RESEARCH

Country Risk Quarterly Report

Cross-Country Emerging Markets – August 2012

Summary

Financial Markets & Global Risk Aversion	• **Financial Stress relaxed somehow after increasing expectations on further policy support driven by the ECB and US Quantitative Easing.** However, financial tensions remain high in Europe while US and Emerging markets relaxed somewhat • **Capital flows experienced some volatility.** Global risk aversion in Spring dragged down net flows into negative territory, specially in May. In June there was an improvement in inflows in most of the regions
Sovereign Markets & Ratings Update	• **Sovereign risk premiums continued to be high and extremely volatile in in Europe** with some breath after the ECB decision to buy debt in the secondary market. With some exceptions, **Emerging Markets' risk premiums continue to improve, specially after the Summer rally** • **The downgrade cycle re-ignited in Western** Europe with Italy's and Spain downgraded again and downgrade pressure still high according to the CD Swap quotes. **The EM rating convergence play with developed markets continued with new upgrades in EM Europe, LatAm and Asia. Upgrade potential has increased in LatAm while Asia moved to the neutral area**
Our own country risk assessment	• **Our tools and models suggest that Western Europe's vulnerability remain high.** The ECB intervention in secondary debt markets could be a positive if high borrowing cost will be reduced substantially and permanently. There is also risk in some of the non EU periphery countries as France and UK • **Emerging European** countries continue to be among the riskiest among the EM. However, there are some positive news in the big countries. Turkey's soft landing and current account reduction increase the likelihood of an update of ratings. **In LatAm some of the countries could join the upgrade cycle in the coming months** joining the recent upgrade in Peru. **In Asia, we continue to favor South East Asian economies as Indonesia and we don't see excessive risks in China** despite the economic slowdown. We maintain our assessment on **India as the most vulnerable country in the region**

Summary

Special Topic:

A bird´s eye on excess credit and housing prices.

- **Excessive credit growth has been signaled as one of the most powerful leading indicators of financial crisis.** Although interpreting unsustainable situations is not an easy task, **international organizations have recently focused on some benchmarks which can be interpreted as a early warning signals**
- **Developed Economies experienced both private credit and real housing price excesses since 2005 reaching a peak just before the financial crisis explode. However, there were different situations:**
  - The **US and the UK** experienced **both booms but longer in the case of housing prices**
  - **EU periphery countries "overheating" period was longer**; it actually started a few years before the rest of developed countries
  - **The situation in Germany was completely the opposite.** After a bubble burst in 1994 both credit and housing prices declined or stagnated during almost one decade. This help to explain the resilience of the German economy
- **The pre crisis situation in Emerging Markets was generally different and it masks important differences. Some of the Asian and Latam countries experienced a long lasting correction after their respective crises in the late 90s, which makes premature to consider the recent recovery as a "bubble". The case of Emerging Europe is different since credit growth was excessive before the 2007-2008 crisis:**
  - The **Asian countries were generally experiencing a long lasting correction before the 2008 crisis** of both credit and housing prices since the Asian Crisis). **The recent regional signs of strong recovery are partially the result of a rebound from very low levels after a long period of correction**
  - **LatAm followed the Asian pattern after the 1990s, but deleveraging was short lived. As in Asia we don't consider that current misalignments are as markets are now closer to equilibrium levels**
  - **Emerging Europe was the outlier** among the EM. **The size and duration of excess growth in credit and housing prices was similar or higher than their Western neighbors. The damaging effects of the 2008 burst explains the higher vulnerability** of the region among the EM

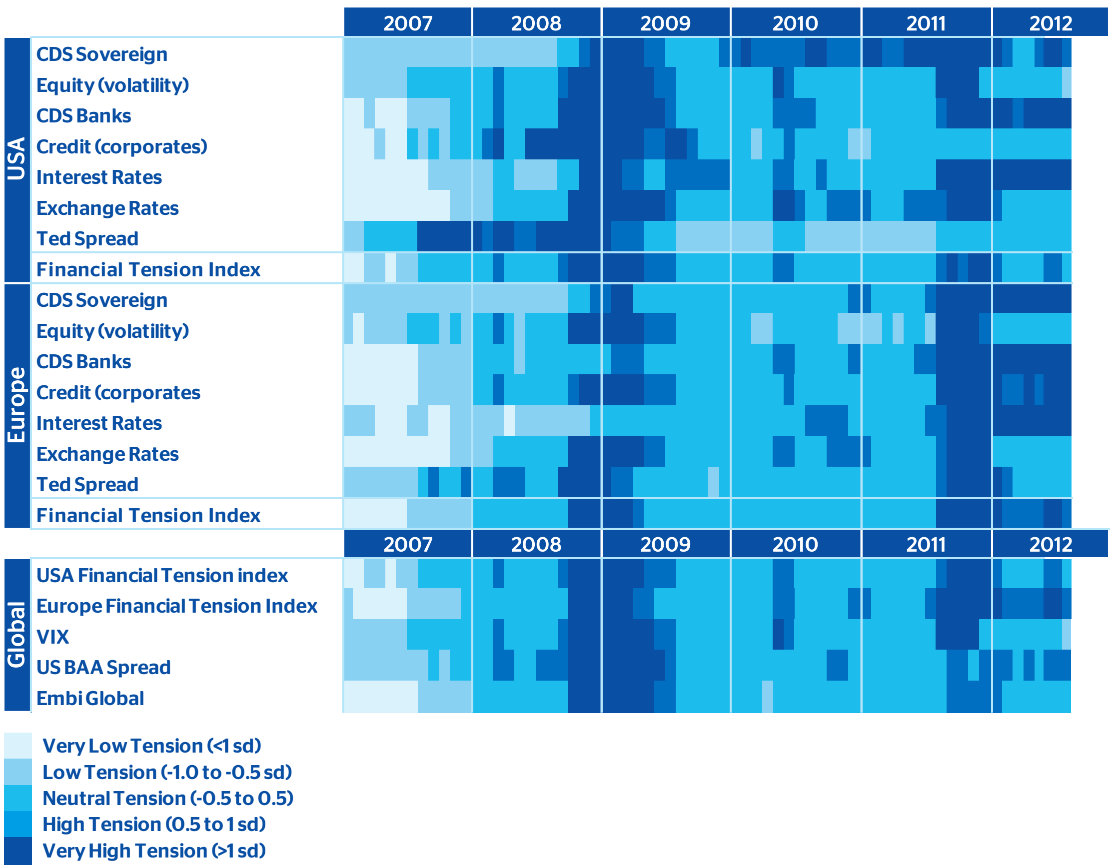
Index

Section 1

Financial Markets Stress & Global Risk Aversion

Financial Stress Map

Source: BBVA



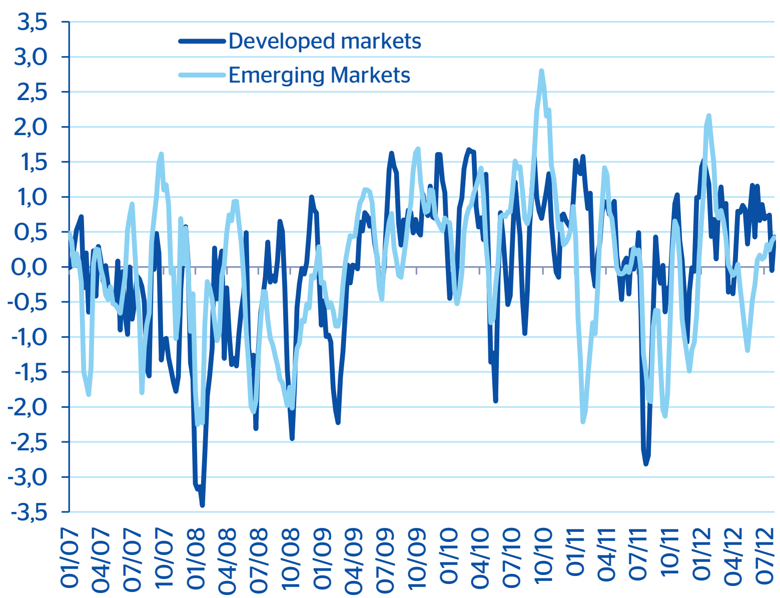
- **Developed Markets Financial Stress experienced high volatility since Q2/12. Very high levels of stress were followed by a relaxation period after ECB´s comments on decision to intervene in bond markets.** The divergence between Europe and US markets remain, with financial tensions still at high levels in Europe and lower in the US financial markets and particularly in Emerging Markets
- In **Europe our financial stress index relaxed somehow during the summer driven by the ECB comments. However, the stress index remain in high tension area** with sovereign, banks CDS and interest rate volatility still maintaining high tension
- **US Financial Stress relaxed entering in the neutral area but showing some stress in some segments.** Most of the segments went back to neutral. Similar to Europe, Sovereign and Banks CDS and interest rate volatility stay at high stress levels, while equity volatility entered in the positive area during the summer rally
- **Emerging Markets assets continued to show some resilience despite uncertainty in developed financial markets.** Traditional Global indicators index (as the VIX equity volatility index and Corporate Baa spreads) stayed at neutral or positive levels. However, some emerging markets asset class as commodity markets and exchange rates have suffered a higher degree of volatility

Section 1

Capital Flows Update

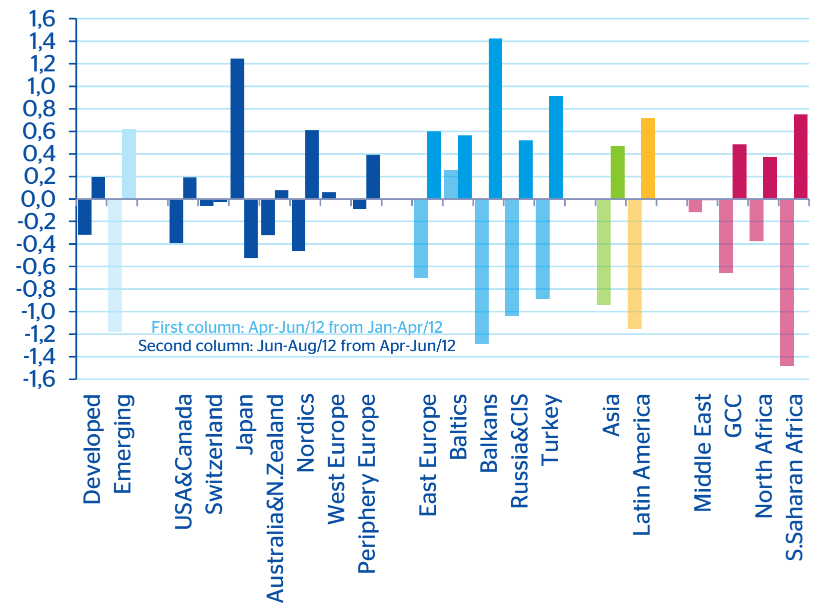
Equity & Bond Fund Flows 2007-2012

(country basis; standardized units of 4wMA over the 2007-2012 period)
Source: EPFR and BBVA Research



Equity & Bond Fund Flows 2012: a new back and forth wave

(change of averages between periods; standardized units over the 2007-2012 period)
Source: EPFR and BBVA Research



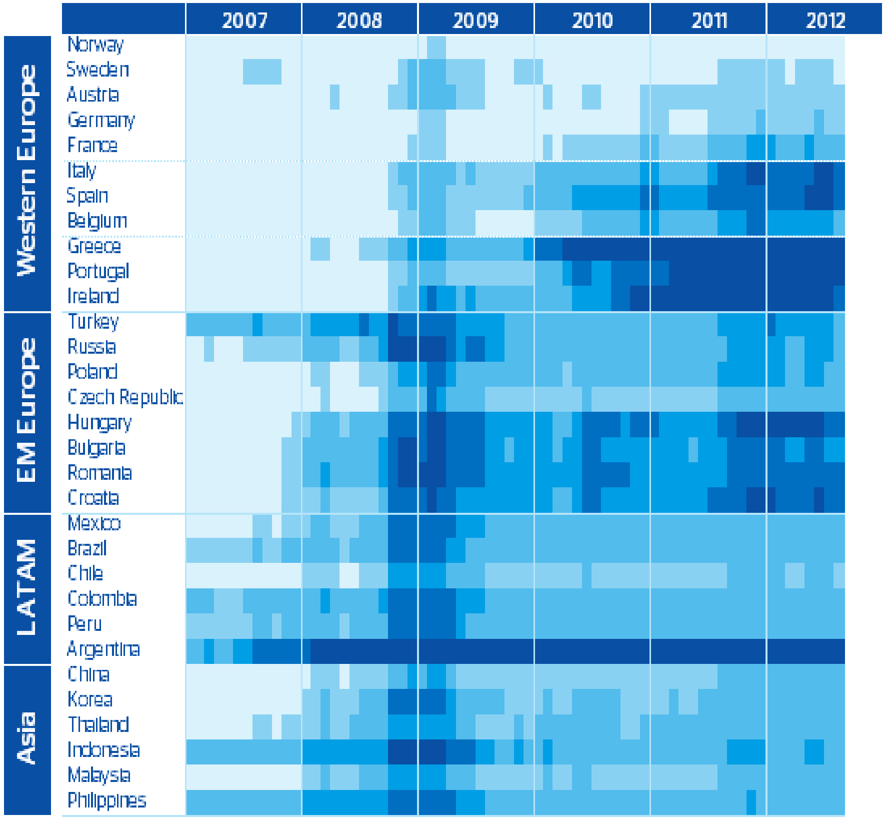
- **Renewed global risk aversion in spring dragged down EMs net flows into negative territory, specially in May,** although the episode was softer than in H2/11; **ongoing recovery followed since June including flows to EU periphery,** also at more moderate pace than in Q1/12
- Among EMs, **full recovery of fund inflows is recorded only for the Balkans and Turkey,** while the Baltics are the only area improving in both sub-periods despite the euro crisis; **both Asia and Latin America are more than halfway in the recovery process with respect to spring reversal,** while Russia & CIS and Sub Saharan Africa are the areas with the worst net balance

Section 2

Sovereign Markets Update

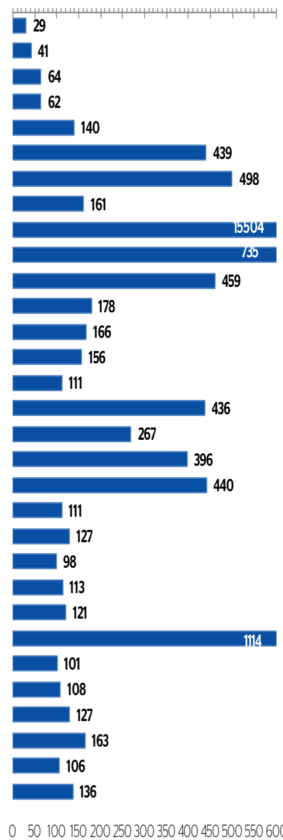
Sovereign CDS spreads

Source: Datastream and BBVA Research



August 2012

Updated August 28th



Sovereign CD Swaps Map: It shows a colour map with 6 different ranges of CD Swaps quotes (darker >500, 300 to 500, 200 to 300, 100 to 200, 50 to 100 and the lighter below 50bp)

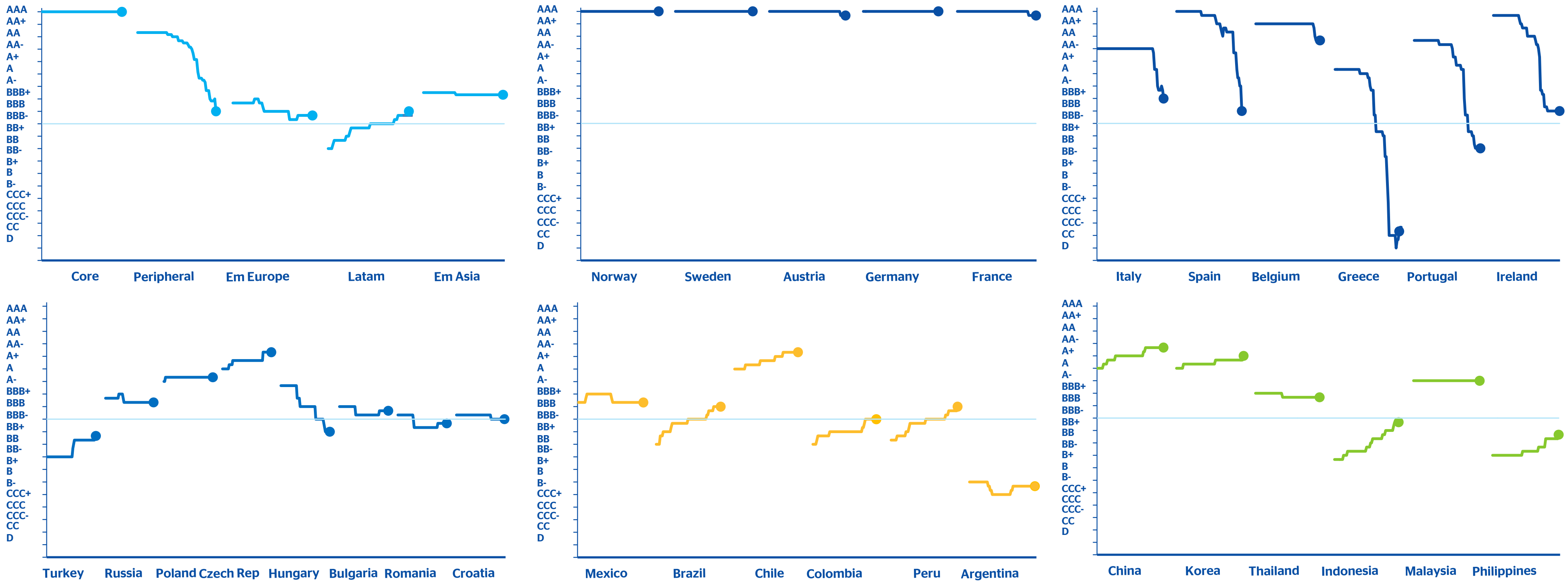
- **Europe's CD Swap spreads relaxed after a period of extreme volatility in some of the EU periphery countries.** Spain and Italy reached extreme levels even after the EU authorities provide help for Bank Re-structuring in the former. Only after the ECB announced the possibility of supporting debt yields, CD Swaps relaxed significantly. However, sovereign premiums remain high and uncertainty about the support by EU authorities remain. Belgium and some of the Bailed out countries (Ireland and Portugal) risk premiums relaxed
- **Eastern Europe sovereign CD Swaps stabilised.** Hungary's CD Swaps relaxed as it happened in Poland, and Bulgaria. Turkey´s risk premium decreased benefited by the soft landing and the improvement by Moody´s. Russia´s risk levels increased after the sharp correction in oil prices. Romania experienced the sharpest increase in the Region
- **Latin American sovereign CD Swaps remained at relatively safe levels in the Emerging Markets group.** Chile continued to be the outperformer quoting below the 100bp. Mexico maintained similar levels than in our previous report, while Brazil deteriorated somehow due to poorer growth perspectives. **Argentina and Venezuela CD Swaps remained high and increasing**
- **Most of the Asian CDS spreads remain under the 200 bp mark with no significant movements in either direction.** There were some improvements in Thailand, with Malaysia and Indonesia experiencing a marginal deterioration.

Section 2

Sovereign Credit Ratings Update

Sovereign Rating Index 2007-2012

Source: BBVA Research by using S&P, Moodys and Fitch Data



Sovereign Rating Index: An index that translates the three important rating agencies ratings letters codes (Moody´s, Standard & Poor´s and Fitch) to numerical positions from 20 (AAA) to default (0) . The index shows the average of the three rescaled numerical ratings.

- **Developed Economies: The Sovereign Rating downgrade cycle re-ignited, with Italy, Spain and Japan experienced some downgrades** and some warning signals about the US fiscal situation by some of the rating agencies.
- **The rating convergence of Emerging markets with developed economies continued** respect to our previous report **except some mixed results in Emerging Europe,** Slovenia was downgraded on serious banking problems while **Turkey was upgraded** by Moody´s and receive positive comments by Fitch. **In LatAm, Peru joined the upgrading cycle while in Asia, rating agencies upgraded some countries as Indonesia and South Korea**

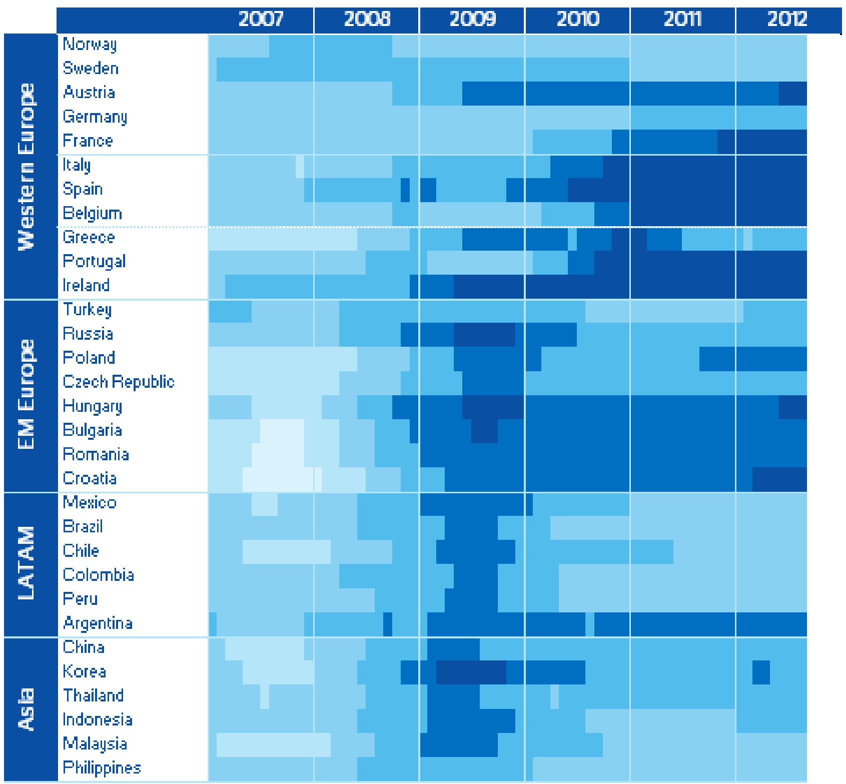
Section 2

Sovereign downgrade Pressures Map

Rating Agencies Downgrade Pressure Map

(actual minus CDS-implied sovereign rating, in notches)

Source: BBVA Research



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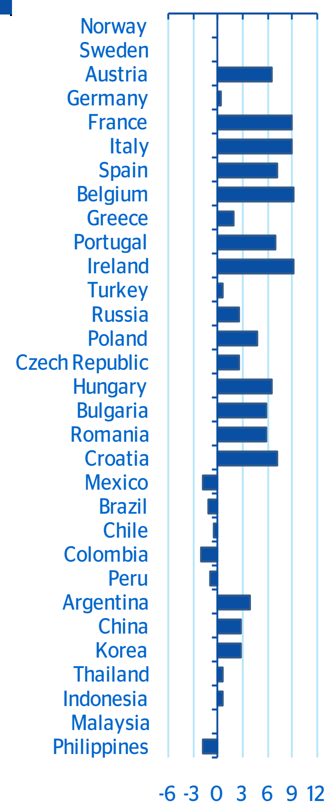
Updated 28th August



- **Short term rating downgrade pressures relaxed during the summer. However, implicit ratings by Sovereign Credit Default Swaps continue to show that European Downgrade pressures remain high. Emerging markets moved to the neutral or upgrade momentum area with the exception of Emerging Europe.**
- **The downgrade pressure continued to be intense in the EU periphery** with CD Swaps quoting 6 to 9 notches below the actual ratings. **This pattern is specially intense in France, Italy, Belgium and Ireland. Spain downgrade pressures relaxed** after the official rating downgrades and the ECB intentions to intervene in secondary bond markets. **However, is still quoting below the official ratings.**
- **Pressure for downgrades in Emerging Europe remained in** Hungary and Croatia showing the higher risk according to the market, Turkey remains the safest quoting at official rating levels.
- **LatAm moved to the upgrade area** with implicit ratings at experiencing mild upgrade pressures most of the countries with Colombia and Mexico showing the higher upgrade pressure.
- **Asia**, remains in the neutral area. The **Philippines continued to signal some upgrade potential,** meanwhile China and Korea (after the recent upgrade) quotes in the neutral area (-/+ 3 notches).

Downgrade Pressure Map: The map shows the difference of the current ratings index (numerically scaled from default (0) to AAA (20)) and the implicit ratings according to the Credit Default Swaps. We calculate implicit probabilities of default (PDs) from the observed CDS and the estimated equilibrium spread. For the computation of these PDs we follow a standard methodology as the described in Chan-Lau (2006) and we assume a constant Loss Given Default of 0.6 (Recovery Rate equal to 0.4) for all the countries in the sample. We use the resulting PDs in a cluster analysis to classify each country at every point in time in one of 20 different categories (ratings) to emulate the same 20 categories used by the Rating Agencies.

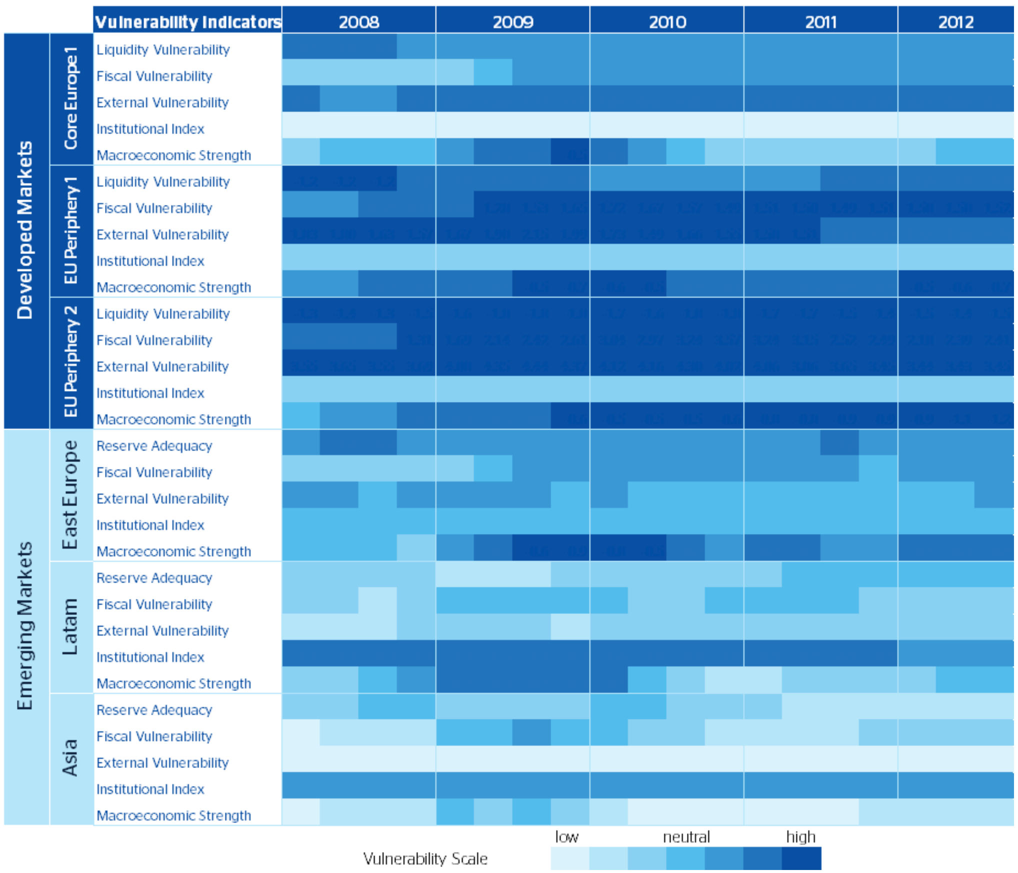
Section 3

World Vulnerability Map

Macroeconomic Vulnerability Map

(scaled through principal components of several vulnerability variables.)

Source: BBVA Research



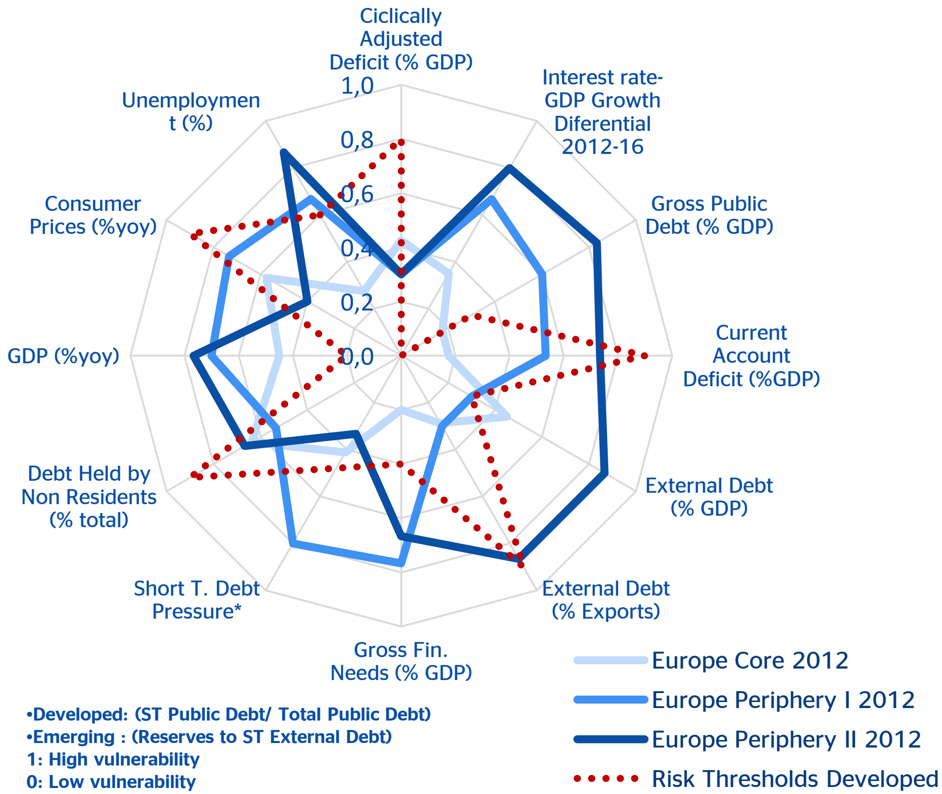
- **Vulnerability in Europe´s Core Countries (Central Western Europe and the Nordics) remains high relative to historical levels although lower than periphery countries.** There were some deterioration in the fiscal front during Q2/12 as public debt increased
- **EU Periphery Countries (Belgium, Italy, Spain)** risk continue to be concentrated in the fiscal dimension. Beyond this, liquidity and external risks remain important despite the external adjustment in some of the countries. The macroeconomic vulnerability index stays high as economic activity and unemployment deteriorated
- **Vulnerability in EU Bailed Out Countries (Greece, Ireland and Portugal) remains extremely high** with liquidity, fiscal and external weaknesses at maximum levels
- **Emerging Europe continued to underperform the rest of EM** countries with the reserve adequacy and macroeconomic dimensions still in negative area
- **Latin America vulnerability remains relatively low** with most of the components below neutral levels. The institutional index remain the main drag for the region
- **Emerging Asia continues to be the least risky area.** Most of vulnerability dimensions remain at neutral or low vulnerability

Section 3

Regional Risk Update: Western Europe

West Europe: Vulnerability Radar 2012

((all data for 2012, Relative position for the Developed Economies)
Source: BBVA Research



•Developed: (ST Public Debt/ Total Public Debt)
•Emerging : (Reserves to ST External Debt)
1: High vulnerability
0: Low vulnerability

- **The Western Europe vulnerability position remains high. Our new vulnerability radars include risk levels taken from the literature of crisis and show that fiscal, external, liquidity and macroeconomic ratios remain at poor levels with some exceptions (the EU core countries)**
- As observed**, fiscal vulnerability is high relative to the risk threshold levels.** Despite the efforts to reduce cyclically adjusted deficits, countries face high gross public debt levels and poor growth perspectives. This is particularly acute in the EU periphery countries.
- **Structural reforms are paying off by reducing External vulnerability specially in the flow variables.** The on-going adjustment process in the EU periphery has allowed the correction of current account deficits , except in some of the bailed out countries (Europe Periphery II) like Greece. However, the stock variables still show high vulnerability as external debt to GDP ratios remain near or above the risk thresholds limits for developed countries.
- **Liquidity indicators are still at risk except in the core countries (Germany, France and the Nordics).** Gross financing needs maintain high levels and short term public debt relative to total debt is still high in the periphery countries. This implies a high dependence on conditions in financial markets or assistance
- **The macroeconomic dimension (GDP, Inflation and unemployment) is still highly vulnerable. Most of the countries will experience very low levels of GDP growth with unemployment surpassing risk thresholds in the EU-periphery**

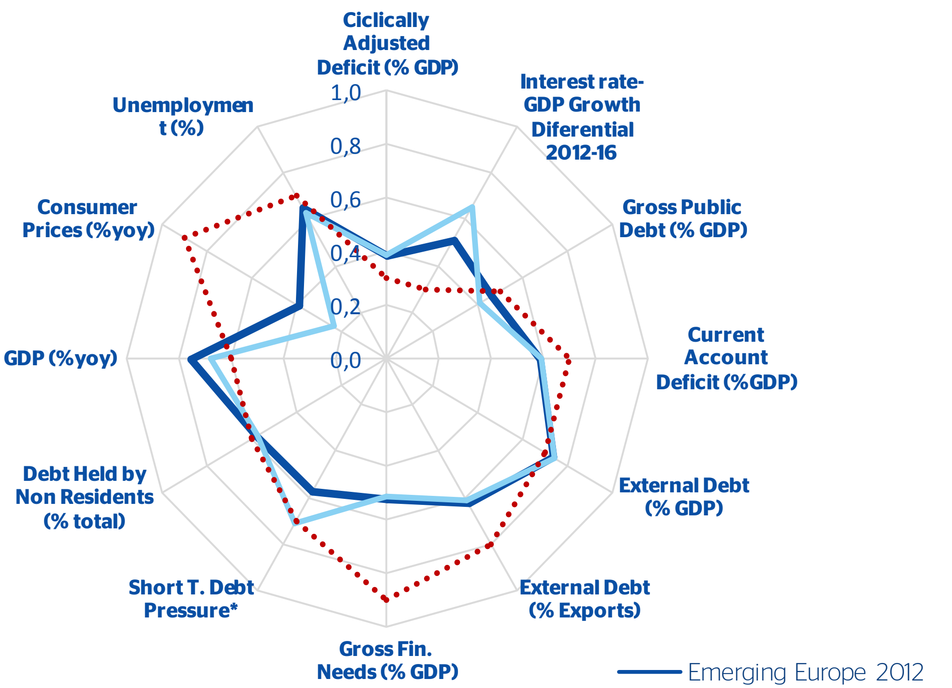
Vulnerability Radar: Shows a static and comparative vulnerability for different countries. For this we assigned several solvency , liquidity and macro variables and we reorder in percentiles from 0 (lower ratio among the countries to 1 maximum vulnerabilities.) Furthermore Inner positions in the radar shows lower vulnerability meanwhile outer positions stands for higher vulnerability. Risk Thresholds have been defined according to the academic literature on crisis and historical levels.

Section 3

Regional Risk Update: Emerging Europe

Emerging Europe: Vulnerability Radar 2012

(all data for 2012, Relative position for the Emerging Market countries)



•Developed: (ST Public Debt/ Total Public Debt)
•Emerging : (Reserves to ST External Debt)
1: High vulnerability
0: Low vulnerability

- **Emerging Europe continue to be the outlier among Emerging Markets. Its vulnerability remain well above LatAm and Asia and is close to risk thresholds.** The higher vulnerability and links with developed Europe (trade and financial) makes the region vulnerable to external shocks
- **Fiscal vulnerability remains relatively high,** with cyclically adjusted deficits and public debt levels near EM thresholds limits but poor interest rates GDP differentials, However, Gross public debt ratios diverge among countries, with Hungary, Croatia and Poland surpassing the 50% mark and Bulgaria, Romania and Turkey showing lower levels
- **External sustainability continue to be the main challenge** as external debt levels remain above the EMs' average and current account deficits are challenging in some countries. Except Russia, most of the countries present high external vulnerability problems. In Turkey external debt levels are manageable but the current account deficit is still high despite the better than expected adjustment in 2012
- **International Reserve adequacy has improved but still underperforms** the rest of the emerging markets, exposing the region to investor sentiment swifts
- **Still poor relative economic growth performance and higher unemployment drag the region.** Turkey's economic growth has embarked in soft landing scenario which will help to correct last year imbalances

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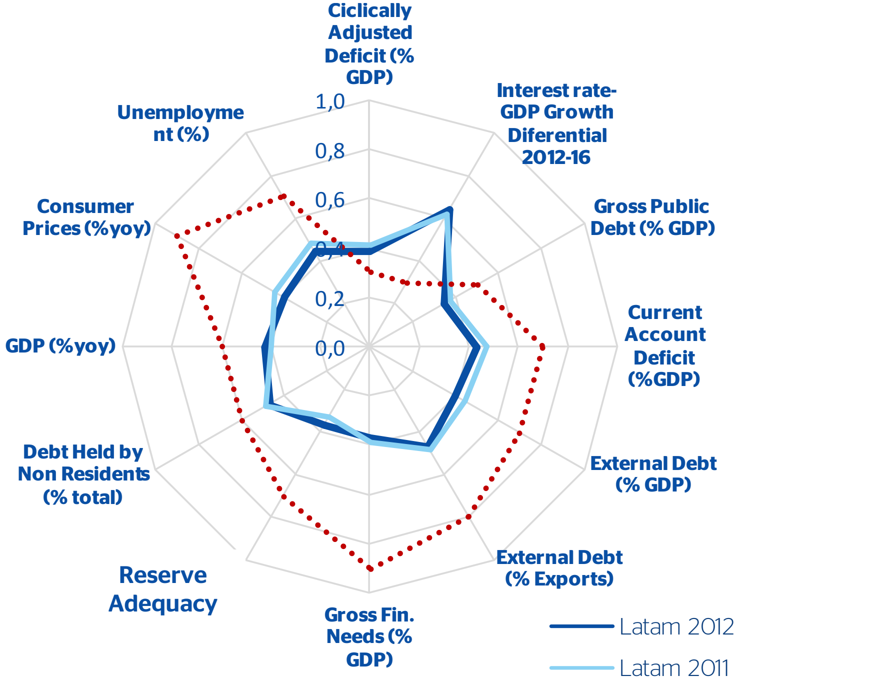
Section 3

Regional Risk Update: LatAm

LatAm: Vulnerability Radar 2012

(all data for 2012, Relative position for the Emerging Market countries)

Source: BBVA Research



Developed: (ST Public Debt/ Total Public Debt)
Emerging : (Reserves to ST External Debt)
1: High vulnerability
0: Low vulnerability

- **Vulnerability position in LatAm stays at relatively sound levels** with the main exceptions being Argentina and Venezuela. **Most of the indicators remain near or below average levels in EM but far from historical risk thresholds. This is specially true in the external vulnerability which will provide some cushion to external shocks**
- **Fiscal vulnerability remains the outlier and more efforts should be done in terms of primary cyclically adjusted deficits and/or structural reforms to shrink interest rates-GDP differentials. On the positive side, debt public levels remain below EM averages and risk value.**
- **External vulnerability is near EM average but far below risk levels.** External debt levels (both relative to GDP and exports) provide low levels of vulnerability
- **Liquidity pressures are relatively low.** Reserve adequacy ratios remains safe. Gross financing needs are low and reserve adequacy will also support the effects of sudden changes in international financial markets
- **Inflation remains the main source of risk in some of the countries**

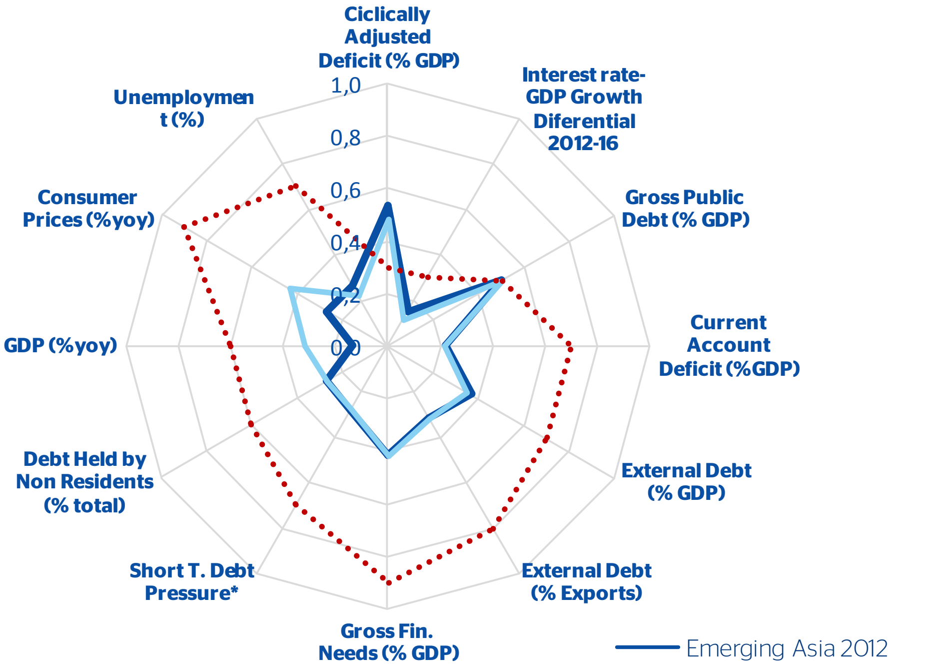
Vulnerability Radar: Shows a static and comparative vulnerability for different countries. For this we assigned several solvency , liquidity and macro variables and we reorder in percentiles from 0 (lower ratio among the countries to 1 maximum vulnerabilities.) Furthermore Inner positions in the radar shows lower vulnerability meanwhile outer positions stands for higher vulnerability. Risk Thresholds have been defined according to the academic literature on crisis and historical levels.

Section 3

Regional Risk Update: Asia

Emerging Asia: Vulnerability Radar 2012

(all data for 2012, Relative position for the Emerging Market countries)
Source: BBVA Research



•Developed: (ST Public Debt/ Total Public Debt)
•Emerging : (Reserves to ST External Debt)
1: High vulnerability
0: Low vulnerability

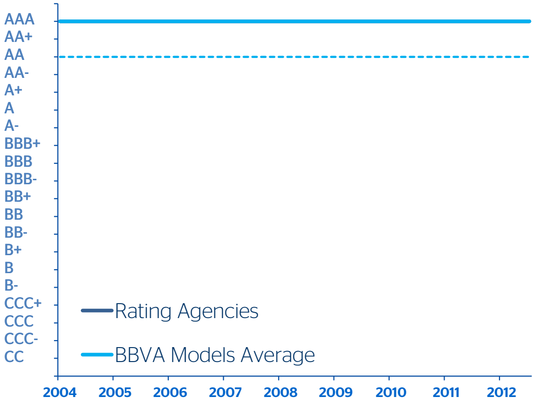
- **Emerging Asia's vulnerability assessment remains the safest among the EM.** This is the result of very low levels of fiscal and external vulnerability and strong reserve adequacy after years of international reserves accumulation. India is still the most vulnerable within the region
- **Fiscal situation should be monitored despite outperforming among the emerging markets.** Although interest rates GDP growth differentials are not worrisome, gross debt ratios are near the thresholds area and cyclically adjusted deficits should be monitored .This is the case of India, Malaysia and the Philippines but also China if we include the local governments debts
- **External vulnerability continue to be low.** External debt remain very low in terms of GDP but also exports and current account ratios in the safest area, with most of the countries with surpluses excepts India. Recently, Indonesia entered in the current account deficit area
- **Reserve adequacy ratios remain in the safest levels and the** external short term debt to reserves ratios are the lowest among the emerging markets. Besides, they are very far from the risk threshold benchmarks
- **On the Economic front**, there has been some improvements on reducing inflation although GDP perspectives have also worsened

Vulnerability Radar: Shows a static and comparative vulnerability for different countries. For this we assigned several solvency , liquidity and macro variables and we reorder in percentiles from 0 (lower ratio among the countries to 1 maximum vulnerabilities.) Furthermore Inner positions in the radar shows lower vulnerability meanwhile outer positions stands for higher vulnerability. Risk Thresholds have been defined according to the academic literature on crisis and historical levels

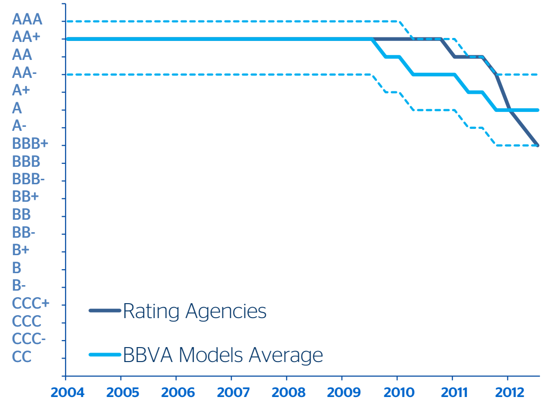
Section 3

Regional Risk Update: Sovereign Risk

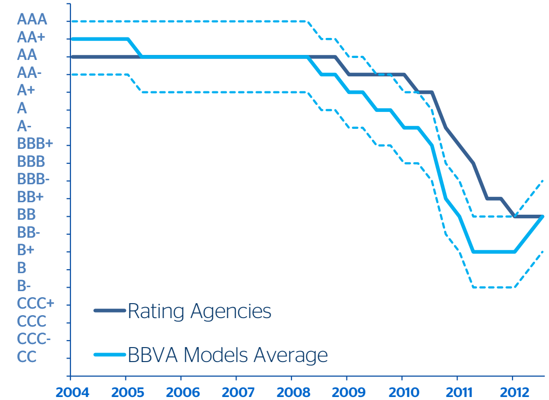
Europe Core: Sovereign Rating
(Rating agencies and BBVA scores +-1std dev)
Source: Standard & Poors, Moody´s, Fitch and BBVA Research



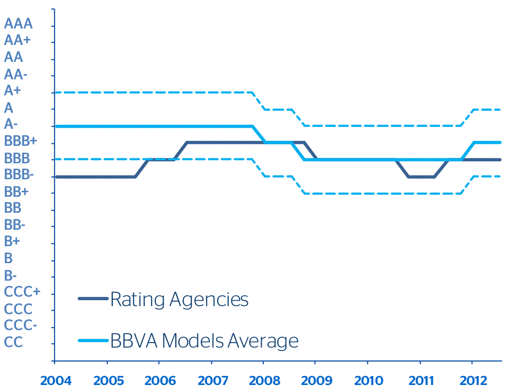
Europe Periphery I: Sovereign Rating
(Rating agencies and BBVA scores +-1 std dev)
Source: Standard & Poors, Moody´s, Fitch and BBVA Research



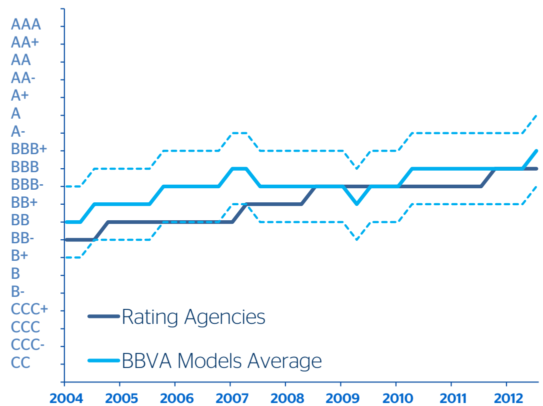
Europe Periphery II: Sovereign Rating
(Rating agencies and BBVA scores +.1 std dev)
Source: Standard & Poors, Moody´s, Fitch and BBVA Research



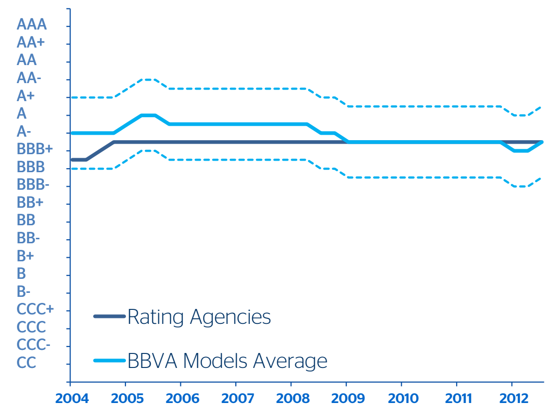
EM Europe: Sovereign Rating
(Rating agencies and BBVA scores)
Source: Standard & Poors, Moody´s, Fitch and BBVA Research



LatAm: Sovereign Rating
(Rating agencies and BBVA scores)
Source: Standard & Poors, Moody´s, Fitch and BBVA Research



Emerging Asia: Sovereign Rating
(Rating agencies and BBVA scores)
Source: Standard & Poors, Moody´s, Fitch and BBVA Research

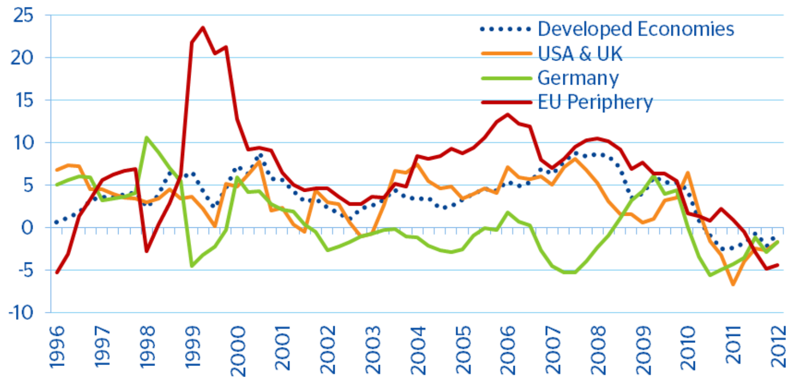


Special Topic: A bird's eye to Excess growth in Credit and housing prices

Developed Economies: Private credit (1996- 1Q 2012)

(yearly change of private credit-to-GDP ratio; in percentage points. Median)

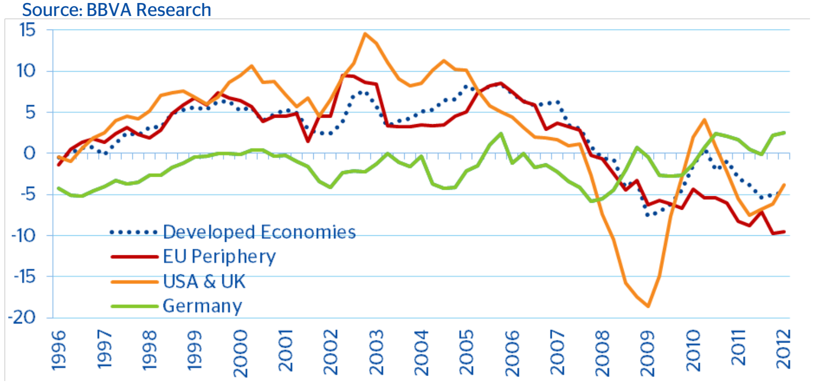
Source: BBVA Research



Developed Economies: Real housing prices (1996-1Q-2012)

(% yearly change; median by regions; in percentage points. Median)

Source: BBVA Research



- **Excessive credit growth has been signaled as one of the most powerful leading indicators of financial crisis.** However, **interpreting unsustainable situations is not an easy task** as we must consider individual conditions to assess if credit growth is driven by fundamentals or not
- **International organizations have recently focused on some benchmarks which can be used as a early warning signals.** Their works normally focus on the deviation of private credit growth from trend or a simple relative measure such as the annual change in the credit-to-GDP ratio. For the latter indicator they find that persistent yearly changes higher than five points of GDP should be monitored
- We have developed **a similar analysis on excessive growth for real housing prices**, using yearly changes as a reference in this case
- **We find that both private credit and real housing prices were growing too fast since 2004 in developed countries, reaching a peak just before the financial crisis explode.** This pattern was particularly acute in some of the countries:
  - **The US and the UK experienced both booms, longer in the case of housing prices.** Some signs of recovery are present today in the US, but not in the UK, and housing prices continue to adjust in both countries
  - **EU periphery countries started recording excessive growth** in the run-up of the euro entry, a few years before average
  - **The situation in Germany was completely different.** After a bubble burst in 1994 both **credit and housing prices declined or stagnated during almost one decade.** This partially explains the higher resilience of the domestic demand during the current crisis. We now see some incipient recovery in housing prices, but the credit-to-GDP ratio remains declining.

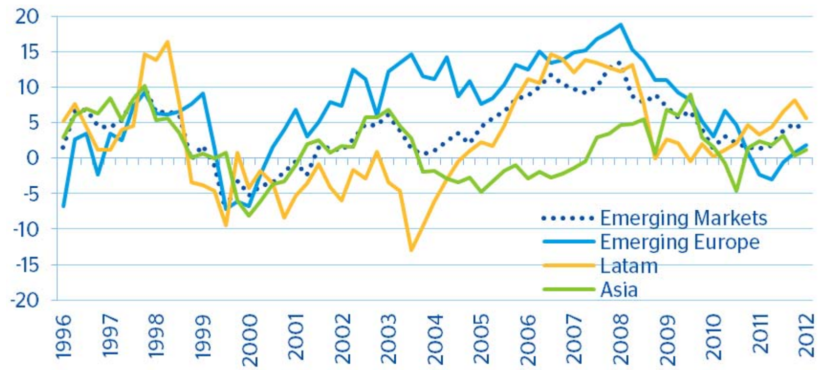
* See for example IMF (2011) Toward Operationalizing Macroprudential Policies: When to Act?IMF Global Financial Stability Report (September 2011).
EU Commission (2012) "Scoreboard of the Surveillance of Macroeconomic imbalances". Occasional paper 92, February 2012
BIS

Special Topic: A bird's eye to Excess growth in Credit and housing prices

Emerging Markets: Private credit (1996-1Q 2012)

(yearly change of private credit-to-GDP ratio. Median by regions)

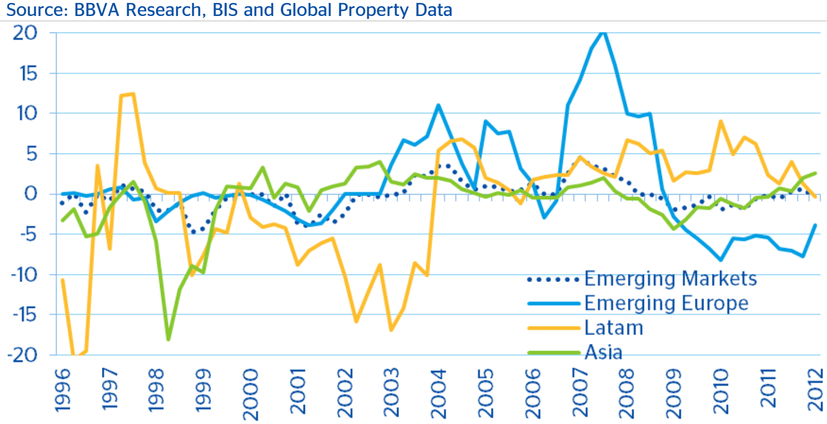
Source: BBVA Research



Emerging Markets: Real housing prices (1996-1Q 2012)

(% yearly change; median by regions)

Source: BBVA Research, BIS and Global Property Data



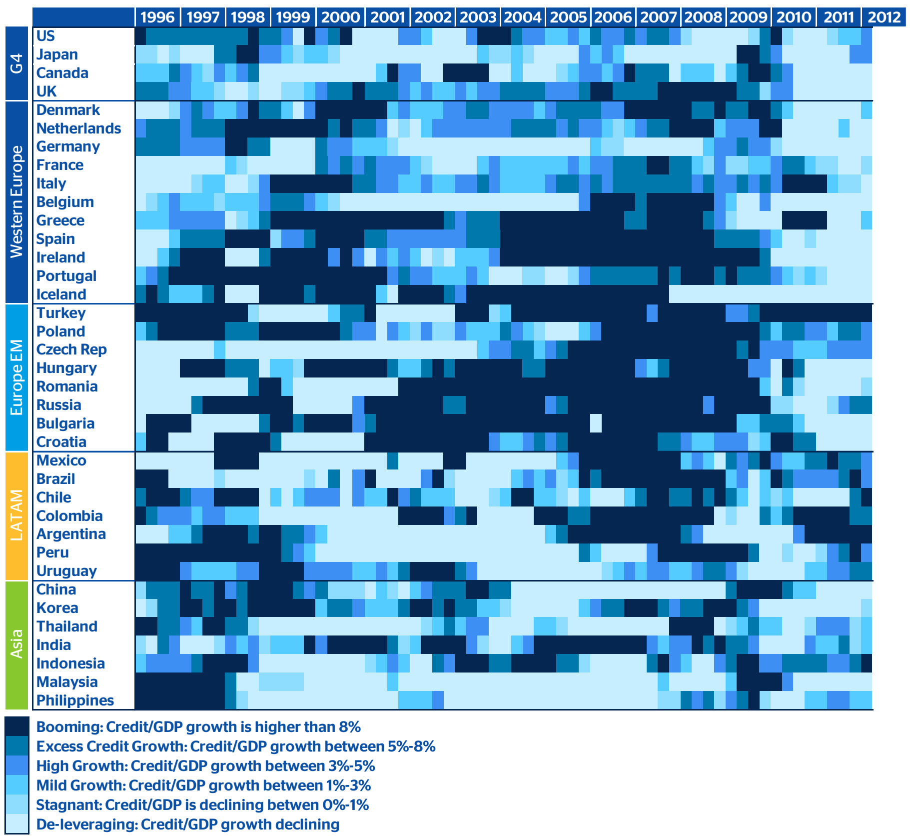
- **The situation in emerging markets is generally different than in developed economies, although it masks diversity among regions. Countries in Asia and LatAm which experienced previous crisis have been isolated of the booming period up to the current one:**
  - **The Asian crisis at the end of the 90s was followed by a long lasting correction of both credit and housing prices until 2005.** Some countries were especially hit as South Korea, Malaysia, the Philippines, Thailand and Indonesia. We see some regional **signs of strong recovery at present, although they are partially the result of rebound from very low levels** and we consider too early to talk about overheating. **Concern rose in China during 2010, but the measures to cool down upward pressures have been successful. In India housing prices growth continue to be excessive, however strict vigilance and measured by the Central Bank of India should contribute to mitigate risk.**
  - **LatAm followed the Asian pattern after crisis in the 90s, but deleveraging was short lived.** Mexico was the outlier and the Tequila crisis triggered negative and long lasting effects in both credit and housing prices. As in Asia, **we now see some potential signs of overheating, specially in credit markets, but we don´t consider that current misalignments are severe and markets are closer to equilibrium levels.**
  - **Emerging Europe was the outlier in the pre-crisis period, sharing some of the excesses of their Western neighbors.** The damaging effects of the 2008 burst partially explain why the current vulnerability of the region is higher than in the rest of emerging markets. This is specially the case of the Baltics, but also of Romania, Bulgaria and Hungary. Looking ahead, the region will continue to face a deleveraging process. **In Turkey,** after suffering a banking crisis in 2001, excess credit growth became apparent in 2010-11 but **macro-prudential measures and liquidity tightening have cooled down credit growth and housing prices are not growing in real terms**
- **Bottom line: the incipient signs of strong growth in credit and housing markets recovery should be monitored, but it is still too early to classify it as a bubble. We consider than Asian and LatAm markets are now close to equilibrium levels, while Emerging Europe will continue to clean up past excesses**

Appendix: Mapping Excess Growth in Credit and Housing Prices

Private credit colour map (1996-2012)

(yearly change of private credit-to-GDP ratio)

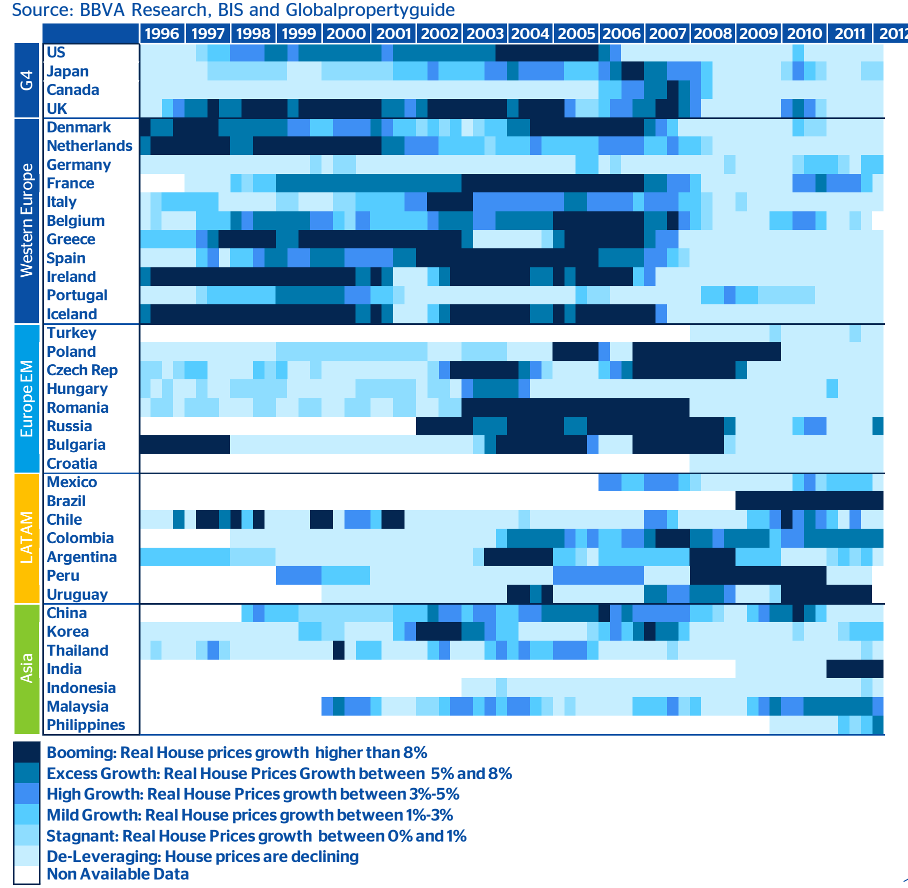
Source: BBVA Research and Haver



Real Housing prices colour map (1996-2012)

(yearly change of real housing prices)

Source: BBVA Research, BIS and Globalpropertyguide



Annex

Methodology : Indicators and Maps

- **Financial Stress Map:** It stress levels of according to the normalized time series movements. Higher positive standard units (1.5 or higher) stands for high levels of stress (dark blue) and lower standard deviations (-1.5 or below) stands for lower level of market stress (lighter colours)
- **Sovereign Rating Index:** An index that translates the three important rating agencies ratings letters codes (Moody´s, Standard & Poor´s and Fitch) to numerical positions from 20 (AAA) to default (0) . The index shows the average of the three rescaled numerical ratings.
- **Sovereign CD Swaps Map:** It shows a colour map with 6 different ranges of CD Swaps quotes (darker >500, 300 to 500, 200 to 300, 100 to 200, 50 to 100 and the lighter below 50 bps)
- **Downgrade Pressure Map:** The map shows the difference of the current ratings index (numerically scaled from default (0) to AAA (20)) and the implicit ratings according to the Credit Default Swaps. We calculate implicit probabilities of default (PDs) from the observed CDS and the estimated equilibrium spread. For the computation of these PDs we follow a standard methodology as the described in Chan-Lau (2006) and we assume a constant Loss Given Default of 0.6 (Recovery Rate equal to 0.4) for all the countries in the sample. We use the resulting PDs in a cluster analysis to classify each country at every point in time in one of 20 different categories (ratings) to emulate the same 20 categories used by the Rating Agencies.
- **Macroeconomic Vulnerability Map:** Using Principal Component Analysis we construct five different vulnerability indicators that summarize information coming from 17 different variables in several dimensions of economic vulnerability: : Liquidity management (Reserves to Short Term Debt, Reserves to M2, Reserves to Imports for EM countries and Short term public debt relative to total Public Debt for developed countries), External Vulnerability (Current Account Balance, External Debt to Exports and External Debt to GDP),Fiscal Vulnerability (Fiscal Balance and Public Debt to GDP), Macroeconomic Strength (GDP Growth, Unemployment and Inflation) and Institutional Strength: (Rule of Law, Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence, Investor Protection, Number of Days to start a business). Once principal components are calculated we assign colors according to the percentiles position with higher vulnerability scores assigned to the darker blue ranges.
- **Vulnerability Radar:** Shows a static and comparative vulnerability for different countries. For this we assigned several solvency , liquidity management and macro variables relative to the group of the Developed or Emerging countries depending on the country. Finally, we reorder in percentiles from 0 (lower ratio among the countries) to 1 (maximum vulnerabilities) Furthermore Inner positions in the radar shows lower vulnerability meanwhile outer positions stands for higher vulnerability.

Annex

Methodology: Models and BBVA country risk

- **GVAR Model:** The approach uses a dynamic multi-country framework for the analysis of the international transmission of shocks and is based on the GVAR toolbox, launched in December 2010, and sponsored by the ECB. The toolbox is based on work by Dees, di Mauro, Pesaran and Smith (2007) and has been developed by Centre for Financial Analysis & Policy at Cambridge University. It comprises 26 economies, with the EA as one of the economies covered. The model is constructed by combining separate models for each of the 26 economies linking core variables within each economy with corresponding trade-weighted foreign variables. EA variables are GDP-weighted aggregates of eight countries (Austria, Belgium, Finland, France, Germany, Italy, Netherlands and Spain). The model has both real and financial variables: real GDP, inflation, the real equity price, the real exchange rate, short and long-term interest rates, and the oil price. All the data are observed at the quarterly frequency. More information about the model and the toolbox can downloaded at

  http://www-cfap.jbs.cam.ac.uk/research/gvartoolbox/index.html.

- **BBVA Research Sovereign Ratings Methodology:** We compute our sovereigns ratings by averaging four alternatives sovereign rating models developed at BBVA research:
  - **Credit Default Swaps Panel Data Error Correction Model:** This model forecasts actual and equilibrium levels of CD Swaps for 40 developed and emerging markets. The model allows for dynamic and long run equilibrium deviation of CD Swaps including Global Risk Aversion and Idiosyncratic fundamental variables. The **long run equilibrium CD Swaps** are the result of equilibrium global risk aversion and idiosyncratic fundamental variables are finally converted to a 20 scale sovereign rating scale
  - **Sovereign Rating Panel Data Ordered Probit with Fixed Effects Model**: The model estimates a sovereign rating index (a 20 numerical scale index of the three sovereign rating agencies) through ordered probit panel data techniques. This model takes into account idiosyncratic fundamental stock and flows sustainability ratios allowing for fixed effects , thus including idiosyncratic country specific effects
  - **Sovereign Rating Panel Data Ordered Probit without Fixed Effects Model:** The model estimates a sovereign rating index (a 20 numerical scale index of the three sovereign rating agencies) through ordered probit panel data techniques. This model takes into account idiosyncratic fundamental stock and flows sustainability but fixed effects are not included, thus all countries are treated symmetrically without including the country specific long run fixed effects.
  - **Sovereign Rating Individual OLS models:** These models estimates the sovereign rating index (a 20 numerical scale index of the three sovereign rating agencies) individually. Furthermore , parameters for the different vulnerability indicators are estimated taken into account the own history of the country independent of the rest of the countries.