

# UK Economics Weekly

## Disinflation Opens the Door to Guidance

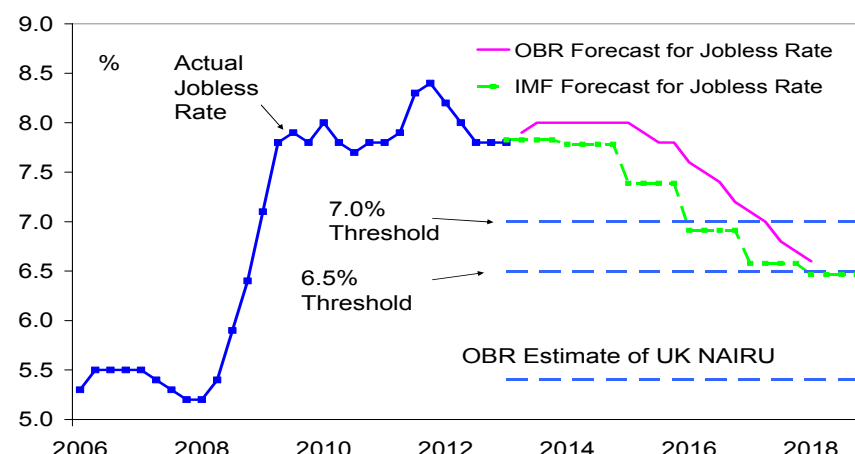
- Although headline CPI inflation (2.4% YoY in April) remains above the MPC's target, the UK's underlying inflation pressures are weak and receding. Excluding regulatory-driven increases in prices for utilities, tobacco and education, UK inflation has slowed below 1.5% YoY and is similar to the euro area pace. Wage growth is weak and, with sluggish demand, disinflationary pressures are likely to persist for a while.
- The disinflationary backdrop opens the door to further easing, and IMF comments reinforce the prospect that the focus will be on Fed-style forward guidance. We doubt that markets appreciate how powerful guidance could be in signaling that rates will be low for longer. We expect that in H2 the MPC will commit to keep rates at 0.5% at least as long as the jobless rate exceeds an intermediate threshold (probably 6.5% or 7.0%) unless the MPC's 2-3 year ahead inflation forecast rises above 2½%. The OBR and IMF do not expect that the UK jobless rate will fall to 6.5% (the threshold set in the US) until 2018. So if the MPC mimics the Fed's thresholds and publishes consensus-type unemployment forecasts, markets could reasonably conclude that the UK will probably not hike rates for five years unless the economy surprises markedly to the upside.

Figure 1. Citi Market Forecasts

|          | Base Rate | QE Target | 10 Year Yield | Spread vs. Bunds | \$/£ | £/€  |
|----------|-----------|-----------|---------------|------------------|------|------|
| End-2013 | 0.50      | £450bn    | 2.10          | 71bp             | 1.43 | 0.88 |
| Mid-2014 | 0.50      | £450bn    | 2.30          | 91bp             | 1.43 | 0.87 |

Source: Citi Research

Figure 2. UK — Actual and Forecast Jobless Rate, Compared With Possible Intermediate Thresholds, 2006-18



Note: The IMF jobless forecasts are annual. Sources: ONS, OBR, IMF 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

[Click to play](#)

Michael Saunders



### 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.

## Disinflation Opens the Door to Guidance

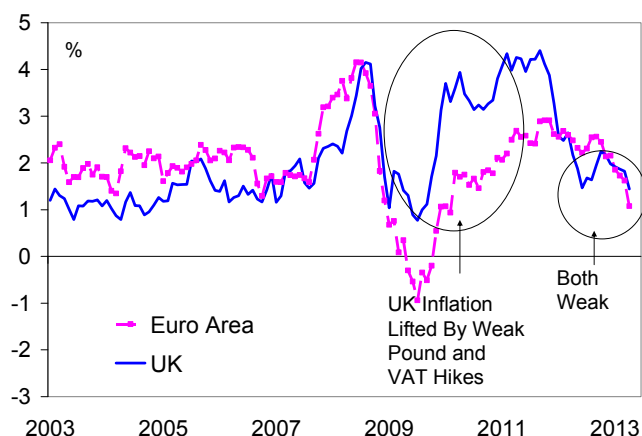
UK inflation pressures are weakening...

Although headline CPI inflation (2.4% YoY in April) remains above the MPC's target — and has been above target every month since Jan-2010 — accumulating evidence suggests that the UK's underlying inflation pressures are weak and receding.

...with inflation ex regulatory-driven items at the lowest since 2009...

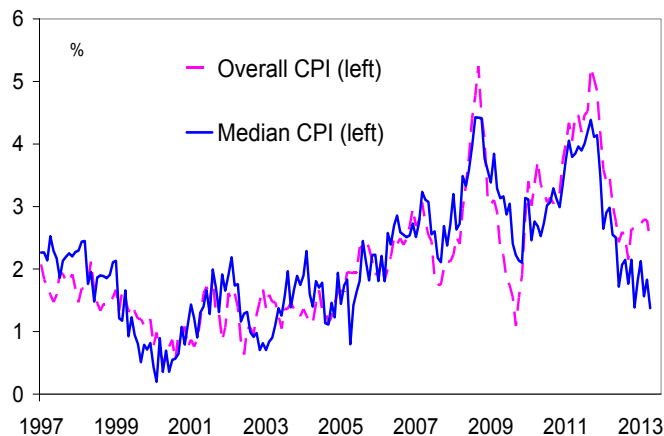
■ CPI inflation is down to 2.4% YoY even with a continued substantial lift from utilities, taxes and regulated prices. Utilities, education and tobacco have a combined weight of 14% in the CPI but, with an average inflation rate of 8.2% YoY in April, have added 1.2% to the CPI over the last year. The price hikes for these items have little or no link to demand and cost pressures in those sectors or the overall economy, but are almost totally driven by government taxes and regulations — and in effect are similar to a series of government-imposed direct tax hikes. Excluding these items, we estimate that UK CPI inflation has fallen to 1.4% YoY in April, the lowest since 2009, from 2.0% in Dec-12. The recent trend in inflation excluding utilities, tobacco and education in the UK (2.1% YoY in Q4-12, 1.9% YoY in Q1-13, 1.5% in April) is broadly similar to that in the euro area (2.2% YoY in Q4-12, 1.7% YoY in Q1-13, 1.1% YoY in April).

Figure 3. UK and Euro Area — CPI Inflation Excluding Utilities, Education and Tobacco, 2003-13



Note: We define utilities as electricity, gas, rail, post, water and sewerage, phone and dental services. Sources: Eurostat, ONS and Citi Research

Figure 4. UK — Median CPI Inflation Rate (Using 85-Item Disaggregated Split), 1997-2013



Sources: ONS and Citi Research

...even with unusual strength in food prices

■ Note that in the UK this figure still includes upward pressure from food prices, which rose 5.0% YoY in April and may well pick up a little further in coming months given base effects — but are unlikely to be a lasting source of inflation divergence versus the euro area.

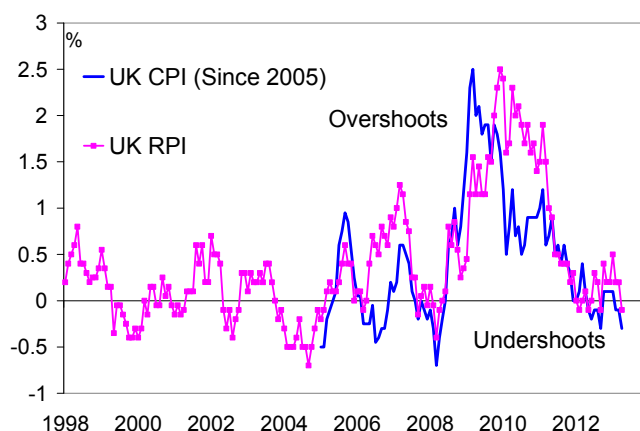
The median inflation rate among CPI items is well below 2% YoY

■ The recent decline in inflation does not just reflect one or two items. Indeed, it is far more accurate to say that CPI inflation is being kept up by disproportionately high inflation rates in a few items. Using an 85-item disaggregated split of the CPI, we estimate that the median YoY inflation rate has fallen to 1.4% YoY in April, matching Nov-12 as the lowest since 2005. The share of CPI items with a negative YoY inflation rate has risen from 15% a year ago to 26% now, while the share with a YoY inflation rate of 2% or less is up to 59% (highest since 2003) from 42% a year ago and 20% two years ago.

April Inflation was significantly below the MPC's forecast...

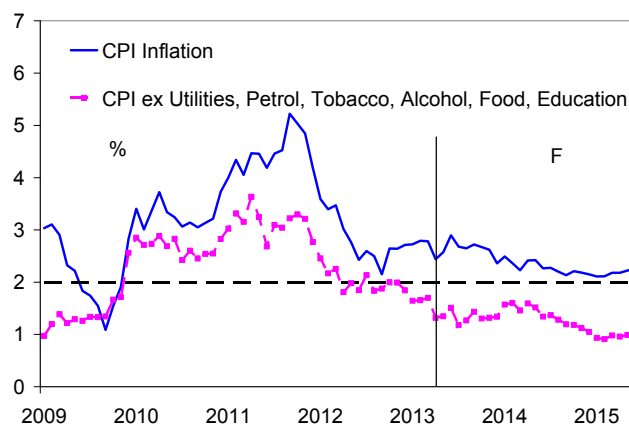
■ The April data were significantly below the BoE's forecast in the May *Inflation Report* (2.6% YoY with a margin of uncertainty of 0.1% on either side).

Figure 5. UK — 12-Month Sum of Deviation Between Inflation Outturns and Pre-Release Consensus, 1998-2013



Sources: ONS, Bloomberg and Citi Research

Figure 6. UK — CPI Inflation Data and Forecast, 2009-15



F Citi Forecast. Sources: ONS and Citi Research

...and recent inflation data also on average have slightly undershot the pre-release consensus

■ The prior tendency for UK inflation to exceed the pre-release consensus — evident in particular during 2009-12 — seems to be ending. Indeed, there has been a slight bias to inflation undershoots over the last year on both the CPI and RPI. In 2009-12, the repeated overshoots in inflation data suggested that the consensus was not allowing enough for the inflation boost from the weak pound. Now, we suspect, the slight bias to undershoots is a sign that the currency effect has faded and that background disinflationary effects are beginning to dominate.

Other data highlight the disinflationary trend...

Other data highlight the renewed disinflationary trend. Average earnings growth ex bonuses has slowed to a record low of less than 1% YoY in recent months, while producer price inflation is 1.1% YoY among both manufacturing and service sector firms, and for both sectors this is the lowest since 2009. Moreover, despite the MPC's fears that inflation expectations might be destabilised by the long period of above target inflation, YouGov reports that in practice inflation expectations among the general public have fallen in recent months<sup>1</sup>. The IMF judges that the UK has a record output gap, of about 4% of GDP. Activity data suggest that the economy remains sluggish, hence maintaining or even expanding these disinflationary pressures. For example, the split of GDP in Q1 showed weakness in investment, exports and consumer spending, while retail sales volumes in April fell 1% below the Q1 average.

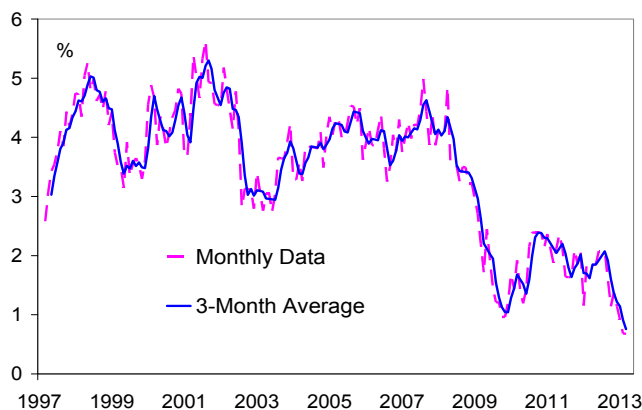
...and our inflation forecasts are a bit below consensus

Overall, we have again pulled down our inflation forecasts a little this month, cutting the 2013 average CPI inflation forecast to 2.7% from 2.9% in April and 3.1% in March<sup>2</sup>. Whereas our UK inflation forecasts in recent years have generally been above consensus, at present our forecasts are a little below consensus. For example, we expect CPI inflation to be 2.5-2.6% YoY in Q4 this year, whereas the consensus is for 2.7% YoY and the MPC expects Q4 inflation to be 2.9% YoY. We now expect the midyear peak in CPI inflation (exacerbated by base effects) will be 2.9% YoY in the June figures, whereas previously we expected the peak to exceed 3.0%. Moreover, given the considerable boost from regulatory-driven hikes in prices for utilities, tobacco and education, a CPI forecast of close to 2% YoY in the next year implies marked weakness in underlying inflation.

<sup>1</sup> See "YouGov Report Inflation Expectations Edge Down Again", Michael Saunders, 23 May 2013, Citi.

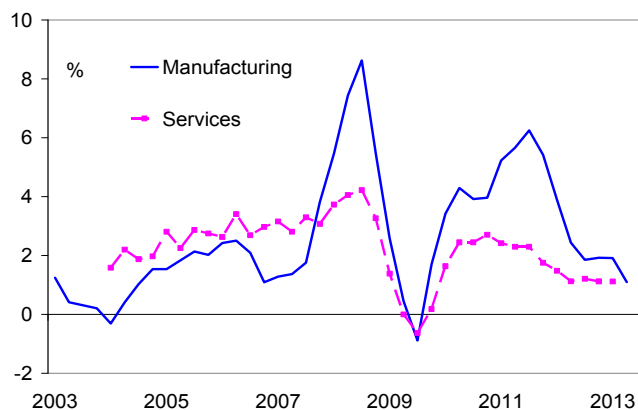
<sup>2</sup> See "Global Economic Outlook and Strategy", Willem Buiter et al, May 2013, Citi.

Figure 7. UK — Average Earnings Growth Excluding Bonuses YoY, 1997-2013



Sources: ONS and Citi Research

Figure 8. UK — Producer Price Inflation In Manufacturing and Service Sectors, YoY, 2003-13



Sources: ONS and Citi Research

**The IMF offers strong support for forward guidance as an unconventional monetary policy tool...**

We believe this disinflationary outlook opens the door to further easing, consistent with the MPC's flexible remit, which encourages the MPC to accept tradeoffs between hitting the 2% inflation target and closing the output gap. The prospect that easing will focus on forward guidance — ending the MPC's tradition of not doing guidance — has been reinforced by the IMF's strong backing for guidance as an unconventional monetary policy tool (alongside asset purchases) at the zero lower bound (ZLB)<sup>3</sup>. In particular, the IMF stresses that the stimulus from guidance is markedly enhanced when the central bank signals it will delay tightening for longer than its usual reaction function implies — for example, by committing to not hike rates even if its inflation forecast is somewhat above its target:

*“Forward guidance can also loosen monetary conditions, despite the ZLB. In its most general form, forward guidance entails managing market expectations of future policy, with explicit communication (or other information) on the central bank's reaction function and economic projections. In normal conditions, it can help fine tune monetary policy communications. At the ZLB, however, forward guidance can be used to convince markets that the central bank will keep rates low for longer (allow inflation to go higher) than consistent with its usual policy rule. If successful, this will decrease expected future nominal and real rates (flatten the yield curve), and create expectations of a stronger recovery. Of the central banks considered in this paper, both the Fed and BOJ strengthened forward guidance at the ZLB.”*

**...especially Fed-style guidance whereby the central bank precommits to hike later than implied by its normal reaction function**

The commitment to postpone tightening later than the central bank's normal reaction function would imply is a key aspect of effective guidance. The IMF report supports Fed-style guidance — which sets thresholds in terms of the jobless rate and an inflation knockout ½% above target — rather than rules based on the price level or nominal GDP path. The IMF's Article IV Report on the UK also endorses guidance: *“In addition to considering further purchases of gilts, the BoE could provide assurance to households and investors that policy rates will be kept low until the recovery reaches full momentum.”*<sup>4</sup> Notice that the IMF's suggestion is for the BoE to signal that rates will be kept low *“until the recovery reaches full momentum”*, which implies some version of Fed-style guidance linked to economic conditions rather than the time-linked guidance used by Carney at the BoC in 2009.

<sup>3</sup> See *“Unconventional Monetary Policies – Experience and Prospects”*, IMF, released 16 May 2013.

<sup>4</sup> Released 22 May 2013.

**We expect the UK will implement forward guidance in H2 this year**

As we recently discussed<sup>5</sup>, we expect that, unless the economy improves really sharply in the next few months, the MPC will adopt Fed-style guidance on rates in H2 this year, probably either at the August meeting (when the BoE will present a possible framework for guidance alongside the next *Inflation Report*) or soon after. With such guidance, the crucial issues for markets are the thresholds chosen and the timeframe over which they are likely to be hit.

**The first threshold probably will be the jobless rate, set a little above the NAIRU...**

The first threshold probably will be the jobless rate, with a threshold set a little above the NAIRU. This signals that the central bank will not tighten until a sizeable part of the output gap has been closed, but will not wait until the output gap is fully closed<sup>6</sup>. In the US, the central tendency among FOMC members is that the “longer-run normal rate of unemployment” (ie NAIRU) is 5.2%-6.0% (with a range of 5.0%-6.5%), while the CBO judges that the NAIRU is 5.5%. The Fed’s 6.5% threshold is set at about 1% above the probable NAIRU, which could be viewed as offering a margin of error over NAIRU uncertainty and also giving the central bank time to return policy to neutral before the jobless rate falls significantly below the NAIRU.

**...and most estimates suggest the UK jobless rate currently is well above the NAIRU**

In the UK, there is more uncertainty about the NAIRU level. The OBR put it at 5.4%<sup>7</sup>, and the NIESR endorses that view<sup>8</sup>. The IMF does not publish an official estimate for the UK NAIRU, but its forecasts imply it believes the jobless rate at a zero output gap (a reasonable definition of the NAIRU) is about 5½%<sup>9</sup>. The OECD judges the UK NAIRU to be 6.8%, while BoE research from about 10 years ago put the NAIRU at about 6% (and falling)<sup>10</sup>. The extreme weakness of wage growth suggests that the current jobless rate (7.8%) is well above the NAIRU. Given this, we suspect that the MPC will set an unemployment threshold of 6.5% or 7.0%. Consistent with the Fed’s approach and the IMF’s endorsement, we expect that the inflation knockout will be set at 2½% (ie the MPC commits to not hike until its forecast 2-3 years ahead exceeds 2½%, which is ½% above the 2% target).

**If the UK uses guidance based on unemployment thresholds of 6.5% or 7%, these triggers are unlikely to be hit for quite a few years**

We doubt that the consensus appreciates how powerful the use of Fed-style guidance in the UK is likely to be in pulling down market rate expectations and sending a message to households and businesses that monetary policy will stay very accommodative even if and when the economy starts to recover. With the sluggish economy and high workforce growth, jobless triggers of 6.5% or 7% (ie a little above the probable NAIRU) are unlikely to be hit for quite a few years.

- At present, the IMF expects that the jobless rate will not fall below 7% until 2016, and will not hit 6.5% until 2018.
- The OBR expects the jobless rate will not fall to 7.0% until Q2-2017, and will still be a little above 6.5% (6.6%) even in Q1-2018 (its forecast horizon).
- The OECD’s jobless forecasts only extend to Q4-2014, and at that horizon they expect the jobless rate will be 7.9% (similar to the OBR forecast for Q4-14 and a little above the current level).

<sup>5</sup> See “Options for Forward Guidance”, Michael Saunders, UK Economics Weekly, 10 May 2013, Citi.

<sup>6</sup> An alternative would be to use a threshold based on nominal GDP growth, but this would be less powerful in signaling that the MPC will aim to largely close the output gap and probably would lack traction with the general public.

<sup>7</sup> See “Economic and Fiscal Outlook”, OBR, March 2013.

<sup>8</sup> See “Things could and should be better”, NIESR, May 2013.

<sup>9</sup> For 2013, the IMF expects 7.8% unemployment and puts the output gap at 3.9% of potential GDP. For 2018, the IMF expects the UK will have a 6.5% jobless rate and output gap of 2.2% of potential GDP. In their forecasts a 1% drop in the output gap cuts unemployment by about ½%.

<sup>10</sup> See “A Kalman filter approach to estimating the UK NAIRU”, BoE Working paper 179, 2003.

**A 6.5% jobless threshold and 2.5% inflation knockout could well signal that rates are unlikely to rise for another five years...**

Hence, if the MPC adopts Fed-style guidance with a 7% jobless threshold and 2.5% knockout on the inflation forecast 2-3 years ahead, and publishes consensus-type jobless forecasts (ie similar to those of the IMF, OECD and OBR), then this would signal that the MPC does not currently intend to lift Bank Rate before 2016 or 2017. If the MPC sets the jobless threshold at 6.5% (ie the same as the Fed) then this would signal that it does not intend to hike rates before 2017 or (more likely) 2018. So if the MPC does Fed-style guidance and publishes consensus-type unemployment forecasts, markets could reasonably conclude that the UK will probably not hike rates for five years. Of course, rates could well rise earlier if the economy markedly outperforms the consensus, or if the inflation knockout is triggered. But, with the current consensus view on the economy, forward guidance along these lines would probably cause markets to markedly postpone rate hike expectations.

**...pulling down market rate expectations and extending powerful – and much needed -- extra stimulus to the economy**

Given that the BoE's surveys suggest that a sizeable net balance of the general public expects interest rates will rise in the coming year, guidance could deliver a powerful stimulus via reduced expectations for real and nominal interest rates. Such stimulus is, we believe, much needed.

Economic Calendar, 20 May — 7 June

| 20 May                         | 21 May  | 22 May  | 23 May   | 24 May   |
|--------------------------------|---|---|--|--|
|                                | <b>Consumer Prices (Apr)</b><br>Mar 0.3% MM, 2.8% YY<br>Apr 0.2% MM, 2.4% YY<br><b>CPI Ex F, D, T, E (Apr)</b><br>Mar 0.5% MM, 2.4% YY<br>Apr 0.1% MM, 2.0% YY<br><b>Retail Prices (Apr)</b><br>Mar 0.4% MM, 3.3% YY<br>Apr 0.3% MM, 2.9% YY<br><b>RPIX – Ex Mortgages (Apr)</b><br>Mar 0.4% MM, 3.2% YY<br>Apr 0.3% MM, 2.9% YY<br><b>Producer Input Prices (Apr)</b><br>Mar 0.1% MM, 0.8% YY<br>Apr -2.3% MM, -0.1% YY<br><b>Prod. Output Prices (Apr)</b><br>Mar 0.2% MM, 1.9% YY<br>Apr -0.1% MM, 1.1% YY<br><b>PPI Ex F, D, T, E (Apr)</b><br>Mar 0.1% MM, 1.3% YY<br>Apr 0.1% MM, 0.8% YY | <b>Retail Sales Volumes (Apr)</b><br>Mar -0.6% MM, -0.5% YY<br>Apr -1.3% MM, 0.5% YY<br><br><b>Public Sector Net Borrowing – PSNB ex (Apr)</b><br>Apr12 £19.1bn Surplus<br>Apr13 £6.3bn Deficit<br><br><b>MPC Minutes</b><br><br><b>CBI Industrial Trends (May)</b><br><b>CBI Output Expectat'ns (May)</b><br>Apr +23%<br>May +18%<br><b>CBI Order Books (May)</b><br>Apr -25%<br>May -20%<br><b>CBI Selling Prices (May)</b><br>Apr +8%<br>May +4% | <b>GDP (Q1, 2<sup>nd</sup> Release)</b><br>Q4 -0.3% QoQ, 0.2% YoY<br>Q1 0.3% QoQ, 0.6% YoY<br><br><b>Service Sector Output (Mar)</b><br>Feb 0.9% MoM, 2.1% YoY<br>Mar 0.2% MoM, 1.6% YoY<br><br><b>Migration Statistics Quarterly Report (May)</b><br><br><b>European Council (Brussels)</b> | <b>BBA Mortgage Advances (Apr)</b>   |
| 27 May                         | 28 May  | 29 May  | 30 May   | 31 May   |
| Bank Holiday                   |   | <b>OECD Economic Outlook Released (10:00)</b><br><br><b>CBI Retail Survey (May, 11:00)</b><br><br><b>Bank of Canada Interest Rate Announcement (15:00)</b>  | <b>Nationwide House Prices (May, 07:00)</b>  | <b>GfK Consumer Confidence (May, 00:01)</b><br><br><b>Personal Borrowing (Apr)</b>           |
| 3 June                         | 4 June  | 5 June  | 6 June   | 7 June   |
| <b>Manufacturing PMI (May)</b> | <b>Mergers &amp; Acquisitions Involving UK Companies (Q1)</b>   | <b>Services PMI (May)</b><br><br><b>MPC Meeting Starts</b>  | <i>Around Now</i><br><b>Halifax House Prices (May) (08:00)</b><br><br><b>MPC Meeting Ends: Outcome at Noon</b><br><br><b>ECB Meeting:</b><br>12:45 Outcome<br>13:30 Press Conference   | <b>Trade Balance – Goods &amp; Services (Apr)</b><br><br><b>New Construction Orders (Q1)</b> |

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, ONS, national sources and Citi Research.

## Notes



## 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](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](http://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 Wealth Management disclosure website at [www.morganstanley.com/online/researchdisclosures](http://www.morganstanley.com/online/researchdisclosures).

For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to [www.morganstanley.com/researchdisclosures](http://www.morganstanley.com/researchdisclosures) and [https://www.citivelocity.com/cvr/eppublic/citi\\_research\\_disclosures](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 100-180, 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 Korea by Citibank Korea Inc., which is regulated by the Financial Services Commission and the Financial Supervisory Service. Address is Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. 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 Comisión Nacional Bancaria y de Valores. Reforma 398, Col. Juárez, 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 ("DFS") 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](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) and other product that is made available through other distribution channels only to certain categories of clients to satisfy legal or regulatory requirements, 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.

---

© 2013 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

---