

## Payments

# Keeping a Closer Eye on Bitcoin & the Growing Impact of Virtual Currencies

Yesterday, we hosted a lunch with two significant figures from the virtual currency community: **Barry Silbert, Founder and Chief Executive Officer, SecondMarket;** and **Phillip Rapoport, Director of Markets and Trading, Ripple Labs, Inc.** Bitcoin usage continues to grow rapidly and raises a question of potential disruption for money transfer/remittance companies and traditional payments companies at the point-of-sale (both physical and e-commerce). That said, with bitcoin's prospects for success appearing to be binary in nature (with certain obstacles that must be overcome including its lack of scale, limited acceptance footprint, high volatility, and incremental friction for merchants) and the potential for greater oversight/regulation around transparency and security to develop over time (which we suspect will likely level the playing field), we continue to watch for additional developments. **We provide key takeaways from the lunch below (with a more detailed explanation of virtual currencies and bitcoin on the following pages).**

**Bitcoin usage has dramatically increased over the last year**, with the total estimated daily transaction volume averaging over \$100 million in recent months (vs. less than \$5 million a year ago). As a result, the market capitalization of the total bitcoins in circulation as of December 17, 2013 is over \$9 billion (vs. a market cap of less than \$150 million a year ago).

**Bitcoins are created at a decreasing and predictable rate**, with the number of bitcoins created each year automatically halved until issuance stops at 21 million bitcoins (though each bitcoin can be divided up to 8 decimal places, or 100 million smaller units). As of December 17, 2013 there were over 12 million bitcoins in circulation.

**With respect to potential regulation**, industry participants expect regulation to be handled by different countries on an individual basis. In the U.S. we have not yet seen any federal regulation, with the U.S. Department of Treasury's Financial Crimes Enforcement Network, FinCEN, recently stating that it was legal to use bitcoins to purchase real/virtual goods or services, though calling for broader registration around those in the remittance business. However, industry participants note the potential for oversight to come at the state level and for further review from the IRS. **Overall, while governments appear to be open-minded, viewing virtual currencies as a potential way to foster growth and innovation, we expect to see an increase in dialogue going forward.**

**In addition to bitcoin, there have been over 50 other competing digital/alternative currencies (e.g. Litecoin, Peercoin, Ripple XRP, etc.).** That said, industry participants view bitcoin as unlikely to be replaced for two reasons: 1) bitcoin's software/protocol is consistently enhanced and able to respond to market demands; and 2) there is a limited appetite for early adopters/investors to embrace additional alternative currencies.

Barclays Capital Inc. and/or one of its affiliates 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.

PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 5.

### INDUSTRY UPDATE

---

U.S. IT Consulting & Computer Services

NEUTRAL

Unchanged

---

U.S. IT Consulting & Computer Services

Darrin D. Peller

1.212.526.7144

darrin.peller@barclays.com

BCI, New York

Adam Carron

1.212.526.0862

adam.carron@barclays.com

BCI, New York

Alexander Veytsman

1.212.526.2351

alexander.veytsman@barclays.com

BCI, New York

## Virtual/Digital Currencies: A Quick Background

---

A key byproduct of the growth and increased penetration of the Internet (and virtual communities) has been the formation of virtual currency schemes. Virtual currencies provide members of virtual communities (there are a wide array of virtual communities ranging from social networking sites, such as Facebook, to Virtual Worlds, such as Second Life) with a means of exchange and a unit of account within these communities. While the concept of virtual currency schemes is not entirely new (for example, an airline frequent flier program can be classified as a virtual currency scheme), the proliferation of certain schemes such as bitcoin has become more relevant over recent months.

In addition to serving as a currency (as well as an investment vehicle similar to gold), bitcoin has become increasingly used as an alternative electronic payment mechanism. As such, we believe there could be important ramifications for traditional payments companies. A recent study by the European Central Bank (“Virtual Currency Schemes,” October 2012) categorized the virtual currency schemes that exist in today’s world into three distinct categories: 1) closed virtual currency schemes; 2) virtual currency schemes with unidirectional flow; and 3) virtual currencies with bidirectional flow.

- **Type #1 (Closed Virtual Currency Schemes):** Closed virtual currency schemes generally have no link to the real economy and are most commonly seen in video games (such as Blizzard Entertainment’s World of Warcraft Gold). Users join the virtual community (usually by paying a subscription fee) and can only earn virtual currency through online performance. That said, the virtual currency is only allowed to be used within the confines of the virtual community (at least in theory) for the purchase of virtual goods/services (not real world goods/services).
- **Type #2 (Virtual Currency Schemes with Unidirectional Flow):** Schemes with unidirectional flow enable users to purchase virtual currency with real money at a specified exchange rate (such as using U.S. dollars to purchase Facebook Credits). The virtual currency can then be used to purchase either virtual goods/services or real goods/services (such as using air miles to purchase a flight), though users cannot convert the currency back to real money.
- **Type #3 (Virtual Currency Schemes with Bidirectional Flow):** Similar to a Type #2 scheme, users are able to purchase virtual currency with real money at a specified exchange rate (such as using U.S. dollars to purchase bitcoins). The key distinguishing feature is that in addition to using the currency to purchase both virtual and real goods/services, this type of virtual currency can be converted back to real money.

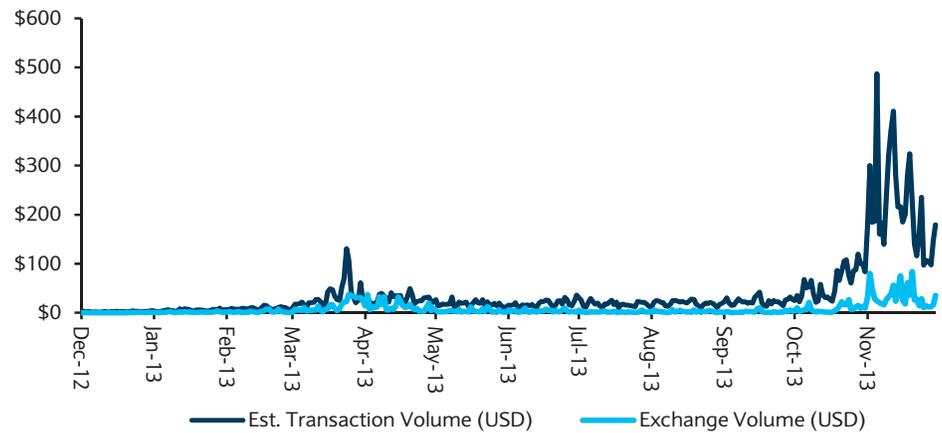
## What is Bitcoin?

---

With this as a backdrop, we want to provide a brief discussion of one of the most popular and well known virtual currency schemes, bitcoin. Founded in 2009 by Satoshi Nakamoto (which is generally thought to be a pseudonym), bitcoin is a virtual currency scheme (type #3 – virtual currency scheme with bidirectional flow) based on a decentralized, peer-to-peer payment network powered by its users. Bitcoins can be used for payment both online and at physical stores; however, unlike traditional currencies, there is no centralized authority in charge of the supply of bitcoins, with new bitcoins created through a competitive process called mining (in short, mining is the process of using computer power to solve complicated mathematical problems for the purpose of processing and confirming transactions). Bitcoins are created at a decreasing and predictable rate, with the number of bitcoins created each year automatically halved until issuance stops at 21 million bitcoins (though each bitcoin can be divided up to 8 decimal places, or 100 million smaller units). As of December 17, 2013 there were over 12 million bitcoins in circulation.

Users can acquire bitcoins in four ways: 1) as a payment for goods/services; 2) by purchasing bitcoins at an exchange; 3) exchanging bitcoins with someone near you; and/or 4) earning bitcoins through mining. We have identified over 100 different exchanges where bitcoins may be purchased (many of which are located outside of the U.S.), though industry sources suggest that the top 5-10 exchanges represent ~90% of the total volume on all exchanges. Bitcoin usage has dramatically increased over the last year, with the total estimated daily transaction volume averaging over \$100 million in recent months (vs. less than \$5 million a year ago).

FIGURE 1  
Average Daily Volume (in \$ millions)



Source: blockchain.info, Barclays Research

Because the price of bitcoins is determined by supply and demand, in instances where demand does not follow the supply pattern, prices of bitcoins can be volatile. For example, demand for bitcoins has skyrocketed over the last year, driving the price of bitcoins from under \$15.00 in December 2012 to over \$1,000 in December 2013. As a result, the market capitalization of the total bitcoins in circulation as of December 17 is over \$9 billion (vs. a market cap of less than \$150 million a year ago).

FIGURE 2  
Price of Bitcoins in Circulation (in USD)



Source: blockchain.info, Barclays Research

FIGURE 3  
Total Market Cap of Bitcoins in Circulation (in USD; \$mn)



Source: blockchain.info, Barclays Research

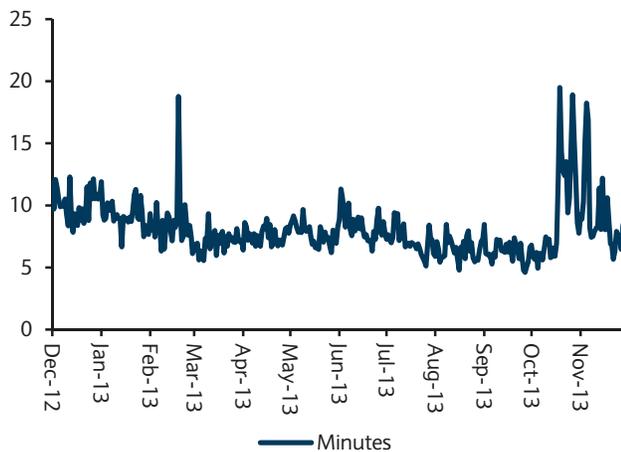
### How Does a Bitcoin Transaction Work?

In order to send and/or receive bitcoin payments, a user must obtain a bitcoin wallet by downloading the free and open-source software on a mobile phone or computer. Payment transactions (the transfer of value between bitcoin wallets) are then made by entering a recipient's address (this can also be done by scanning a QR code or touching two phones together with NFC technology), entering the amount, and then pressing send.

Bitcoin transactions rely on public-key cryptography (the use of mathematical proofs to provide high levels of security). Each bitcoin owner has two mathematically linked keys (or digital addresses): a private key (data known only to its user) and a public key (widely distributed and known by all users of the network). When a user sends a transaction, the transaction is signed by the user's private key, which provides a mathematical proof that the bitcoins being spent have come from the owner of the wallet and prevents the transaction from being altered by anybody. The transaction is then broadcast to all users (which shows the transferor's and transferee's public addresses, though no information is provided about the involved parties) and confirmed by the network through mining.

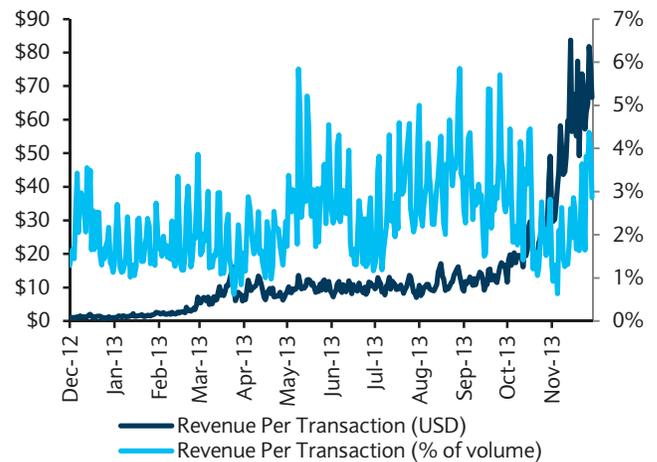
A miner confirms a transaction by performing billions of calculations per second to validate the user's mathematical proof of work (essentially solving a mathematical equation). This process is designed in such a way that it takes about 10 minutes to solve each equation and clear the payment (the bitcoin network resets itself every couple of weeks to ensure that the 10-minute timeframe remains consistent). The transaction is then included in the block chain (a public record of all bitcoin transactions in chronological order). Because the mathematical proof of work is based on previous blocks (a block is a record in the block chain), it becomes increasingly more difficult to reverse prior transactions (reinforcing the chronological order in the block chain and preventing double spending). As compensation for their work, miners are rewarded with additional bitcoins (as well as transaction fees paid by users on a voluntary basis for faster processing).

FIGURE 4  
Average Transaction Confirmation Time (in minutes)



Source: blockchain.info, Barclays Research

FIGURE 5  
Miners' Revenue Per Transaction



Source: blockchain.info, Barclays Research

**ANALYST(S) CERTIFICATION(S):**

I, Darrin D. Peller, hereby certify (1) that the views expressed in this research report accurately reflect my personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

**IMPORTANT DISCLOSURES**

Barclays Research is a part of the Corporate and Investment Banking division of Barclays Bank PLC and its affiliates (collectively and each individually, "Barclays"). For current important disclosures regarding companies that are the subject of this research report, please send a written request to: Barclays Research Compliance, 745 Seventh Avenue, 14th Floor, New York, NY 10019 or refer to <http://publicresearch.barclays.com> or call 212-526-1072.

The analysts responsible for preparing this research report have received compensation based upon various factors including the firm's total revenues, a portion of which is generated by investment banking activities.

Analysts regularly conduct site visits to view the material operations of covered companies, but Barclays policy prohibits them from accepting payment or reimbursement by any covered company of their travel expenses for such visits.

In order to access Barclays Statement regarding Research Dissemination Policies and Procedures, please refer to <https://live.barcap.com/publiccp/RSR/nyfipubs/disclaimer/disclaimer-research-dissemination.html>. In order to access Barclays Research Conflict Management Policy Statement, please refer to: <http://group.barclays.com/corporates-and-institutions/research/research-policy>.

The Corporate and Investment Banking division of Barclays produces a variety of research products including, but not limited to, fundamental analysis, equity-linked analysis, quantitative analysis, and trade ideas. Recommendations contained in one type of research product may differ from recommendations contained in other types of research products, whether as a result of differing time horizons, methodologies, or otherwise.

**Guide to the Barclays Fundamental Equity Research Rating System:**

Our coverage analysts use a relative rating system in which they rate stocks as Overweight, Equal Weight or Underweight (see definitions below) relative to other companies covered by the analyst or a team of analysts that are deemed to be in the same industry (the "industry coverage universe").

In addition to the stock rating, we provide industry views which rate the outlook for the industry coverage universe as Positive, Neutral or Negative (see definitions below). A rating system using terms such as buy, hold and sell is not the equivalent of our rating system. Investors should carefully read the entire research report including the definitions of all ratings and not infer its contents from ratings alone.

**Stock Rating**

**Overweight** - The stock is expected to outperform the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

**Equal Weight** - The stock is expected to perform in line with the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

**Underweight** - The stock is expected to underperform the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

**Rating Suspended** - The rating and target price have been suspended temporarily due to market events that made coverage impracticable or to comply with applicable regulations and/or firm policies in certain circumstances including where the Corporate and Investment Banking Division of Barclays is acting in an advisory capacity in a merger or strategic transaction involving the company.

**Industry View**

**Positive** - industry coverage universe fundamentals/valuations are improving.

**Neutral** - industry coverage universe fundamentals/valuations are steady, neither improving nor deteriorating.

**Negative** - industry coverage universe fundamentals/valuations are deteriorating.

Below is the list of companies that constitute the "industry coverage universe":

**U.S. IT Consulting & Computer Services**

Acacia Research Corp. (ACTG)	Accenture Plc (ACN)	Alliance Data Systems Corp. (ADS)
Camelot Information Systems (CIS)	Cognizant Technology Solutions (CTSH)	Computer Sciences Corp. (CSC)
CoreLogic, Inc. (CLGX)	EPAM Systems Inc (EPAM)	Fidelity National Information Services (FIS)
Fiserv Inc. (FISV)	FleetCor Technologies, Inc. (FLT)	Global Payments Inc. (GPN)
InterDigital, Inc. (IDCC)	Lender Processing Services, Inc. (LPS)	MasterCard Inc. (MA)
RPX Corporation (RPXC)	Total System Services Inc. (TSS)	Vantiv, Inc. (VNTV)
VeriFone Systems Inc. (PAY)	Visa Inc. (V)	Western Union Co. (WU)
Xoom Corp. (XOOM)		

## IMPORTANT DISCLOSURES CONTINUED

### Distribution of Ratings:

Barclays Equity Research has 2575 companies under coverage.

44% have been assigned an Overweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Buy rating; 48% of companies with this rating are investment banking clients of the Firm.

39% have been assigned an Equal Weight rating which, for purposes of mandatory regulatory disclosures, is classified as a Hold rating; 43% of companies with this rating are investment banking clients of the Firm.

15% have been assigned an Underweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Sell rating; 39% of companies with this rating are investment banking clients of the Firm.

### Guide to the Barclays Research Price Target:

Each analyst has a single price target on the stocks that they cover. The price target represents that analyst's expectation of where the stock will trade in the next 12 months. Upside/downside scenarios, where provided, represent potential upside/potential downside to each analyst's price target over the same 12-month period.

### Barclays offices involved in the production of equity research:

London

Barclays Bank PLC (Barclays, London)

New York

Barclays Capital Inc. (BCI, New York)

Tokyo

Barclays Securities Japan Limited (BSJL, Tokyo)

São Paulo

Banco Barclays S.A. (BBSA, São Paulo)

Hong Kong

Barclays Bank PLC, Hong Kong branch (Barclays Bank, Hong Kong)

Toronto

Barclays Capital Canada Inc. (BCCI, Toronto)

Johannesburg

Absa Capital, a division of Absa Bank Limited (Absa Capital, Johannesburg)

Mexico City

Barclays Bank Mexico, S.A. (BBMX, Mexico City)

Taiwan

Barclays Capital Securities Taiwan Limited (BCSTW, Taiwan)

Seoul

Barclays Capital Securities Limited (BCSL, Seoul)

Mumbai

Barclays Securities (India) Private Limited (BSIPL, Mumbai)

Singapore

Barclays Bank PLC, Singapore branch (Barclays Bank, Singapore)

## DISCLAIMER:

This publication has been prepared by the Corporate and Investment Banking division of Barclays Bank PLC and/or one or more of its affiliates (collectively and each individually, "Barclays"). It has been issued by one or more Barclays legal entities within its Corporate and Investment Banking division as provided below. It is provided to our clients for information purposes only, and Barclays makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to any data included in this publication. Barclays will not treat unauthorized recipients of this report as its clients. Prices shown are indicative and Barclays is not offering to buy or sell or soliciting offers to buy or sell any financial instrument.

Without limiting any of the foregoing and to the extent permitted by law, in no event shall Barclays, nor any affiliate, nor any of their respective officers, directors, partners, or employees have any liability for (a) any special, punitive, indirect, or consequential damages; or (b) any lost profits, lost revenue, loss of anticipated savings or loss of opportunity or other financial loss, even if notified of the possibility of such damages, arising from any use of this publication or its contents.

Other than disclosures relating to Barclays, the information contained in this publication has been obtained from sources that Barclays Research believes to be reliable, but Barclays does not represent or warrant that it is accurate or complete. Barclays is not responsible for, and makes no warranties whatsoever as to, the content of any third-party web site accessed via a hyperlink in this publication and such information is not incorporated by reference.

The views in this publication are those of the author(s) and are subject to change, and Barclays has no obligation to update its opinions or the information in this publication. The analyst recommendations in this publication reflect solely and exclusively those of the author(s), and such opinions were prepared independently of any other interests, including those of Barclays and/or its affiliates. This publication does not constitute personal investment advice or take into account the individual financial circumstances or objectives of the clients who receive it. The securities discussed herein may not be suitable for all investors. Barclays recommends that investors independently evaluate each issuer, security or instrument discussed herein and consult any independent advisors they believe necessary. The value of and income from any investment may fluctuate from day to day as a result of changes in relevant economic markets (including changes in market liquidity). The information herein is not intended to predict actual results, which may differ substantially from those reflected. Past performance is not necessarily indicative of future results.

This communication is being made available in the UK and Europe primarily to persons who are investment professionals as that term is defined in Article 19 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005. It is directed at, and therefore should only be relied upon by, persons who have professional experience in matters relating to investments. The investments to which it relates are available only to such persons and will be entered into only with such persons. Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange.

The Corporate and Investment Banking division of Barclays undertakes U.S. securities business in the name of its wholly owned subsidiary Barclays Capital Inc., a FINRA and SIPC member. Barclays Capital Inc., a U.S. registered broker/dealer, is distributing this material in the United States and, in connection therewith accepts responsibility for its contents. Any U.S. person wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of Barclays Capital Inc. in the U.S. at 745 Seventh Avenue, New York, New York 10019.

Non-U.S. persons should contact and execute transactions through a Barclays Bank PLC branch or affiliate in their home jurisdiction unless local regulations permit otherwise.

Barclays Bank PLC, Paris Branch (registered in France under Paris RCS number 381 066 281) is regulated by the Autorité des marchés financiers and the Autorité de contrôle prudentiel. Registered office 34/36 Avenue de Friedland 75008 Paris.

This material is distributed in Canada by Barclays Capital Canada Inc., a registered investment dealer and member of IIROC ([www.iiroc.ca](http://www.iiroc.ca)).

Subject to the conditions of this publication as set out above, Absa Capital, the Investment Banking Division of Absa Bank Limited, an authorised financial services provider (Registration No.: 1986/004794/06. Registered Credit Provider Reg No NCRCP7), is distributing this material in South Africa. Absa Bank Limited is regulated by the South African Reserve Bank. This publication is not, nor is it intended to be, advice as defined and/or contemplated in the (South African) Financial Advisory and Intermediary Services Act, 37 of 2002, or any other financial, investment, trading, tax, legal, accounting, retirement, actuarial or other professional advice or service whatsoever. Any South African person or entity wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of Absa Capital in South Africa, 15 Alice Lane, Sandton, Johannesburg, Gauteng 2196. Absa Capital is an affiliate of Barclays.

In Japan, foreign exchange research reports are prepared and distributed by Barclays Bank PLC Tokyo Branch. Other research reports are distributed to institutional investors in Japan by Barclays Securities Japan Limited. Barclays Securities Japan Limited is a joint-stock company incorporated in Japan with registered office of 6-10-1 Roppongi, Minato-ku, Tokyo 106-6131, Japan. It is a subsidiary of Barclays Bank PLC and a registered financial instruments firm regulated by the Financial Services Agency of Japan. Registered Number: Kanto Zaimukyokucho (kinsho) No. 143.

Barclays Bank PLC, Hong Kong Branch is distributing this material in Hong Kong as an authorised institution regulated by the Hong Kong Monetary Authority. Registered Office: 41/F, Cheung Kong Center, 2 Queen's Road Central, Hong Kong.

Information on securities/instruments that trade in Taiwan or written by a Taiwan-based research analyst is distributed by Barclays Capital Securities Taiwan Limited to its clients. The material on securities/instruments not traded in Taiwan is not to be construed as 'recommendation' in Taiwan. Barclays Capital Securities Taiwan Limited does not accept orders from clients to trade in such securities. This material may not be distributed to the public media or used by the public media without prior written consent of Barclays.

This material is distributed in South Korea by Barclays Capital Securities Limited, Seoul Branch.

All equity research material is distributed in India by Barclays Securities (India) Private Limited (SEBI Registration No: INB/INF 231292732 (NSE), INB/INF 011292738 (BSE), Registered Office: 208 | Ceejay House | Dr. Annie Besant Road | Shivsagar Estate | Worli | Mumbai - 400 018 | India, Phone: + 91 22 67196363). Other research reports are distributed in India by Barclays Bank PLC, India Branch.

Barclays Bank PLC Frankfurt Branch distributes this material in Germany under the supervision of Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin).

This material is distributed in Malaysia by Barclays Capital Markets Malaysia Sdn Bhd.

This material is distributed in Brazil by Banco Barclays S.A.

This material is distributed in Mexico by Barclays Bank Mexico, S.A.

Barclays Bank PLC in the Dubai International Financial Centre (Registered No. 0060) is regulated by the Dubai Financial Services Authority (DFSA). Principal place of business in the Dubai International Financial Centre: The Gate Village, Building 4, Level 4, PO Box 506504, Dubai, United Arab Emirates. Barclays Bank PLC-DIFC Branch, may only undertake the financial services activities that fall within the scope of its existing DFSA licence. Related financial products or

services are only available to Professional Clients, as defined by the Dubai Financial Services Authority.

Barclays Bank PLC in the UAE is regulated by the Central Bank of the UAE and is licensed to conduct business activities as a branch of a commercial bank incorporated outside the UAE in Dubai (Licence No.: 13/1844/2008, Registered Office: Building No. 6, Burj Dubai Business Hub, Sheikh Zayed Road, Dubai City) and Abu Dhabi (Licence No.: 13/952/2008, Registered Office: Al Jazira Towers, Hamdan Street, PO Box 2734, Abu Dhabi).

Barclays Bank PLC in the Qatar Financial Centre (Registered No. 00018) is authorised by the Qatar Financial Centre Regulatory Authority (QFCRA). Barclays Bank PLC-QFC Branch may only undertake the regulated activities that fall within the scope of its existing QFCRA licence. Principal place of business in Qatar: Qatar Financial Centre, Office 1002, 10th Floor, QFC Tower, Diplomatic Area, West Bay, PO Box 15891, Doha, Qatar. Related financial products or services are only available to Business Customers as defined by the Qatar Financial Centre Regulatory Authority.

This material is distributed in the UAE (including the Dubai International Financial Centre) and Qatar by Barclays Bank PLC.

This material is distributed in Saudi Arabia by Barclays Saudi Arabia ('BSA'). It is not the intention of the publication to be used or deemed as recommendation, option or advice for any action (s) that may take place in future. Barclays Saudi Arabia is a Closed Joint Stock Company, (CMA License No. 09141-37). Registered office Al Faisaliah Tower, Level 18, Riyadh 11311, Kingdom of Saudi Arabia. Authorised and regulated by the Capital Market Authority, Commercial Registration Number: 1010283024.

This material is distributed in Russia by OOO Barclays Capital, affiliated company of Barclays Bank PLC, registered and regulated in Russia by the FSFM. Broker License #177-11850-100000; Dealer License #177-11855-010000. Registered address in Russia: 125047 Moscow, 1st Tverskaya-Yamskaya str. 21.

This material is distributed in Singapore by the Singapore branch of Barclays Bank PLC, a bank licensed in Singapore by the Monetary Authority of Singapore. For matters in connection with this report, recipients in Singapore may contact the Singapore branch of Barclays Bank PLC, whose registered address is One Raffles Quay Level 28, South Tower, Singapore 048583.

Barclays Bank PLC, Australia Branch (ARBN 062 449 585, AFSL 246617) is distributing this material in Australia. It is directed at 'wholesale clients' as defined by Australian Corporations Act 2001.

IRS Circular 230 Prepared Materials Disclaimer: Barclays does not provide tax advice and nothing contained herein should be construed to be tax advice. Please be advised that any discussion of U.S. tax matters contained herein (including any attachments) (i) is not intended or written to be used, and cannot be used, by you for the purpose of avoiding U.S. tax-related penalties; and (ii) was written to support the promotion or marketing of the transactions or other matters addressed herein. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

© Copyright Barclays Bank PLC (2013). All rights reserved. No part of this publication may be reproduced in any manner without the prior written permission of Barclays. Barclays Bank PLC is registered in England No. 1026167. Registered office 1 Churchill Place, London, E14 5HP. Additional information regarding this publication will be furnished upon request.

