The Changing Landscape in Europe: A Macro Economic Update and Review of Implications for Treasurers

William Lee
Managing Director,
Office of the Chief Economist,
Citi Research
William.lee@citi.com
+1 (212) 816-2621

Ron Chakravarti
Managing Director,
Head – Clients Solutions & Advisory,
Global Liquidity & Investments
Ron.chakravarti@citi.com
+1 (212) 816-6909

Mark Tweedie
Managing Director,
Industry Head Technology,
Media and Telecom,
Corporate Client Sales Management,
CTS EMEA
Mark.david.tweedie@citi.com
+44 (20) 7500-5446
Euro Crisis In Perspective

Identifying Fundamental Forces and Policy Prescriptions

William Lee
Managing Director
William.Lee@Citi.com
+1-212-816-2621
Table of Contents

Euro Area Crisis—Fundamental Drivers 4
Banking Crisis 9
External Imbalance Crisis 13
Selected Policy Prescriptions 18
Euro Area Crisis — Fundamental Drivers
Euro Area Crisis: Confluence of Multiple Headwinds

● **Sovereign Debt Crisis**
  – Decade of Increased Leverage “Artificially” Boosted Expenditures and Growth
  – Fiscal Austerity Necessary to Deleverage (and maintain sustainable debt/GDP)
    • Deleveraging is Drag on Economic Growth
    • Slow Growth Worsens Sovereign Crisis

● **Banking Crisis**
  – Adverse Feedback Loops Between Sovereign Debt and Banking Risks
  – Markets Tank Bank Share Prices, Limit Debt Issuance, Deposit Outflows
    → Banks Rely More on ECB Funding
  – De-Leveraging and Recapitalizing Banks Required to Restore Lending Capacity
  – Global Contagion Effects Euro Area Banking Crisis
  – Global GDP Effects of Euro Credit Crunch
    • Largest for Europe (Advanced and Emerging)
    • Least for North America and Asia

● **External Balance Crisis: Tearing Apart Euro Area**
  – Structural Causes for Loss of Competitiveness Require Structural Solutions
  – ECB Liquidity Buys Time as does Fiscal Compact
  – Structural Policies to Improve Competitiveness Required for Durable Solution
Government Debt and Fiscal Balances for Select Countries

Debt / GDP (%, 2012E)

<table>
<thead>
<tr>
<th>Country</th>
<th>Debt (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>235.8</td>
</tr>
<tr>
<td>Greece</td>
<td>153.2</td>
</tr>
<tr>
<td>Italy</td>
<td>125.4</td>
</tr>
<tr>
<td>Ireland</td>
<td>113.1</td>
</tr>
<tr>
<td>Portugal</td>
<td>112.4</td>
</tr>
<tr>
<td>United States</td>
<td>106.6</td>
</tr>
<tr>
<td>France</td>
<td>89.0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>88.4</td>
</tr>
<tr>
<td>Canada</td>
<td>84.7</td>
</tr>
<tr>
<td>Spain</td>
<td>79.0</td>
</tr>
<tr>
<td>Germany</td>
<td>78.9</td>
</tr>
</tbody>
</table>

Primary Deficit / GDP (%, 2012E)

<table>
<thead>
<tr>
<th>Country</th>
<th>Deficit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>8.9</td>
</tr>
<tr>
<td>United States</td>
<td>6.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5.3</td>
</tr>
<tr>
<td>Ireland</td>
<td>4.4</td>
</tr>
<tr>
<td>Spain</td>
<td>3.6</td>
</tr>
<tr>
<td>Canada</td>
<td>3.1</td>
</tr>
<tr>
<td>France</td>
<td>2.2</td>
</tr>
<tr>
<td>Greece</td>
<td>1.0</td>
</tr>
<tr>
<td>Portugal</td>
<td>-0.1</td>
</tr>
<tr>
<td>Germany</td>
<td>-1.0</td>
</tr>
<tr>
<td>Italy</td>
<td>-3.0</td>
</tr>
</tbody>
</table>

2011 Deficit: 10.7  9.4  8.3  13.0  8.9  4.5  5.2  9.1  4.2  1.0  3.9

Source: IMF WEO database April 2012, Citi Research calculations
Sovereign Debt Ownership—Domestic and Foreign Shares

Note: Data are 2011Q2 for Greece, Ireland, United States, 2011Q1 for Japan, 2010Q4 for Portugal, France, Italy, and Germany. For US and Japan, Non-Resident holders include foreign official holdings, and for Greece, Ireland, Portugal ECB holdings.

Source: IMF Fiscal Monitor, September 2011 and Eurostat
Fiscal Policy: How long until Debt/GDP ratios peak?

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JPN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEU</td>
<td>83.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN</td>
<td>85.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Debt ratio will not stabilize in the forecast period.

Sources: IMF staff estimates and projections.
Note: Red bars indicate countries whose debt-to-GDP ratios will not stabilize within the next five years. Numbers in bars refer to the projected peak debt-to-GDP ratio. EA refers to the euro area average.

Source: IMF Fiscal Monitor Update July 16, 2012
Banking Crisis
Euro Area Banks Still Leveraged and Vulnerable

Dependence on Wholesale Funding and Deposit Outflows Risks Credit Crunch

Bank Leverage
(Adjusted tangible assets to Tier 1 Capital)

Bank Loan-to-Deposit Ratio
(in percent)

Sources: SNL Financial; and IMF staff estimates.
Note: Tangible assets are adjusted by subtracting derivative liabilities from tangible assets of European banks. However, some accounting differences may remain. Based on large banks in each economy.

Cumulative Euro Area Deposit Flows 2011-12
(Billions of Euros)

Source: IMF Global Financial Stability Report, April 2012
Deleveraging and Weakened Bank Funding Capabilities Tighten Lending

Banks’ Use of ECB Open Market Operations as a Share of Total Assets

Bank Lending Rates To Non-Financial Corporations (New Loans Up to EUR 1 million)

Reduction in Credit over 2 years under Current Policies (In Percent of total bank credit)

Corporate Reliance on Bank Financing (In percent)

Source: IMF GFSR April 2012, Eurosystem and CIRA.

Note: Data are an extrapolation of results from a sample of banks to the entire banking system. Total bank credit includes domestic and direct cross-border credit supplied by banks in each country.
Contagion From Intensified Euro Sovereign/Bank Crisis

Sharp drop in EA credit growth slows GDP globally through trade and bank linkages

Trade Linkages

Banks raise capital buffers with less lending and asset sales
Feedback loops raise risk spreads, bank funding costs, fiscal vulnerabilities, and slow domestic demand in Euro Area
Trade linkages strongest within Europe, then EEMENA. Links relatively weak for Asia, the U.S., and LATAM
Euro Area banks and their central and eastern European subsidiaries constitute most of the financial transmission

Banking Linkages

Source: IMF World Economic Outlook April 2012
External Imbalance Crisis
Economic Divergence Highlights Imbalances Among Euro Area Countries

Change in Real GDP Since Q1-2002

Current Account Balances as Pct GDP

Sources CIRA, Eurostat
Range of Competitiveness Among Euro Area Countries

Euro Area Countries — Unit Labour Costs Relative to Euro Area Avg.

Source: ECB and Citi Investment Research and Analysis
Euro Area Productivity and Growth has Slowed

Potential GDP Growth Most Affected in “Southern Core” (in percent)

Source: April 2012 WEO, European Commission.

Source: “Fostering Growth in Europe Now” IMF Staff Discussion Paper SDN 12/07 June 2012
How Long for Structural Reforms to Spur Euro Area Growth?

Immediate and Cumulative Effect on GDP (in percent)

Source: “Fostering Growth in Europe Now” IMF Staff Discussion Paper SDN 12/07 June 2012
Selected Policy Prescriptions
Impact of “Grexit” on Greece - Extreme Case of a General Problem

Citi economists now see a 90% probability that Greece will exit the EMU in the next year or two, so Citi’s revised Euro Area forecasts now exclude Greece as of January 2013 as a working assumption.

GDP declines 10 percent in 2013

Improved competitiveness spurs partial rebound in 2015-16 (temporary effect w/out structural reforms to improve competitiveness)

- Export share of GDP among lowest in EMU (24 percent of GDP)
- Greece is more than twice as open as Argentina during its crisis in 2001-2

Inflation surges following an assumed 60 percent depreciation of “New Drachma”

Debt/GDP surges to about 400 percent in 2013

- Require large debt write down to return debt/GDP to EMU average of about 95 percent

Sources: Eurosystem, Eurstat, Citi GEOS May 2012
<table>
<thead>
<tr>
<th>Acting Entity</th>
<th>Potential Measures</th>
<th>Likelihood</th>
<th>Market Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>European Central Bank</strong></td>
<td>LTROs</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Relaxation of collateral</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Refinancing rate cut</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Deposit rate cut</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Conditional Government Bond Purchase Program (CGBPP)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Accepting ESM as counter-party for Open Market Operations</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>EFSF/ESM</strong></td>
<td>Primary market purchases of sovereign debt</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Secondary market purchases of sovereign debt</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ESM uses ECB for funding and leverages up lending capacity</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Euro Area deposits guarantee (including currency re-denomination risk)</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Euro Area bank recapitalization scheme</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Second bailout programs for Portugal and Ireland</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Bond Market Assistance for Spain</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bond Market Assistance for Italy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>European Council</strong></td>
<td>Structural funds, further liberalization of product and labor markets</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Relaxation of fiscal tightening requirements (more time to hit budget targets)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Joint and several guaranteed uncapped Eurobonds</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Debt Redemption Fund</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td><strong>European Commission</strong></td>
<td>Structural funds, cohesion funds, project bonds</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Additional lending in terms of infrastructure and energy-related projects</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>EIB</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Citi Research
ECB to the Rescue with OMT: Outright Monetary Transactions

“Safeguard Monetary Policy Transmission” and “Singleness of Monetary Policy”

- Unlimited ECB purchases to “correct” market distortions in secondary market of sovereign borrower (ESM responsible for primary market purchases)
- EFSF/ESM programme requirements must be met by sovereign borrower after request for assistance
- Transactions expected to be in short-term (1-3 year) portion of sovereign yield curve
- OMT will be fully sterilized, leaving no net increase in Euro Area liquidity—i.e., no monetary-policy-based inflation fears.
- More “financial patching” still needs to be done... including bank recapitalization, debt restructuring regime (with haircuts likely), lender and market-maker of last resort for sovereigns.
- Fundamental structural reforms beyond the province of the ECB

Source: Citi Research
Contingency Planning

Ron Chakravarti
Managing Director,
Head – Clients Solutions & Advisory, Global Liquidity & Investments
Ron.chakravarti@citi.com
+1 (212) 816-6909

Mark Tweedie
Managing Director,
Industry Head Technology, Media and Telecom,
Corporate Client Sales Management, CTS EMEA
Mark.david.tweedie@citi.com
+44 (20) 7500-5446
Treasury Hot Topics

Through 2012, key topics have been gaining operational flexibility, improving risk management, and better alignment with the businesses.

1. Manage through the Euro Crisis
2. Respond to accelerating changes in financial regulations and tax
3. Drive for operational treasury best practice on global basis
4. Get engaged, and add value to the Supply Chain
5. Extend credit risk management discipline to commercial counterparties
6. Invest in technology to drive centralization, control benefits

While each company’s situation is driving specific priorities … … a common theme is recognition of the need to align more closely with working capital stakeholders, while proactively addressing impacts of evolving trading models

Source: Citi Treasury Diagnostics
Corporate Contingency Planning

While every company has unique operating characteristics and exposures to the broader European region, all firms should consider contingency plans for Eurozone crisis scenarios.
Treasury Considerations

To prepare their organizations, Treasurers are assessing several considerations within the direct remit of treasury.

- Have you assessed cash flow/earnings impacts if substantial—but not easily predictable—changes to relative currency valuations occur?

- How would you cope with dislocations in operating flows, or in the ability to access cash, if payment systems and cash management processes need to be migrated?

- Have you assessed cash flow/earnings impacts if substantial—but not easily predictable—changes to relative currency valuations occur?

- How would you be impacted if capital controls were to re-emerge in a country—e.g., Exchange Controls, Withdrawal Limits, or Transaction Taxes?

- If there were disruptions in funding markets, how matched are you in local assets/liabilities or reliant on external funding? Have you assessed contractual terms?

Action Steps
Other Considerations

Companies are also assessing broader / firm-wide considerations.

- Inorganic Growth
- Legal Frameworks
- "Embedded" Currency Risks
- Supplier Performance Risks
- Customer Credit Risks
- Organic Growth
Summary

The focus should be on mitigating direct risks while preparing the organization for various possible scenarios.

Note: Regulations (such as currency transferability and convertibility) and tax/legal implications should be considered. You must refer to your tax and legal advisors.
Sources

Our discussion on corporate treasury priorities and planning is based on our client advisory work, feedback from Citi colleagues around our worldwide platform, and our global research programs—including our proprietary Citi Treasury Diagnostics benchmarking program and projects with independent third parties.

Proprietary Research: Citi Treasury Diagnostics™

Proprietary Research: Citi Treasury Diagnostics™

Silver Winner
Solution of the Year

Citi/NeuGroup Principles of World Class Cash Management
Client Responses and CTS Solutions

- Reporting of balances across all legal entities, currencies and financial institutions
  - Treasury Vision
  - Client Playbook - consideration of direct and indirect risks
- Capital preservation focus
- Overnight sweeps to CCY centers
- Adequate compensation for EUR balances held in-country
- London call account solutions with enhanced interest from GSIFI Partner bank
- Enhanced deposit pricing held locally in Southern Europe

**SEPA end date**
February 1st, 2014 is the end date for migration to SEPA Credit Transfers and EUR Direct Debits

- **STRATEGIC - SEPA re-engineering potential with drive towards rationalization and standardized connectivity**
- **TACTICAL - Secure vaults and cash delivery in event of clearing moratorium**
- Review of underlying agreements for redenomination provisions:
  - Securities
  - Assets – current account conditions
- Drive towards centralized expenditure, automated workflows and manual process reduction:
  - P- Cards
  - Travel & Entertainment Cards

- **Visibility of Risk**
  - Adam Smith Award: Omnicom recognised for Best Practice and Innovation with their visibility and mobilisation of cash using Treasury Vision

- **Sales and Marketing**
- **Continuity of Credit**
- **Financial**
- **Commercial**
- **Operational**
- **Efficiency Agenda**

- **Safeguarding of Assets**

- **Concentration of Cash**

- **Distributors**

- **Legal and Jurisdictional**

- **Case study:**
  Xerox worked with Citi to create a custom Virtual Card Account Solution for Meeting & Events needs

**TACTICAL - Secure vaults and cash delivery in event of clearing moratorium**

- **Consumer & Channel sales incentives to support top line growth in constrained markets**
  - Prepaid Cards
- **Significant focus on supply chain financing to support vendors while meeting buyer cash-flow and working capital objectives**
- **Popularity of agency & trust structures to provide increased protection through pledge accounts**
Questions?
Contacts

William Lee
Managing Director,
Office of the Chief Economist,
Citi Research
William.lee@citi.com
+1 (212) 816-2621

Ron Chakravarti
Managing Director,
Head – Clients Solutions & Advisory,
Global Liquidity & Investments
Ron.chakravarti@citi.com
+1 (212) 816-6909

Mark Tweedie
Managing Director,
Industry Head Technology, Media and Telecom,
Corporate Client Sales Management, CTS EMEA
Mark.david.tweedie@citi.com
+44 (20) 7500-5446
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

Within the past 12 months, Citigroup Global Markets Inc. or its affiliates has acted as manager or co-manager of an offering of securities of Japan, France, Spain, United Kingdom, Belgium, Netherlands.

Citigroup Global Markets Inc. or its affiliates has received compensation for investment banking services provided within the past 12 months from Greece, Ireland, Portugal, France, Spain, United Kingdom, Germany, Belgium, Netherlands.

Citigroup Global Markets Inc. or its affiliates expects to receive or intends to seek, within the next three months, compensation for investment banking services from Greece, Ireland, Portugal, France, Spain, United Kingdom, Germany, Netherlands.

Citigroup Global Markets Inc. or an affiliate received compensation for products and services other than investment banking services from Greece, Ireland, Portugal, France, Spain, United Kingdom, Germany, Belgium, Netherlands in the past 12 months.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as investment banking clients: Greece, Ireland, Portugal, France, Spain, United Kingdom, Germany, Belgium, Netherlands.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, securities-related: Greece, Ireland, Portugal, France, Spain, United Kingdom, Germany, Belgium, Netherlands.

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/cr/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 Inc. William Lee

OTHER DISCLOSURES

Citigroup Global Markets Inc. and/or its affiliates has a significant financial interest in relation to Japan, France, Spain, United Kingdom, Germany, Belgium, Netherlands. (For an explanation of the determination of significant financial interest, please refer to the policy for managing conflicts of interest which can be found at www.citiVelocity.com.)

For securities recommended in the Product in which the Firm is not a market maker, the Firm acts 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 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.
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?companyCd2=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 (“Accval”) which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In New Zealand the Product is made available to ‘wholesale clients’ only as defined by s5C(1) of the Financial Advisers Act 2008 (FAA) through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Pakistan by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1, Chundrigar Road, P.O. Box 4898, 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. 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, 00-023 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 product 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 Gaisheka Street, 125047 Moscow. The Product is made available in Singapore through Citigroup Global Markets Singapore Pte. Ltd. (“CGMSP”), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSP 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, Sixornwold. 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, Songshi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited (“CSTL”), 14 and 15F, No. 1, Songshi 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, Bangrao, 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 # 208 Kat 2B, 34394 Levent, Istanbul, Turkey. In the UAE, 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 consumers 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.
IRS Circular 230 Disclosure: Citigroup Inc. and its affiliates do not provide tax or legal advice. Any discussion of tax matters in these materials (i) is not intended or written to be used, and cannot be used or relied upon, by you for the purpose of avoiding any tax penalties and (ii) may have been written in connection with the "promotion or marketing" of any transaction contemplated hereby ("Transaction"). Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

Any terms set forth herein are intended for discussion purposes only and are subject to the final terms as set forth in separate definitive written agreements. This presentation is not a commitment to lend, syndicate a financing, originate, purchase securities, or commit capital nor does it obligate us to enter into such a commitment, nor are we acting as a fiduciary to you. By accepting this presentation, subject to applicable law or regulation, you agree to keep confidential the information contained herein and the existence of and proposed terms for any Transaction.

Prior to entering into any Transaction, you should determine, without reliance upon us or our affiliates, the economic risks and merits (and independently determine that you are able to assume these risks) as well as the legal, tax and accounting characterizations and consequences of any such Transaction. In this regard, by accepting this presentation, you acknowledge that (a) we are not in the business of providing (and you are not relying on us for) legal, tax or accounting advice, (b) there may be legal, tax or accounting risks associated with any Transaction, (c) you should receive (and rely on) separate and qualified legal, tax and accounting advice and (d) you should apprise senior management in your organization as to such legal, tax and accounting advice (and any risks associated with any Transaction) and our disclaimer as to these matters. By acceptance of these materials, you and we hereby agree that from the commencement of discussions with respect to any Transaction, and notwithstanding any other provision in this presentation, we hereby confirm that no participant in any Transaction shall be limited from disclosing the U.S. tax treatment or U.S. tax structure of such Transaction.

We are required to obtain, verify and record certain information that identifies each entity that enters into a formal business relationship with us. We will ask for your complete name, street address, and taxpayer ID number. We may also request corporate formation documents, or other forms of identification, to verify information provided.

Any prices or levels contained herein are preliminary and indicative only and do not represent bids or offers. These indications are provided solely for your information and consideration, are subject to change at any time without notice and are not intended as a solicitation with respect to the purchase or sale of any instrument. The information contained in this presentation may include results of analyses from a quantitative model which represent potential future events that may or may not be realized, and is not a complete analysis of every material fact representing any product. Any estimates included herein constitute our judgment as of the date hereof and are subject to change without any notice. We and/or our affiliates may make a market in these instruments for our customers and for our own account. Accordingly, we may have a position in any such instrument at any time.

Although this material may contain publicly available information about Citi corporate bond research, fixed income strategy or economic and market analysis, Citi policy (i) prohibits employees from offering, directly or indirectly, a favorable or negative research opinion or offering to change an opinion as consideration or inducement for the receipt of business or for compensation; and (ii) prohibits analysts from being compensated for specific recommendations or views contained in research reports. So as to reduce the potential for conflicts of interest, as well as to reduce any appearance of conflicts of interest, Citi has enacted policies and procedures designed to limit communications between its investment banking and research personnel to specifically prescribed circumstances.

© 2012 Citibank, N.A. All rights reserved. Citi and Citi and Arc Design are trademarks and service marks of Citigroup Inc. or its affiliates and are used and registered throughout the world.

Citi believes that sustainability is good business practice. We work closely with our clients, peer financial institutions, NGOs and other partners to finance solutions to climate change, develop industry standards, reduce our own environmental footprint, and engage with stakeholders to advance shared learning and solutions. Highlights of Citi’s unique role in promoting sustainability include: (a) releasing in 2007 a Climate Change Position Statement, the first US financial institution to do so; (b) targeting $50 billion over 10 years to address global climate change: includes significant increases in investment and financing of renewable energy, clean technology, and other carbon-emission reduction activities; (c) committing to an absolute reduction in GHG emissions of all Citi owned and leased properties around the world by 10% by 2011; (d) purchasing more than 234,000 MWh of carbon neutral power for our operations over the last three years; (e) establishing in 2008 the Carbon Principles; a framework for banks and their U.S. power clients to evaluate and address carbon risks in the financing of electric power projects; (f) producing equity research related to climate issues that helps to inform investors on risks and opportunities associated with the issue; and (g) engaging with a broad range of stakeholders on the issue of climate change to help advance understanding and solutions.

Citi works with its clients in greenhouse gas intensive industries to evaluate emerging risks from climate change and, where appropriate, to mitigate those risks.

efficiency, renewable energy and mitigation