The euro area and its crises

Willem H Buiter
Chief Economist
Willem.Buiter@citi.com
Overview: The euro area crises

- The European project and EMU
- The euro area crises
- How to exit the crises
- Addendum: Why is everybody so happy all of a sudden?
- Czech and Slovak counterfactuals
The four crises of the euro area

- The eurozone crisis is really a tale of four crises:
  1. a currency regime break-up crisis (convertibility crisis or reversibility crisis)
  2. a sovereign debt/fiscal crisis
     - Liquidity crisis
     - Solvency crisis
  3. a banking crisis
     - Liquidity crisis
     - Solvency crisis
  4. a crisis of political legitimacy: existing democratic deficit (lack of ECB accountability, lack of accountability of European Commission, lack of accountability for the European Council (HoSHoGs)) enhanced by
     - Prospects for banking union (further powers for ECB)
     - Greater powers for EC under Fiscal Compact
     - Ability of EC and ECB jointly to invoke QMV for EMS programmes
There was once a dream… The three Ps of European integration

- **Peace**
  - Two world wars and hundreds of years of varied violent conflict in Europe

- **Power**
  - In a world of 9 billion people, how much hope can tiny European nation states have of being influential or even to safeguard their national self-interest?

- **Prosperity**
  - Efficiencies of scale and scope in Europe’s Single Market
  - An ‘innovation union’

→ A common currency is often seen as a key element of European integration, as much because of its political significance (sovereignty = seigniorage) as because of its efficiency-enhancing properties. Also, continental Europeans always more focused on the competitive/beggar-thy-neighbour distortions created by competitive devaluations and the ‘casino’ aspects of floating exchange rates than by the competitiveness restoring & shock-absorbing properties of nominal exchange rate adjustments.
A brief history of European integration

- May 9, 1950: Robert Schuman proposes pooling Europe's coal and steel industries
- April 18, 1951: European Coal and Steel Community (ECSC) Treaty signed
- March 25, 1957: European Economic Community (EC) and European Atomic Energy Community (Euratom) Treaties signed
- April 8, 1965: Treaty merging the institutions of the three European Communities signed
- November 1, 1993: Treaty on European Union enters into force after ratification by the member states

Key Events:

- 1950: ECSC Treaty signed
- 1951: EC and Euratom Treaties signed
- 1957: Treaty merging the institutions of the three Communities signed
- 1965: Treaty on European Union signed
- 1993: Treaty on European Union enters into force

- 1950: May 9, 1950: Robert Schuman proposes pooling Europe's coal and steel industries
- 1951: April 18, 1951: ECSC Treaty signed
- 1957: March 25, 1957: EC and Euratom Treaties signed
- 1965: April 8, 1965: Treaty merging the institutions of the three Communities signed
- 1993: November 1, 1993: Treaty on European Union signed

- 1970: October 3, 1990: The five Länder of the former German Democratic Republic enter the community as part of a united Germany
- 1971: October 21, 1991: European Community and European Free Trade Association (EFTA) agree to form the European Economic Area (EEA)


- 1980: October 3, 1990: The five Länder of the former German Democratic Republic enter the community as part of a united Germany
- 1991: October 21, 1991: European Community and European Free Trade Association (EFTA) agree to form the European Economic Area (EEA)

- 1993: October 1, 1993: Treaty on European Union enters into force after ratification by the member states
- 1995: January 1, 1995: Spain, Austria, Finland and Sweden join the community
- 1996: January 1, 1996: EMU and euro launched in eleven EU countries
- 1997: July 1, 1998: European Central Bank inaugurated in Frankfurt, Germany
- 1999: January 1, 1999: Treaty of Amsterdam is concluded

- 2002: January 1, 2002: Euro notes and coins are introduced in the 12 euro-area countries
- 2003: January 1, 2003: EMU and euro launched in eleven EU countries
- 2004: January 1, 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia join the EU

- 2011: January 1, 2011: Estonia adopts the euro
- 2012: January 1, 2012: Slovakia adopts the euro
- 2013: January 1, 2013: Cyprus and Malta adopt the euro
- 2014: January 1, 2014: Bulgaria and Romania join the EU. Slovenia adopts the euro.
- 2015: January 1, 2015: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia join the EU

- 2015: May 9, 1950: Robert Schuman proposes pooling Europe's coal and steel industries
The Euro: the poster child for European integration

- The case for Economic and Monetary Union (EMU)
  1. reducing exchange rate risk and costs of excessive volatility and misalignments – exchange rates can be manipulated and even market-determined exchange rates driven mainly by financial markets without much regard to underlying competitive conditions
  2. importing German inflation-fighting credibility
  3. encouraging fiscal, monetary, structural and governance reforms
  4. promoting and deepening the European single market (price transparency)
  5. furthering European integration – pathway to a United States of Europe?
  6. ‘dollar envy’

- 1999: Euro launched with 11 member countries (now 17)
  - 2001: Greece joins
  - 2007: Slovenia
  - 2008: Malta and Cyprus
  - 2009: Slovakia
  - 2011: Estonia
  - 2014: Latvia (?)
Some things seemed to work rather well

Real GDP Growth Rates (%ΔYoY)

- Greece
- Spain
- Ireland
- Netherlands

Consumer Prices (%ΔYoY)

- Greece
- Ireland
- Spain
- Portugal
- Italy
- Netherlands

Source: Eurostat
Source: IMF WEO
…and borrowing costs quickly fell…but then…

Mispricing of risk was clearly at work in late 90s and early 00s. Greece is ‘off the chart’
Four proximate causes of the euro area crisis

1. Design flaws in euro area institutions

2. Unsustainable (credit-driven) growth and fiscal models

3. Excessive build-up of debt (sovereign & banks almost everywhere; households and NFCs in many countries)

4. Poor financial regulation –
   - regulatory capture
   - regulatory arbitrage because of financial liberalisation:
     domain of supervision & regulation ≤ domain of mobility of capital, financial enterprises, entrepreneurs & staff

→ only one of them is unique to the euro area
The last decade has seen large increases in debt levels. Total gross (financial and non-financial) debt has increased in virtually all rich countries over the past decade, not just in the euro area.

**Total Non-Financial Gross Debt/GDP Ratio**

Change from 2001 to 2006-12 Peak
- Change since 2001

**Total Financial Sector Gross Debt/GDP Ratio**

Change from 2001 to 2006-12 Peak
- Change since 2001

Note: Non-financial sector includes households (HH), non-financial corporations (NFCs), and general government (GG). Gross debt is equal to total financial liabilities (HH and GG) less shares and other equities (NFC and MFIs) from national balance sheet statistics. Financial Corporations include NCBs. For the US, financial corporations’ and NFC debt correspond to “credit market instruments”. All values are expressed on a non-consolidated basis except for Australia and Portugal. For Slovakia and Czech Republic 2001 corresponds to 2003. Source: National Sources and Citi Research.
Main drivers of increases in public and private sector leverage

**Private sector**
- Asset price increases
- Regulatory liberalisation
- Financial ‘innovations’
- Belief that risk when traded away was gone forever – failure to distinguish between diversifiable and non-diversifiable risk
- ‘Great Moderation’, ‘reach for yield’
- Convergence of borrowing rates in EMU driven by persistently irrational financial markets

**Public sector**
- Budgetary and political processes decouple spending commitments from structurally matching revenue
- Demographics (should not have been a surprise!)
- Erosion of tax compliance/administration capacity
- The crisis itself
- Low yields on ‘safe’ industrial country sovereign debt
Cross-border financial integration also increased rapidly

Fast-growing countries in particular enjoyed large (net) capital inflows, but gross external assets and liabilities increased almost everywhere

Bank Foreign Claims on EA Countries (€ bn), 2005-2012

Gross External Debt (% of GDP)

Note: Consolidated foreign claims (in gross terms) of reporting banks in individual countries on the EA entities (excl. Cyprus, Estonia, Finland, Luxembourg, Malta, Slovakia, Slovenia).
Sources: BIS and Citi Research

Note: Gross external debt for all sectors of the economy.
Sources: BIS and Citi Research
The crisis
Financial crises and deleveraging: the Reinhart-Rogoff story

Multi-year process of private sector deleveraging in rich countries has only just begun

Change in Gross Private Debt/GDP Ratios, 1980 – 2012

Note: t=0 (peak in private debt) corresponds to 2007 (Spain), 2008 (US, UK), and 2009 (EMU). Gross private debt includes total domestic credit to private sector and cross border lending to the nonbank private sector by foreign banks. Average is computed using sample of 12 banking crises as defined in “Debt Reduction after Crises”, BIS, September 2010. Shaded area corresponds to historic average plus or minus 1 standard deviation.

Sources: US Federal Reserve, Eurostat, ONS, BIS, IMF, World Bank and Citi Research
Many EA countries are yet to reach their pre-crisis levels of output

But very slow recovery is in line with the historical experience after systemic banking crises.

Real GDP (2008:Q1=100)

Note: Dotted lines are Citi forecasts. Sources: National Statistical Offices and Citi Research forecasts (May 2013)

Real GDP vs. pre-crisis trend

Note: The shaded area corresponds to the interquartile range of previous episodes, which indicates the middle 50 percent of all crises. From T+5 (2013), real GDP corresponds to Citi Research forecasts. Source: IMF, World Bank, BEA, Eurostat and Citi Research
Domestic demand usually collapses in the aftermath of financial crises

Private saving rises, and net exports and government spending usually cushion the output fall—but both are more constrained in the current episodes.

**Real Private Consumption vs Pre-Crisis Trend**

**Real Investment vs Pre-Crisis Trend**

**Real Net Exports vs Pre-Crisis Trend**


Source: IMF, World Bank, BEA, Eurostat and Citi Research
Public debt has risen a lot and keeps on rising

Crisis-related revenue losses, bank bail-outs & early fiscal stimuli have all led to rising public debt in the euro area – and beyond

---

**General Government Gross Debt (% GDP)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Greece</th>
<th>Portugal</th>
<th>Ireland</th>
<th>Italy</th>
<th>Spain</th>
<th>Slovakia</th>
<th>Czech Rep</th>
<th>EA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: Eurostat, IMF, and Citi Research forecasts (May-2013)

---

**Drivers of Public Debt Increase, 2007-2011**

- Interest-growth dynamics \( (r-g) \)
- Financial sector support
- Fiscal stimulus
- Accommodated revenue loss

---

Source: IMF – Regional Economic Outlook: Europe – Oct 2011

¹Contribution of the interest expenditure (in percent of GDP) adjusted for growth (see Appendix 1, IMF, 2010a). ²Revenue loss associated with output losses from the financial crisis. This is computed as a residual. If the sum of identified drivers of debt is larger than the overall increase in debt, revenue losses from lower output were minimal and/or compensated for by fiscal measures (see Box 1, IMF, 2010c).
Sovereign yields spiked in many EA countries

10-year Govt Bond Spreads over Bund, 1994-2012

Source: Bloomberg
Note: 9-year yields for Ireland
How to deal with a systemic financial crisis?

We can think of three broad archetypes:

1) Decisive policy intervention
   - Fiscal stimulus cum banking sector recapitalisation cum debt restructuring in many sectors
   - Examples: Scandinavia in the ’90s, Iceland and the US more recently
   - Note: many possible sources of funding for bank recaps and balance sheet reconstruction

2) Policy constantly behind the curve, never to catch up, ending in another systemic event
   - Example: Argentina in the early 2000s? Great Depression in many countries, euro area (??)

3) Policy gradualist, but buffeted by political commitment and sources of support
   - Japan (?), euro area (??)
Initial plan looked like option (2)

**Original EA/EU/ECB plan (mid-2010): Hope**

- Fund a few small sovereigns until mid-2013 with liquidity facilities (Greek facility-EFSF-EFSM-IMF) and ECB funds
  - Growth may come to the rescue
  - Incumbents may no longer be in office if it does not

- Why the plan did not work:
  - Growth has still not returned to the Periphery & is unlikely to soon & sufficiently
  - Position of banks in Periphery and core EA worse than assumed/hoped for
  - Facilities not big enough to handle {Greece, Ireland, Portugal} + Spain (including up to €100bn of bank losses assumed by sovereign) + Italy + Cyprus + Slovenia without open-ended & uncapped support from ECB
  - Running battle between ECB and Core EA sovereigns about who will take on exposure to risky debt of Periphery sovereigns and banks (Game of Chicken).
  - Inconsistent combination of growing political resistance – in Periphery and Core – to (1) fiscal tightening and (2) financial support from EU/IMF/ECB and (3) no burden sharing for senior unsecured bank creditors and sovereign creditors

→ main issue is how to bring down debt!
Main crisis response

- May 2009 Creation of the Covered Bonds Purchases Programme I by the ECB
- 3 May 2010 First Greek Programme (size: EUR110bn)
- 9 May 2010 Creation of the European Financial Stability Facility (EFSF)
- 9 May 2010 Creation of the Security Markets Programme (SMP) by the ECB
- 10 May 2010 Creation of the European Financial Stabilisation Mechanism (EFSM)
- 28 November 2010 Ireland Programme (size: EUR85bn)
- 17 May 2011 Portugal Programme (size: EUR78bn)
- November 2011 Creation of the Covered Bonds Purchases Programme II by the ECB
- 23 December 2011 ECB conducts Long Term Refinancing Operations (LTROs) for EUR489bn
- 29 February 2012 ECB conducts Long Term Refinancing Operations (LTROs) for EUR530bn
- 20 March 2012 Second Greek Programme (size: EUR173bn)
- 27 June 2012: Spain seeks financial support for banks
- 27 June 2012: Cyprus seeks financial support for banks and sovereign
- 29 June 2012: EC agrees on creating a European banking supervisory mechanism
- 20 July 2012: Eurogroup grants financial assistance to Spain’s banking sector (size: EUR100bn)
- 26 July 2012: Speech by Mario Draghi on ‘whatever it takes’ to save the euro
- 6 September 2012: ECB announces a new conditional sovereign debt purchase instrument OMT
- 8 October 2012: ESM is launched
- 13 December 2012: Council agree (mas o menos) position on SSM
How to reduce public and private debt over time?

**Public Sector**
- A higher growth rate of GDP
  - Not an instrument, unfortunately
- A lower interest rate on the public debt
  - QE
  - Financial repression
- Fiscal pain
- Increased recourse to revenues from CB (possibly, but not necessarily requiring excess inflation)
- Bailout – mutualisation
- Default/restructuring of debt

**Private Sector**
- A higher growth rate of GDP
  - Not a choice variable for private entities
- A lower interest rate on the outstanding debt
  - Financial repression is not a private sector instrument (but governments can for concessions from lenders)
- Financial surpluses
  - raising revenue not generally an option
- Bailout from the govt, foreign govts or CB
- Default/restructuring of debt
Ingredient I: Austerity

Public finances were on an unsustainable trajectory in many EA countries, so austerity was necessary.

General Government Gross Debt (% of GDP)  
Change in Gen Gov Cycl-Adj Primary Balance (% of GDP)

Note: Debt corresponds to general government gross debt. 
Source: IMF and Citi Research Forecast (May-2013).
Sense and Non-sense in the austerity vs growth debate

Recessionary environments raise fiscal multipliers – but what is the alternative? Social acceptance matters but so do funding constraints and political economy

- Both more and less austerity to come
  - ‘More’: future austerity > 0, (in fact > current austerity), but ‘less’ than originally planned

- ‘Growth’ is not the only constraint: funding, loss exposure, political economy within and between countries
  - And ‘growth’ is not a policy

- What is the alternative to austerity:
  - If it is more spending/tax cuts, who will fund it? Who will pay it back? Is that credible?
  - Does fiscal austerity increase the deficit? Is there a Keynesian Laffer curve?

- Reinhart-Rogoff made an error – but another mistake was to interpret their findings as a strict one-directional causal relationship

- Debt is an impediment to growth even if there is no ‘cliff’ effect

Europe: Growth Forecast Errors vs. Fiscal Consolidation Forecasts

Note: Figure plots forecast error for real GDP growth in 2010 and 2011 relative to forecasts made in the spring of 2010 on forecasts of fiscal consolidation for 2010 and 2011 made in spring of year 2010; and regression line. Source: Blanchard and Leigh, “Growth Forecasts Errors and Fiscal Multipliers”, 2013, IMF
Ingredients 2 & 3: banking union and sovereign debt restructuring

Only banking union & sovereign and bank debt restructuring can save euro

Banking union and bank restructuring

- Only single supervisor and single EA resolution regime/fund and recapitalisation fund were proposed at the June 2012 Summit
  - Even there, the timetable and conditions remain unclear
  - To save euro, actual bank recovery/restructuring/resolution/recapitalisation has to start immediately, not wait till 2018 (!), for Greece, Portugal, Spain, Cyprus, Slovenia and core EA, before bad bank assets migrate further to sovereign
- Common regulatory framework (single rule book), necessary to save euro (banks as Societas Europaea)
- EA-wide deposit guarantee regime and fund
  - helpful to contain the effects of Grexit, & fear of depositor bail-ins but not essential for survival
- EA-wide unsecured term funding guarantee fund for banks;
  - not essential for survival, but likely necessary for normally functioning bank term unsecured funding markets

Sovereign debt restructuring

- Extensive mutualisation of sovereign debt remains unlikely
  - Applies to joint issuance (E-bonds or Euro bonds for legacy or new issuance), large fiscal transfers and back-door mutualisation through the ECB
- Sustainable private market access also remains elusive for many EA sovereigns
  → Debt restructuring is necessary
    - to save the euro
    - for growth to resume
- The candidates are plentiful:
  - Greece
  - Portugal
  - Ireland (w/out further restructuring of bank bailout (OSI), risk of PSI)
  - Possibly Cyprus, Italy, Spain and Slovenia if bad private assets migrate to sovereign

Only banking union & sovereign and bank debt restructuring can save euro.
Complement to austerity I: Monetary support, but not activism

ECB has saved the day on many occasions during this crisis so far

1) Rate cuts
   - 375bp cuts since 2008 to 0.5% for MRO

2) Asset purchases
   - SMP for unconditional, outright sovereign debt purchases
   - CBPP for covered bonds

3) Bank funding facilities
   - Repeated easing of collateral standards
   - 3-year LTROs in early 2012

4) OMT
   - Yet to be used; conditional outright sovereign debt purchases

Source: ECB

MRO= Main Refinancing Operations fixed rate or refi rate
CBPP= Covered Bond Purchase Programme
Could the ECB still do more?

The ECB has not emptied its coffers, but there are considerable political, cultural, financial and some legal hurdles to further decisive action.

1) More rate cuts
   – Negative deposit rates (at least on excess reserves)

2) Helicopter money
   – Cash transfers to households or public spending on infrastructure financed permanently by increasing the monetary base
   – Always raises real output and/or prices
   – Conditions right in Japan, EA and US

3) Further easing of collateral standards

4) Purchases of private assets

5) QE

→ Other AE central banks have in fact been even more active than the ECB recently

![Balance sheet size of Central Banks](chart.png)

Source: National Central Banks
Central banks as buyers and market makers of last resort

Central banks are holding more government debt outright, both in absolute terms and relative to the size of their balance sheet, but in the EA far less than elsewhere.

Central Bank outright holdings of government debt

% of GDP

% of total CB assets

Sources: National Central Banks and Statistical Offices
Complements to austerity II: Financial repression

In many countries, governments likely to aim to lower cost of carrying their debt burden by engaging in financial repression

- **Financial repression:**
  - “the use of regulatory or administrative measures, moral suasion and other pressures to induce banks and other regulated/politically susceptible entities to hold more sovereign debt than they would otherwise hold and/or hold it at lower yields”.

- **Forms of financial repression:**
  - Regulatory minimum ‘liquidity buffers’ for banks
  - Very low (zero) risk weights of sovereign debt for banks’ RWAs
  - Mandating use of government bond yields as discount rates for insurance portfolios + mismatch penalties through insurance premia.
  - Reserve requirements for banks
  - Restrictions or mandates on credit allocation
  - Binding interest rate ceilings on deposits or other financial assets
  - Capital controls
  - Application of ‘soft power’ on regulated institutions (banks, insurance firms, pension funds) by governments, regulators and central banks to buy more sovereign debt
Many measures are taken, some are working…

Austerity is painful, but not self-defeating. Competitiveness is improving.

**Current Account Balance (% of GDP), 2007 – 2017F**

<table>
<thead>
<tr>
<th>Year</th>
<th>Portugal</th>
<th>Ireland</th>
<th>Italy</th>
<th>Greece</th>
<th>Spain</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>-15%</td>
<td>-10%</td>
<td>-5%</td>
<td>0%</td>
<td>5%</td>
<td>-15%</td>
</tr>
<tr>
<td>2009</td>
<td>-10%</td>
<td>-5%</td>
<td>0%</td>
<td>-2%</td>
<td>0%</td>
<td>-10%</td>
</tr>
<tr>
<td>2011</td>
<td>-5%</td>
<td>0%</td>
<td>1%</td>
<td>-3%</td>
<td>2%</td>
<td>-5%</td>
</tr>
<tr>
<td>2013</td>
<td>0%</td>
<td>5%</td>
<td>3%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>2015</td>
<td>5%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>2017</td>
<td>10%</td>
<td>15%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

**12-month cum Budget Deficits (€ bn), 2000 – Apr 2013**

<table>
<thead>
<tr>
<th>Year</th>
<th>Portugal</th>
<th>Ireland</th>
<th>Italy</th>
<th>Greece</th>
<th>Spain</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>-40%</td>
<td>-20%</td>
<td>0%</td>
<td>-20%</td>
<td>-20%</td>
<td>-40%</td>
</tr>
<tr>
<td>2009</td>
<td>-20%</td>
<td>-10%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>-20%</td>
</tr>
<tr>
<td>2010</td>
<td>0%</td>
<td>20%</td>
<td>30%</td>
<td>5%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>2011</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>10%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>2012</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>15%</td>
<td>15%</td>
<td>40%</td>
</tr>
<tr>
<td>2013</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>20%</td>
<td>20%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Sources: IMF World Economic Outlook.

Note: 12-month accumulated Central Government Deficit.
But many large imbalances remain and some are widening

Target2 imbalances are still very large. Unemployment rates are now at historical highs in many countries

Target2 balance outstanding (EUR bn), 2003 – 2013

Unemployment Rate (%)
2003 – 2013

Source: National Central Banks and Citi Research.
Source: Eurostat
‘The euro area will not fall apart’

…but it’s likely to be rocky and ugly at times in years to come

● EA approach to resolving the sovereign debt and banking crisis
  – **Piecemeal** and reluctant agreements to extending fiscal firewall (EFSF/ESM, SDRM)
  – Continued focus on **austerity** in the fiscally weak countries
  – **Regulatory forbearance** for banks and **financial repression** to purchase govt bonds
  – **Lender of last resort** support for sovereigns and banks (but not in words) by the ECB
  – Some **structural reforms**, notably in the fiscally weak countries

● Implications:
  – Many years of **low growth** and even lower domestic demand growth
  – Intermittent **crisis periods**
  – **Additional sovereign bail-out programmes**
  – Additional sovereign debt restructuring (OSI and also some PSI)
  – Low credit growth, zombie banks in vast majority of EA member states until banking union is completed
  – **Greek and/or Cypriot exit still** plausible, wholesale EA breakup remains unlikely
  – no (domestically generated) inflation; material risk of deflation in 2014 and beyond

…but it’s likely to be rocky and ugly at times in years to come
What does it take for the EA to survive *and* prosper?

1. More flexible, contestable labour markets, professions and product markets
2. Moving from protecting existing jobs to *flexicurity*
3. Large-scale immigration to fill the demographic vacuum
4. Active life-long learning/education

→ Without 2. 3. and 4., the euro area will be viable, solvent but increasingly poor and unproductive.
Why not move to fiscal union?

Fiscal union is neither necessary nor politically feasible currently

EU Poll - Stereotypes in Europe: Which EU nation is most likely to be named...

<table>
<thead>
<tr>
<th>Views in:</th>
<th>Most Trustworthy</th>
<th>Least Trustworthy</th>
<th>Most Arrogant</th>
<th>Least Compassionate</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>🇬🇧</td>
<td>🇬🇧</td>
<td>🇬🇧</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>France</td>
<td>🇫🇷</td>
<td>🇫🇷</td>
<td>🇫🇷</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>Germany</td>
<td>🇩🇪</td>
<td>🇩🇪</td>
<td>🇩🇪</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>Italy</td>
<td>🇮🇹</td>
<td>🇮🇹</td>
<td>🇮🇹</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>Spain</td>
<td>🇪🇸</td>
<td>🇪🇸</td>
<td>🇪🇸</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>Greece</td>
<td>🇬🇷</td>
<td>🇬🇷</td>
<td>🇬🇷</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>Poland</td>
<td>🇵🇱</td>
<td>🇵🇱</td>
<td>🇵🇱</td>
<td>🇬🇧</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>🇨🇿</td>
<td>🇬🇷</td>
<td>🇬🇷</td>
<td>🇬🇧</td>
</tr>
</tbody>
</table>

EU Poll - Most Important Challenge to Address First (%)...

<table>
<thead>
<tr>
<th></th>
<th>Lack of emp'y opport.</th>
<th>Public debt</th>
<th>Rich-poor gap</th>
<th>Rising prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>46</td>
<td>22</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>France</td>
<td>51</td>
<td>20</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Germany</td>
<td>23</td>
<td>21</td>
<td>42</td>
<td>6</td>
</tr>
<tr>
<td>Italy</td>
<td>64</td>
<td>9</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Spain</td>
<td>72</td>
<td>12</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Greece</td>
<td>52</td>
<td>17</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Poland</td>
<td>61</td>
<td>4</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>64</td>
<td>17</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

Median: 57, 17, 11, 9

Note: Poll conducted in eight EU countries among 7,646 respondents from Mach 2 to March 27, 2013. Source: Pew Research Centre
So why are financial markets so happy currently?

A case of ‘Financial markets can remain irrational longer than you can stay solvent’? Liquidity, reach for yield, and career incentives play a large role.

Note: Latest refers to 23 May 2013. Source: Bloomberg

Note: EA – Euro Area. RHS axis is inverted. Sources: Bloomberg and Citi Research
Some near-term tail risks didn’t materialise & other good news

- Growth in China appears to have stabilised – **no hard landing** likely in the near term
- Growth in the US seems to have stabilised – **no double dip** in the US unless we run into a fiscal confidence crisis over the debt ceiling, sequestration etc.
- Thanks to **Abenomics**, Japan looks likely to have up to two years of cyclical recovery and an end to deflation
- The risk of **Grexit** has receded in the short term
- ... and risk of near-term sovereign **default** in Italy and Spain or large-scale **break-up** in the euro area has diminished
- **BUT**: there remain risks galore
The ‘Grexit’ question – should Greece leave?

Grexit would likely be very costly for Greece

- **Benefits of euro area exit for Greece:**
  - Debt default/restructuring
    - But they can do that within the euro area!
  - Devaluation of the currency
    - But it’s the real ER that matters and overshooting/volatility would likely be large
  - ‘Catharsis’: An end with horror might be better than a horror without end…

- **Costs of euro area exit would be much bigger**
  - Loss of troika funding for sovereign and ECB funding for banks
    - Some ‘aid’ would be very likely even post-exit – Greece would likely remain EU member
  - Even bigger capital flight, run on banks
  - Further deterioration of prospects for governance, fiscal and structural reform
    - High inflation, volatile growth at best
  - Major hardship for population likely during transition period
    - Risk of major social, political and economic turmoil

Grexit would likely be very costly for Greece
The ‘Grexit’ question – what happens to the rest, i.e. us?

Implications of Grexit depend crucially on the policy response by ECB

● Without decisive policy response:
  – ‘exit fear contagion’ likely to spread from Greece to Portugal, Ireland, Italy and Spain
    • Defaults of financial institutions and sovereigns likely
    • Large falls in asset prices across the board
    • Substantial negative effects on growth in Europe, but also elsewhere
    • Risk of full euro area break-up

→ Costs would be in the trillions of euros!

● With decisive policy response (activation of OMT, possible new LTROs)
  – ‘exit fear contagion’ would be contained: euro area would live for another day
    • Negative effects on growth and asset prices still likely, but more moderate
Better to be in or out? Not an easy question to answer.

SK catching up faster over the (short) period since EA membership, but EA entry may have spurred overheating. Overall, EA entry likely net beneficial, assuming EA moves to banking union soon. Once in, staying in is usually clearly superior.

**GDP per Capita (PPP €)**

- **Czech Republic**
- **Slovakia**

**Real GDP (%YoY)**

- **Czech Republic**
- **Slovakia**

Note: GDP per capita in purchasing power adjusted euros.

Source: Eurostat
Conclusion: The EA crisis is not over yet, but the euro will survive

● Real progress is being achieved or envisaged on various fronts…
  – Deficit reduction, structural reform, banking union, bail-out facilities

● … but actions to date remain clearly insufficient
  – On all of the above!

● Removal of near-term tail-risk of large-scale breakup should not be confused with crisis resolution & absence of default risk on sovereign & bank debt

● EA comprehensive break-up remains unlikely…
  – BUT its avoidance likely requires decisive action on banking union and sovereign & bank debt restructuring

● The most likely scenario remains ‘muddling through’:
  – gradual policy measures
  – low growth
  – no (domestically generated) inflation
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, 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/reppublic/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  Willem Buiter

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 Wealth Management disclosure website at www.morganstanley.com/online/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 68 004 325 080 and AFSL 238088). 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, Reutenweg 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 may be 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, 5F, Citibank Tower, Bapindo Plaza, Jl. 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 Israel 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 (61 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&typeDiv=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 Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In New Zealand the Product is made available to “wholesale clients” only as defined by s5C(1) of the Financial Advisers Act 2008 (FAA) through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Pakistan by Citibank N.A., Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1-1, Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the Philippines through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bld. 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 Appraisals 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). 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 the 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, redisseminated 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