

Express analysis: Measuring the vulnerability of a country's banking sector to crisis

A micro- and macro-level approach using Quantitative Country Analytics

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The stability of the banking sector has become an increasing focus of the markets and rating agencies. Most of the commentary focuses on two levels— micro-level (stress-tests), and sector-level vulnerabilities. More often than not this is done on a country by country basis. Vulnerability to a financial crisis at large is also discussed mostly in the context of individual countries. The diversity and a sheer number of economies that fell pray to the global financial crisis, however, have shown the need for a more comprehensive 'warning signal' cross-country analysis. IMF, as a body whose prime responsibility is global financial stability, has been among a few proponents of tools for cross-country analysis¹, however, it still tends to target specific areas of an economy (fiscal, banking sector or sovereign debt), rather than a more complex picture of the overall economic resilience.

Quantitative Country Analytics is a tool that allows consistently screening most countries in the world, with equal depth, to assess either overall economic weakness or a vulnerability to specific shocks. (See methodological note on p.5 of this document).

Thus, when looking at the banking sector specifically, QCA measures **banking sector strength** as a composite of (1) **capital adequacy**, (2) **banks' cross-border borrowing**, (3) **loan-to-deposit ratio** (as a measure of dependency on wholesale borrowing) and (4) **private sector credit growth** (to capture any overheating or credit contraction).² Using this measure alone one could easily identify countries most vulnerable to a banking sector crisis in the EU in **2007**, at the dawn of the financial crisis: Iceland (scoring 2.2 on this factor in QCA, on a scale from 0 to 10, with 10 being the best), Ireland (0.7), Baltic countries (Estonia 0.9, Latvia 0.4, Lithuania 0.9), Spain (1.2) and Denmark (2.2). Most of these countries relied heavily on wholesale and cross-border borrowing. This measure would not, however, illuminate the vulnerability of a banking sector to a broader financial and macroeconomic shock. Thus, Greece (4.5), Portugal (3.4) or United Arab Emirates (7.1) had banking sectors that were not significantly different from other countries that coped with the global financial crisis well. They were swept by weaknesses in other parts of their economy, which then affected their financial sectors as well.

However, the ability of a banking sector to mediate normal functioning of an economy, especially when it is large in proportion to GDP, is closely linked to the external position of an economy, namely **current account and how it is financed**, as this will determine the level of foreign capital inflow; **reserve buffer**; **exchange rate flexibility** (adjusted for labour costs and productivity); as well as **overall indebtedness**, which banks have to support at the end of the day. Roubini and Setser (2004),³ similarly, call for examining a full range of financial vulnerabilities as a starting point for 'closing the gap between rhetoric and reality' about financial crises.

¹ E.g. IMF (2004) 'Sovereign Debt Defaults and Financing Needs', IMF WP/04/52. IMF (2011) 'Managing Volatility: A vulnerability exercise for low-income countries', March 9, 2011. Schaechter, A. (2012) 'A toolkit for assessing fiscal vulnerabilities and risks in advanced economies. IMF Working Paper WP/12/11.

² Non-performing loans is a useful measure of how distressed the banks' asset portfolio is, however data on NPLs is mostly unreliable due to how banks disclose their non-performing loans. It also tends to be a lagging, rather than leading indicator, as banks are forced to disclose previously unrecognised bad loans at times of distress.

³ Roubini, N., Setser, B. (2004) *Bail-ins or bailouts: responding to financial crises in emerging economies*. Washington, DC, 2004.

As can be seen from Table 1 below, while many EU countries hard hit by a crisis have by now improved the strength of their banking sectors, their overall vulnerability to a financial crisis (or indeed in some cases, like Greece – their ability to be a cause of a financial crisis) still remains very high due to weak current account balances, high overall indebtedness and lack of currency flexibility. While Table 1 shows the bottom 10th percentile of our universe of 174 countries, lack of control over currency puts many eurozone countries at the bottom of the rank. Table 2 provides selected economic data that supports the indicators. High loan-to-deposit ratios, indicating a still high reliance on wholesale lending, relatively high cross-border lending at 25-40% of GDP, deep current account deficits and overall indebtedness three to six times GDP, compounded by lack of currency flexibility, put Portugal, Cyprus, Italy, Spain, France and Netherlands at the bottom of our universe of 174 countries.

Finally, it is interesting to note that in its recent stress-test exercise of European banks the European Banking Authority highlights as weakest countries that also score low in QCA vulnerability to a banking sector crisis indicator (see Table 3 below, with countries ranked in descending order of vulnerability to a crisis according to QCA). Although the EBA exercise is based on the exposure of banks to sovereign debt of European Economic Area (EEA) countries, while QCA analysis reflects country-level risk, it is remarkable that both QCA and EBA assess Portugal, Cyprus, Spain and Italy as being among top ten weakest countries.

Table 1. Countries most vulnerable to a banking sector crisis, October 2011 QCA scores

	Portugal	Cyprus	Italy	Spain	France	Netherlands	Barbados	Guinea	Vietnam	Nicaragua	Denmark	Hong Kong	Greece	Germany	Nepal	Iraq	Ireland	Lebanon	Austria	Sweden
Macrofin adjustment capability	2.2	2.9	2.4	2	1.9	2.3	1	3.5	5.1	4.3	4.1	5.3	2	2.5	3.2	4.4	3.3	5.1	3	7.8
CA offset by FDI	3.7	4	5	4.8	5.2	7.1	6.9	4.3	10	8.9	10	10	0	10	8.1	...	10	0	9.5	8.9
Current account	3.6	3.8	2.8	5	6.4	9	4.6	4.5	7.1	5	10	10	2.7	9.7	5.9	7.5	8	0	9.1	9.1
Total indebtedness	0	0	0	0	0.7	0.8	1.7	4.4	0	2.5	0	0	2.4	0.9	2.4	3.9	3.3	1.7	1.9	1.3
Banking sector	3.1	3.4	4.6	5	4.5	4.5	5.3	2.7	4	2.9	5.1	5	7.3	6.3	5.2	3.7	4.1	7.2	5.9	4.3
Banking sector vulnerability indicator (bottom 10%)	2.1	2.3	2.8	2.9	2.9	3.2	3.6	3.6	3.6	3.7	3.9	4	4.1	4.3	4.3	4.3	4.3	4.4	4.5	4.6

Source: Country Insights Research

Table 2. Selected economic data, latest available 2011 data

	Portugal	Cyprus	Italy	Spain	France	Netherlands	Barbados	Guinea	Vietnam	Nicaragua	Denmark	Hong Kong	Greece	Germany	Nepal	Iraq	Ireland	Lebanon	Austria	Sweden
Labour productivity growth, % yoy	-2.3	-1.6	0.5	-0.3	1.4	1.1	1.5	0.9	3.9	1.4	1.5	5.2	-4.9	2.4	0.5	6.1	-1.0	5.7	2.6	3.9
ER regime (QCA score)	1.0	1.0	1.0	1.0	1.0	1.0	3.0	3.0	3.0	5.0	3.0	3.0	1.0	1.0	3.0	3.0	1.0	3.0	1.0	10.0
Current account deficit, % of GDP	-9.1	-8.3	-3.8	-4.7	-1.7	7.9	...	-7.1	-3.2	-16.1	5.9	6.8	-9.5	5.7	-0.8	...	0.8	5.9	2.8	7.0
Current account offset by FDI, % of GDP*	-5.5	...	-4.0	-4.3	-3.7	-1.4	...	-4.8	2.7	...	4.2	3.0	-10.3	3.9	...	...	4.9	...	1.4	0.7
Overall indebtedness, % of GDP**	447.6	557.8	341.2	434.1	347.8	585.3	357.4	...	192.3	120.5	392.0	397.1	342.1	317.4	94.8	129.4	781.0	225.3	320.6	327.8
Private sector credit growth, 3y average annual change, %	5.2	8.9	6.6	2.7	2.2	2.1	...	...	10.2	-7.1	1.5	11.1	5.8	0.5	16.2	29.1	1.6	2.9	1.3	3.5
Loan-to-deposit ratio*	1.6	1.1	...	1.3	1.6	1.7	...	...	...	...	3.3	...	1.0	1.3	...	...	2.5	...	2.2	...
International claims on banks, % of GDP	26.9	39.0	16.4	23.1	41.7	48.7	40.5	1.4	3.5	1.5	40.5	53.0	6.6	22.8	0.2	0.4	80.5	2.3	33.1	31.8
Capital adequacy ratio, % of risk-weighted assets*	10.8	11.8	12.0	11.9	12.5	13.9	18.0	...	...	...	16.1	...	11.3	16.1	...	...	13.7	...	17.4	12.6

* end of 2010 data

** Overall public, overall private and cross-border banking sector debt.

Source: IMF, World Bank, BIS

Table 3. Comparison of QCA Banking sector vulnerability indicator and EBA assessment of bank recapitalisation needs by countries*

	QCA Banking sector vulnerability indicator	QCA Banking sector vulnerability indicator (Ranked in descending order of vulnerability, 0=highest, 10=lowest)	Capital shortfall identified by EBA – million EUR	Capital shortfall as % of bank risk-weighted assets	EBA rank by capital shortfall % risk-weighted asset
Portugal	3.1	2.1	6950	3.0%	3
Cyprus	3.4	2.3	3531	6.5%	2
Italy	4.6	2.8	15366	1.4%	8
Spain	5.0	2.9	26170	1.9%	5
France	4.5	2.9	7324	0.4%	11
Netherlands	4.5	3.2	159	0.0%	12
Denmark	5.1	3.9	0	0.0%	12
Greece	7.3	4.1	30000	Not disclosed	1
Germany	6.3	4.3	13107	1.0%	10
Ireland	4.1	4.3	0	0.0%	12
Austria	5.9	4.5	3923	1.5%	7
Sweden	4.3	4.6	0	0.0%	12
Luxembourg	6.4	5.0	0	0.0%	12
Malta	8.8	5.0	0	0.0%	12
United Kingdom	6.7	5.2	0	0.0%	12
Finland	5.0	5.3	0	0.0%	12
Norway	5.8	5.4	1520	1.2%	9
Slovenia	5.3	5.7	320	1.7%	6
Belgium	7.9	5.8	6313	2.7%	4
Poland	6.5	7.3	0	0.0%	12

* EBA assessment is available at <http://stress-test.eba.europa.eu/capitalexercise/Press%20release%20FINALv2.pdf>

COUNTRY INSIGHTS AND QUANTITATIVE COUNTRY ANALYTICS

Our perspective

The established ways of analysing **country risk and growth fundamentals** have failed most market participants and risk takers over the last five years. Established analysis is often focused on a limited number of economic variables and therefore is unable to adequately assess the many complex interrelationships between economic fundamentals. As a result, such analysis is often too slow to capture rapidly changing **broad fundamentals** across a country's socio-economic structure. Country Insights developed its totally quantitative country analytical model, Quantitative Country Analytics (QCA), to address these issues.

What does our analysis focus on?

QCA answers three questions:

1. How much risk is a country exposed to?
2. How able is it to manage these risks?
3. What is the growth potential of the country?

It does this by analysing four fundamental aspects of the economy. These are:

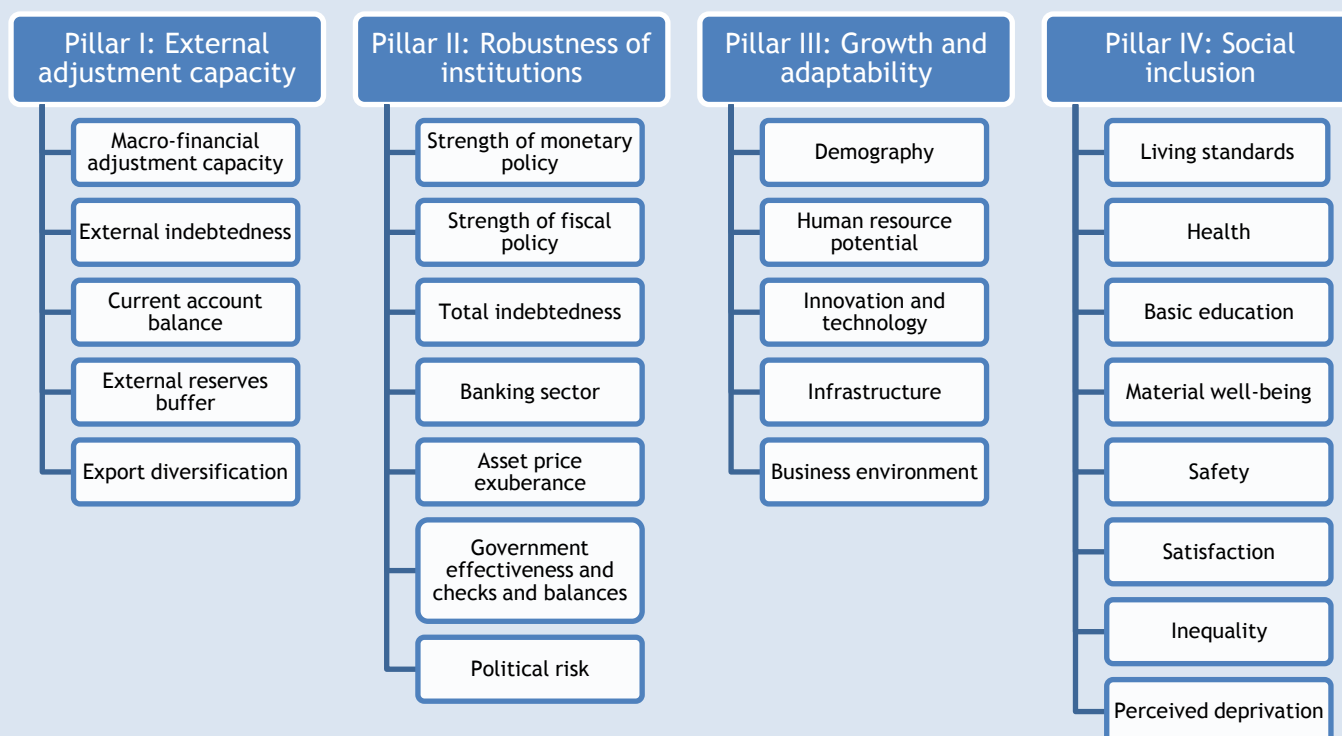
1. How exposed is the economy to external shocks?
2. How strong are its institutions?
3. How adaptable is the economy, and how able is it to continue growing?
4. How does the country share the benefits of growth across society?

How is the analysis conducted?

Country Insights believes that analysis should be as objective as possible and always up to date with publicly available data. QCA is a totally quantitative model that replicates the qualitative analysis of its architects, Max Watson and Paul Domjan, through a quantitatively-driven analytical scoring system. Its uniqueness is not the inputs themselves, but the way that they are scored.

Technical features

- In-depth analytical reports can be delivered in three working days
- Covers 174 countries in equal depth with quarterly updates
- Recursive model that shows the impact of interactions between different parts of the economy (e.g. productivity growth, wage flexibility and the exchange rate system all impact on macro-financial adjustment capacity)
- Methodology is reviewed every six months to capture newly available data and seek improvements
- Produces one score that is supported by four pillars, 25 factors, 72 sub factors and over 150 data series
- Cumulatively the model has over 1000 data inputs per country



OUR HISTORY

Country Insights was spun-off in 2011 from John Howell and Co Ltd, an advisory firm focusing on financial and economic policy and regulation. Country Insights was established to capitalise on the success of Quantitative Country Analytics (QCA), the analytical model that drives our research and consulting. QCA was developed in 2007 in response to demand from our investor clients who wanted a rigorous, consistently, transparent and low-cost means of comparing risk and strength across countries. Since 2007, QCA has grown to cover 174 countries, with more than 100 types of data for each country. As well as supporting advice to private equity firms, sovereign wealth funds, asset managers and investment banks, QCA also support policy and regulatory advice to national and regional governments. We believe that QCA is the most sophisticated and comprehensive model of its kind available.

We synthesise policy, regulatory, micro and macro economic and financial expertise, which gives us a unique understanding of the underpinnings of market performance.

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