

Lebanon Macro View

Gas in Lebanon: Cinderella or Sleeping Beauty?

- This Macro View focuses on Lebanon's prospects for energy independence. In the coming week, the much-anticipated tendering process for Lebanon's first offshore exploration blocks begins. Mainly because of its divisive internal politics, Lebanon is lagging its neighbours, Cyprus and Israel, in its efforts to exploit its potentially sizeable offshore hydrocarbon reserves.
- We believe a Cinderella scenario could unfold over the coming decade if Lebanon is successful in exploiting its potential off-shore resources. The country's energy poverty is a major drag on the economy: it is in part responsible for its domestic electricity crisis, with brown-out rationing costing the economy billions of dollars a year. High fuel costs are also the main cause of the gaping hole in Electricité du Liban's (EdL) finances, which drains around 4% of GDP out of the annual government budget. And the fuel importation bill (well over 10% of GDP per year) is a key driver of the current account deficit, making the economy highly dependent on continued capital inflows (deposits). A cheap domestic source of gas could, therefore, spur a major transformation in the country's economic fortunes.
- That said, we do also caution of the competing Sleeping Beauty narrative: that divisive domestic politics and regional conflict continue to hamper efforts to exploit the off-shore resources, or that they keep some of the benefits from such exploitation at bay indefinitely.
- Bottom line, while we are cautiously optimistic of a Cinderella scenario, we believe that the extended timeline for potential oil and gas production (not before the end of the decade, in our view), and the intervening uncertainties mean that it is still way too early to start pricing a Lebanese energy independence dividend into current asset valuations.

Farouk Soussa

+971-4-509-9750

farouk.soussa@citi.com

With thanks to

Adrian Thomas

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.

Gas in Lebanon: Cinderella or Sleeping Beauty?

In the coming week, the much-anticipated tendering process for Lebanon's first offshore exploration blocks begins. Lebanon is lagging its neighbours, Cyprus and Israel, in its efforts to exploit its potentially sizeable offshore hydrocarbon reserves, and there is much anticipation that it is about to take meaningful steps towards catching up.

We believe a 'Cinderella' scenario could unfold over the coming decade if Lebanon is indeed successful in exploiting its potential off-shore resources. Energy poverty is a major drag on the economy: it is in part responsible for its domestic electricity crisis, with brown-out rationing costing the economy billions of dollars a year. High fuel costs are the main cause of the gaping hole in Electricité du Liban's (EdL) finances, which drains around 4% of GDP out of the annual government budget. And the fuel importation bill (well over 10% of GDP per year) is a key driver of the current account deficit, making the economy highly dependent on continued capital inflows (deposits). A cheap domestic source of gas could, therefore, spur a major transformation in the country's economic fortunes.

That said, we do also point out the risks of the competing 'Sleeping Beauty' narrative: that divisive domestic politics and regional conflict continue to hamper efforts to exploit the off-shore resources, or that they keep some of the benefits from such exploitation at bay indefinitely.

Bottom line, while we are cautiously optimistic of a Cinderella scenario, we believe that the extended timeline for potential oil and gas production (not before the end of the decade, in our view), and the intervening uncertainties mean that it is still way too early to start pricing a Lebanese energy independence dividend into current asset valuations.

Prospects for oil and gas production look good

With the bidding on Lebanon's first off-shore exploration blocks about to begin, there is much excitement about the prospects of imminent commercial production of oil and gas in Lebanon. We agree that prospects look good in the medium term, albeit uncertain.

No done deal, but looks promising

There is a lot of excitement, especially within Lebanon, about the imminent riches lying beneath the sea. So far, however, it's worth noting that there are no proven oil or gas reserves off the coast of Lebanon. The current excitement over the prospects for such reserves rests on two (albeit significant) pieces of information.

First is the discovery in recent years of large reserves off the coasts of Israel and Cyprus in the geological formation known as the Levant Basin, which extends into Lebanon and Syria as well (see table). The US Geological Survey¹ puts its estimate of total potential gas in the Levant Basin at 122 trillion cubic feet (tcf), less than a tenth of Russia's gas reserves. Total discoveries (proven reserves) to date amount to 43 tcf, meaning that, in principle, 78 tcf (65% of the total) remains out there, waiting to be discovered. This naturally generates an expectation that some of the gas must lie in Lebanese waters.

¹ USGS, 2010, 'Assessment of Undiscovered Oil and Gas Resources of the Levant Basin Province, Eastern Mediterranean'. <http://pubs.usgs.gov/fs/2010/3014/pdf/FS10-3014.pdf>

Second, the Lebanese government has commissioned off-shore 2-dimensional and 3-dimensional seismic surveys. According to Spectrum, the company that carried out the 3-D survey, the data so far suggest potential gas deposits of around 25 tcf. The area surveyed was 3,000 square kilometres, with a further 19,000 square kilometers yet to be surveyed, suggesting there remains potential for further significant deposits to be discovered.

These two facts together have raised expectations of sizable exploitable hydrocarbon resources in Lebanese waters, but there can be no certainty as to the actual amount of such resources until after the exploration is in full swing. That could be years away.

Production not likely this decade

According to the government's announced timeline, the prequalification round for exploration bids will open on February 1st, with pre-qualified bidders announced on March 21st. These bidders will then be invited to submit formal bids from May 2nd. According to statements by Minister of Energy Gebran Bassil, the government expects to announce winners and start signing contracts by early 2014, which is when the exploratory work can begin. This suggests that commercial extraction of gas could start as early as 2017.

This timeline does, however, ignore Lebanon's divisive political scene, and the ever-elevated risk of political and institutional bickering resulting in significant delays. Considering it took over two years to get from an oil law (the August 2010 Offshore Petroleum Resources Law – Law 132/2010) to the appointment of a Petroleum Administration to oversee the tendering process, we believe the potential for slippage is high. Our assessment is that it is unlikely that commercial gas extraction will begin before the end of this decade, and possibly significantly later (see below).

Territorial disputes won't hinder development plans, but the threat of conflict is ever-present

Much is said in the press regarding the possibility that rivalry over oil and gas resources in the eastern Mediterranean could somehow ignite a regional conflict, particularly between Lebanon and Israel. Such talk is fuelled by the ongoing boundary dispute between Lebanon and Israel, and the bellicose public comments made by some politicians on both sides of that dispute.

The UN Convention on the Law of the Sea (UNCLOS) gives a country exclusive economic rights in waters extending up to 200km off its shore. Where countries are less than 200km apart, a mutually acceptable boundary must be agreed upon through negotiations, arbitration and other methods set out by the convention.

In Lebanon's case, agreeing on a border demarcation with neighbouring Israel has proved difficult. Direct negotiations are not an option as the two countries have no diplomatic ties, and Israel has not signed up to UNCLOS, making arbitration or legal action impossible. Third-party intermediation (carried out by the UN, the US and Cyprus) has so far not broken the deadlock, which is over a disputed triangle of waters of 800 square kilometres.

For the time being, we believe the dispute is unlikely to prevent Lebanon from going ahead with its plans to develop its offshore gas potential. The area subjected to seismic surveys and going under the hammer this year is entirely within Lebanon's exclusive economic zone as agreed with Cyprus in 2007, and is not in the triangle of water disputed with Israel. Moreover, Israel has yet to exercise its claimed economic rights in the disputed zone unilaterally, despite unsubstantiated statements by Hizbollah that some of the Tamar gas field being exploited by Israel lies within this zone (this is denied by the Lebanese government).

That said, the bellicose rhetoric on both sides concerning the border dispute taken in the wider context of tense and often violent relations between Lebanon and Israel means that the possibility of conflict over the issue cannot be ruled out, in our view.

The Cinderella scenario

There are at least three areas where we think the availability of cheap domestic energy sources could have a transformative effect on Lebanon's economy: the electricity sector, the public finances, and the external sector.

Alleviating the electricity crisis

In 2009, Lebanon produced around 1500MW of electricity, while consumption peaked in the summer at around 2500MW of electricity.² Since then, production capacity has at best stayed the same, while consumption has continued to rise. The net result is rationing and 'brown-outs', with supply available for as little as 12 hours of the day in parts of the country. This forces private individuals and businesses to fill the gaps with private diesel generators.

The inefficiencies and added costs result in large losses to the economy. The World Bank put the loss of output alone at around 2% of GDP, added to which there is the cost of private generation and the opportunity cost of lost investment.

The cause of this is in part the scarcity of gas. Lebanon had initially anticipated the ability to import large volumes of gas through the Arab Gas Pipeline running from Egypt through Jordan and Syria. This has not materialized. Two major gas turbine generators with installed capacity of 870MW (over half of current available production) are, as a result, running on gas oil rather than natural gas, reducing efficiency and production by as much as 20%.

More important than the loss in efficiency, however, is the financial impact of importing gas oil and other fuels. EdL ran up operational losses in excess of US\$1.7bn in 2011: money is tight, and the budget for capital outlays virtually non-existent. As a result, maintenance and investment in capacity suffer: indeed, there has been no addition to generation capacity in the past decade.

A cheap local source of gas supply could reduce inefficiencies and alleviate financial pressures, potentially freeing up resources for maintenance and future investment in generation capacity. This could, in turn, reduce electricity shortages and rationing, providing a significant positive catalyst to the economy as a whole.

Transforming public finances

The losses at EdL are covered directly by transfers from the Lebanese treasury. In 2011, these represented 4.3% of GDP, almost 60% of the government's budget deficit for that year. Lebanon's precarious government finances are a major factor behind its relatively low credit rating (single B category from the three major rating agencies), and the large debt overhang acts as a drag on investment and productive public expenditure. Easing, and potentially wiping out, the losses at EdL would therefore provide significant fiscal capacity to the government through the expenditure side.

The revenue side, moreover, could also see a major transformation if Lebanon's potential off-shore hydrocarbon resources are exported to foreign markets. We believe that commercial exploitation of Lebanon's resources is very likely to

² Lebanon Ministry of Energy and Water, Policy Paper for the Electricity Sector, 2010.

incorporate plans to monetize the gas through exports. This is because the domestic market is likely too small and prices too tight to produce the economies of scale required to justify the financial outlay for extraction (in deep waters) to international oil companies (IOCs). With plans to export, the Lebanese government could extract potentially significant royalties (as stipulated in the oil law), providing a major boost to revenues.

The upshot is that, through reducing expenditures and upping revenues, Lebanese energy independence could transform public finances dramatically. The public borrowing requirement could be reduced or even wiped out altogether, accelerating the ongoing decline in the country's debt-to-GDP ratio, bolstering debt sustainability and with it investment and growth.

Reducing external vulnerabilities

Lebanon's fuel bill reached US\$3bn in 2011, almost 12% of GDP for that year. Over half of this bill was due to imports for electricity generation. As mentioned above, over half of Lebanon's generation capacity is currently ready to switch to domestic natural gas. This implies that the exploitation of domestic sources would immediately reduce imports by as much as 3% of GDP, about one quarter of the deficit in 2011.

Further improvement to the external balances would clearly also be recorded should exports come on line in line with our expectations. As above, we believe there are too many unknown variables to predict the magnitude of such exports, but we think they could be significant and could greatly reduce Lebanon's current account deficit.

We believe the significance of a reduction in Lebanon's current account deficit is far-reaching. Most notably, it would reduce the need to attract capital inflows to cover the current account outflows – the threat of a reversal in depositor inflows, in particular, is a major weakness in Lebanon's credit story and is one reason why the Banque du Liban (BdL) currently holds what the IMF considers to be 'excessively high' and costly levels of foreign currency reserves, in our view. It would also materially reduce risks to the Lira peg. Overall, we believe this would reduce economic vulnerabilities and strengthen the sovereign's credit profile, once again having a positive impact on investment and long-term economic growth.

Or will it be Sleeping Beauty?

We believe that Lebanon stands a good chance of achieving at least some of the benefits outlined above. However, given the divisive nature of domestic politics and the volatile geo-political situation in the wider region, we believe it is worth pointing out that there are significant downside risks that could mean the potential remains dormant for some time.

Risks of delay in timeline

The extent to which the establishment of a six-man Petroleum Administration has proven such a hotly debated political issue in Lebanon, leading to major delays, does not augur well for the timeliness of the process going forward. At each stage, decisions have to be taken by the Administration and by the Cabinet to enable the process to move forward: the parameters for the tendering process, assessment of the bids, terms of contracts, award of contracts, use of proceeds, etc. The process is fraught with difficulty and uncertainty in the best of environments. But in the case of Lebanon, where political dysfunction has prevented the passing of something as basic and important as a national budget for the past seven years, this may prove a major obstacle to progress and push out the time line well beyond current expectations.

In bleaker scenarios, the exploitation of Lebanon's potential oil and gas resources could itself act as a catalyst for greater internal conflict between the various sectarian and political groupings within Lebanon. In this regard, safeguards against corruption and appropriation of the national wealth for the benefit of any particular section of society are critical in order to prevent resentment building between parties.

Beyond domestic politics, we think regional geopolitics present a further risk to development plans. As mentioned earlier, exports are likely to be central to IOC decisions to develop Lebanon's potential offshore resources. Lebanon's fraught relations with its neighbours call into question the long-term viability and stability of export routes, necessary to ensure the continued ability of IOCs to monetize the reserves. Moreover, as we have argued before, we believe the likelihood of Lebanon becoming embroiled in another conflict with Israel is fairly high, further undermining the physical security of off-shore oil and gas assets.

No panacea

Even if all goes according to plan on the oil and gas front, we don't believe that this will automatically bring about all of the positive externalities envisaged in the Cinderella scenario. Indeed, we consider that the government has a responsibility to actively enable the country's potential hydrocarbon resources to benefit the economy.

To begin with, the electricity sector's troubles go well beyond the availability of gas and the scarcity of finances. Losses in transmission and distribution (part technical, part theft), inadequate metering and monitoring of the grid, an inappropriate tariff system, governance issues at EdL and politicization of energy policy are among the issues that could limit any benefit to the electricity sector from the mere availability of gas feedstock. If Lebanon is to end its energy crisis, and enjoy the associated economic rewards, a concerted political effort to address the crisis is necessary, in our view.

Moreover, the potential benefits to the public finances assume that sensible and transparent fiscal policies will be enacted that prevent Lebanon from squandering its hydrocarbons windfall. History offers many examples from around the globe where this has demonstrably not been the case.

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

Farouk Soussa

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 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 ("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) 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
