticked up last month after two months of declines, and probably will rise again this month given the recent weakness in the economy. The LFS total, however, probably will edge down, because it is a three-month average and hence more of a lagging measure – it will continue to benefit from the lower jobless totals in March and April.			
Thu 19 Jul	Retail Sales Volumes (Jun)	Forecast: -0.4% MoM, 1.3% YoY	Prior: 1.4% MoM, 2.4% YoY
There are conflicting signals for May retail sales. On one side, spending probably was boosted around the Queen's Diamond Jubilee celebrations in early June, but at the same time the relatively wet weather (wettest June for many decades) probably also hit sales and some fall-back is likely after the weather-related boost in May (which was relatively warm). On balance we go for a small drop in sales, but attach high uncertainty to this forecast.			
Fri 20 Jul	Public Sector Net Borrowing (Jun) (Figures Exclude Costs of Financial Intervention)	Forecast: £13.1 bn deficit, £13.5 billion deficit fiscal year to date Year Ago: £13.1 bn deficit, £37.6 billion deficit fiscal year to date	
The fiscal deficit is likely to be similar to a year ago, with revenues hit by the economic slowdown. Over the first two months of the fiscal year, the deficit fell by £24bn from a year earlier but this is accounted for by the shift of assets from the pension fund state-owned postal service, which cut the April deficit by £28bn. The underlying fiscal position has worsened slightly so far this year.			

Accessing Citi Economic Research

We want to highlight to you that our research is also available for your convenience through the following research distribution providers:

- Bloomberg using CTIR<GO>
- FactSet
- Thomson Reuters
- TheMarkets.com from Capital IQ

You are automatically able to view Citi research if you have entitlement on one of these systems. If you do not currently have Citi entitlement on these systems, please contact your provider representative to request access. These services are available to you in addition to Citi website access and research email services you may already receive from Citi directly.

If you have any questions or we can be of further assistance please do not hesitate to contact us.

Economic Calendar, 2 July — 20 July 2012

2 July	3 July	4 July	5 July	6 July
Manufacturing PMI (Jun) May 45.9 Jun 48.6	Personal Borrowing (May) Consumer Credit (May) Apr £0.4bn MoM, 2.2% YoY May £0.7bn, 2.4% YoY Mortgage Approvals for House Purchase (May) Apr 51,627 MoM, 12.3% YoY May 51,098 MoM, 9.8% YoY	Services PMI (Jun) May 53.3 Jun 51.3 Profitability of UK Companies (Q1) BoE Housing Equity Withdrawal (Q1) Q4 £-8.6bn Q1 £-8.8bn MPC Meeting Starts Riksbank: Rates Unchanged at 1.50%	Halifax House Prices (Jun) May 0.4% MoM, -0.3% YoY Jun 1.0% MoM, -0.2% YoY MPC Meeting Ends: £50bn QE Announced ECB Meeting: Refi Rate cut 25bp to 0.75%	Producer Input Prices (Jun) May -2.6% MoM, 0.0% YoY Jun -2.2% MoM, -2.3% YoY Prod. Output Prices (Jun) May -0.2% MoM, 2.9% YoY Jun -0.4% MoM, 2.3% YoY Excluding Tax (Jun) May -0.2% MoM, 2.7% YoY Jun -0.5% MoM, 1.9% YoY Ex Food, Drink, Tobacco And Energy (Jun) May 0.2% MoM, 2.3% YoY Jun -0.2% MoM, 2.0% YoY Record of Financial Policy Committee Mtg (Jun 22)
9 July	10 July	11 July	12 July	13 July
BoE's Tucker to testify to Treasury Select Committee Re Libor (16:30) Eurogroup Meeting of EA Finance Ministers (Brussels)	Industrial Production (May) Apr 0.0% MoM, -1.0% YoY MayE 0.1% MoM, -1.7% YoY Manufacturing Output (May) Apr -0.7% MoM, -0.3% YoY MayE 0.5% MoM, -1.3% YoY Trade Balance – Goods & Services (May) Apr £4.4bn MayE £-3.5bn EcoFin Meeting of EU-27 Finance Ministers (Brussels)			Construction Output (May)
16 July	17 July	18 July	19 July	20 July
	Consumer Prices (Jun) May -0.1% MoM, 2.8% YoY JunE 0.0% MoM, 2.8% YoY CPI Ex Food, Drink, Tobacco, Energy (Jun) May 0.0% MoM, 2.2% YoY JunE 0.1% MoM, 2.6% YoY Retail Prices (Jun) May 0.0% MoM, 3.1% YoY JunE 0.1% MoM, 3.1% YoY RPIX – Ex Mortgages (Jun) May 0.0% MoM, 3.1% YoY JunE 0.1% MoM, 3.2% YoY Bank of Canada Interest Rate Announcement (14:00)	Claimant Count Unemployment (Jun) May +8,100 MoM, 4.9% Rate JunE +5,000 MoM, 4.9% Rate LFS Unemployment't (Mar-May) Feb-Apr -51K QoQ Mar-MayE -70K QoQ LFS Unemployment Rate Feb-Apr 8.2% Rate Mar-MayE 8.1% Rate MPC Minutes (5 Jul) Agents' Summary of Business Conditions (Jul)	Retail Sales Volumes (Jun) May 1.4% MoM, 2.4% YoY JunE -0.4% MoM, 1.3% YoY	Public Sector Net Borrowing – Ex Costs of Financial Intervention (Jun) Jun 11 £13.1bn Deficit Jun 12E £13.1bn Deficit Fiscal Year To Date Apr-Jun 11 £37.6bn Deficit Apr-Jun 12E £13.5bn Deficit

E Citi estimate. B Billion. P Provisional. R Revised. Note: All data are released at 9.30 a.m., except those marked otherwise.

Sources: BoE, CBI, CML, ONS, national sources and Citi Research.

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Research product ("the Product"), please contact Citi Research, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

NON-US RESEARCH ANALYST DISCLOSURES

Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Ltd

Michael Saunders; Ann O'Kelly

OTHER DISCLOSURES

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Research does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of Citi Research to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Research research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to Citi Research research reports.

Important disclosure regarding the relationship between the companies that are the subject of this Citi Research research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.

For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

This Citi Research research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of Citi Research. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by.

The Product is made available in **Australia** through Citi Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A. Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 110-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. <http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd=A03030&pageDiv=02>. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) ("CGMM") to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ('FAA') through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the

meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. ("CGMSPL"), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold/Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E.**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different Citi Research ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority. Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to Citi Research's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product. With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs), Citi Research concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual Citi Research analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. Citi Research simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by Citi Research analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.

Citi Research product may source data from dataCentral. dataCentral is a Citi Research proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

© 2012 Citigroup Global Markets Inc. Citi Research is a division of Citigroup Global Markets Inc. Citi and Citi with Arc Design are trademarks and service marks of Citigroup Inc. and its affiliates and are used and registered throughout the world. All rights reserved. Any unauthorized use, duplication, redistribution or disclosure of this report (the "Product"), including, but not limited to, redistribution of the Product by electronic mail, posting of the Product on a website or page, and/or providing to a third party a link to the Product, is prohibited by law and will result in prosecution. The information contained in the Product is intended solely for the recipient and may not be further distributed by the recipient to any third party. Where included in this report, MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are services marks of MSCI and its affiliates. The Firm accepts no liability whatsoever for the actions of third parties. The Product may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the Product refers to website material of the Firm, the Firm has not reviewed the linked site. Equally, except to the extent to which the Product refers to website material of the Firm, the Firm takes no responsibility for, and makes no representations or warranties whatsoever as to, the data and information contained therein. Such address or hyperlink (including addresses or hyperlinks to website material of the Firm) is provided solely for your convenience and information and the content of the linked site does not in anyway form part of this document. Accessing such website or following such link through the Product or the website of the Firm shall be at your own risk and the Firm shall have no liability arising out of, or in connection with, any such referenced website.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST
