

**From:** richard.fox@fitchratings.com [mailto:richard.fox@fitchratings.com]  
**Sent:** 09 September 2010 11:15  
**To:** email@bis.org  
**Subject:** A comment on the 'Countercyclical capital buffer proposal'

Dear Sirs

I was interested in the analysis you have undertaken for this document, as it is similar to analysis we have conducted this year - specifically the relative merits of different types of indicators for 'predicting' systemic banking stress.

We have been publishing our 'Bank Systemic Risk report' six-monthly since 2005 and it met with some success in highlighting the development of credit booms/ asset price bubbles in the run up to 2007. I attach a number of recent reports to show how our thinking has evolved.

Our most recent report - renamed the Macprudential Risk Monitor, concluded that while credit/GDP was the best measure for signalling potential problems in developed countries (DCs), for a number of reasons, real credit growth was a more useful indicator for emerging markets (EMs). Moreover, in both cases they worked in best in combination with other indicators, especially property prices, and in some cases real equity prices and the real effective exchange rate.

Another reasons for our different approach for EMs is the practical one, relating to data issues. In particular, we have found that credit/GDP has been problematic where data series are relatively short e.g. emerging Europe, or where data is often revised (many EMs have revised up their GDP series, resulting in major discontinuities), and where there are often problems with the credit series themselves. These last two problems have been particularly severe in China. I note that your indicators do not suggest much cause for concern there whereas in our most recent report, which introduced the new methodology, China moved into our highest risk category. The problem is that nominal GDP is growing so fast that credit/GDP has actually been declining in recent years, and even though rising sharply in 2009, the series remains well below trend. This is despite extremely high real credit growth last year.

We have also found that discerning reliable trends for credit/GDP in EMs, where data tends to be more volatile than for developed countries, has created considerable problems when moving from the analysis of the past, to a real time forward looking operating model.

I would encourage you to survey the attached reports for a more detailed explanation of our experience in this important area,

Further reports are available at [www.fitchratings.com](http://www.fitchratings.com)

Yours sincerely  
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Special Report

# Macro-Prudential Risk Monitor

## Analysts

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## Related Research

- *Assessing Bank Systemic Risk: A New Product* (July 2005)
- *Bank Systemic Risk Report* (November 2009)
- *Sovereign Data Comparator* (April 2010)
- *EM Banking System Datawatch* (April 2010)
- *Global Bank Rating Trends Q110* (May 2010)

## Summary

This latest semi-annual report updates the systemic risk indicators Fitch Ratings has published since 2005. The change of title to “*Macro-Prudential Risk Monitor*” from “*Bank Systemic Risk Report*” more accurately reflects the report’s objective: to identify the build-up of potential stress in banking systems due to a specific set of circumstances: rapid credit growth associated with “bubbles” in housing or equity markets or appreciated real exchange rates, the latter sometimes associated with asset market bubbles. The focus of the report is therefore on only one potential source of systemic stress in banking systems.

Fitch continues to review its methodology in light of the evidence gained from the banking crises of the past few years. This report presents the results of research which has been used to recalibrate the thresholds used to judge when stresses in key variables have reached critical levels.

In addition, it reports the results of a review comparing the success rates of the approach looking at deviations from trend of the key variables and a simpler one using percentage changes in those variables. The latter approach has, up to now, only been applied to Emerging Europe (EE), where it was dictated by the relatively short length of time series available and the difficulty of discerning clear trends, largely due to the economic transition process underway in those countries. The conclusion is that this approach in fact works best for most emerging markets (EMs), probably due to the general problem of establishing definitive trends in countries undergoing important structural changes. By contrast, the model looking at deviations from trend continues to work much better for developed countries (DCs).

The success rate of the region-specific models, measured by crises predicted, is over 70% for DCs and 50% for EMs. But in interpreting the results of the resulting Macro-Prudential Indicator (MPI) scores, it is important to remember that this type of “early warning” analysis inevitably gives false alarms. They can be minimised but not eliminated by careful calibration while maintaining an acceptable success rate. In the final models adopted, the ratio of correct signals to false alarms is still a relatively high 50%. The resulting MPI scores can therefore only be a starting point for Fitch’s in-depth country and banking system analysis.

The period of analysis in this report is moved forward a year to 2007-2009. For DCs this, combined with the re-calibration, results in Australia, Belgium, Canada and Sweden dropping out of the MPI 3 category. The only new MPI 3 is Cyprus. The other seven MPI 3s remain: the US, UK, Denmark, France, Iceland, Ireland and New Zealand. Of the eight DC MPI 3s, five have had banking crises of varying degrees while three – Cyprus, France and New Zealand – have not.

The most significant change for EMs is the move of China and Vietnam to MPI 3, due to rapid credit growth in 2009. These are two of only a handful of countries where real credit growth exceeded the threshold 15% in 2009, reflecting continued slow credit growth in most of the rest of the world. A number of EMs also drop from MPI 3, mainly because of the more recent assessment period: Armenia, Colombia, Estonia, Korea, Latvia, South Africa and Turkey.

The report also updates the Banking System Indicators (BSIs), the average of Individual Ratings for rated and systemically important unrated banks. France and Chile improve to ‘B’. Portugal worsens to ‘C’, Greece to ‘D’ and Nigeria to ‘E’.<sup>1</sup>

<sup>1</sup> A complete list of BSI and MPI scores is in the appendix, together with the usual systemic risk matrix and the underlying credit/GDP, real house price, real equity price and RER data. The data are also

## Review of the Research

The starting point for the methodology review was a new dataset of banking crises published in 2009.<sup>2</sup> However, as not all banking crises are associated with overlending, those crises where bank lending was not growing in the preceding years were excluded. This removed a number of crises in Latin America in the 1980s, which were associated more with currency crises, and most of the crises in Eastern Europe in the early 1990s at the start of their transition to market economies. In both these cases, bank lending was generally falling before the crisis.

The adjusted dataset was then updated for events since 2007, adding the crises in the US and UK, Iceland, Ireland, Netherlands and Belgium. However, other DC crises, notably those in Germany and Switzerland, were not included, as these were not preceded by excessive lending but were mainly a crisis of large banks with exposure to US subprime-related instruments. The resulting dataset includes 45 crises – 10 in DC and 35 in EMs – spanning a period of three decades.

The May 2009 report (see *Related Research* on front page) presented research that, including evidence from the 2007-2008 crises, suggested a 15% trigger threshold for the deviation of real house prices above their long-term trend. It also presented preliminary results suggesting that real credit growth, rather than its deviation from trend, gave an earlier warning of potential problems. The focus of this latest research was therefore to clarify which model specification – “deviations from trend” or “changes” – produced the best early warning of past crises.

The behaviour of key variables before previous crises is summarised below.

### Median Real Growth in Key Variables Before Banking Crises<sup>a</sup>

(%)	Observations	t-5	t-4	t-3	t-2	t-1
<b>All countries</b>						
Credit to private sector	54	8.7	8.8	8.7	12.1	9.7
House prices	18	4.9	4.4	4.9	6.0	3.1
Equity prices	31	-3.3	7.9	22.3	12.1	3.8
RER	42	2.3	1.2	2.2	1.3	3.6
<b>Developed countries</b>						
Credit to private sector	13	5.3	7.1	8.9	7.1	6.1
House prices	13	4.1	7.9	8.2	7.2	3.7
Equity prices	11	-16.8	-8.7	19.0	15.5	16.8
RER	13	3.0	3.6	2.1	-0.6	1.9
<b>Emerging markets</b>						
Credit to private sector	41	13.0	9.9	8.6	18.6	11.5
House prices	5	7.3	-0.2	-1.6	-2.4	-2.9
Equity prices	20	11.4	19.2	25.5	9.5	0.6
RER	29	-1.2	0.5	3.6	2.7	4.3

<sup>a</sup> Banking crisis occurs in year t. Peak observation in bold  
Source: Fitch

There is a clear peak in real credit growth and real house prices two years before a crisis and a peak in real equity price growth three years previously. Based on these results a “changes” model was specified as follows.

Real credit growth greater than 10% in two successive years, combined with either

- real house price growth greater than 5%, or real exchange rate growth greater than 2.5% in the same two successive years; or
- real equity price growth greater than 15% in two successive years, but lagged a year before the credit growth trigger.

available in Fitch’s quarterly “*Sovereign Comparator*” and the Peer Analysis Tool, together with other system-wide bank prudential indicators, e.g. risk-weighted capital ratios and ownership data.

<sup>2</sup> “*Banking Crises and Crisis Dating: Theory and Evidence*”, IMF Working Paper 09/141, July 2009

For a subset of 39 crises (10 DC, 29 EM) for which data are available to test both models, the changes model had a better success rate overall: 59% of crises predicted compared with 49% for the “deviations” model. However, analysis of the performance over DCs and EMs revealed that this better performance was confined to EMs. By contrast, the deviations model worked much better for DCs. The relative performance of the two models was even more stark in a subset of 16 “key crises” (see table).

#### Alternative Model Success Rates (% of Crises Predicted)

	Deviations model			Changes model		
	All countries	DCs	EMs	All countries	DCs	EMs
Common crises (39)	49	80	38	59	60	59
Key crises (16)	75	86	67	69	57	78

Source: Fitch

Fitch has been applying a model similar to the changes model in EE since the instigation of this report in 2005. This reflected the reality that for most of EE, data series were too short and often very volatile in the early years of the transition process, such that establishing clear trends was problematic. Over time, as more data has become available, it has become more realistic to apply the deviations model.

However, these latest results suggest, in fact, that the approach Fitch has adopted for EE should be applied to EMs in general. And indeed, an important reason why the changes model is more successful for EMs is likely to be similar to the reason why it works better for EE, i.e. the difficulty of discerning clear and stable trends in countries undergoing rapid economic change. This can have especially large impacts on the variables on which the MPIs are based.

A further practical issue favouring the changes model is the propensity of data to change and be revised, which can have a particularly powerful effect on estimated trends. For DCs, however, where economic change tends to be more measured, it is much easier to determine long-term trends in data series which typically go back at least to the mid-1970s.

Fitch has therefore decided to continue with a dual approach, but one which now differentiates between DCs and EMs, rather than one that just treats EE differently. The definition of DC remains the same as in previous reports – essentially the rich industrial countries. However, migration of countries from the EM to the DC methodology is possible, provided the data from which to estimate trends is robust enough.

This is particularly important for house prices, which now play the main role in the deviations model applied to DCs. Although house price series are sometimes available for EMs, they often do not go back very far and can often be narrowly based. The series may be sufficient to calculate recent percentage changes, but in most cases it is not long enough to perform sophisticated trend analysis.

Having made the decision to continue applying a dual model, the focus was then on recalibrating the two models to produce an acceptable success rate with as few false alarms as possible. For DCs this was largely achieved by raising the threshold for the real exchange rate deviation from 9% to 15%, but the real house price and real equity price thresholds were also raised from 15% and 40% to 17% and 50% respectively.

The house price threshold is particularly sensitive, with a number of the banking crises in 2007-2008 preceded by house price deviations of 15-20% (see next section). This explains why, for example, France still shows as MPI 3 while Sweden drops to

MPI 2. Their respective house price deviations are both in the 15%-20% range but straddle the “optimum” 17% trigger value.

Another reason for the need for different models for DCs and EMs is their different experience of lending growth. Double-digit real lending growth is much less common in DCs than in EMs and was certainly not experienced by the US in the run-up to its crisis (whether narrow or broad measures of credit are used). Double-digit credit growth is much more common in EMs, however, and this latest research confirms the 15% threshold Fitch has been using for EE is an appropriate one for EMs in general. The associated optimum thresholds for annual real house price growth, real equity price growth and real effective exchange rate growth are respectively 5%, 17% and 4% a year, measured over a cumulative two-year period.

## Revised Guidelines for Assigning MPI Scores

The MPI aims to identify potential systemic stress of a type often preceded by a combination of rapid bank lending growth and bubbles in asset markets and/or the RER. Risk is measured on a scale from ‘1’ (low) through ‘2’ (moderate) to ‘3’ (high). MPI 2 can be triggered by rapid lending growth alone, while MPI 3 requires further triggers. It should be borne in mind that all the data used in this exercise are subject to sometimes major revision, are volatile and are difficult to forecast.<sup>3</sup>

## Developed Countries

The methodology identifies instances of rapid credit growth which bring the ratio of private-sector credit to GDP and the RER or real equity or property prices above long-run trend values by certain trigger amounts. Trends are derived from as long a time series as is available, using a Hodrick-Prescott filter. The trends against which the data are assessed are sensitive to the development of actual data and will change over time.

High vulnerability to potential systemic stress is designated MPI 3 and is defined as:

- a ratio of private-sector credit to GDP more than 5pp above trend and
- either real property prices more than 17% above trend
- or real equity prices more than 50% above trend (two years previously)
- or a real effective exchange rate more than 15% above trend.

Moderate vulnerability (MPI 2) occurs when the ratio of credit to GDP is above its trigger value, whatever the other indicators may show. An MPI score of ‘1’ denotes low potential vulnerability.

Credit/GDP vs. trend	Asset price or exchange rate trigger	
	On	Off
> 5pp above	3	2
< 5pp above	1	1

Source: Fitch

The assessment is based on three years of annual data, with a trigger in any of the three years being relevant to a country’s MPI score. The MPI aims to highlight potential systemic stress which could materialise up to three years after an early warning is first indicated. The three-year horizon is designed to be long enough to

<sup>3</sup> The primary data source is the IMF’s “*International Financial Statistics*”. Private-sector credit is a broad definition, including bank lending and other debt instruments. The RER is based on relative consumer prices. An alternative data source for equity prices is Bloomberg. House price data are from a variety of national sources, where available.

take account of the time it can take for banking system stress to emerge, but not so long as to reduce the indicator's analytical usefulness.<sup>4</sup>

### Emerging Markets

The methodology identifies instances of rapid real credit growth over successive two-year periods, in parallel with growth in real house prices, real equity prices and/or the real exchange rate.

High vulnerability to potential systemic stress is designated MPI 3 and is defined as:

- real private-sector credit growth exceeding 15% a year, sustained over a two-year period and
- either real property price growth of more than 5% a year in the same period
- or real effective exchange rate appreciation of more than 4% a year in the same period.
- or real equity price growth of more than 17% a year (in the preceding two-year period)

Moderate vulnerability (MPI 2) occurs when real credit growth exceeds its trigger value, whatever the other indicators may show. An MPI score of '1' denotes low potential vulnerability.

Average annual real credit growth in two successive years	Asset price or exchange rate trigger	
	On	Off
> 15% pa real credit growth in two successive years	3	2
< 15% pa real credit growth	1	1

Source: Fitch

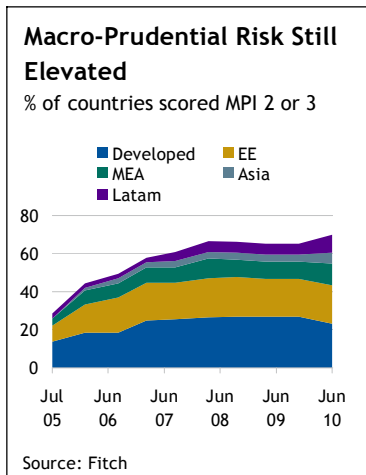
The assessment is based on three years of annual data, divided into overlapping two-year periods. For the current 2007-2009 assessment period therefore, the periods analysed are annual average growth in 2007/2008 and 2008/2009. A trigger in either period is relevant to a country's MPI score. The MPI aims to highlight potential systemic stress which could materialise up to three years after an early warning is first indicated. The three-year horizon is designed to be long enough to take account of the time it can take for banking system stress to emerge, but not so long as to reduce the indicator's analytical usefulness.

### Results

#### Developed Countries

The combination of the assessment period being one year later and the re-calibration exercise results in Australia, Belgium, Canada and Sweden dropping out of the MPI 3 category. The only new MPI 3 is Cyprus. The other seven remaining MPI 3s are the US, UK, Denmark, France, Iceland, Ireland and New Zealand. Of the eight DC MPI 3s (30% of all DCs), five have had banking crises of varying degrees while three – Cyprus, France and New Zealand – have not.

The variable that now determines most moves into the MPI 3 category is house prices. Previously it was the RER. The inclusion of property prices allows a higher threshold for the other variables, which helps reduce the number of false alarms over the estimation period. The higher RER threshold, combined with the more recent assessment period, explains why Australia and Canada are no longer MPI 3. For Belgium and Sweden by contrast, the explanation is in the higher house price



<sup>4</sup> The equity price trigger works with an even longer lag, as equities have been a leading indicator of wider asset price trends, notably property, as well as developments in the real economy. A trigger in year t would not affect the MPI score for a further two years. Thus, banking system problems might materialise up to five years after an equity price peak in time t.

threshold. Although this has been raised only slightly – from 15% to 17% – this now exceeds their peak house price deviations in the run up to the recent crisis (14% and 16.4% respectively).

## Developed Country House Prices: Peak Deviation from Trend

	Peak deviation, %	Year
US	30.7	2006
UK	23.3	2006
Denmark	22.6	2006
New Zealand	21.7	2007
Norway	21.1	2007
Ireland	20.7	2006
France	18.6	2007
Sweden	16.4	2007
Iceland	15.7	2006
Belgium	14.0	2007
Spain	13.9	2006
Canada	11.6	2008
Switzerland	10.7	2009
Finland	10.2	2007

Source: Fitch

Cyprus rises to MPI 3, as credit/GDP was substantially above trend in both 2008 and 2009 and equity prices breached their trigger threshold two years ago. It is also worth noting that real credit growth exceeded 20% in 2007-2008 – rare for a DC – and coincided with real house price growth of 7%-8%. Credit/GDP is also amongst the highest in the developed world and has increased sharply in the past two years.

## Private-Sector Credit

	2009 % GDP
Iceland	434
San Marino	428
Cyprus	270
Ireland	232
Denmark	229
UK	213
Netherlands	204
Spain	203
USA	195
Portugal	192
Luxembourg	186

Source: Fitch

## Emerging Markets

With regard to the macro-prudential triggers monitored in this report, only four Fitch-rated countries breached the 15% real credit growth “speed limit” in 2009 – China, Vietnam, Angola and Lesotho – of which only China and Vietnam are included in the MPI analysis (see table overleaf). Taking 2008 and 2009 together, a further 10 countries breached the speed limit – see table – but credit growth slowed significantly last year in all these countries, except China, Vietnam and Lesotho.

China’s strong real credit growth in 2009, which Fitch forecasts to stay above the 15% threshold in 2010, together with strong increases in house prices, equity prices and the RER, explains China’s move to MPI 3.

Vietnam also moves to MPI 3: credit growth has been more volatile, slumping in 2008 but now accelerating again and exceeding 15% on average in 2007-2008 and 2008-2009 and forecast to do so again in 2009-2010. The 2006-2007 equity bubble and RER appreciation in 2008 are the other factors explaining Vietnam’s MPI 3.

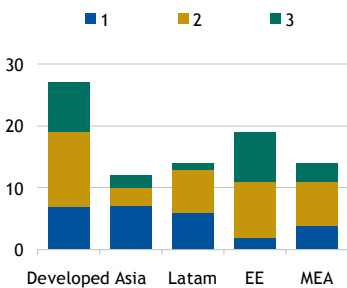
### Real Credit Growth of 15% or More, 2008-2009

(%)	2008	2009	2008-2009 average	MPI
Angola	47.5	40.3	43.8	n.a.
Mozambique	42.2	13.2	26.9	n.a.
Nigeria	44.5	8.8	25.4	3
Libya	32.7	7.4	19.4	n.a.
Uganda	36.0	4.0	19.0	n.a.
Suriname	42.9	-1.3	18.7	n.a.
China	6.1	32.6	18.6	3
UAE	30.4	3.4	16.1	3
Poland	30.8	2.9	16.0	3
Ghana	22.6	9.7	16.0	n.a.
Bahrain	38.2	-3.5	15.5	2
Vietnam	1.9	30.5	15.3	3
Qatar	23.3	7.6	15.2	3
Lesotho	11.6	18.6	15.0	n.a.

Source: Fitch

### MPI Scores by Region

No. of countries



Source: Fitch

MPI scores have begun to fall in EE in those countries where credit growth started to slow earliest. With 2006 data no longer part of the assessment period, improved scores occur in Armenia (MPI 1) and Estonia, Latvia and Turkey, which all fall to MPI 2. However, countries where strong annual average real credit growth continued into 2008 (Azerbaijan, Belarus, Bulgaria, Georgia, Romania, Russia and Ukraine) remain MPI 3 or, in the case of Belarus and Bulgaria, MPI 2.

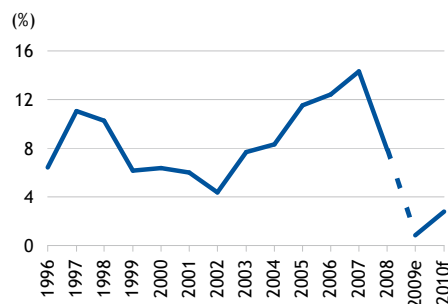
Elsewhere, Colombia, Korea and South Africa fall to MPI 2. For around 60% of countries, the new model applied to EMs produces the same results as the old model. However, there are some upward adjustments based on historic data, all from MPI 1 to MPI 2, due to the change – Indonesia, Argentina, Peru, Uruguay, Benin, and Croatia. However, these changes are likely to be short lived, as credit growth in all cases is declining, with all these countries likely to decline to MPI 1 once 2010 forecasts are included, in the next of these reports.

Although MPI scores have begun to ease in EE, it still has the largest proportion of countries in the MPI 3 category (42%) or MPI 2 and 3 categories combined (89%). DCs come next, with 30% and 74% respectively. Asia remains the region with the lowest proportion of countries with elevated MPI scores (17% MPI 3 and 42% either MPI 2 or MPI 3).

### Trends in Credit Growth

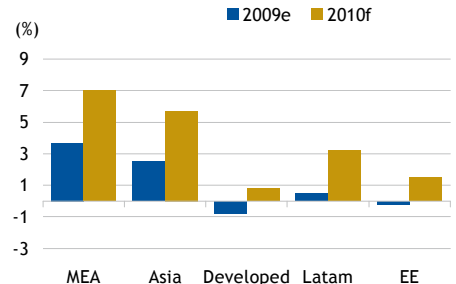
Median global real credit growth slumped to 1% last year, compared with a peak of 14% just two years earlier. The biggest slump was seen in the developed world and EE, which both saw negative growth, while the rest of the emerging world remained in positive territory, notably MEA and Asia. Despite this, credit/GDP has continued to rise. China saw one of the fastest increases last year – up by 25% of GDP –

### Global Real Credit Growth



Source: Fitch Sovereign Data Comparator

### Real Credit Growth by Region, 2009-2010



Source: Fitch

second only to San Marino's almost 50% of GDP rise. Cyprus and Vietnam saw the next fastest increases, of 17% to 18% of GDP. By contrast, credit/GDP fell significantly in only a handful of countries, including Iceland, Thailand, South Africa, Switzerland and Finland.

For 2010 Fitch forecasts only a slight acceleration in real credit growth to 3%. All regions should experience positive real growth, but with the developed world and EE once again experiencing the weakest growth and MEA the fastest.

With credit growth remaining moderate in most countries, MPI scores will continue to fall. The next report will use forecasts of 2010 credit growth to push the reference period of the analysis forward a year to 2008-2010. However, it should be borne in mind that banking crises typically occur up to two or three years after peak lending growth or credit/GDP and so developments in 2008, though increasingly distant, nevertheless remain relevant. The reduction in MPI scores will therefore be moderated and, in some countries, increases cannot be ruled out. The table below shows, of current MPI 3s, when credit indicators first exceeded critical thresholds and which are most likely to move lower in the next report.

### Countries Currently Scoring MPI 3

	Date of most recent credit trigger	Prospective MPI score in next report
Azerbaijan	2008-2009	at least MPI 2
Brazil	2007-2008	MPI 1
China	2008-2009	MPI 3
Cyprus	2009	MPI 3
Czech Republic	2007-2008	MPI 1
Denmark	2009	MPI 2
France	2009	MPI 2
Georgia	2007-2008	MPI 1
Iceland	2009	MPI 3
Ireland	2009	MPI 2
Lithuania	2007-2008	MPI 1
New Zealand	2008	MPI 2
Nigeria	2008-2009	at least MPI 2
Qatar	2008-2009	at least MPI 2
Romania	2007-2008	MPI 1
Russia	2007-2008	MPI 1
Slovakia	2007-2008	MPI 1
Ukraine	2007-2008	MPI 1
UAE	2008-2009	at least MPI 2
UK	2009	MPI 2
US	2009	MPI 2
Vietnam	2008-2009	MPI 3

Source: Fitch

Among developed countries, all except Cyprus and Iceland are likely to move to MPI 2 as 2007 house price triggers drop out of the reference period. For Cyprus and Iceland, however, the longer lag attached to the equity price trigger will keep these countries MPI 3 for at least another year. Among EMs, all except China and Vietnam are likely to move lower.

### Banking System Indicator (BSI)

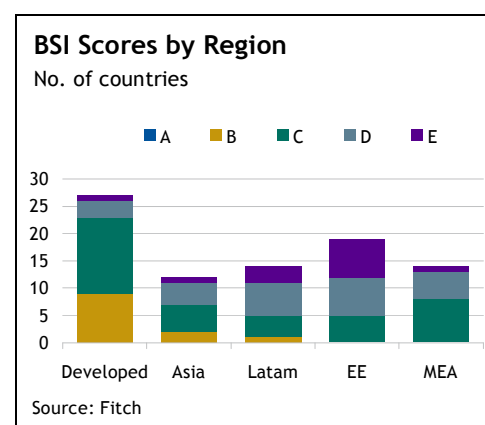
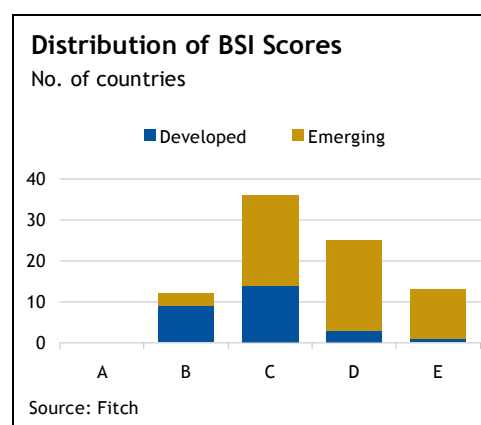
The BSI is a summary measure of intrinsic banking system quality, or strength, derived from Fitch's long-standing Individual Ratings for banks. The BSI measures system quality or strength on a scale ranging from 'A' (very high), through 'B' (high), 'C' (adequate) and 'D' (low), to 'E' (very low). The BSI deliberately abstracts from potential support from shareholders or governments (as measured by Fitch's bank Support Ratings) since the objective of the methodology is to highlight systemic weakness which might trigger the need for such support.

The BSI is essentially a rounded version of the system average Individual Rating, which is an asset-weighted average of Fitch's bank Individual Ratings for a critical

mass – at least two-thirds – of banks in any banking system, including, where necessary, systemically important unrated banks. Scores are rounded to the nearest letter grade, whether up or down.

## Results

Compared with the last report, two countries receive lower scores due to downgrades of specific banks' Individual Ratings. Greece moves down to 'D' and Nigeria to 'E'. Other changes are due to changes in the weightings of individual banks within the system total, due to differential growth and/or new ratings. Chile and France improve to 'B' while Portugal moves down to 'C'. The typical DC banking system remains 'C' (52%) or 'B' (33%), while the typical EM system is either 'C' or 'D', both categories including 37% of all EM systems.



## Appendix 1: Bank Systemic Risk Matrix

The matrix below brings together the two systemic risk indicators – the BSI and MPI – to emphasise their complementarity. Weaker banking systems are likely to be less able to absorb increased stress of the type that a high MPI may portend.

### Bank Systemic Risk Matrix

Banking System Indicator	Macro-Prudential Indicator			No. of countries
	1	2	3	
<b>A</b>				<b>0</b>
<b>B</b>	Canada Hong Kong Norway Singapore	Australia Chile Finland Spain Sweden	Denmark France New Zealand	<b>12</b>
<b>C</b>	Austria Bermuda Germany Israel Japan Malaysia Mexico Panama Switzerland Taiwan Thailand	Bahrain India Italy Korea Kuwait Luxembourg Malta Netherlands Oman Peru Poland Portugal San Marino Saudi Arabia Slovenia South Africa Turkey	Brazil Cyprus Czech Republic Qatar Slovakia UAE UK US	<b>36</b>
<b>D</b>	Armenia Dominican Republic Ecuador Egypt El Salvador Hungary Lebanon Philippines Sri Lanka Tunisia	Belgium Benin Bulgaria Colombia Costa Rica Croatia Greece Indonesia Morocco Venezuela	China Georgia Ireland Romania Russia	<b>25</b>
<b>E</b>	Bolivia	Argentina Belarus Estonia Kazakhstan Latvia Uruguay	Azerbaijan Iceland Lithuania Nigeria Ukraine Vietnam	<b>13</b>
<b>Number of countries</b>	<b>26</b>	<b>38</b>	<b>22</b>	<b>86</b>

Source: Fitch

## Appendix 2: Bank Systemic Risk Indicators

### Banking System Indicator (BSI) and Macro-Prudential Indicator (MPI)

	BSI	MPI		BSI	MPI
Argentina	E	2 (1)	Kuwait	C	2
Armenia	D	1 (3)	Latvia	E	2 (3)
Australia	B	2 (3)	Lebanon	D	1
Austria	C	1	Lithuania	E	3
Azerbaijan	E	3	Luxembourg	C	2
Bahrain	C	2	Malaysia	C	1
Belarus	E	2	Malta	C	2
Belgium	D	2 (3)	Mexico	C	1
Benin	D	2 (1)	Morocco	D	2
Bermuda	C	1	Netherlands	C	2
Bolivia	E	1	New Zealand	B	3
Brazil	C	3	Nigeria	E (D)	3
Bulgaria	D	2	Norway	B	1 (2)
Canada	B	1 (3)	Oman	C	2 (1)
Chile	B (C)	2	Panama	C	1
China	D	3 (1)	Peru	C	2 (1)
Colombia	D	2 (3)	Philippines	D	1
Costa Rica	D	2	Poland	C	2
Croatia	D	2 (1)	Portugal	C (B)	2
Cyprus	C	3 (2)	Qatar	C	3
Czech Republic	C	3	Romania	D	3
Denmark	B	3	Russia	D	3
Dominican R.	D	1	San Marino	C	2
Ecuador	D	1	Saudi Arabia	C	2
Egypt	D	1	Singapore	B	1
El Salvador	D	1	Slovakia	C	3
Estonia	E	2 (3)	Slovenia	C	2
Finland	B	2	South Africa	C	2 (3)
France	B (C)	3	Spain	B	2
Georgia	D	3	Sri Lanka	D	1
Germany	C	1	Sweden	B	2 (3)
Greece	D (C)	2	Switzerland	C	1 (2)
Hong Kong	B	1	Taiwan	C	1
Hungary	D	1	Thailand	C	1
Iceland	E	3	Tunisia	D	1
India	C	2	Turkey	C	2 (3)
Indonesia	D	2 (1)	Ukraine	E	3
Ireland	D	3	UAE	C	3
Israel	C	1	UK	C	3
Italy	C	2	US	C	3
Japan	C	1	Uruguay	E	2 (1)
Kazakhstan	E	2	Venezuela	D	2
Korea	C	2 (3)	Vietnam	E	3 (2)

Figures in brackets are results from the November 2009 report  
Source: Fitch

### Appendix 3: Bank Systemic Risk Indicators Since 2005

#### Bank Systemic Risk Indicators

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09		Nov 09		Jun 10	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Argentina	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	2
Armenia	-	-	-	-	-	-	D	2	D	2	D	2	D	3	D	3	D	3	D	1
Australia	B	2	B	2	B	2	B	3	B	3	B	3	B	3	B	3	B	3	B	2
Austria	C	1	C	1	C	2	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Azerbaijan	E	1	E	3	E	3	E	3	E	3	E	3	E	3	E	3	E	3	E	3
Bahrain	C	1	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Belarus	-	-	-	-	-	-	E	2	E	2	E	2	E	2	E	2	E	2	E	2
Belgium	B	1	B	1	B	1	B	2	B	2	B	3	D	3	D	3	D	3	D	2
Benin	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	2
Bermuda	B	1	B	1	B	1	B	1	B	1	B	1	B	1	C	1	C	1	C	1
Bolivia	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Brazil	C	1	C	1	C	1	C	1	C	2	C	3	C	3	C	3	C	3	C	3
Bulgaria	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Canada	B	1	B	1	B	1	B	3	B	3	B	3	B	3	B	3	B	3	B	1
Chile	C	1	C	1	C	1	C	1	C	1	C	2	C	2	C	3	C	2	B	2
China	E	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	3
Colombia	D	1	D	1	D	1	D	1	D	2	D	2	D	3	D	3	D	3	D	2
Costa Rica	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Croatia	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	1	D	1	D	2
Cyprus	D	1	D	1	D	1	C	1	C	1	C	2	C	2	C	2	C	2	C	3
Czech R.	C	1	C	1	C	2	C	2	C	2	C	2	C	2	C	3	C	3	C	3
Denmark	B	1	B	1	B	1	B	2	B	3	B	3	B	3	B	3	B	3	B	3
Dominican R.	D	2	D	2	D	2	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Ecuador	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Egypt	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	D	1	D	1
El Salvador	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Estonia	C	2	C	2	C	2	C	2	C	3	C	3	D	3	E	3	E	3	E	2
Finland	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2
France	B	1	B	1	B	1	B	2	B	2	B	3	B	3	C	3	C	3	B	3
Georgia	-	-	-	-	-	-	D	2	D	2	D	2	D	2	D	3	D	3	D	3
Germany	C	1	C	1	C	1	C	1	C	1	B	1	C	1	C	1	C	1	C	1
Greece	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	D	2
Hong Kong	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Hungary	C	3	C	2	C	2	C	1	C	1	C	1	C	1	D	1	D	1	D	1
Iceland	C	2	C	3	C	3	C	3	C	3	C	3	E	3	E	3	E	3	E	3
India	D	1	D	1	D	2	D	2	C	2	C	2	C	2	C	2	C	2	C	2
Indonesia	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	2
Ireland	B	2	B	3	B	3	B	2	B	2	B	3	B	3	D	3	D	3	D	3
Israel	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Italy	B	2	C	1	B	1	B	2	B	2	B	2	C	2	C	2	C	2	C	2
Japan	D	1	D	1	C	1	C	1	C	1	C	1	B	1	C	1	C	1	C	1
Kazakhstan	D	1	D	2	D	2	D	2	D	2	D	3	D	3	E	3	E	2	E	2
Korea	C	1	C	1	C	1	C	1	C	3	C	3	C	3	C	3	C	3	C	2
Kuwait	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Latvia	C	2	C	2	C	2	C	2	C	3	C	3	D	3	E	3	E	3	E	2
Lebanon	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Lithuania	C	2	C	2	C	2	C	2	C	2	C	2	D	2	E	3	E	3	E	3
Luxembourg	B	1	B	2	B	2	B	2	B	2	B	2	C	2	D	2	C	2	C	2
Malaysia	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Malta	C	1	C	2	C	1	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Mexico	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Morocco	-	-	-	-	-	-	-	D	1	D	2	D	2	D	2	D	2	D	2	2
Netherlands	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	C	2	C	2
New Zealand	B	1	B	2	B	2	B	2	B	2	B	2	B	3	B	3	B	3	B	3
Nigeria	-	-	-	-	-	-	-	D	1	D	2	D	2	D	3	D	3	E	3	3
Norway	B	1	B	3	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	1
Oman	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	2
Panama	D	1	D	1	D	1	D	1	D	1	C	1	C	1	C	1	C	1	C	1
Peru	D	1	D	1	D	1	D	1	D	1	D	1	D	1	C	1	C	1	C	2
Philippines	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Poland	D	1	D	1	D	1	C	1	C	1	C	2	C	2	C	2	C	2	C	2
Portugal	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	C	2
Qatar	C	1	C	2	C	2	C	2	C	2	C	3	C	3	C	3	C	3	C	3

**Bank Systemic Risk Indicators (Cont.)**

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09		Nov 09		Jun 10	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Romania	D	1	D	2	D	2	D	2	D	2	D	3	D	3	D	3	D	3	D	3
Russia	D	2	D	3	D	3	D	3	D	3	D	3	D	3	D	3	D	3	D	3
San Marino	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Saudi Arabia	B	1	B	2	B	2	B	2	B	2	B	2	B	2	C	2	C	2	C	2
Singapore	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Slovakia	D	1	D	1	C	2	C	2	C	2	C	3	C	3	C	3	C	3	C	3
Slovenia	C	1	C	1	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
South Africa	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	2
Spain	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2
Sri Lanka	-	-	-	-	-	-	E	1	E	1	E	1	E	1	E	1	D	1	D	1
Sweden	B	1	B	1	B	1	B	2	B	2	B	3	B	3	B	3	B	3	B	2
Switzerland	B	1	B	1	B	1	B	1	B	2	B	2	B	2	C	2	C	2	C	1
Taiwan	D	1	D	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Thailand	D	1	D	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Tunisia	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Turkey	D	1	D	2	D	2	C	2	C	2	C	3	C	3	C	3	C	3	C	2
Ukraine	D	1	D	2	D	2	D	2	D	2	D	2	D	2	E	3	E	3	E	3
UAE	C	1	C	1	C	1	C	2	C	2	C	3	C	3	C	3	C	3	C	3
UK	B	2	B	2	B	2	B	2	B	2	B	3	B	3	C	3	C	3	C	3
US	B	1	B	2	B	2	B	3	B	3	B	3	B	3	C	3	C	3	C	3
Uruguay	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	2
Venezuela	D	1	D	1	D	1	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Vietnam	E	1	E	2	E	2	E	2	D	2	D	2	D	2	D	2	E	2	E	3

Source: Fitch

## Appendix 4: Credit/GDP Ratios

<b>Bank Credit to Private Sector</b>							
(% of GDP)	2003	2004	2005	2006	2007	2008	2009e
Argentina	10.6	10.3	11.4	12.6	13.9	13.1	13.1
Armenia	5.7	7.0	8.0	8.8	13.6	17.4	21.8
Australia	98.3	99.2	103.9	109.2	117.7	120.9	127.3
Austria	105.6	106.8	114.1	115.2	115.0	119.3	123.9
Azerbaijan	7.0	9.3	9.5	12.1	15.1	15.5	18.9
Bahrain	47.9	51.4	51.8	52.4	62.5	75.4	88.6
Belarus	11.7	14.0	15.9	20.2	24.8	28.6	34.4
Belgium	74.1	71.3	73.9	82.2	91.1	94.3	98.3
Benin	13.7	13.6	15.3	15.8	18.4	21.0	23.0
Bermuda	116.2	123.1	121.5	127.1	126.1	130.5	136.9
Bolivia	47.9	42.7	39.8	35.2	34.3	31.5	31.5
Brazil	29.9	30.1	34.1	41.1	49.9	56.0	61.1
Bulgaria	27.4	36.3	43.6	47.1	66.8	74.5	83.3
Canada	117.1	119.5	125.9	138.5	127.1	128.5	137.0
Chile	66.1	66.9	68.3	67.3	74.0	85.0	85.6
China	141.4	137.9	125.0	121.1	120.6	120.6	139.2
Colombia	33.7	29.2	27.3	32.9	35.9	37.4	44.0
Costa Rica	31.3	32.0	35.6	37.9	44.4	50.8	52.4
Croatia	46.1	48.9	53.0	60.2	63.1	64.9	67.6
Cyprus	163.4	163.7	164.5	175.8	204.5	252.0	270.1
Czech Republic	31.8	32.6	37.0	41.0	47.9	52.8	55.9
Denmark	151.6	158.2	171.8	185.7	203.0	218.3	230.5
Dominican Rep.	37.1	23.4	23.3	19.6	21.6	20.9	20.0
Ecuador	20.0	21.5	23.1	23.7	24.6	25.5	26.6
Egypt	53.9	54.0	51.2	49.3	46.4	47.0	41.0
El Salvador	41.2	41.2	42.2	42.4	42.3	40.8	37.2
Estonia	70.7	80.6	81.8	88.8	93.9	97.4	109.6
Finland	64.1	67.7	75.1	78.9	81.7	86.7	94.6
France	88.2	90.5	92.3	97.9	105.1	107.9	109.5
Georgia	8.7	9.7	14.8	19.5	28.3	33.3	33.6
Germany	115.3	112.5	111.9	109.0	105.1	107.8	112.0
Greece	64.6	69.9	78.6	84.5	92.6	95.0	91.7
Hong Kong	148.8	147.6	146.1	139.4	139.7	143.0	157.9
Hungary	42.3	45.6	51.3	55.4	61.5	69.8	69.5
Iceland	130.4	164.9	247.7	319.5	398.1	440.3	433.7
India	32.1	35.6	39.3	43.3	45.2	49.0	49.9
Indonesia	22.9	26.4	26.4	24.6	25.5	26.5	26.9
Ireland	114.6	134.3	160.8	182.0	199.1	218.1	240.0
Israel	86.3	84.9	89.7	86.3	88.5	90.1	94.0
Italy	83.6	85.3	89.4	94.9	101.1	105.4	109.0
Japan	172.0	164.9	162.0	155.4	149.8	151.3	157.0
Kazakhstan	22.7	26.5	35.4	47.6	60.1	48.9	52.9
Korea	95.6	90.1	93.0	95.1	99.6	109.1	109.7
Kuwait	59.5	56.4	50.9	51.2	61.6	60.1	77.0
Latvia	40.2	50.8	68.2	87.5	88.7	90.0	108.7
Lebanon	78.6	75.9	68.5	70.5	73.4	74.2	70.3
Lithuania	22.8	28.8	40.9	50.1	60.0	62.9	70.2
Luxembourg	103.2	106.0	128.9	153.4	184.8	192.1	185.8
Malaysia	136.8	126.3	123.2	118.1	114.6	111.8	119.0
Malta	101.2	106.6	106.5	115.0	118.1	127.4	135.3
Mexico	25.9	22.9	23.4	24.5	25.6	23.9	23.1
Morocco	57.2	58.2	61.9	65.0	77.6	84.5	80.5
Netherlands	148.0	157.8	165.0	167.2	189.1	192.7	204.4
New Zealand	116.2	120.7	129.6	138.8	149.4	151.3	149.6
Nigeria	13.8	13.1	13.2	13.2	25.6	34.9	35.0
Norway	77.3	77.7	81.4	87.0	90.9	93.6	93.8
Oman	36.9	35.1	30.2	31.7	36.2	35.8	52.8
Panama	87.1	85.1	87.1	88.4	92.0	90.8	86.7
Peru	20.2	18.1	19.1	17.6	20.8	24.9	24.6
Philippines	34.9	32.4	28.5	27.3	26.9	28.4	28.7
Poland	28.1	28.1	28.9	33.3	39.4	50.0	55.0
Portugal	140.2	140.8	145.6	157.2	168.7	179.5	185.0
Qatar	30.0	29.0	35.4	38.6	46.7	46.0	52.4

**Bank Credit to Private Sector (Cont.)**

(% of GDP)	2003	2004	2005	2006	2007	2008	2009e
Romania	13.7	15.6	19.9	25.9	34.8	37.7	42.6
Russia	21.0	24.1	25.7	30.9	37.9	41.3	58.2
San Marino	197.1	245.0	263.6	332.0	356.5	380.3	428.1
Saudi Arabia	28.4	33.4	36.9	35.6	40.1	41.8	53.0
Singapore	109.8	100.4	94.1	89.1	90.0	100.6	106.2
Slovakia	31.8	30.4	35.1	38.6	42.4	44.7	50.4
Slovenia	41.4	48.1	56.4	66.2	81.2	86.8	86.5
South Africa	69.1	67.5	71.2	79.4	84.8	82.4	81.3
Spain	113.2	124.9	145.7	167.2	187.8	202.5	211.2
Sri Lanka	28.9	30.6	32.9	34.0	33.3	28.9	28.5
Sweden	101.0	102.7	109.2	114.5	124.0	129.7	137.0
Switzerland	156.9	158.8	164.4	169.5	173.6	165.4	174.7
Taiwan	122.6	130.0	137.4	139.2	135.1	139.6	147.4
Thailand	119.1	114.6	111.2	103.6	98.5	99.5	92.4
Tunisia	60.6	61.1	62.6	60.6	60.3	62.8	67.0
Turkey	15.8	18.2	23.0	26.6	30.5	33.4	34.7
Ukraine	24.6	25.2	32.2	44.4	58.2	73.9	87.1
UAE	53.0	54.6	58.6	64.4	72.7	83.2	102.5
UK	143.1	150.8	159.6	171.1	188.1	210.3	213.6
US	183.4	187.4	191.3	198.4	205.2	189.1	200.5
Uruguay	46.5	25.1	23.5	24.3	23.7	27.2	26.9
Venezuela	8.2	10.8	12.8	16.4	23.1	20.5	19.4
Vietnam	51.8	61.9	65.9	71.2	93.4	90.6	107.6

Source: IMF and Fitch estimates

## Appendix 5: Real Exchange Rates

### Real Effective Exchange Rate Index (2000 = 100)

	2003	2004	2005	2006	2007	2008	2009e
Argentina	47.7	46.0	45.9	45.2	42.9	46.3	47.4
Armenia	82.6	87.2	97.7	106.6	122.9	137.0	128.8
Australia	112.6	121.2	124.8	124.8	133.3	131.8	128.1
Austria	104.2	105.8	105.9	105.6	106.8	107.7	108.1
Azerbaijan	75.0	74.0	86.0	89.0	93.0	106.0	106.0
Bahrain	93.0	86.6	84.2	83.3	80.2	77.5	82.1
Belarus	67.9	66.2	66.1	64.5	61.0	60.9	62.1
Belgium	106.9	108.7	109.5	109.5	110.9	114.9	114.9
Benin	113.1	116.0	118.9	120.2	121.3	127.0	127.0
Bermuda	101.2	102.1	101.8	101.7	102.7	103.7	105.9
Bolivia	89.1	83.3	79.8	79.5	81.8	93.9	103.4
Brazil	77.2	80.6	99.4	111.1	120.2	126.2	109.8
Bulgaria	114.0	119.4	120.5	125.7	134.2	146.2	152.2
Canada	107.0	112.8	119.7	126.8	132.3	130.3	123.5
Chile	82.0	87.0	91.9	96.7	95.2	97.4	95.2
China	95.2	92.6	92.5	94.4	99.5	107.5	110.4
Colombia	85.0	92.8	105.6	103.8	116.0	120.6	113.6
Costa Rica	94.8	91.8	91.9	92.7	95.3	100.4	102.1
Croatia	105.4	107.4	109.8	112.0	113.0	117.6	117.6
Cyprus	111.0	112.8	113.0	113.2	113.1	117.2	119.9
Czech Republic	116.8	118.1	125.5	132.6	136.8	158.0	151.3
Denmark	108.2	109.1	108.5	108.5	109.8	112.4	115.5
Dominican Rep.	74.6	79.3	104.5	99.1	100.8	101.7	100.9
Ecuador	162.4	154.4	148.0	147.2	138.5	137.7	147.5
Egypt	59.1	56.7	61.5	64.5	66.2	75.6	85.1
El Salvador	97.1	96.4	98.7	98.5	97.7	96.8	95.4
Estonia	105.7	107.1	108.2	108.6	111.8	117.0	115.6
Finland	106.9	106.9	104.9	104.1	106.3	109.3	110.1
France	106.7	108.6	108.0	107.7	109.0	111.3	111.0
Georgia	87.3	91.9	95.3	98.7	100.1	108.5	110.1
Germany	106.3	108.0	106.6	106.3	108.6	109.7	110.1
Greece	126.2	128.5	113.8	114.8	116.9	120.1	121.3
Hong Kong	89.3	84.5	82.8	81.8	77.4	73.2	72.0
Hungary	121.6	129.7	132.8	127.2	143.5	149.8	139.9
Iceland	98.9	101.5	114.6	106.9	112.9	89.1	72.4
India	96.5	99.0	104.4	102.7	110.9	105.3	108.0
Indonesia	122.5	116.7	114.8	134.0	133.4	128.6	130.2
Ireland	120.3	123.1	123.6	126.0	133.1	140.7	134.8
Israel	84.9	79.7	78.1	78.1	79.5	89.2	87.2
Italy	110.2	112.3	111.1	111.0	112.5	114.9	115.7
Japan	83.6	84.5	79.4	72.1	66.6	72.7	82.0
Kazakhstan	88.9	94.4	100.3	100.9	111.2	124.1	105.5
Korea	99.6	100.7	112.5	120.6	119.5	97.3	84.7
Kuwait	96.7	91.8	93.7	94.5	95.3	102.2	104.2
Latvia	102.8	101.7	96.8	97.7	100.5	106.6	106.5
Lebanon	88.4	82.4	79.1	80.8	77.1	78.1	83.7
Lithuania	102.8	101.7	96.8	97.7	100.5	106.6	106.5
Luxembourg	105.4	106.7	107.2	108.2	109.6	111.5	112.0
Malaysia	99.2	94.8	91.4	94.3	101.1	103.3	100.0
Malta	108.5	112.8	112.7	113.9	117.3	121.5	122.2
Mexico	95.1	90.8	94.2	94.2	94.0	90.0	78.0
Morocco	94.6	93.3	91.9	93.0	92.6	94.0	95.1
Netherlands	112.5	113.5	112.8	112.0	113.6	115.6	117.3
New Zealand	121.7	130.1	137.6	128.2	137.8	128.9	120.5
Nigeria	105.0	107.7	124.3	133.3	130.7	144.8	136.0
Norway	111.0	106.8	111.2	111.3	112.3	113.4	110.6
Oman	95.4	89.6	88.7	88.7	87.4	90.0	90.9
Panama	86.4	82.2	87.6	83.4	81.7	82.0	82.0
Peru	99.1	98.2	104.0	105.9	106.5	102.3	100.5
Philippines	89.1	86.2	92.3	102.5	112.3	118.7	115.7
Poland	96.3	96.0	107.6	110.0	114.2	125.7	106.5
Portugal	109.6	110.7	110.9	111.6	113.5	115.0	114.2
Qatar	95.5	95.4	102.1	110.6	117.8	123.7	129.9
Romania	99.1	101.4	120.1	129.2	140.8	134.8	124.3
Russia	127.3	137.0	149.4	163.7	172.9	184.2	172.1

## Real Effective Exchange Rate Index (2000 = 100) (Cont.)

	2003	2004	2005	2006	2007	2008	2009e
San Marino	110.2	112.3	111.1	111.0	112.5	114.9	115.7
Saudi Arabia	90.5	84.4	82.2	80.8	78.5	80.2	86.8
Singapore	94.3	93.2	92.1	94.3	95.1	101.4	101.0
Slovakia	119.1	130.2	134.6	142.9	158.3	171.9	175.3
Slovenia	104.2	104.1	104.8	101.4	102.5	107.3	112.1
South Africa	97.1	106.2	104.7	98.8	93.7	87.9	96.2
Spain	109.2	111.5	113.1	115.0	117.3	120.8	120.3
Sri Lanka	98.8	95.1	103.6	110.0	115.4	137.5	131.1
Sweden	100.2	100.8	97.0	96.9	98.9	97.6	88.0
Switzerland	106.4	105.4	104.1	101.9	98.1	103.3	107.3
Taiwan	86.6	85.3	87.8	84.8	80.2	79.2	74.2
Thailand	96.0	95.5	96.9	105.0	111.1	110.9	105.5
Tunisia	92.5	89.1	85.4	84.7	82.3	81.7	81.3
Turkey	94.9	98.0	108.1	107.3	116.0	117.5	112.8
Ukraine	98.3	96.2	106.1	111.3	113.1	122.7	102.8
UAE	97.7	94.3	96.9	102.2	104.1	107.8	112.1
UK	96.1	101.7	101.4	103.2	108.0	95.1	82.9
US	98.7	94.1	92.8	92.5	88.8	85.8	90.0
Uruguay	68.6	68.2	76.6	78.1	79.6	89.0	93.1
Venezuela	72.3	70.0	68.3	73.3	81.0	99.0	131.2
Vietnam	90.6	89.3	99.8	96.8	100.5	121.9	123.9

Source: IMF, BIS, Eurostat and Fitch estimates

## Appendix 6: Equity Prices

### Real Equity Price Index (2000 = 100)

	2003	2004	2005	2006	2007	2008	2009e
Argentina	102.0	148.8	183.4	193.8	219.5	165.8	143.5
Armenia	-	-	-	-	-	-	-
Australia	87.1	98.8	116.7	134.4	158.4	119.9	98.8
Austria	110.5	162.2	239.7	311.4	357.2	251.7	158.0
Azerbaijan	-	-	-	-	-	-	-
Bahrain	98.1	128.0	154.7	144.6	150.2	148.5	103.9
Belarus	-	-	-	-	-	-	-
Belgium	63.0	79.8	97.0	116.0	128.8	89.6	60.2
Benin	-	-	-	-	-	-	-
Bermuda	138.7	170.3	181.7	230.0	247.1	157.8	95.6
Bolivia	-	-	-	-	-	-	-
Brazil	67.0	98.6	115.2	152.9	207.1	200.3	183.7
Bulgaria	255.1	392.7	568.9	627.1	920.2	552.3	206.3
Canada	70.6	82.1	94.4	110.0	122.1	109.1	89.9
Chile	114.3	158.1	186.6	199.9	253.4	222.7	266.5
China	74.7	75.8	58.0	79.7	198.7	136.2	120.8
Colombia	180.9	284.7	507.6	784.6	788.9	611.9	646.2
Costa Rica	92.5	65.0	67.7	83.0	127.0	138.6	76.5
Croatia	120.4	135.4	196.6	271.9	448.3	314.7	165.2
Cyprus	17.6	15.3	19.0	39.4	65.5	35.9	25.4
Czech Republic	93.2	137.1	204.1	234.5	273.7	196.8	137.6
Denmark	68.1	82.5	102.4	116.9	139.6	107.6	81.7
Dominican Rep.	269.4	185.5	180.7	17.8	155.0	393.6	219.6
Ecuador	123.1	144.7	180.2	210.1	216.4	190.1	152.4
Egypt	119.9	135.0	199.2	238.0	236.5	210.7	125.2
El Salvador	-	-	-	-	-	-	-
Estonia	149.1	213.1	354.1	374.2	450.8	251.1	162.8
Finland	36.7	38.9	45.2	55.6	67.5	49.3	33.1
France	46.8	54.4	62.0	72.9	80.6	59.4	45.0
Georgia	-	-	-	-	-	-	-
Germany	43.8	52.5	60.2	74.2	90.2	68.5	51.8
Greece	41.1	50.6	63.5	77.5	92.3	61.3	38.5
Hong Kong	72.1	87.0	95.8	110.5	148.6	128.6	110.7
Hungary	77.8	104.7	163.6	186.4	200.3	142.8	108.4
Iceland	88.7	161.6	223.5	292.0	357.3	155.6	10.3
India	75.5	103.5	131.6	192.8	253.0	224.2	189.3
Indonesia	78.6	113.1	135.7	155.0	212.1	174.0	157.1
Ireland	72.1	88.6	103.2	123.1	125.1	66.5	38.2
Israel	82.9	111.0	134.9	155.0	193.4	154.2	149.4
Italy	52.9	60.4	70.5	79.9	86.1	57.8	40.7
Japan	62.0	73.6	83.8	107.3	109.6	77.1	57.2
Kazakhstan	103.6	145.6	258.5	1068.8	1523.8	1067.2	646.5
Korea	84.9	99.3	124.2	153.5	189.6	162.0	148.6
Kuwait	256.1	355.1	471.8	457.0	500.5	478.1	341.2
Latvia	175.9	228.4	321.8	366.2	372.2	223.2	123.9
Lebanon	69.4	84.6	133.2	211.1	174.2	206.2	163.8
Lithuania	141.9	224.6	409.1	402.8	476.8	315.4	172.1
Luxembourg	48.4	62.1	77.2	98.4	121.4	88.2	53.8
Malaysia	79.8	95.6	98.7	100.8	135.3	112.3	105.1
Malta	49.9	66.8	89.3	128.2	111.6	91.2	64.0
Mexico	81.7	133.7	174.3	245.3	332.5	285.8	255.6
Morocco	78.5	94.4	99.3	147.3	202.4	215.6	174.5
Netherlands	40.3	46.4	51.8	60.6	65.7	47.7	32.4
New Zealand	120.3	149.5	174.4	185.2	208.8	158.1	135.8
Nigeria	150.1	200.7	154.4	157.4	257.6	255.4	108.5
Norway	65.9	94.9	121.2	151.0	183.7	132.7	99.8
Oman	113.5	146.0	177.6	178.3	216.6	229.4	172.5
Panama	93.5	105.7	120.0	158.1	198.6	187.6	N.A.
Peru	121.4	193.0	269.7	526.2	1150.4	751.7	658.3
Philippines	67.1	83.8	96.8	110.1	155.3	230.0	N.A.
Poland	84.7	114.8	137.2	197.0	229.0	230.0	157.4
Portugal	44.1	53.3	55.6	68.3	83.9	59.8	47.2
Qatar	225.8	330.9	534.2	356.4	301.8	328.2	231.2
Romania	160.7	273.4	451.0	573.6	658.9	388.6	230.2
Russia	170.7	178.0	189.4	300.4	319.5	217.2	123.0
San Marino	-	-	-	-	-	-	-

**Real Equity Price Index (2000 = 100) (Cont.)**

	2003	2004	2005	2006	2007	2008	2009e
Saudi Arabia	154.8	253.3	417.9	382.3	296.4	351.0	292.7
Singapore	75.8	90.9	105.3	120.9	158.4	113.7	99.9
Slovakia	172.8	199.4	397.9	351.1	357.7	349.5	236.8
Slovenia	140.3	179.9	179.6	195.7	355.2	258.7	135.8
South Africa	86.8	106.8	136.8	185.3	229.8	191.3	96.8
Spain	54.2	65.9	76.8	91.7	108.6	83.5	70.5
Sri Lanka	132.7	165.6	221.4	228.7	231.8	173.5	172.8
Sweden	39.8	50.3	59.6	71.8	83.3	57.5	52.1
Switzerland	63.7	75.6	89.1	112.9	129.7	99.7	83.5
Taiwan	66.5	78.4	79.7	98.9	123.6	104.5	91.1
Thailand	134.8	181.2	180.6	179.7	187.2	159.3	135.7
Tunisia	67.8	86.2	98.8	122.9	152.0	166.7	195.9
Turkey	31.5	45.4	62.8	77.3	86.4	60.0	56.4
Ukraine	88.4	255.8	589.9	757.1	1683.2	462.7	238.9
UAE	129.1	182.1	465.9	349.5	278.7	268.7	143.2
UK	58.5	64.8	71.8	79.9	82.9	66.8	57.1
US	78.8	87.6	86.6	90.8	101.9	83.9	66.4
Uruguay	-	-	-	-	-	-	-
Venezuela	107.8	198.1	144.1	188.6	191.6	127.7	125.5
Vietnam	96.2	139.1	141.2	253.6	466.4	188.2	153.5

Source: IMF, Bloomberg and Fitch estimates

## Appendix 7: House Prices

### Real House Price Index (2000 = 100)

	2003	2004	2005	2006	2007	2008	2009e
Australia	140.7	146.0	144.4	150.3	163.4	163.5	166.0
Austria	107.6	103.2	105.7	107.5	109.1	105.6	107.5
Belgium	127.9	138.8	160.0	173.6	187.3	187.1	185.1
Canada	109.7	112.6	115.6	124.9	131.3	134.4	134.4
China	106.4	116.6	124.2	130.2	127.1	135.8	147.9
Cyprus <sup>a</sup>	-	99.0	100.0	102.3	110.7	118.4	110.8
Denmark	106.2	113.8	131.3	156.7	161.2	148.8	127.8
Estonia	170.5	215.9	262.4	374.2	371.5	306.1	191.3
Finland	109.4	116.3	123.0	128.8	132.6	128.3	127.8
France	122.8	139.3	157.8	173.9	182.7	179.9	166.9
Germany	97.0	93.6	91.4	89.9	88.5	86.5	87.5
Greece	154.3	153.3	164.3	178.6	179.6	172.5	170.0
Hong Kong	77.3	94.1	110.0	108.6	118.9	132.7	133.4
Iceland	127.1	138.6	171.3	187.5	195.3	184.1	149.7
Ireland	144.3	158.0	165.3	180.5	177.3	156.4	133.4
Israel	90.7	90.0	89.5	88.2	87.2	90.2	N.A.
Italy	137.3	147.4	155.9	162.7	168.3	167.2	165.0
Japan	89.5	82.2	78.7	76.4	76.4	76.3	74.9
Korea	120.8	116.6	114.4	118.8	126.3	128.0	127.5
Latvia	205.1	207.3	312.5	437.9	467.4	387.5	193.0
Lithuania	112.0	138.9	185.1	247.4	280.4	259.7	194.5
Malaysia	104.3	107.0	106.6	105.7	107.6	101.5	102.4
Malta	136.3	160.2	170.9	172.1	171.9	162.2	143.3
Netherlands	107.8	116.2	118.7	120.8	120.9	120.2	112.6
New Zealand	140.0	162.9	181.1	190.5	206.9	184.6	163.0
Norway	110.2	118.4	126.0	145.6	157.0	137.4	137.4
Poland	104.2	105.6	127.1	160.2	223.3	211.3	191.2
Singapore	85.8	78.8	80.6	85.3	99.9	110.9	85.0
South Africa	177.2	218.3	259.1	285.6	305.2	273.7	255.5
Spain	122.3	140.9	153.8	163.8	168.6	163.8	152.7
Sweden	115.5	125.1	135.4	150.0	162.1	161.6	162.1
Switzerland	107.4	109.1	109.0	110.5	112.0	112.2	118.4
Taiwan	93.2	104.6	107.9	109.6	114.1	129.5	N.A.
Thailand	104.0	111.3	115.3	114.4	108.9	92.6	N.A.
UK	151.2	170.5	171.1	191.3	198.2	162.1	161.1
US	149.7	172.3	194.8	202.6	188.2	151.0	131.9

<sup>a</sup> 2005 = 100

Source: National sources and Fitch estimates

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Special Report

# Bank Systemic Risk Report

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## Related Research

- [Assessing Bank Systemic Risk: A New Product \(July 2005\)](#)
- [Sovereign Comparator \(September 2009\)](#)

## Summary: Signs of Stabilisation

This latest semi-annual report updates the systemic risk indicators Fitch Ratings has published since 2005. For the first time, the number of changes is relatively few and largely reflects technical changes rather than underlying changes in risk. Nevertheless, the level of risk described by the indicators remains high, and it would be premature to say that risk had begun to ease. However, there are at least signs of stabilisation, and when full 2009 data is included in the next report, the chances are there will be as many improvements as deteriorations.

Credit growth has slowed sharply this year, to 2.5% in nominal terms (year-to-date annual rate) for the median of all Fitch-rated sovereigns, compared to over 15% in 2008. By end-2009, Fitch forecasts a slight pick-up, but to a still subdued 5%, or less than 2% in real terms. The main exception is China, which at a forecast 23% will experience the fastest real credit growth anywhere this year and one of the biggest increases in credit to GDP. It has yet to trigger even “moderate” signs of macro-prudential risk based on the indicators in this report, but it could do in the next report if credit growth turns out even slightly faster than currently forecast.

The credit/GDP ratio in general shows little sign of major fall yet, despite the slowdown in credit growth. Indeed, even in some crisis countries such as Iceland and Ireland, the ratio is still rising sharply due to the fall in nominal GDP (a fairly wide-spread phenomenon this year). Moreover, as the warning signals monitored in this report remain in force for three years once triggered, it will be some time before there is substantial improvement in Macro-Prudential Indicator (MPI) scores.

In the next report, however, it is quite likely that the US and Canada will improve (to MPI 2), as house prices and real exchange rates (RERs) respectively peaked relative to trend in 2006 and will drop out of the assessment period in six months’ time. In this report there are no deteriorations in MPI scores and the two changes – Chile and Kazakhstan improve to MPI 2 – are due to data revisions.

The new financial landscape described by the Banking System Indicator (BSI) and noted in the last report is essentially unchanged. Developed-country banking systems are mostly either BSI B or C. None are BSI A, the three systems closest being Australia, Canada and Hong Kong. The three weakest systems remain Belgium and Ireland – both BSI D – and Iceland – BSI E. The typical emerging-market (EM) system meanwhile remains either BSI C or D, though a dozen remain BSI E. Systems closest to improving to BSI B are Bermuda and Chile. Among the weakest EM systems, those nearest to improving are Azerbaijan, Belarus, Estonia and Lithuania.

Five BSI scores change this time, most driven not by underlying Individual Rating changes but by compositional changes as banks change in relative size and new banks are added. Luxembourg improves to BSI C and Sri Lanka and Egypt improve to BSI D; the Netherlands and Vietnam deteriorate to BSI C and E respectively.

After introducing house prices as a formal trigger for the MPI in the last report, Fitch will review the relative merits of equity prices and the RER and of credit growth and the credit/GDP ratio as leading indicators of systemic stress in time for the next report.<sup>1</sup>

<sup>1</sup> A complete list of BSI and MPI scores and a historical times series is in the appendix, together with the usual systemic risk matrix and the underlying credit/GDP, real house price, real equity price and RER

## Macro-Prudential Indicator (MPI)<sup>2</sup>

### Guidelines for Assigning MPI Scores

The MPI seeks to highlight, in as objective a way as possible, the existence and severity of a set of macroeconomic circumstances that has been shown to anticipate a majority of past episodes of banking system distress and in some cases full-blown systemic crises. The methodology identifies instances of rapid credit growth which bring the ratio of private-sector credit to GDP and the RER or real equity or property prices above long-run trend values by certain trigger amounts.<sup>3</sup>

High vulnerability to potential systemic stress is designated MPI 3 and is defined as:

- a ratio of private-sector credit to GDP more than 5pp above trend and
- either real property prices more than 15% above trend
- or real equity prices more than 40% above trend (two years previously)
- or a real effective exchange rate more than 9% above trend.

Moderate vulnerability (MPI 2) occurs when the ratio of credit to GDP is either above or close to its trigger value and other indicators are close to or above their trigger values respectively, as summarised in the table below. An MPI score of '1' denotes low potential vulnerability.

### Guidelines for Assigning MPI Scores

Exchange rate or asset price trigger	On <sup>a</sup>	Close <sup>b</sup>	Off
<b>Credit/GDP vs. trend</b>			
> 5pp above	3	2	2
> 3pp above	2	2	1
< 3pp above	1	1	1

<sup>a</sup> House prices, equity prices and the RER more than 15%, 40% and 9% above trend respectively

<sup>b</sup> House prices, equity prices and the RER more than 10%, 30% and 6% above trend respectively

Source: Fitch

The assessment is based on three years of annual data, with a trigger in any of the three years being relevant to a country's MPI score. The MPI aims to highlight potential systemic stress which could materialise up to three years after an early warning is first indicated. The three-year horizon is designed to be long enough to take account of the time it can take for banking system stress to emerge, but not so long as to reduce the indicator's analytical usefulness.<sup>4</sup>

The reference period in this report remains 2006-2008. Data for 2009 will not be formally incorporated until more complete data are available next year. All the data used in this exercise are subject to sometimes major revision, are volatile and are difficult to forecast. Also, the trends against which the data are assessed are sensitive to the development of actual data and will change over time.

data. The data are also available in Fitch's quarterly "Sovereign Comparator" and the Peer Analysis Tool, together with other system-wide bank prudential indicators, e.g. risk-weighted capital ratios and ownership data.

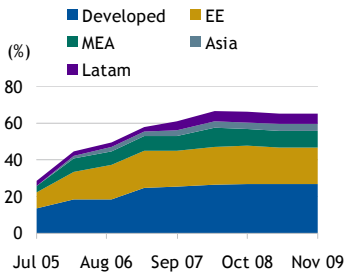
<sup>2</sup> The MPI aims to identify potential systemic stress of a type often preceded by a combination of rapid bank lending growth and bubbles in asset markets and/or the RER. Risk is measured on a scale from '1' (low) through '2' (moderate) to '3' (high). MPI 2 can be triggered by rapid lending growth alone, while MPI 3 requires further triggers.

<sup>3</sup> The primary data source is the IMF's "International Financial Statistics". Private-sector credit is a broad definition, including bank lending and other debt instruments. The RER is based on relative consumer prices. An alternative data source for equity prices is Bloomberg. House price data are from a variety of national sources, where available.

<sup>4</sup> The equity price trigger works with an even longer lag, as equities have been a leading indicator of wider asset price trends, notably property, as well as developments in the real economy. A trigger in year t would not affect the MPI score for a further two years. Thus, banking system problems might materialise up to five years after an equity price peak in time t.

### Macro-Prudential Risk Stabilises

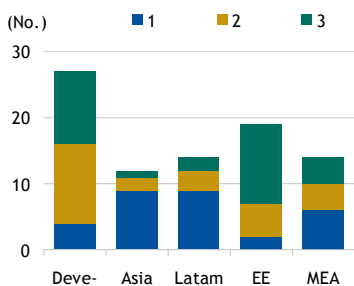
Countries scored MPI 2 or 3



Source: Fitch

### MPI Scores by Region

No. of countries



Source: Fitch

## Results

Compared to the substantial number of changes in the last report, only two MPI scores change this time, both due to data revisions: Chile and Kazakhstan no longer trigger MPI 3.<sup>5</sup>

The number of countries in the MPI 3 category therefore drops to 30. However, this still amounts to over one-third of the 86 countries included in this report. The region with proportionately most MPI 3s (63%) remains Emerging Europe (EE), followed by developed countries (41%) and the Middle East and Africa (MEA) with 29%. Latin America and Asia have the lowest proportion of MPI 3s at 14% and 8% respectively. The proportion of countries in the MPI 2 and MPI 3 categories combined is also of interest, as both scores require credit/GDP or credit growth to exceed critical thresholds. The rank order is the same, with 90% of EE in one of these two categories, 85% of developed markets, and 57% of MEA, with significantly fewer in Latin America (36%) and Asia (25%).

## MPI 3 Countries

Combination of credit and real house price trigger	First triggered by data in
Belgium	2007
Denmark	2006
Estonia	2006
France	2007
Latvia	2006
New Zealand	2007
Sweden	2007
UK	2007
US	2006
Combination of credit and RER trigger	MPI 3 dating from
Armenia	2008
Australia	2007
Azerbaijan	2006
Brazil	2008
Canada	2007
Colombia	2008
Czech Republic	2009
Georgia	2009
Iceland	2006
Ireland	2006 (and house prices)
Korea	2007
Nigeria	2009
Romania	2008
Russia	2006
Slovakia	2008
South Africa	2005 (and house prices)
Turkey	2008
Ukraine	2009
Combination of credit and real equity price trigger	MPI 3 dating from
Lithuania	2009
Qatar	2008
UAE	2008

Source: Fitch

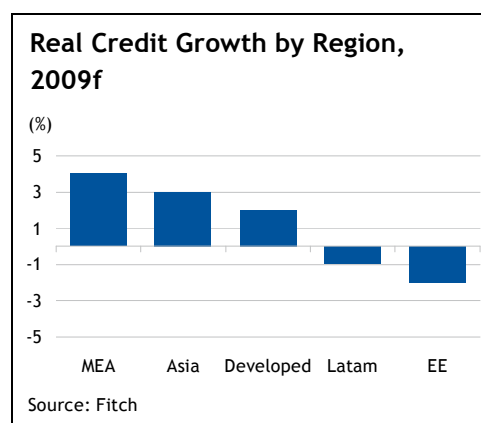
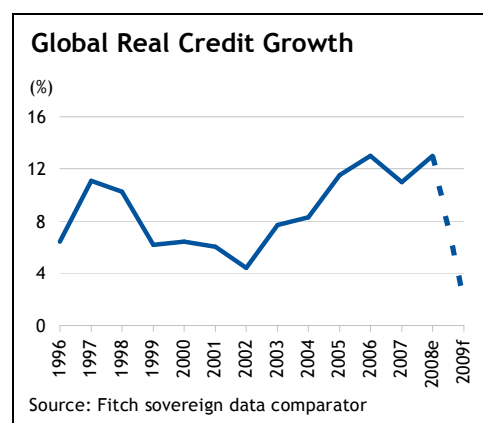
## Developments in 2009

Credit growth has slowed sharply in most countries this year. Across all countries rated by Fitch, median nominal year-to-date credit growth has slumped to 2.5%, compared to over 15% last year. By end-2009, Fitch forecasts nominal credit growth to pick up slightly, but to a still subdued 5%, or less than 2% in real terms.

<sup>5</sup> The second BSR report of the year usually sees fewer changes because it remains based on the previous year's annual data. Nevertheless, when credit growth was rapid and rising, annual outturns were firmed up in this report, often resulting in upward revisions to bank lending data, which led to changes in MPI scores even at this late stage in the year.

Advanced economies (as defined by the IMF) will see 2% median real credit growth this year – the same as the global median. Most countries will see growth of less than 4% and a third of countries will see negative real growth, with the UK's expected 3% drop second only to Iceland's 5% drop.

Credit growth is holding up better in MEA and emerging Asia, where median real credit growth will be 4% and 3% respectively, with China (23%) and Ghana (16%) leading the field. In total just seven countries will see double-digit real credit growth this year compared to over 60 last year. Both Latin America and EE will see negative real credit growth of -1% and -2% respectively. In the former, only Peru and Brazil will see significant positive growth, while more than half the EE region is seeing real declines in credit extension, notably the Baltics and also Armenia and Georgia.



With regard to the macro-prudential credit triggers monitored in this report, only three countries will breach the 15% real credit growth “speed limit” in 2009 – China, Belarus and Ghana. Of these, only China's credit growth is accelerating and it is also the only country where growth is accelerating from a high base. By contrast, the pick-up in credit growth in Kazakhstan and a few developed countries this year follows negative real growth in 2008. Taking 2008 and 2009 together, a further 11 countries will breach the speed limit – see table – but in all these countries credit growth has slowed significantly this year.

### Real Credit Growth of 15% or More, 2008-2009

(%)	2008	2009	2008-2009 average	MPI
Belarus	35	17	26	2
Ukraine	56	-4	22	3
Poland	32	13	22	2
Libya	41	4	21	n.a.
PNG	30	12	21	n.a.
Nigeria	47	-1	21	3
Azerbaijan	49	-3	20	3
Cyprus	35	4	19	2
China	14	23	18	1
Ghana	21	16	18	n.a.
Bahrain	40	0	18	2
Peru	28	8	17	1
Qatar	23	10	17	3
Oman	28	4	15	1

Source: Fitch

Despite the slowdown in credit growth, the credit/GDP ratio continues to rise or at least stabilise in most countries. And some of the biggest increases continue to be in countries which have seen the most severe banking system stress, including Ireland and Iceland, where the ratio will rise by around 20pp this year, because the contraction of credit is overwhelmed by the contraction in nominal GDP. Indeed,

nominal GDP is forecast to contract this year in almost half the countries rated by Fitch, notably in the Baltics, but also in most oil producers. Apart from these special cases, the biggest increase in credit to GDP will be China's 17pp.

On the basis of Fitch's forecasts for 2009 credit growth, few further deteriorations in MPI scores seem likely in the next report, assuming house prices, RERs and equity prices remain at their latest levels for the rest of the year. Some deterioration cannot be ruled out, however, since equity prices trigger with a lag and peaked in many countries in 2007 and so could trigger higher MPI scores once the assessment period is rolled forward a year. Cyprus, India and Vietnam come under this category as does China, but credit growth would also have to accelerate more than currently envisaged in China for it to trigger MPI 3 next time. RERs are also appreciating sharply in some countries. In the next report, Fitch will review the evidence for using equity prices and the RER as early-warning indicators, as well as the relative merits of credit growth and the credit/GDP ratio.

Despite the slowdown in credit growth, prospective improvement in MPIs is likely to be gradual, as triggers have a three-year lifespan. In the next report, however, 2006 data will no longer be included in the analysis and this should result in an improved MPI for the US – where the peak deviation of house prices from trend was in 2006 – and in Canada – where the RER trigger dates from 2006.

### **Banking System Indicator (BSI)**

The BSI is a summary measure of intrinsic banking system quality, or strength, derived from Fitch's long-standing Individual Ratings for banks. The BSI measures system quality or strength on a scale ranging from 'A' (very high), through 'B' (high), 'C' (adequate) and 'D' (low), to 'E' (very low). The BSI deliberately abstracts from potential support from shareholders or governments (as measured by Fitch's bank Support Ratings) since the objective of the methodology is to highlight systemic weakness which might trigger the need for such support.

The BSI is essentially a rounded version of the system average Individual Rating, which is an asset-weighted average of Fitch's bank Individual Ratings for a critical mass – at least two-thirds – of banks in any banking system, including, where necessary, systemically important unrated banks. Scores are rounded to the nearest letter grade, whether up or down.

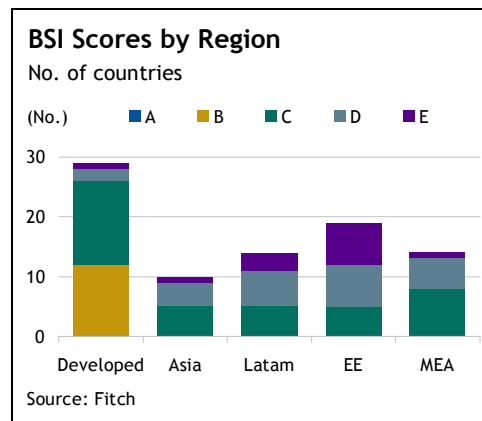
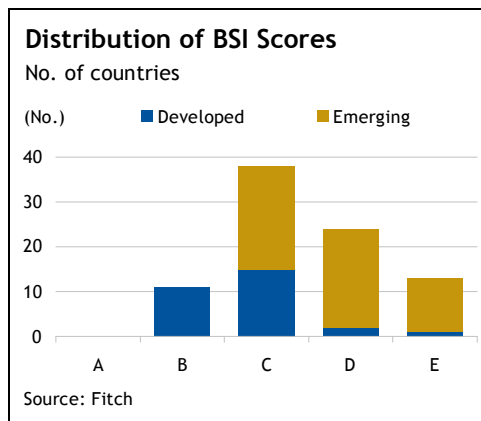
### **Results**

There are five changes to BSI scores this time, due to a combination of Individual Rating changes and compositional changes. Where a banking system's average Individual Rating is on the cusp of adjacent letter categories, the score may change as the relative size of component banks change, using more up-to-date balance sheet data. This explains the improvement in Luxembourg and Sri Lanka to 'C' and 'D' respectively and the deterioration in the Netherlands to 'C'. Coverage may also change due to new banks being added: this explains Egypt's improvement to BSI D. By contrast, the deterioration in Vietnam to 'E' reflects a component bank downgrade.

The new global financial landscape as summarised in the BSI and noted in the last report remains essentially unchanged. The typical developed-country banking system is now either BSI B or BSI C with only a few at BSI D (Ireland and Belgium) and E (Iceland). The typical EM system is either BSI C or BSI D but with around a dozen systems still at BSI E. No system is BSI A: the closest to getting there are Australia, Canada and Hong Kong. The closest to BSI B are Bermuda, Chile and the Netherlands. Amongst the weakest EM systems, the ones closest to graduating to BSI D are Azerbaijan, Belarus, Estonia and Lithuania.

Among EM regions, Asia and MEA have the strongest profile, with around half their systems BSI C, including all the Gulf Cooperation Council countries as well as South

Africa. Latin America has a weaker profile overall, with a slightly higher proportion of systems at BSI D and more at BSI E. EE has the widest spread of systems, with similar numbers at BSI C, D and E.



## Appendix 1: Bank Systemic Risk Matrix

The matrix below brings together the two systemic risk indicators – the BSI and MPI – to emphasise their complementarity. Fitch regards high MPI scores as a greater concern when the banking system is already weak, as indicated by the BSI. Weak banking systems are less able to absorb increased stress of the type that a high MPI may portend. Thus, for a given BSI, countries with a higher MPI present more cause for concern and, for a given MPI, countries with a weaker BSI suggest potentially more problematic situations.

### Bank Systemic Risk Matrix

Banking System Indicator	Macro-Prudential Indicator			No. of countries
	1	2	3	
<b>A</b>				<b>0</b>
<b>B</b>	Hong Kong Singapore	Finland Norway Portugal Spain	Australia Canada Denmark New Zealand Sweden	<b>11</b>
<b>C</b>	Austria Bermuda Germany Israel Japan Malaysia Mexico Oman Panama Peru Taiwan Thailand	Bahrain Chile Cyprus Greece India Italy Kuwait Luxembourg Malta Netherlands Poland San Marino Saudi Arabia Slovenia Switzerland	Brazil Czech Republic France Korea Qatar Slovakia South Africa Turkey UAE UK US	<b>38</b>
<b>D</b>	Benin China Croatia Dominican Republic Ecuador Egypt El Salvador Hungary Indonesia Lebanon Philippines Sri Lanka Tunisia	Bulgaria Costa Rica Morocco Venezuela	Armenia Belgium Colombia Georgia Ireland Nigeria Romania Russia	<b>25</b>
<b>E</b>	Argentina Bolivia Uruguay	Belarus Kazakhstan Vietnam	Azerbaijan Estonia Iceland Latvia Lithuania Ukraine	<b>12</b>
<b>Number of countries</b>	<b>30</b>	<b>26</b>	<b>30</b>	<b>86</b>

Source: Fitch

## Appendix 2: Bank Systemic Risk Indicators

### Banking System Indicator (BSI) and Macro-Prudential Indicator (MPI)

	BSI	MPI		BSI	MPI
Argentina	E	1	Kuwait	C	2
Armenia	D	3	Latvia	E	3
Australia	B	3	Lebanon	D	1
Austria	C	1	Lithuania	E	3
Azerbaijan	E	3	Luxembourg	C (D)	2
Bahrain	C	2	Malaysia	C	1
Belarus	E	2	Malta	C	2
Belgium	D	3	Mexico	C	1
Benin	D	1	Morocco	D	2
Bermuda	C	1	Netherlands	C (B)	2
Bolivia	E	1	New Zealand	B	3
Brazil	C	3	Nigeria	D	3
Bulgaria	D	2	Norway	B	2
Canada	B	3	Oman	C	1
Chile	C	2 (3)	Panama	C	1
China	D	1	Peru	C	1
Colombia	D	3	Philippines	D	1
Costa Rica	D	2	Poland	C	2
Croatia	D	1	Portugal	B	2
Cyprus	C	2	Qatar	C	3
Czech Republic	C	3	Romania	D	3
Denmark	B	3	Russia	D	3
Dominican R.	D	1	San Marino	C	2
Ecuador	D	1	Saudi Arabia	C	2
Egypt	D (E)	1	Singapore	B	1
El Salvador	D	1	Slovakia	C	3
Estonia	E	3	Slovenia	C	2
Finland	B	2	South Africa	C	3
France	C	3	Spain	B	2
Georgia	D	3	Sri Lanka	D (E)	1
Germany	C	1	Sweden	B	3
Greece	C	2	Switzerland	C	2
Hong Kong	B	1	Taiwan	C	1
Hungary	D	1	Thailand	C	1
Iceland	E	3	Tunisia	D	1
India	C	2	Turkey	C	3
Indonesia	D	1	Ukraine	E	3
Ireland	D	3	UAE	C	3
Israel	C	1	UK	C	3
Italy	C	2	US	C	3
Japan	C	1	Uruguay	E	1
Kazakhstan	E	2 (3)	Venezuela	D	2
Korea	C	3	Vietnam	E (D)	2

Figures in brackets are results from the May 2009 report  
Source: Fitch

### Appendix 3: Bank Systemic Risk Indicators Since 2005

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09		Nov 09	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Argentina	E	1 E	E	1 E	E	1 E	E	1 E	E	1 E	E	1 E	E	1 E	E	1 E	E	1
Armenia	-	-	-	-	-	-	D	2 D	2 D	2 D	2 D	2 D	3 D	3 D	3 D	3 D	3 D	3
Australia	B	2 B	B	2 B	B	2 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3
Austria	C	1 C	C	1 C	C	2 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Azerbaijan	E	1 E	E	3 E	E	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3
Bahrain	C	1 C	C	2 C	C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Belarus	-	-	-	-	-	E	2 E	2 E	2 E	2 E	2 E	2 E	2 E	2 E	2 E	2 E	2 E	2
Belgium	B	1 B	B	1 B	B	1 B	2 B	2 B	2 B	2 B	3 D	3 D	3 D	3 D	3 D	3 D	3 D	3
Benin	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Bermuda	B	1 B	B	1 B	B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1 C	1 C	1 C	1 C	1 C	1
Bolivia	E	1 E	E	1 E	E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1
Brazil	C	1 C	C	1 C	C	1 C	1 C	1 C	2 C	2 C	3 C	3 C	3 C	3 C	3 C	3 C	3 C	3
Bulgaria	D	2 D	D	2 D	D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2
Canada	B	1 B	B	1 B	B	1 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3
Chile	C	1 C	C	1 C	C	1 C	1 C	1 C	1 C	1 C	2 C	2 C	2 C	2 C	3 C	3 C	3 C	2
China	E	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Colombia	D	1 D	D	1 D	D	1 D	1 D	1 D	2 D	2 D	2 D	2 D	3 D	3 D	3 D	3 D	3 D	3
Costa Rica	D	2 D	D	2 D	D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2
Croatia	D	2 D	D	2 D	D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	1 D	1 D	1 D	1
Cyprus	D	1 D	D	1 D	D	1 C	1 C	1 C	1 C	1 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Czech R.	C	1 C	C	1 C	C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	3 C	3 C	3 C	3
Denmark	B	1 B	B	1 B	B	1 B	2 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3 B	3
Dominican R.	D	2 D	D	2 D	D	2 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Ecuador	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Egypt	E	1 E	E	1 E	E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 E	1 D	1
El Salvador	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Estonia	C	2 C	C	2 C	C	2 C	2 C	2 C	3 C	3 C	3 D	3 D	3 E	3 E	3 E	3 E	3 E	3
Finland	B	2 B	B	2 B	B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2
France	B	1 B	B	1 B	B	1 B	2 B	2 B	2 B	2 B	3 B	3 B	3 C	3 C	3 C	3 C	3 C	3
Georgia	-	-	-	-	-	D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	3 D	3 D	3 D	3
Germany	C	1 C	C	1 C	C	1 C	1 C	1 C	1 B	1 B	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Greece	C	2 C	C	2 C	C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Hong Kong	B	1 B	B	1 B	B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1 B	1
Hungary	C	3 C	C	2 C	C	2 C	1 C	1 C	1 C	1 C	1 C	1 C	1 D	1 D	1 D	1 D	1 D	1
Iceland	C	2 C	C	3 C	C	3 C	3 C	3 C	3 C	3 C	3 E	3 E	3 E	3 E	3 E	3 E	3 E	3
India	D	1 D	D	1 D	D	2 D	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Indonesia	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Ireland	B	2 B	B	3 B	B	3 B	2 B	2 B	2 B	2 B	3 B	3 B	3 D	3 D	3 D	3 D	3 D	3
Israel	C	1 C	C	1 C	C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Italy	B	2 C	C	1 B	B	1 B	2 B	2 B	2 B	2 B	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Japan	D	1 D	D	1 C	C	1 C	1 C	1 C	1 C	1 C	1 B	1 B	1 C	1 C	1 C	1 C	1 C	1
Kazakhstan	D	1 D	D	2 D	D	2 D	2 D	2 D	2 D	2 D	3 D	3 D	3 E	3 E	3 E	3 E	3 E	2
Korea	C	1 C	C	1 C	C	1 C	1 C	1 C	3 C	3 C	3 C	3 C	3 C	3 C	3 C	3 C	3 C	3
Kuwait	C	2 C	C	2 C	C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Latvia	C	2 C	C	2 C	C	2 C	2 C	2 C	3 C	3 C	3 D	3 D	3 E	3 E	3 E	3 E	3 E	3
Lebanon	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Lithuania	C	2 C	C	2 C	C	2 C	2 C	2 C	2 C	2 C	2 D	2 D	2 E	2 E	3 E	3 E	3 E	3
Luxembourg	B	1 B	B	2 B	B	2 B	2 B	2 B	2 B	2 B	2 C	2 C	2 D	2 D	2 C	2 C	2 C	2
Malaysia	C	1 C	C	1 C	C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Malta	C	1 C	C	2 C	C	1 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Mexico	C	1 C	C	1 C	C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Morocco	-	-	-	-	-	-	D	1 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2 D	2
Netherlands	B	2 B	B	2 B	B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 C	2
New Zealand	B	1 B	B	2 B	B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	3 B	3 B	3 B	3 B	3 B	3
Nigeria	-	-	-	-	-	-	D	1 D	2 D	2 D	2 D	2 D	2 D	2 D	3 D	3 D	3 D	3
Norway	B	1 B	B	3 B	B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2
Oman	C	1 C	C	1 C	C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Panama	D	1 D	D	1 D	D	1 D	1 D	1 D	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1 C	1
Peru	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 C	1 C	1 C	1
Philippines	D	1 D	D	1 D	D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1 D	1
Poland	D	1 D	D	1 D	D	1 C	1 C	1 C	1 C	1 C	2 C	2 C	2 C	2 C	2 C	2 C	2 C	2
Portugal	B	2 B	B	2 B	B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2 B	2

**Bank Systemic Risk Indicators (Cont.)**

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09		Nov 09	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Qatar	C	1	C	2	C	2	C	2	C	2	C	3	C	3	C	3	C	3
Romania	D	1	D	2	D	2	D	2	D	2	D	3	D	3	D	3	D	3
Russia	D	2	D	3	D	3	D	3	D	3	D	3	D	3	D	3	D	3
San Marino	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Saudi Arabia	B	1	B	2	B	2	B	2	B	2	B	2	B	2	C	2	C	2
Singapore	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Slovakia	D	1	D	1	C	2	C	2	C	2	C	3	C	3	C	3	C	3
Slovenia	C	1	C	1	C	2	C	2	C	2	C	2	C	2	C	2	C	2
South Africa	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	3
Spain	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2
Sri Lanka	-	-	-	-	-	-	E	1	E	1	E	1	E	1	E	1	D	1
Sweden	B	1	B	1	B	1	B	2	B	2	B	3	B	3	B	3	B	3
Switzerland	B	1	B	1	B	1	B	1	B	2	B	2	B	2	C	2	C	2
Taiwan	D	1	D	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Thailand	D	1	D	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Tunisia	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Turkey	D	1	D	2	D	2	C	2	C	2	C	3	C	3	C	3	C	3
Ukraine	D	1	D	2	D	2	D	2	D	2	D	2	D	2	E	3	E	3
UAE	C	1	C	1	C	1	C	2	C	2	C	3	C	3	C	3	C	3
UK	B	2	B	2	B	2	B	2	B	2	B	3	B	3	C	3	C	3
US	B	1	B	2	B	2	B	3	B	3	B	3	B	3	C	3	C	3
Uruguay	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Venezuela	D	1	D	1	D	1	D	2	D	2	D	2	D	2	D	2	D	2
Vietnam	E	1	E	2	E	2	E	2	D	2	D	2	D	2	D	2	E	2

Source: Fitch

## Appendix 4: Credit/GDP Ratios

<b>Bank Credit to Private Sector</b>						
(% of GDP)	2003	2004	2005	2006	2007	2008e
Argentina	10.6	10.3	11.4	12.6	13.9	13.1
Armenia	5.7	7.0	8.0	8.8	13.6	17.4
Australia	98.3	102.0	107.5	113.3	122.9	127.3
Austria	105.6	106.8	113.7	114.7	115.0	119.1
Azerbaijan	7.0	9.3	9.5	12.1	15.1	16.4
Bahrain	47.9	51.4	51.8	52.5	62.6	74.4
Belarus	11.7	14.0	15.9	20.2	25.1	28.8
Belgium	74.1	71.5	74.1	82.2	91.1	94.6
Benin	13.7	13.6	15.3	15.8	18.4	21.0
Bermuda	116.2	123.1	121.4	127.2	125.5	127.2
Bolivia	47.9	42.7	39.8	35.2	34.3	31.5
Brazil	29.9	30.1	34.1	41.1	51.1	58.3
Bulgaria	27.4	36.3	43.6	47.1	66.8	74.5
Canada	117.1	119.5	125.9	138.5	127.1	128.5
Chile	66.1	66.9	68.3	67.3	74.0	85.0
China	141.4	137.9	125.0	121.1	121.3	123.1
Colombia	33.7	33.8	32.1	39.3	43.3	45.0
Costa Rica	31.3	32.0	35.6	37.9	44.4	50.8
Croatia	46.1	48.9	53.0	60.2	63.1	64.9
Cyprus	163.4	163.7	164.5	175.8	204.5	257.1
Czech Republic	31.8	32.6	37.0	41.1	48.0	52.7
Denmark	151.6	158.2	171.8	186.2	203.4	218.8
Dominican Rep.	37.1	23.4	23.3	19.6	21.6	20.9
Ecuador	20.0	21.5	23.1	23.9	24.6	26.7
Egypt	53.9	54.0	51.2	49.3	46.4	47.0
El Salvador	41.2	41.2	42.2	42.4	42.3	40.5
Estonia	70.7	80.9	82.5	89.6	96.1	98.7
Finland	64.1	67.7	75.2	78.2	81.6	85.7
France	88.2	90.5	92.3	97.9	105.1	107.9
Georgia	8.7	9.7	14.8	19.5	28.3	33.3
Germany	115.3	112.6	111.8	109.2	105.3	108.0
Greece	64.6	69.9	77.7	83.4	91.8	93.5
Hong Kong	148.8	147.6	146.1	139.4	139.7	142.8
Hungary	42.3	45.9	51.3	55.4	61.4	69.6
Iceland	130.4	164.9	247.8	319.7	400.0	444.1
India	32.1	36.6	40.6	45.0	47.3	51.4
Indonesia	22.9	26.4	26.4	24.6	25.5	26.5
Ireland	114.6	134.3	160.8	182.0	199.1	218.1
Israel	86.3	85.7	90.4	87.5	90.1	91.5
Italy	83.6	85.3	89.4	94.9	101.2	105.1
Japan	172.0	164.9	162.0	155.5	149.7	150.6
Kazakhstan	22.7	26.5	35.4	47.5	59.7	51.6
Korea	95.6	90.1	93.0	95.1	99.6	109.1
Kuwait	59.5	56.4	50.9	51.2	63.2	59.3
Latvia	40.2	50.8	68.2	87.5	88.7	90.2
Lebanon	78.6	75.9	68.5	70.5	73.5	76.3
Lithuania	22.8	28.8	40.9	50.1	60.3	62.7
Luxembourg	103.2	106.0	129.4	154.7	190.3	192.1
Malaysia	136.8	126.3	123.2	118.2	114.3	111.5
Malta	101.2	106.6	106.5	115.0	118.1	126.2
Mexico	25.9	22.9	23.4	24.5	25.6	23.9
Morocco	57.2	58.2	61.9	65.0	77.6	84.5
Netherlands	148.0	157.8	165.0	167.3	188.7	189.0
New Zealand	116.2	103.4	114.4	127.1	136.5	150.8
Nigeria	13.8	13.1	13.2	13.2	25.6	34.9
Norway	77.3	77.7	81.4	87.0	96.5	96.5
Oman	36.9	34.4	30.8	31.1	35.9	37.7
Panama	87.1	85.1	87.1	88.4	92.0	90.8
Peru	20.2	18.1	19.1	17.6	20.8	24.9
Philippines	34.9	32.4	28.5	27.3	26.9	28.1
Poland	28.1	28.1	28.9	33.3	39.5	50.0
Portugal	140.2	140.8	145.6	157.2	168.6	179.8
Qatar	30.0	29.0	35.4	38.6	46.7	46.0

**Bank Credit to Private Sector (Cont.)**

(% of GDP)	2003	2004	2005	2006	2007	2008e
Romania	13.7	15.7	20.0	25.9	35.8	39.3
Russia	21.0	24.1	25.7	30.9	37.9	41.0
San Marino	197.1	245.0	263.6	332.0	360.0	395.0
Saudi Arabia	28.4	33.4	36.9	35.6	40.1	41.8
Singapore	109.8	100.4	94.3	90.0	92.5	104.1
Slovakia	31.8	30.4	35.1	38.6	42.4	44.7
Slovenia	41.4	48.1	56.4	66.0	81.2	86.8
South Africa	69.1	70.2	75.0	83.3	88.1	88.5
Spain	113.2	124.9	145.3	166.4	182.5	201.4
Sri Lanka	28.9	30.6	32.9	34.0	33.3	28.9
Sweden	101.0	102.7	109.2	114.5	123.9	129.6
Switzerland	156.9	158.8	164.6	170.7	176.7	168.4
Taiwan	122.6	130.0	137.4	139.2	135.1	139.6
Thailand	119.1	114.6	111.2	104.1	99.2	99.2
Tunisia	60.6	61.1	62.6	61.0	61.0	66.0
Turkey	15.8	18.2	23.0	26.6	30.5	33.4
Ukraine	24.6	25.2	32.2	44.4	58.2	73.7
UAE	53.0	54.6	58.6	64.4	72.7	83.2
UK	143.1	150.8	159.6	171.1	188.1	210.7
US	183.4	190.3	194.6	201.7	209.2	191.2
Uruguay	46.5	25.1	23.5	24.3	23.7	24.7
Venezuela	8.2	10.8	12.8	16.4	23.1	20.5
Vietnam	51.8	61.9	65.9	71.2	93.4	90.6

Source: IMF and Fitch estimates

## Appendix 5: Real Exchange Rates

### Real Effective Exchange Rate Index (2000 = 100)

	2003	2004	2005	2006	2007	2008e
Argentina	47.7	46.0	45.9	45.2	42.9	46.5
Armenia	82.6	87.2	97.5	106.4	122.7	136.8
Australia	112.6	121.2	124.8	124.8	133.3	131.8
Austria	104.2	105.7	105.9	105.6	106.9	107.8
Azerbaijan	75.0	74.0	86.0	89.0	93.0	106.0
Bahrain	93.0	86.7	84.2	81.7	76.0	70.9
Belarus	67.9	66.2	66.1	64.5	61.0	60.9
Belgium	106.9	108.6	109.5	109.5	110.9	115.0
Benin	113.1	116.0	118.9	120.2	122.6	122.6
Bermuda	101.2	102.1	101.8	101.7	102.7	103.7
Bolivia	89.1	83.4	79.8	79.5	81.8	93.9
Brazil	77.2	80.6	99.4	111.1	120.2	126.2
Bulgaria	114.0	119.6	120.3	125.5	134.0	146.1
Canada	107.0	112.8	119.7	126.8	132.3	130.2
Chile	82.0	87.0	91.9	96.7	95.2	97.3
China	95.2	92.7	92.5	94.5	98.5	107.5
Colombia	85.0	92.9	105.6	103.8	116.0	120.6
Costa Rica	94.8	91.9	91.9	92.7	95.3	100.4
Croatia	105.4	107.6	109.8	112.0	113.0	118.4
Cyprus	111.0	113.0	112.9	113.1	113.1	117.1
Czech Republic	116.8	118.3	125.4	132.5	136.9	157.9
Denmark	108.2	109.3	108.5	108.5	109.8	112.3
Dominican Rep.	74.6	79.3	104.5	99.1	100.9	101.7
Ecuador	162.4	154.5	148.0	147.1	138.5	137.7
Egypt	59.1	56.7	61.5	64.5	66.2	75.4
El Salvador	97.1	96.4	98.7	98.5	97.7	96.8
Estonia	105.7	107.1	108.2	108.6	111.8	117.0
Finland	106.9	107.0	104.9	104.1	106.3	109.3
France	106.7	108.4	108.0	107.7	109.0	111.3
Georgia	87.3	91.9	95.3	98.7	100.1	108.5
Germany	106.3	107.7	106.5	106.2	108.5	109.8
Greece	126.2	128.5	113.7	114.7	116.9	120.1
Hong Kong	89.3	84.5	82.8	81.8	77.4	73.2
Hungary	121.6	130.0	132.8	127.2	142.7	148.0
Iceland	98.9	101.7	114.6	106.9	112.9	89.1
India	96.5	99.0	104.4	102.7	110.9	105.3
Indonesia	122.5	116.7	114.8	134.0	133.4	128.6
Ireland	120.3	123.1	123.6	126.0	133.2	140.8
Israel	84.9	79.7	78.0	78.0	79.4	89.2
Italy	110.2	112.1	111.0	110.9	112.4	114.9
Japan	83.6	84.5	79.4	72.0	66.6	72.7
Kazakhstan	88.9	94.4	100.3	100.9	111.2	124.1
Korea	99.6	100.7	112.5	120.6	119.5	97.3
Kuwait	96.7	91.8	93.7	94.5	95.3	102.2
Latvia	102.8	101.7	96.8	97.7	100.5	106.6
Lebanon	88.4	82.4	79.1	80.9	77.2	72.5
Lithuania	102.8	101.7	96.8	97.7	100.5	106.6
Luxembourg	105.4	106.6	107.2	108.2	109.6	111.5
Malaysia	99.2	94.9	91.4	94.3	101.2	103.3
Malta	108.5	112.9	112.7	113.9	117.3	121.5
Mexico	95.1	90.8	94.2	94.2	94.0	90.0
Morocco	94.6	93.5	91.9	92.9	92.6	93.7
Netherlands	112.5	113.3	112.8	112.0	113.6	115.7
New Zealand	121.7	130.2	137.6	128.2	137.8	128.9
Nigeria	105.0	107.8	124.3	133.3	130.7	144.7
Norway	111.0	107.0	111.2	111.3	112.3	113.4
Oman	95.4	89.6	88.7	88.7	87.4	90.0
Panama	86.4	82.2	87.6	83.4	81.7	82.0
Peru	99.1	98.2	104.0	105.9	106.5	102.3
Philippines	89.1	86.2	92.3	102.5	112.3	118.7
Poland	96.3	96.2	107.6	110.0	114.3	125.6
Portugal	109.6	110.7	110.9	111.6	113.6	115.0
Qatar	95.5	95.4	102.1	110.6	117.8	123.7

**Real Effective Exchange Rate Index (2000 = 100) (Cont.)**

	2003	2004	2005	2006	2007	2008e
Romania	99.1	101.6	119.9	129.0	140.6	134.7
Russia	127.3	137.3	149.3	163.5	172.8	184.1
San Marino	110.2	112.1	111.0	110.9	112.4	114.9
Saudi Arabia	90.5	84.4	82.2	80.8	78.5	80.3
Singapore	94.3	93.3	92.1	94.3	95.1	101.3
Slovakia	119.1	130.5	134.6	142.9	158.3	171.6
Slovenia	104.2	104.1	104.8	101.4	102.5	107.3
South Africa	97.1	107.1	105.7	99.5	90.9	76.9
Spain	109.2	111.4	113.0	115.0	117.3	120.9
Sri Lanka	98.8	95.1	103.6	110.0	115.4	137.5
Sweden	100.2	100.9	97.0	96.9	98.9	97.5
Switzerland	106.4	105.6	104.1	101.9	98.1	103.2
Taiwan	86.6	85.3	87.8	84.8	80.2	79.2
Thailand	96.0	95.5	96.9	105.0	111.1	110.9
Tunisia	92.5	89.3	85.3	84.6	82.3	81.7
Turkey	94.9	98.0	108.1	107.3	116.0	117.5
Ukraine	98.3	96.1	106.0	111.1	113.2	123.1
UAE	97.7	94.3	96.9	102.2	104.1	107.8
UK	96.1	101.8	101.4	103.2	108.0	95.0
US	98.7	94.1	92.8	92.5	88.9	85.8
Uruguay	68.6	68.3	76.6	78.1	79.6	89.0
Venezuela	72.3	70.0	68.3	73.3	81.0	99.0
Vietnam	90.6	89.3	99.8	96.8	100.5	121.9

Source: IMF, BIS, Eurostat and Fitch estimates

## Appendix 6: Equity Prices

### Real Equity Price Index (2000 = 100)

	2003	2004	2005	2006	2007	2008e
Argentina	102.0	141.0	175.1	180.9	195.2	134.0
Armenia	-	-	-	-	-	-
Australia	87.1	98.0	113.7	129.8	150.6	111.5
Austria	110.5	164.9	244.5	316.4	362.9	258.0
Azerbaijan	-	-	-	-	-	-
Bahrain	98.1	128.0	154.7	144.7	150.1	144.6
Belarus	-	-	-	-	-	-
Belgium	63.0	79.7	97.2	116.2	128.4	89.3
Benin	-	-	-	-	-	-
Bermuda	138.7	170.3	181.7	230.0	247.1	210.3
Bolivia	-	-	-	-	-	-
Brazil	67.0	94.4	109.9	143.2	193.9	187.1
Bulgaria	255.1	408.4	599.1	653.1	963.3	582.7
Canada	70.6	82.6	94.0	109.1	119.8	105.4
Chile	114.3	141.1	159.7	157.4	198.1	189.0
China	74.7	70.7	53.1	71.5	173.8	119.2
Colombia	180.9	283.4	502.1	770.1	787.4	630.6
Costa Rica	92.5	65.0	67.7	83.0	127.0	138.6
Croatia	120.4	129.3	187.9	259.4	423.3	260.3
Cyprus	17.6	15.3	19.0	39.4	65.5	35.9
Czech Republic	93.2	132.2	200.9	234.5	272.2	195.8
Denmark	68.1	81.9	100.6	114.8	136.6	104.8
Dominican Rep.	269.4	185.5	180.7	17.8	155.0	393.6
Ecuador	123.1	148.8	174.5	195.9	191.3	167.8
Egypt	119.9	132.7	193.3	231.4	227.6	214.0
El Salvador	-	-	-	-	-	-
Estonia	149.1	204.6	334.6	347.4	418.4	231.3
Finland	36.7	39.2	45.7	56.4	67.9	50.3
France	46.8	54.4	61.8	72.2	79.0	58.5
Georgia	-	-	-	-	-	-
Germany	43.8	53.2	61.5	76.7	93.5	71.7
Greece	41.1	50.6	63.5	77.5	92.3	61.3
Hong Kong	72.1	94.0	104.5	123.3	164.6	137.1
Hungary	77.8	104.2	164.7	187.5	205.2	142.7
Iceland	88.7	160.9	224.9	287.6	350.4	153.0
India	75.5	103.4	131.6	194.4	258.7	232.2
Indonesia	78.6	113.1	135.7	155.0	212.1	174.0
Ireland	72.1	88.8	103.6	124.0	130.5	73.1
Israel	82.9	111.0	134.9	155.0	193.4	154.2
Italy	52.9	59.3	69.2	78.7	84.3	56.8
Japan	62.0	76.4	87.8	113.6	116.9	84.1
Kazakhstan	103.6	145.6	258.5	1068.8	1524.7	1066.3
Korea	84.9	101.4	130.5	154.6	192.0	167.1
Kuwait	256.1	355.1	471.8	457.0	500.5	478.1
Latvia	175.9	223.3	304.9	336.3	313.0	189.0
Lebanon	69.4	84.6	133.2	211.1	174.2	206.2
Lithuania	141.9	224.9	394.6	378.2	435.3	289.0
Luxembourg	48.4	62.1	77.2	98.4	121.4	88.2
Malaysia	79.8	91.0	92.6	94.4	122.8	97.6
Malta	49.9	66.8	89.3	128.2	111.6	91.2
Mexico	81.7	111.5	145.0	197.8	265.8	225.3
Morocco	78.5	96.6	101.3	152.8	206.3	226.6
Netherlands	40.3	44.0	49.5	57.8	63.9	47.2
New Zealand	120.3	148.6	175.2	187.7	206.3	159.1
Nigeria	150.1	200.7	154.4	157.4	257.6	255.4
Norway	65.9	94.9	121.6	152.8	185.2	134.3
Oman	113.5	144.7	178.6	183.8	218.7	250.1
Panama	93.5	105.7	120.0	158.1	198.6	187.6
Peru	121.4	187.8	258.2	480.6	1045.6	714.9
Philippines	67.1	83.8	96.8	110.1	155.3	110.7
Poland	84.7	114.8	137.2	197.0	229.0	230.0
Portugal	44.1	53.6	55.6	68.3	83.8	60.3
Qatar	225.8	340.3	522.1	351.2	301.1	316.4

**Real Equity Price Index (2000 = 100) (Cont.)**

	2003	2004	2005	2006	2007	2008e
Romania	160.7	240.2	384.3	469.0	511.0	285.9
Russia	170.7	178.0	189.4	300.4	319.5	218.5
San Marino	-	-	-	-	-	-
Saudi Arabia	154.8	253.3	417.9	382.3	296.4	351.0
Singapore	75.8	93.8	108.4	124.1	157.3	119.0
Slovakia	172.8	212.3	424.8	380.7	394.1	391.1
Slovenia	140.3	179.4	180.5	197.7	357.1	260.8
South Africa	86.8	100.5	126.4	166.9	203.4	170.4
Spain	54.2	63.4	73.3	87.0	102.8	79.8
Sri Lanka	132.7	165.6	221.4	228.7	231.8	168.3
Sweden	39.8	50.6	59.8	71.8	82.7	57.3
Switzerland	63.7	75.7	90.2	113.7	129.1	99.5
Taiwan	66.5	78.4	79.7	98.9	122.6	103.5
Thailand	134.8	179.5	178.8	178.1	183.8	157.8
Tunisia	67.8	75.8	81.0	97.6	128.8	134.4
Turkey	31.5	46.4	64.9	79.0	88.5	63.6
Ukraine	88.4	176.4	325.9	364.7	668.8	462.7
UAE	129.1	182.1	465.9	349.5	278.7	265.8
UK	58.5	63.6	71.1	79.4	83.8	68.6
US	78.8	87.8	86.9	91.1	102.4	85.7
Uruguay	-	-	-	-	-	-
Venezuela	107.8	161.2	107.2	130.3	113.9	95.0
Vietnam	96.2	139.1	141.2	253.6	466.4	188.2

Source: IMF, Bloomberg and Fitch estimates

## Appendix 7: House Prices

### Real House Price Index (2000 = 100)

	2003	2004	2005	2006	2007	2008e
Australia	140.7	144.8	140.7	145.2	155.4	152.0
Austria	107.6	102.9	105.7	107.1	108.7	105.6
Belgium	127.9	138.4	160.0	174.0	187.0	180.0
Canada	109.7	113.3	115.1	123.8	128.8	127.4
China	106.4	108.8	113.7	116.8	117.6	118.9
Cyprus <sup>a</sup>	-	99.0	100.0	102.3	110.7	118.4
Denmark	106.2	112.9	129.0	153.8	157.8	145.0
Estonia	170.5	214.4	261.2	374.4	373.7	314.1
Finland	109.4	116.3	123.0	129.1	132.0	129.3
France	122.8	139.3	157.3	172.2	179.1	177.1
Germany	97.0	94.8	93.3	92.8	91.7	90.3
Greece	154.3	152.7	163.9	178.2	179.2	173.3
Hong Kong	77.3	101.6	120.0	121.2	131.7	146.8
Iceland	127.1	137.1	171.3	183.6	190.3	180.1
Ireland	144.3	157.8	165.3	181.2	178.0	157.0
Israel	90.7	90.0	89.5	88.2	87.2	90.2
Italy	137.3	147.5	155.9	163.2	167.8	167.2
Japan	89.5	85.3	82.4	80.9	81.5	83.2
Korea	120.8	119.0	120.1	119.6	127.8	129.6
Latvia	205.1	207.3	312.5	437.9	467.4	387.5
Lithuania	112.0	138.9	185.1	247.4	279.6	257.6
Malaysia	104.3	107.0	106.6	105.7	107.6	101.5
Malta	136.3	160.4	170.9	172.3	170.3	160.6
Netherlands	107.8	110.0	113.4	115.2	117.5	118.9
New Zealand	140.0	159.9	179.6	190.7	201.9	180.2
Norway	110.2	117.3	116.6	127.1	135.1	112.0
Poland	104.2	105.6	127.1	160.2	223.3	211.3
Singapore	85.8	82.7	84.5	89.5	104.7	116.3
South Africa	177.2	222.0	258.5	277.9	291.9	272.6
Spain	122.3	135.6	146.8	155.6	159.6	156.5
Sweden	115.5	126.0	135.9	150.0	161.0	160.8
Switzerland	107.4	109.3	110.3	111.2	111.5	112.0
Taiwan	93.2	104.6	107.9	109.6	114.1	129.5
Thailand	104.0	110.3	114.2	113.3	106.9	91.8
UK	151.2	167.5	169.3	189.3	197.0	163.9
US	149.7	172.1	194.8	202.6	188.5	153.7

<sup>a</sup> 2005 = 100

Source: National sources and Fitch estimates

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Special Report

# Bank Systemic Risk Report

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- [Assessing Bank Systemic Risk: A New Product \(July 2005\)](#)

## Summary

This latest semi-annual report updates the systemic risk indicators Fitch Ratings has published since 2005 and presents the first results of an ongoing review of the performance of the model used to anticipate banking system problems, in light of the events of the past year. Two main changes are introduced, with more likely as the review continues.

Firstly, based on preliminary evidence of the role of house prices in the current global financial crisis, an additional trigger is introduced to determine when a country should move into Fitch's highest-risk category for the Macro-Prudential Indicator (MPI), MPI 3 – a 15% deviation in real house prices above trend. This is not low enough to have predicted all previous crises where house prices were a factor, but it does significantly improve the model's accuracy, particularly in the recent past. The US would have become MPI 3 in early 2007 (based on 2006 data) while the UK, as well as Belgium, Denmark, France, New Zealand and Sweden, would have become MPI 3 in early 2008, based on 2007 data. (Iceland and Ireland were already MPI 3 due to appreciated real exchange rates (RERs).) The fact that some countries with banking crises are still not MPI 3, notably Germany (MPI 1), the Netherlands and Switzerland (both MPI 2), suggests that these crises are due less to domestic asset price booms and more to balance sheet contamination by foreign lending.

House price series are available for only a dozen emerging markets (EMs), which prevents this analysis being extended globally. Of the EMs where house price series are available, Estonia and Latvia are ones where house price gains in 2006-2007 would have triggered MPI 3 scores in early 2007. The same is true for Korea and South Africa, but these are already MPI 3 due to past RER appreciation. The absence of house price data for other EMs raises problems of comparability for the MPI, and Fitch will therefore continue making efforts to add more data. As has always been the case, however, the MPI should be seen as a starting point for the analysis of potential banking system stress. More detailed country commentary is available from sovereign and financial institutions research on specific banks and banking systems.

The second main change is to the Banking System Indicator (BSI). To improve transparency of the translation of bank Individual Ratings to the BSI, the System Average Individual Rating (SAIR) will now be rounded to the nearest letter instead of asymmetrically. This results in more than the usual number of BSI changes this time, with the rounding change pushing systems more to the middle of the scale, but superimposed on a general weakening in scores due to the global banking crisis. Abstracting from changes due to rounding, several BSI scores move down, most obviously in the main crisis countries – US, UK, Switzerland (all now BSI C) and Ireland (BSI D) – as well as in France, Japan and Bermuda (all BSI C) and Luxembourg (BSI D). There are fewer changes amongst EMs, but BSIs have also weakened in Saudi Arabia (to a still relatively strong BSI C), Hungary (BSI D), and the Baltics, Kazakhstan and Ukraine (all now BSI E). The landscape of the global banking system, as summarised in the BSI, has changed radically, with almost half of developed-country systems now BSI C (previously they were typically 'B') and with no EM system remaining BSI B, with most now BSI C or BSI D.

Fitch continues to use a modified methodology in Emerging Europe (EE) which focuses on credit growth rather than divergences of credit/GDP from trend. The results of the two methodologies have gradually converged, but an analysis shows

that credit growth generally gives an earlier warning of problems than credit/GDP and therefore deserves monitoring in all countries. Real credit growth in developed countries tends to be lower than in EMs, but in general double-digit real credit growth deserves close monitoring anywhere. Among the few countries still expected to have double-digit real credit growth this year, most are already MPI 2 or higher. China is an exception, but its BSI will deteriorate if current credit growth continues.

Elsewhere, credit growth is generally slowing and is likely to give rise to fewer warning signals from now on. However, new MPI 3s in this report, due mostly to appreciating RERs in 2008, are Chile, the Czech Republic, Georgia, Lithuania, Nigeria and Ukraine. Chile is the most recent example of a commodity exporter moving to MPI 3, and in such cases the appreciating RER may reflect more the improved terms of trade than problematic speculative inflows.

## Introduction

Since the outbreak of the global financial crisis in the summer of 2007, the focus of this report, first introduced in 2005, has gradually changed. Leading indicators of banking system stress, as constructed for and monitored in this report, are clearly of less interest once a crisis has erupted. Attention has instead turned more to the actual impact of the crisis on banks and banking systems, and the possible spread of the crisis to other countries. The MPI still has a role to play, however. Its warning signals remain valid for three years, and it is quite possible that more countries will experience banking crises in that time frame. However, Fitch has also begun to review the evidence gained from this latest episode of financial crisis, particularly as regards the performance of the MPI, to update its methodology.

The section discussing the MPI explains how Fitch will from now on incorporate house price trends in the methodology, where such data are available. It also takes a preliminary look at the relative merits of credit growth and credit/GDP as the main credit variables in the model. This will have implications for the methodology applied to EE, which currently differs from the methodology applied to other countries. However, no change is being introduced at this stage. Finally, in the section discussing the BSI, Fitch explains a modification to the translation of the SAIR to the BSI, which improves the transparency of the read across from banks' Individual Ratings. This is followed by a description of the dramatic impact the banking crisis has had on the global banking landscape, as summarised by the BSI.

A complete list of BSI and MPI indicators is provided in the annex, together with the usual systemic risk matrix and a historical time series of both indicators. The underlying credit/GDP, real house price, real equity price and RER data are also provided.<sup>1</sup>

## Macro-Prudential Indicator (MPI)<sup>2</sup>

### A Formal Role for House Prices

With the global financial crisis ongoing, it is too soon for a definitive review of the early-warning model Fitch has operated since 2005. The early-warning signal devised for this report (MPI 3) aims to pick up potential crises within three years from the first trigger, and crises may yet erupt in countries so far only mildly affected, or even unscathed. Moreover, where crises are evident, it is difficult in many cases to say definitively at this stage which have been "systemic" – defined in the literature as exhausting essentially all system capital – rather than confined

<sup>1</sup> The data are also available in Fitch's quarterly "Sovereign Comparator" and the Peer Analysis Tool (PAT), together with other system-wide bank prudential indicators e.g. risk-weighted capital ratios and ownership data.

<sup>2</sup> The Macro-Prudential Indicator (MPI) aims to identify potential systemic stress of a type often preceded by a combination of rapid bank lending growth and bubbles in asset markets and/or the real exchange rate. Risk is measured on a scale from '1' (low) through '2' (moderate) to '3' (high). MPI 2 can be triggered by rapid lending growth alone while MPI 3 requires further triggers.

to a handful of banks. In its original 2005 research, Fitch used a list of banking crises compiled by the World Bank.<sup>3</sup> This was updated last year by an IMF paper,<sup>4</sup> which defined the current US and UK crises as “systemic” but which was too early to review the crises that have subsequently erupted. In the absence of a definitive view from the multilateral agencies, but in need of a more up-to-date opinion for the research summarised here, Fitch has made its own preliminary judgement as to which current crises are systemic. The final assessment may well be different, and this will affect the ultimate conclusion about the performance of the MPI.

Though the global financial crisis is not over yet, it is obvious that house prices have played an important role, sufficient to warrant another look at whether house prices can be formally introduced into Fitch’s model. A previous review, in the September 2007 “*Bank Systemic Risk Report*”, concluded that the degree of house price appreciation relative to trend immediately prior to the, rather few, previous banking crises had been too variable to suggest a precise trigger value above which real house price increases would be a cause for concern. The degree of overvaluation relative to trend varied from the low teens in Spain (1977) and Sweden (1991) to a much higher 20%-30% in Norway and Japan (1991) and as high as 50% in Finland (1987). Setting the trigger too low increases the model’s success rate, but at the expense of a large number of false alarms. By contrast, too high a figure, while reducing false alarms, also reduces the success rate of predicting actual crises.

Before the current global crisis, the available data set, i.e. the number of countries which had reliable property price series and had had banking crises, was very small – limited to the five episodes mentioned in the previous paragraph. The 2008 IMF study increased this number to eight, with the inclusion of the US savings and loan crisis of 1988 as well as the current US and UK banking crises, dating from 2007. For the purpose of this report, Fitch has made preliminary estimates of the extent of system recapitalisation carried out to date – from both private- and public-sector sources. This exceeds half system starting capital in the following countries, which Fitch will define as having experienced systemic crises: as well as the US and UK, these are Switzerland, Belgium, Netherlands, Germany, Ireland, Iceland and Luxembourg. Of these, Fitch has house price data for all except Luxembourg.

Using this expanded, albeit preliminary, data set, Fitch concludes that the addition of house prices to its early-warning model results in a significant improvement in its *ex post* accuracy compared to the original model, in which real equity prices and the RER were used as proxies for financial-market bubbles (see table overleaf).<sup>5</sup>

The data suggest that the recent crises in some countries were more a product of international contagion than due to home-grown asset price booms. Deviations of real house prices from trend were only 5% in the Netherlands and Switzerland and virtually zero in Germany.<sup>6</sup> Even excluding these cases, however, a very low 10% deviation of real house prices from trend is required to capture all the more obviously home-grown episodes of systemic crisis – the lowest deviations having been observed in Spain in 1977 (12.4%) and Iceland in 2006 (11.1%). A 10% deviation is therefore a figure that should at least begin to raise concerns. However, the median deviation from trend is Ireland’s 16.2%. In the US and UK, real house prices were more than 20% above trend in 2006 (using the Case-Shiller index for the US) –

<sup>3</sup> Caprio and Klingebiel, “*Episodes of Systemic and Borderline Financial Crises*”, World Bank, 2003.

<sup>4</sup> “*Systemic Banking Crises: A New Database*”, IMF, 2008. The definition of a systemic banking crisis is similar to the one used by Caprio, i.e. one in which essentially all banking system capital is exhausted.

<sup>5</sup> A recent paper by Borio and Drehmann “*Assessing the risk of banking crises - revisited*”, BIS Quarterly Review, March 2009, comes to the same conclusion. An earlier paper by Borio and Lowe “*Assessing the Risk of Banking Crises*”, BIS Quarterly Review, December 2002, provided the theoretical underpinnings of Fitch’s original methodology.

<sup>6</sup> Borio and Drehmann, *op cit*, come to the same conclusion.

the highest in the current global crisis and the same order of magnitude as the deviations that preceded previous crises in Norway and Japan<sup>7</sup> as well as the 1998 US savings and loans crisis. Using a 15% threshold for house prices for developed countries, the success rate (defined as crises foreseen) for a model based solely on house prices doubles to almost 60% from only about 30% for the model excluding house prices. The number of false alarms also declines slightly.

As mentioned above, these findings can only be preliminary until the crisis is clearly over and a comprehensive delineation of crises between systemic and non-systemic is possible. At this stage, however, the evidence seems compelling enough to add house prices to Fitch's early-warning model.

### Success of Alternative Models in Predicting Systemic Banking Crises in Developed Countries

	Using real house prices <sup>a</sup>	Using real equity prices and/or the real exchange rate (RER)
<b>Past crises</b>		
Spain (1977)	Fail (coincident deviation of 12.4% < 15% trigger)	Insufficient data
US (1988)	Success 19.2%	Fail
Finland (1991)	Success 49.6%	Success (RER)
Norway (1991)	Success 21.5%	Fail
Sweden (1991)	Success 15.5%	Success (equity and RER)
Japan (1997)	Fail (crisis began 4 years after trigger - see text)	Success (RER)
<b>Current crises</b>		
US (2007)	Success 21.6% (2006)	Fail
UK (2007)	Success 24.1% (2005)	Fail
Switzerland	Fail (only 5% deviation)	Fail
Belgium	Success 15.3% (2007)	Fail
Netherlands	Fail 5% (only 5% deviation)	Fail
Germany	Fail (zero deviation and no credit/GDP trigger)	Fail
Ireland	Success 16.2% (2005)	Success (RER)
Iceland	Fail (11.1% deviation < 15% trigger)	Success (RER)

<sup>a</sup> Figure shows the maximum deviation from trend of real house prices in the three years prior to the crisis; figures in brackets are the date of the trigger  
Source: Fitch

Unfortunately, as house price data are not available for most EMs outside Asia, a fully comprehensive study of the role of house prices as an early-warning indicator of banking crises is not possible. Based on the available evidence, however, house prices would appear to be a more accurate indicator of banking system stress than either equity or RER developments, at least for developed countries. Fitch will therefore include them as a further trigger in determining whether a country should be in the highest warning category – MPI 3. The absence of house price data for most EMs unfortunately means that MPIs are not strictly comparable: a country that appears to be MPI 2 on the basis of available data might be MPI 3 if house price data were available. This serves to emphasise that the MPI is a starting point for analysis and should be considered in conjunction with other Fitch research, notably country-specific sovereign and bank research. This will include further analysis of the data underlying the systemic indicators in this report.

### Revised Guidelines for Assigning MPI Scores

The MPI seeks to highlight, in as objective a way as possible, the existence and severity of a set of macroeconomic circumstances that has been shown to anticipate a majority of past episodes of banking system distress and in some cases full-blown systemic crises. The methodology identifies instances of rapid credit

<sup>7</sup> The most recent IMF study dates the start of the Japan crisis at 1997, whereas the earlier World Bank study put it much earlier at 1991. The difference is due to a judgement about the date at which NPLs became large enough to be defined as a crisis. Both equity prices and house prices gave warning signals in 1989-1990, but by 1997 house prices were well past their peak and only the real exchange rate continued to give an early warning.

growth which bring the ratio of private-sector credit to GDP and the RER or real equity or property prices above long-run trend values by certain trigger amounts.<sup>8</sup>

High vulnerability to potential systemic stress is designated MPI 3 and is defined as:

- a ratio of private-sector credit to GDP more than 5 percentage points above trend *and*
- *either* real property prices more than 15% above trend
- *or* real equity prices more than 40% above trend (two years previously)
- *or* a real effective exchange rate more than 9% above trend.

Moderate vulnerability (MPI 2) occurs when the ratio of credit to GDP is either above or close to its trigger value and other indicators are close to or above their trigger values respectively, as summarised in Table 3. An MPI score of '1' denotes low potential vulnerability.

### Guidelines for Assigning MPI Scores

Exchange rate or asset price trigger	On <sup>a</sup>	Close <sup>b</sup>	Off
<b>Credit/GDP vs. trend</b>			
> 5 percentage points above	3	2	2
> 3 percentage points above	2	2	1
< 3 percentage points above	1	1	1

<sup>a</sup> House prices, equity prices and the RER more than 15%, 40% and 9% above trend respectively

<sup>b</sup> House prices, equity prices and the RER more than 10%, 30% and 6% above trend respectively  
Source: Fitch

The assessment is based on three years of annual data, with a trigger in *any* of the three years being relevant to a country's MPI score. The MPI aims to highlight potential systemic stress which could materialise up to three years after an early warning is first indicated. The three-year horizon is designed to be long enough to take account of the time it can take for banking system stress to emerge, but not so long as to reduce the indicator's analytical usefulness.<sup>9</sup>

The reference period in this report is extended by one year to 2006-2008. All the data used in this exercise are subject to sometimes major revision, are volatile and difficult to forecast. Also, the trends against which the data are assessed are sensitive to the development of actual data and will change over time.

### Results

Without the introduction of house prices as a formal trigger, six new countries would move into the MPI 3 category – Chile, Czech Republic, Georgia, Lithuania, Nigeria and Ukraine. All were previously MPI 2, but RER appreciation in 2008 and in the case of Lithuania past equity price movements are sufficient to trigger the move to MPI 3. In addition, due to the introduction of the house price trigger, the US, UK and Belgium, all of which Fitch judges to be experiencing systemic crises, also become MPI 3, as do Denmark, Sweden, France and New Zealand, which so far have experienced more contained banking system problems. Among EMs, house price data for Estonia and Latvia also trigger a move to MPI 3. (House prices in South Africa also remain more than 15% above trend, but South Africa has been MPI 3, based on RER appreciation, since 2005.) The only improved score is in Croatia,

<sup>8</sup> The primary data source is the IMF's "International Financial Statistics". Private-sector credit is a broad definition, including bank lending and other debt instruments. The real effective exchange rate is based on relative consumer prices. An alternative data source for equity prices is Bloomberg. House price data are from a variety of national sources, where available.

<sup>9</sup> The equity price trigger works with an even longer lag, as equities have been a leading indicator of wider asset price trends, notably property, as well as developments in the real economy. A trigger in year *t* would not affect the MPI score for a further two years. Thus, banking system problems might materialise up to five years after an equity price peak in time *t*.

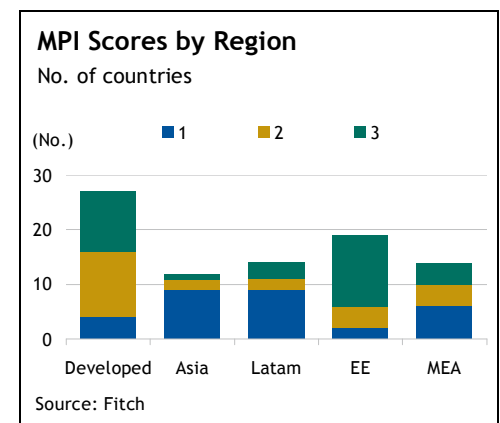
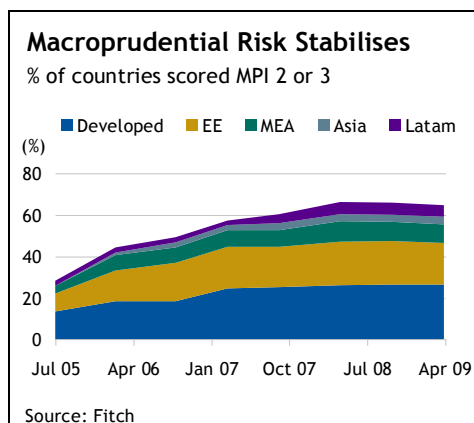
which moves to MPI 1 from MPI 2 due to real credit growth falling below 15% in 2006-2008.

### Changes to MPI Scores

Deterioration	Improvement
<b>New MPI 3</b>	<b>New MPI 1</b>
Due to introduction of house price trigger	Croatia (previously MPI 2)
Belgium	
Denmark	
Estonia	
France	
Latvia	
New Zealand	
Sweden	
UK	
US	
Due to exchange rate trigger	
Chile	
Czech Republic	
Georgia	
Nigeria	
Ukraine	
Due to equity trigger	
Lithuania	

Source: Fitch

These changes bring the number of countries in the MPI 3 category to 32, or over one-third of the 86 countries included in this report. The region with proportionately most MPI 3s is EE (68%), but 41% of developed countries are also now MPI 3 and 29% of the Middle East and Africa (MEA). Latin America and Asia have the lowest proportion of MPI 3s at 21% and 8% respectively. The proportion of countries in the MPI 2 and MPI 3 categories combined is also of interest, as both scores require credit/GDP or credit growth to be in excess of critical thresholds. The rank order is the same, with 90% of EE in one of these two categories, 85% of developed markets, 57% of MEA and significantly fewer in Latin America (36%) and Asia (25%).



From an analytical point of view it is useful to distinguish between the different ways of triggering an MPI 3 score, particularly now that house prices have been formally added to the list of possible triggers. The evidence summarised earlier suggests, certainly for developed countries, that house prices give a more accurate early warning of potential banking system problems. In this regard, it is interesting to note that most MPI 3 scores by contrast continue to be triggered by RER appreciation. While this can be a proxy for speculative short-term capital inflows, which are a concern because they may be reversed, there may be more benign explanations. For example, Fitch has previously noted that a number of commodity-

exporting countries have moved into the MPI 3 category, e.g. Australia, Canada and most recently Chile, as well as several oil producers, most recently Nigeria. Countries with flexible exchange rates are also more likely to see swings in the RER around its trend, and this may well be less problematic than in countries with more rigidly managed exchange rates, where intervention may boost banking system liquidity and set off unsustainable credit growth and asset bubbles. This is another example of where the MPI score should be regarded as a starting point for future analysis and needs to be put in the context of the more detailed analysis available in Fitch sovereign and bank reports.

## MPI 3 Countries

Combination of credit and real house price trigger	First triggered by data in
Belgium	2007
Denmark	2006
Estonia	2006
France	2007
Latvia	2006
New Zealand	2007
Sweden	2007
UK	2007
US	2006
Combination of credit and real exchange rate trigger	MPI 3 dating from
Armenia	2008
Australia	2007
Azerbaijan	2006
Brazil	2008
Canada	2007
Chile	2009
Colombia	2008
Czech Republic	2009
Georgia	2009
Iceland	2006
Ireland	2006 (and house prices)
Kazakhstan	2008
Korea	2007
Nigeria	2009
Romania	2008
Russia	2006
Slovakia	2008
South Africa	2005 (and house prices)
Turkey	2008
Ukraine	2009
Combination of credit and real equity price trigger	MPI 3 dating from
Lithuania	2009
Qatar	2008
UAE	2008

Source: Fitch

Where MPI 3 is triggered by previous equity price bubbles, the transmission to potential banking system problems is somewhat more clear-cut. However, it should also be recalled that equity prices act as a leading indicator of banking crises mainly because they are often a proxy for subsequent house price trends. This is certainly plausible for the only three MPI 3 scores currently triggered by equity prices – Qatar, UAE and most recently Lithuania – where equity and property prices have been closely associated.

Lithuania also provides an example of the potential sensitivity of the methodology to shifting trends. The trends against which deviations are measured are based on annual data and are adjusted whenever a new year of data is added. 2008 outturns are included in the analysis for the first time in this report. With all the indicators analysed in this report experiencing major shifts, there is a possibility of new signals being triggered as previous credit/GDP, house price, equity and RER data

start to look more elevated relative to downward shifting trends. In this case, the data may have a tendency to give lagging warning signals. This is a phenomenon Fitch will monitor over the coming year, as more data for 2009 become available.

### The Role of Real Credit Growth

The experience of EE is a useful case study in the timeliness of early warnings based on credit growth and deviations of credit/GDP from trend. For EE (except Turkey), Fitch has been using a modified methodology which focuses on real credit growth rather than the deviation of credit/GDP from trend. As explained in previous reports, this was due to the difficulty of determining trend credit/GDP in countries where available time series were often short and showed major discontinuity, particularly at the beginning of the transition to market economies in the early 1990s. Fitch expressed concern about rapid credit growth in these countries at a very early stage. In the context of this report it often gave rise to steep, straight-line increases in credit/GDP series, with divergences from this trend usually too low to trigger increased MPI scores, even though rapid credit growth of itself was often felt to be unsustainable.

This phenomenon has not been unique to EE, however, and is often the experience of countries going through rapid liberalisation. Nigeria is the most recent example, where real credit growth approached 100% in 2007, but from a very low base of only 13% of GDP in 2002-2006. China is also witnessing a surge in credit growth this year, but credit/GDP has been below trend for several years since it peaked in 2003.

For EE, the results of the two alternative methodologies have gradually converged, to the extent that MPI scores are now the same under either methodology for 13 out of 19 (68%) countries in the region. Where the results differ, the modified methodology usually gives higher scores, and these are the ones that are still used in this report. With the EE credit cycle clearly now having turned, however, and with longer time series available, the calculation of more meaningful credit/GDP trends is becoming increasingly possible, and Fitch will aim to align the methodologies applied to EE and other countries in the coming year.

### Peak Average Annual Real Credit Growth in Selected “Crisis” Countries

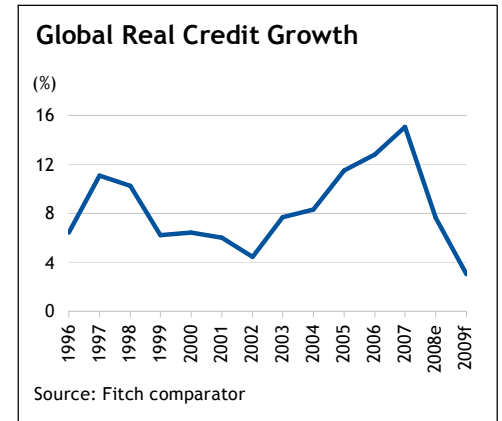
	(%)	
Iceland	48.3	2004-2005
Luxembourg	28.4	2006-2007
Ireland	24.7	2004-2005
Spain	19.7	2006-2007
Belgium	14.4	2006-2007
UK	12.9	2007-2008
Denmark	11.6	2005-2006
Netherlands	10.6	2006-2007
France	9.0	2006-2007
Switzerland	7.0	2006-2007
USA	6.3	2006-2007
Germany	0.5	2005-2006
<b>Median</b>	<b>12.3</b>	

Source: Fitch

As well as being more conservative, credit growth has generally given an earlier indication of potential problems, suggesting a continuing need to monitor credit growth in parallel with trends in credit/GDP. For EE, Fitch has been using a figure of 15% annual average real credit growth over a two-year period as the preferred credit trigger – a figure close to the median in the run-up to previous banking crises. Applying this to the universe of Fitch-rated sovereigns, this threshold was exceeded in 63 countries in the last five years, compared to only 54 credit/GDP triggers (i.e. credit/GDP more than 5% above trend). In countries where both triggers were activated, the credit growth trigger came earlier, sometimes substantially so, in three-quarters of cases and coincided with the credit deviation

trigger in the remaining quarter of cases. It never lagged the MPI trigger. Countries where there was a credit deviation trigger but where credit growth never exceeded 15% were almost exclusively developed countries (together with a handful of EMs: Chile, Hungary, Korea, South Africa), where credit growth will generally tend to be more subdued. Ironically, of course, it is in developed markets where banking system problems have been largely concentrated up to now. The table above shows peak credit growth in selected developed countries experiencing varying degrees of financial crisis over the past year. The US stands out as having seen one of the lowest rates<sup>10</sup>, but the median has been only marginally below the 15% threshold used for EE.

Median global real credit growth is now falling rapidly. It peaked at a record 15% in 2007, halved in 2008 to just over 7% and is forecast by Fitch to halve again this year to barely 3%. The slowdown is widespread, but is especially pronounced in EE, where median real credit growth will turn negative this year, after reaching almost 30% in 2007.



Among the few countries still experiencing double-digit real credit growth this year, China's is likely to be amongst the highest at over 20%.<sup>11</sup> If sustained, this would be sufficient to raise China's MPI score to at least MPI 2 in a year's time and probably MPI 3, given the lagged impact of the fall in equity prices from their 2007 peak and the subsequent and ongoing fall in property prices.

### Banking System Indicator (BSI)

The BSI is a summary measure of intrinsic banking system quality, or strength, derived from Fitch's long-standing Individual Ratings for banks. The BSI measures system quality or strength on a scale ranging from 'A' (very high), through 'B' (high), 'C' (adequate) and 'D' (low), to 'E' (very low). The BSI deliberately abstracts from potential support from shareholders or governments (as measured by Fitch's bank Support Ratings) since the objective of the methodology is to highlight systemic weakness which might trigger the need for such support.

The BSI is essentially a rounded version of the SAIR, which is an asset-weighted average of Fitch's bank Individual Ratings for a critical mass – at least two-thirds – of banks in any banking system, including, where necessary, systemically important unrated banks. In this report Fitch has changed the rounding system to improve the transparency and read across from its Individual Ratings. Whereas previously, scores better (or worse) than C were rounded up (or down) to the nearest letter grade, scores are now simply rounded to the nearest letter grade, whether up or down. The change removes a bias in favour of what were generally stronger, developed-country systems – typically BSI B – but many of these have fallen into lower categories anyway because of the ongoing global financial crisis. The change

<sup>10</sup> Fitch has examined both narrow and broad measures of credit growth for the US and certain other countries where the difference is quantitatively significant, but generally found the trends shown to be similar in both. The US figures used in this report are a broad measure of credit, including credit extended by non-bank financial institutions such as mortgage brokers and including credit extended to the financial sector as well as the non-bank private sector. A longer discussion of this point was included in the April 2008 report.

<sup>11</sup> China's bank lending figures are an official series which adjusts for loan charge-offs and therefore generally shows faster growth than the IFS series. The gap was a particularly large six percentage points in 2008.

favours weaker EM systems – typically BSI D or BSI E – which have so far been less affected by the global crisis. The annex contains a revised time series of BSIs on the new basis, and the next section indicates where underlying changes have taken place since the October report. Changes that are merely the result of the changed rounding system are not commented on.

### Results

Underlying changes in BSIs (due to changes of Individual Ratings and not merely due to the changed rounding system) are summarised in the table below. Developed-country banking crises – especially in the US, UK, Switzerland, Ireland and Luxembourg – explain the changes in those countries. However, a number of EMs have also seen downgrades of banks' Individual Ratings sufficient to reduce their BSIs, especially in EE (the Baltics, Kazakhstan and Ukraine). Peru is the only country to have seen an improved BSI in the last six months. Further details of the underlying bank rating actions and circumstances underlying these changed BSIs are available from specific bank and banking system research on Fitch's website.

#### Underlying BSI Changes (abstracting from changed rounding system)

A	B	C	D	E
		Bermuda (from B)	Hungary (from C)	Estonia (from D)
		France (from B)	Ireland (from B)	Kazakhstan (from D)
		Japan (from B)	Luxembourg (from C)	Latvia (from D)
		Saudi Arabia (from B)		Lithuania (from D)
		Switzerland (from B)		Ukraine (from D)
		UK (from B)		
		US (from B)		
		Peru (up from D)		

Source: Fitch

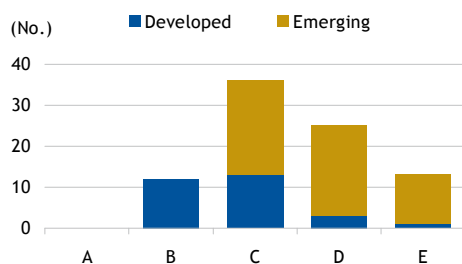
The banking crises affecting major developed countries and some EMs have resulted in a major change to the global financial landscape, as summarised in the BSI. At the outset of the crisis, the typical developed-country system, with few exceptions, had a BSI of 'B', while the typical EM system had a BSI of 'D', though with a wider distribution on either side, including a handful at BSI B. Wholesale downgrades of developed-country banks over the past year now result in there being more systems at BSI C than BSI B and with a few at BSI D (Ireland, Belgium and Luxembourg) and E (Iceland). Changes within EM systems have been less profound, with the revised rounding system having more of an effect. But no EM banking system remains BSI B, with the stronger EM systems which were previously BSI B now in the BSI C category. Over three-quarters of EM systems are now either BSI C or D, with around a dozen in the weakest category – BSI E.

Among EM regions, Asia and MEA have the strongest profile, with around half their systems BSI C, including all the Gulf Cooperation Council countries as well as South Africa. Latin America has a weaker profile overall, with a slightly higher proportion of systems at BSI D and more at BSI E. EE has the widest spread of systems, with similar numbers at BSI C, D and E.

Talking a longer view, the revised BSI had been remarkably stable up to the current crisis. Relatively few systems entered the current crisis stronger than in 2005 – just Japan and Cyprus among developed countries and 10 EMs: China, India, Panama, Peru, Poland, Slovakia, Taiwan, Thailand, Turkey and Vietnam.

## Distribution of BSI Scores

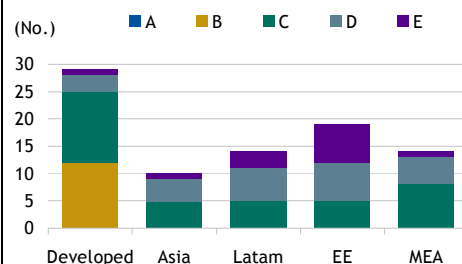
No. of countries



Source: Fitch

## BSI Scores by Region

No. of countries



Source: Fitch

## Appendix: Bank Systemic Risk Matrix

The matrix below brings together the two systemic risk indicators – the BSI and MPI – to emphasise their complementarity. Fitch regards high MPI scores as a greater concern when the banking system is already weak, as indicated by the BSI. Weak banking systems are less able to absorb increased stress of the type that a high MPI may portend. Thus, for a given BSI, countries with a higher MPI present more cause for concern and, for a given MPI, countries with a weaker BSI suggest potentially more problematic situations.

### Bank Systemic Risk Matrix

Banking System Indicator	Macro-Prudential Indicator			No. of countries
	1	2	3	
<b>A</b>				<b>0</b>
<b>B</b>	Hong Kong Singapore	Finland Netherlands Norway Portugal Spain	Australia Canada Denmark New Zealand Sweden	<b>12</b>
<b>C</b>	Austria Bermuda Germany Israel Japan Malaysia Mexico Oman Panama Peru Taiwan Thailand	Bahrain Cyprus Greece India Italy Kuwait Malta Poland San Marino Saudi Arabia Slovenia Switzerland	Brazil Chile Czech Republic France Korea Qatar Slovakia South Africa Turkey UAE UK USA	<b>36</b>
<b>D</b>	Benin China Croatia Dominican Republic Ecuador El Salvador Hungary Indonesia Lebanon Philippines Tunisia	Bulgaria Costa Rica Luxembourg Morocco Venezuela Vietnam	Armenia Belgium Colombia Georgia Ireland Nigeria Romania Russia	<b>25</b>
<b>E</b>	Argentina Bolivia Egypt Sri Lanka Uruguay	Belarus	Azerbaijan Estonia Iceland Kazakhstan Latvia Lithuania Ukraine	<b>13</b>
<b>Number of countries</b>	<b>30</b>	<b>24</b>	<b>32</b>	<b>86</b>

Source: Fitch

## Bank Systemic Risk Indicators

### Banking System Indicator (BSI) and Macro-Prudential Indicator (MPI)

	BSI	MPI		BSI	MPI
Argentina	E	1	Kuwait	C (B)	2
Armenia	D (E)	3	Latvia	E (D)	3 (2)
Australia	B	3	Lebanon	D	1
Austria	C (B)	1	Lithuania	E (D)	3 (2)
Azerbaijan	E	3	Luxembourg	D	2
Bahrain	C (B)	2	Malaysia	C	1
Belarus	E	2	Malta	C	2
Belgium	D	3 (2)	Mexico	C (B)	1
Benin	D	1	Morocco	D	2
Bermuda	C (B)	1	Netherlands	B	2
Bolivia	E	1	New Zealand	B	3 (2)
Brazil	C	3	Nigeria	D	3 (2)
Bulgaria	D	2	Norway	B	2
Canada	B	3	Oman	C	1
Chile	C (B)	3 (2)	Panama	C (D)	1
China	D	1	Peru	C (D)	1
Colombia	D	3	Philippines	D	1
Costa Rica	D	2	Poland	C	2
Croatia	D	1 (2)	Portugal	B	2
Cyprus	C	2	Qatar	C (B)	3
Czech Republic	C (B)	3 (2)	Romania	D	3
Denmark	B	3 (2)	Russia	D	3
Dominican R.	D	1	San Marino	C	2
Ecuador	D (E)	1	Saudi Arabia	C (B)	2
Egypt	E	1	Singapore	B	1
El Salvador	D	1	Slovakia	C	3
Estonia	E (D)	3 (2)	Slovenia	C	2
Finland	B	2	South Africa	C (B)	3
France	C (B)	3 (2)	Spain	B	2
Georgia	D	3 (2)	Sri Lanka	E	1
Germany	C (B)	1	Sweden	B	3 (2)
Greece	C (B)	2	Switzerland	C (B)	2
Hong Kong	B	1	Taiwan	C	1
Hungary	D	1	Thailand	C	1
Iceland	E	3	Tunisia	D (E)	1
India	C (D)	2	Turkey	C (D)	3
Indonesia	D	1	Ukraine	E (D)	3 (2)
Ireland	D (B)	3	UAE	C (B)	3
Israel	C	1	UK	C (B)	3 (2)
Italy	C (B)	2	US	C (B)	3 (2)
Japan	C (B)	1	Uruguay	E	1
Kazakhstan	E (D)	3	Venezuela	D	2
Korea	C (B)	3	Vietnam	D (E)	2

Figures in brackets are results from the October 2008 report  
Source: Fitch

## Bank Systemic Risk Indicators Since 2005

### Bank Systemic Risk Indicators

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Argentina	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Armenia	...	...	...	...	...	...	D (E)	2	D (E)	2	D (E)	2	D (E)	3	D (E)	3
Australia	B (A)	2	B (A)	2	B (A)	2	B (A)	3	B (A)	3	B (A)	3	B	3	B	3
Austria	C	1	C	1	C (B)	2	C (B)	1	C (B)	1	C (B)	1	C (B)	1	C	1
Azerbaijan	E	1	E	3	E	3	E	3	E	3	E	3	E	3	E	3
Bahrain	C	1	C	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C	2
Belarus	...	...	...	...	...	...	E	2	E	2	E	2	E	2	E	2
Belgium	B	1	B	1	B	1	B	2	B	2	B	3 (2)	D	3 (2)	D	3
Benin	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Bermuda	B	1	B	1	B	1	B	1	B	1	B	1	B	1	C	1
Bolivia	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Brazil	C (D)	1	C (D)	1	C	1	C	1	C	2	C	3	C	3	C	3
Bulgaria	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Canada	B	1	B	1	B	1	B	3	B	3	B	3	B	3	B	3
Chile	C (B)	1	C (B)	1	C (B)	1	C (B)	1	C (B)	1	C (B)	2	C (B)	2	C	3
China	E	1	D (E)	1	D (E)	1	D	1	D	1	D	1	D	1	D	1
Colombia	D	1	D	1	D	1	D	1	D	2	D	2	D	3	D	3
Costa Rica	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Croatia	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	1
Cyprus	D	1	D	1	D	1	C	1	C	1	C	2	C	2	C	2
Czech R.	C	1	C	1	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C	3
Denmark	B	1	B	1	B	1	B	2	B	3 (2)	B	3 (2)	B	3 (2)	B	3
Dominican R.	D (E)	2	D (E)	2	D (E)	2	D (E)	1	D (E)	1	D (E)	1	D	1	D	1
Ecuador	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D	1
Egypt	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
El Salvador	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Estonia	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C (B)	3 (2)	C (B)	3 (2)	D	3 (2)	E	3
Finland	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2
France	B	1	B	1	B	1	B	2	B	2	B	3 (2)	B	3 (2)	C	3
Georgia	...	...	...	...	...	...	D	2	D	2	D	2	D	2	D	3
Germany	C	1	C	1	C (B)	1	C (B)	1	C (B)	1	B	1	C (B)	1	C	1
Greece	C (B)	2	C (B)	2	C	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C	2
Hong Kong	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Hungary	C (D)	3	C (D)	2	C (D)	2	C (D)	1	C (D)	1	C (D)	1	C (D)	1	D	1
Iceland	C	2	C (B)	3	C (B)	3	C (B)	3	C (B)	3	C (B)	3	E	3	E	3
India	D	1	D	1	D	2	D	2	C (D)	2	C (D)	2	C (D)	2	C	2
Indonesia	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Ireland	B	2	B	3	B	3	B	2	B	2	B	3	B	3	D	3
Israel	C (D)	1	C (D)	1	C (D)	1	C (D)	1	C (D)	1	C (D)	1	C	1	C	1
Italy	B	2	C (B)	1	B	1	B	2	B	2	B	2	C (B)	2	C	2
Japan	D	1	D	1	C	1	C	1	C (B)	1	C (B)	1	B	1	C	1
Kazakhstan	D	1	D	2	D	2	D	2	D	2	D	3	D	3	E	3
Korea	C	1	C	1	C	1	C	1	C (B)	3	C (B)	3	C (B)	3	C	3
Kuwait	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C (B)	2	C	2
Latvia	C (D)	2	C (D)	2	C	2	C	2	C	3 (2)	C	3 (2)	D	3 (2)	E	3
Lebanon	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Lithuania	C (D)	2	C (D)	2	C (D)	2	C (D)	2	C (D)	2	C (D)	2	D	2	E	3
Luxembourg	B (A)	1	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B (A)	2	C (D)	2	D	2
Malaysia	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Malta	C	1	C	2	C	1	C	2	C	2	C	2	C	2	C	2
Mexico	C	1	C	1	C (B)	1	C (B)	1	C (B)	1	C (B)	1	C (B)	1	C	1
Morocco	...	...	...	...	...	...	...	...	D	1	D	2	D	2	D	2
Netherlands	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B	2	B	2
New Zealand	B	1	B	2	B	2	B	2	B	2	B	2	B	3 (2)	B	3
Nigeria	...	...	...	...	...	...	...	...	D	1	D	2	D	2	D	3
Norway	B	1	B	3	B	2	B	2	B	2	B	2	B	2	B	2
Oman	C (D)	1	C (D)	1	C	1	C	1	C	1	C	1	C	1	C	1
Panama	D	1	D	1	D	1	D	1	D	1	C (D)	1	C (D)	1	C	1
Peru	D	1	D	1	D	1	D	1	D	1	D	1	D	1	C	1
Philippines	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Poland	D	1	D	1	D	1	C (D)	1	C (D)	1	C (D)	2	C	2	C	2
Portugal	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2

**Bank Systemic Risk Indicators (Continued)**

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Qatar	C	1	C	2	C (B)	2	C (B)	2	C (B)	2	C (B)	3	C (B)	3	C	3
Romania	D	1	D	2	D	2	D	2	D	2	D	3	D	3	D	3
Russia	D	2	D	3	D	3	D	3	D	3	D	3	D	3	D	3
San Marino	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Saudi Arabia	B	1	B	2	B	2	B	2	B	2	B	2	B	2	C	2
Singapore	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Slovakia	D	1	D	1	C (D)	2	C (D)	2	C	2	C	3	C	3	C	3
Slovenia	C	1	C	1	C	2	C	2	C	2	C	2	C	2	C	2
South Africa	C (B)	3	C (B)	3	C (B)	3	C (B)	3	C (B)	3	C (B)	3	C (B)	3	C	3
Spain	B	2	B	2	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B	2	B	2
Sri Lanka	...	...	...	...	...	...	E	1	E	1	E	1	E	1	E	1
Sweden	B	1	B	1	B	1	B	2	B	2	B	3 (2)	B	3 (2)	B	3
Switzerland	B	1	B	1	B (A)	1	B (A)	1	B (A)	2	B	2	B	2	C	2
Taiwan	D	1	D	1	C (D)	1	C (D)	1	C (D)	1	C (D)	1	C	1	C	1
Thailand	D	1	D	1	C (D)	1	C (D)	1	C (D)	1	C	1	C	1	C	1
Tunisia	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D (E)	1	D	1
Turkey	D	1	D	2	D	2	C (D)	2	C (D)	2	C (D)	3	C (D)	3	C	3
Ukraine	D	1	D	2	D	2	D	2	D	2	D	2	D	2	E	3
UAE	C	1	C (B)	1	C (B)	1	C (B)	2	C (B)	2	C (B)	3	C (B)	3	C	3
UK	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B (A)	2	B (A)	3 (2)	B	3 (2)	C	3
US	B (A)	1	B (A)	2	B (A)	2	B (A)	3 (2)	B (A)	3 (2)	B	3 (2)	B	3 (2)	C	3
Uruguay	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Venezuela	D	1	D	1	D	1	D	2	D	2	D	2	D	2	D	2
Vietnam	E	1	E	2	E	2	E	2	D (E)	2	D (E)	2	D (E)	2	D	2

Where historic BSIs have changed due to the revised rounding system, the previous BSI is shown in brackets  
Historic MPIs have also been adjusted for the introduction of the house price trigger  
Source: Fitch

**Data Annex**

<b>Bank Credit to Private Sector</b>						
(% of GDP)	2003	2004	2005	2006	2007	2008e
Argentina	10.6	10.3	11.4	12.6	13.9	13.1
Armenia	5.7	7.0	8.0	8.8	13.6	17.4
Australia	98.3	102.0	107.5	113.3	122.9	127.3
Austria	105.6	106.8	113.7	114.7	115.0	119.0
Azerbaijan	7.0	9.3	9.5	11.7	16.3	18.9
Bahrain	47.9	51.4	51.8	52.5	62.6	74.4
Belarus	11.7	14.0	15.9	20.2	25.1	30.4
Belgium	74.1	71.5	74.1	82.2	91.1	95.1
Benin	13.7	13.6	15.3	15.8	18.4	20.7
Bermuda	116.2	123.1	121.4	127.2	125.5	124.5
Bolivia	47.9	42.7	39.8	35.2	34.3	30.0
Brazil	29.9	30.1	34.1	41.1	51.1	58.4
Bulgaria	27.4	36.3	43.6	47.1	66.8	74.5
Canada	117.1	119.5	126.0	138.4	126.9	128.3
Chile	66.1	66.9	68.3	67.5	74.0	79.2
China	141.4	137.9	125.0	121.1	123.4	125.3
Colombia	33.7	33.8	32.1	39.3	43.3	42.0
Costa Rica	31.1	31.9	35.6	37.8	44.4	50.7
Croatia	46.1	48.9	53.0	60.2	63.1	64.6
Cyprus	163.4	163.7	164.5	175.8	204.5	268.8
Czech Republic	31.8	32.6	37.0	41.1	48.0	50.3
Denmark	151.6	158.2	171.8	186.2	203.4	218.6
Dominican Rep.	37.1	23.1	23.0	20.6	21.6	20.9
Ecuador	20.0	21.5	23.1	23.9	24.6	26.7
Egypt	53.9	54.0	51.2	49.3	46.4	45.6
El Salvador	41.2	41.2	42.2	42.4	42.3	40.2
Estonia	70.7	80.9	82.5	89.6	96.1	98.7
Finland	64.1	67.7	75.2	78.2	81.6	85.7
France	88.2	90.5	92.4	97.8	105.2	107.9
Georgia	8.7	9.7	14.8	19.5	28.3	33.3
Germany	115.3	112.6	111.8	109.2	105.3	108.0
Greece	64.6	69.9	77.7	83.4	91.8	93.5
Hong Kong	148.8	147.6	146.1	139.4	139.7	116.7
Hungary	42.3	45.8	51.2	55.3	61.5	70.0
Iceland	130.4	164.9	247.8	319.7	402.5	433.9
India	32.1	36.6	40.6	45.0	47.3	50.9
Indonesia	22.9	26.4	26.4	24.6	25.5	26.5
Ireland	114.9	134.5	160.8	181.5	198.2	212.1
Israel	86.3	85.7	90.4	87.5	90.1	91.7
Italy	83.6	85.3	89.4	94.9	101.2	105.0
Japan	171.9	164.9	162.0	155.4	149.6	149.9
Kazakhstan	22.7	26.5	35.4	47.5	59.7	50.1
Korea	95.6	90.1	93.0	101.9	107.8	118.3
Kuwait	59.5	56.4	50.9	51.2	63.0	59.3
Latvia	40.2	50.8	68.2	87.5	88.7	117.5
Lebanon	78.6	75.9	68.5	70.5	73.5	76.3
Lithuania	22.8	28.8	40.9	50.1	60.3	62.7
Luxembourg	103.2	106.0	129.4	154.7	190.3	192.1
Malaysia	136.8	126.3	123.2	118.2	114.3	111.7
Malta	101.2	106.6	106.5	115.0	118.1	134.3
Mexico	25.9	22.9	23.4	24.5	25.6	24.4
Morocco	57.2	58.2	61.9	65.0	77.6	79.9
Netherlands	148.0	157.8	169.1	172.1	192.4	188.2
New Zealand	116.2	103.4	114.4	125.0	134.3	142.7
Nigeria	13.8	13.1	13.2	13.2	25.4	32.9
Norway	77.3	77.7	81.4	87.0	99.0	100.4
Oman	36.9	34.4	30.8	31.1	35.9	37.7
Panama	87.1	85.1	87.1	88.4	92.0	90.8
Peru	20.2	18.1	19.1	17.6	20.8	24.9
Philippines	34.9	32.4	28.5	27.3	26.9	25.8
Poland	28.1	28.1	28.9	33.3	39.7	50.0
Portugal	140.2	140.8	145.6	157.3	169.0	180.0
Qatar	30.0	29.0	35.4	41.6	46.6	46.0

**Bank Credit to Private Sector (Continued)**

(% of GDP)	2003	2004	2005	2006	2007	2008e
Romania	13.7	15.6	19.9	25.9	35.1	39.2
Russia	21.0	24.1	25.7	30.9	37.9	41.3
San Marino	112.3	141.0	150.6	190.9	225.2	255.6
Saudi Arabia	28.4	33.4	36.9	35.6	40.4	41.9
Singapore	109.8	100.9	95.2	91.7	95.7	99.7
Slovakia	31.8	30.4	35.1	38.6	42.4	44.7
Slovenia	41.4	48.1	56.4	66.0	81.2	86.8
South Africa	69.1	70.2	75.0	83.3	88.1	88.5
Spain	113.2	124.9	145.3	166.4	182.5	201.4
Sri Lanka	28.9	30.6	32.9	34.0	33.3	31.0
Sweden	101.0	102.7	109.2	114.5	123.9	129.5
Switzerland	156.9	158.8	164.6	170.7	176.7	168.4
Taiwan	122.6	130.0	137.8	139.9	134.6	143.0
Thailand	119.1	114.6	111.2	104.1	99.2	99.2
Tunisia	60.6	61.1	62.6	61.0	61.0	63.5
Turkey	15.8	18.2	23.0	26.6	30.0	34.2
Ukraine	24.6	25.2	32.2	44.4	58.8	73.7
UAE	51.3	53.0	56.6	61.8	72.7	76.1
UK	143.1	151.1	159.8	171.6	187.7	210.8
US	183.4	190.3	194.6	201.7	209.2	189.6
Uruguay	46.5	25.1	23.5	24.3	23.7	21.1
Venezuela	8.2	10.8	12.8	16.4	23.1	19.5
Vietnam	51.8	61.9	71.2	75.4	96.2	93.7

Source: IMF and Fitch estimates

**Data Annex (Continued)**
**Real Effective Exchange Rate Index (2000 = 100)**

	2003	2004	2005	2006	2007	2008e
Argentina	47.7	46.0	45.9	45.2	42.9	46.5
Armenia	82.6	87.2	97.5	106.4	122.7	147.0
Australia	112.6	121.2	124.8	124.7	133.3	132.1
Austria	104.2	105.7	105.7	105.4	106.7	107.7
Azerbaijan	75.0	74.0	86.0	89.0	95.0	101.7
Bahrain	93.0	86.7	84.2	81.7	76.0	70.9
Belarus	67.9	66.2	66.1	64.5	66.0	68.0
Belgium	107.0	108.6	109.5	109.4	110.8	114.9
Benin	113.1	116.0	118.9	120.2	122.6	122.6
Bermuda	101.2	102.1	101.8	101.7	102.7	103.7
Bolivia	89.1	83.4	79.8	79.5	81.8	93.8
Brazil	76.0	79.4	98.4	110.3	119.9	129.5
Bulgaria	114.0	119.6	120.2	125.4	133.9	145.8
Canada	107.0	112.8	119.7	126.8	132.3	130.3
Chile	82.0	87.0	92.3	96.6	95.2	97.5
China	95.2	92.7	92.5	94.4	99.1	107.5
Colombia	85.0	92.9	105.4	103.7	115.8	120.5
Costa Rica	94.8	91.9	91.9	92.7	95.3	100.3
Croatia	105.4	107.6	109.7	111.9	112.9	117.2
Cyprus	111.0	113.0	112.8	113.0	113.0	117.1
Czech Republic	116.8	118.3	125.3	132.3	136.8	157.7
Denmark	108.2	109.3	108.4	108.4	109.7	112.2
Dominican Rep.	74.6	79.3	104.5	99.1	100.9	101.7
Ecuador	162.4	154.5	147.8	147.1	138.5	137.6
Egypt	59.1	56.7	61.5	64.5	66.2	75.4
El Salvador	97.1	96.4	98.7	98.5	97.7	96.7
Estonia	105.7	107.1	108.2	108.6	111.8	118.5
Finland	106.9	107.0	104.8	104.1	106.2	109.3
France	106.7	108.4	107.9	107.6	109.0	111.2
Georgia	87.3	91.9	95.3	98.7	100.1	114.1
Germany	106.3	107.7	106.9	106.7	108.9	110.1
Greece	111.0	113.0	113.6	114.6	116.8	120.1
Hong Kong	89.3	84.5	82.8	81.8	77.4	73.2
Hungary	121.6	130.0	132.6	127.0	142.5	147.9
Iceland	98.9	101.6	114.5	106.8	112.8	88.7
India	96.5	99.0	104.4	102.7	110.9	105.3
Indonesia	122.5	116.7	114.8	134.0	133.4	128.6
Ireland	120.3	123.1	123.5	125.9	133.1	140.7
Israel	84.9	79.8	78.0	78.0	79.4	89.1
Italy	110.3	112.1	110.9	110.8	112.3	114.8
Japan	83.7	84.6	79.4	72.0	66.6	72.7
Kazakhstan	88.9	94.4	100.3	100.9	111.2	124.1
Korea	99.6	100.7	112.5	120.6	119.5	97.3
Kuwait	96.7	91.8	93.7	94.5	96.3	101.1
Latvia	88.1	88.1	89.1	92.4	102.1	110.0
Lebanon	88.4	82.4	79.1	80.9	77.2	76.8
Lithuania	102.8	101.7	96.8	97.7	100.5	110.8
Luxembourg	105.4	106.6	107.1	108.0	109.6	111.4
Malaysia	99.2	94.9	95.2	99.0	102.4	103.1
Malta	108.5	112.9	112.7	113.8	117.3	121.6
Mexico	95.1	90.8	94.2	94.2	94.0	90.0
Morocco	94.6	93.5	91.8	92.9	92.6	93.8
Netherlands	112.5	113.3	112.7	111.9	113.5	115.6
New Zealand	121.7	130.1	137.6	128.1	137.7	129.3
Nigeria	105.0	107.8	124.2	133.1	130.6	145.0
Norway	111.0	106.9	111.1	111.3	112.2	113.7
Oman	95.4	89.6	88.7	88.7	87.4	90.0
Panama	86.4	82.2	87.6	83.4	81.7	82.0
Peru	99.1	98.2	104.0	105.9	106.5	102.3
Philippines	89.1	86.2	92.3	102.5	112.3	118.7
Poland	96.3	96.2	107.5	109.8	114.1	125.5
Portugal	109.6	110.7	110.8	111.5	113.5	115.0
Qatar	95.5	95.4	102.1	110.6	117.8	123.7

**Real Effective Exchange Rate Index (2000 = 100) (Continued)**

	2003	2004	2005	2006	2007	2008e
Romania	99.1	101.6	119.8	128.9	140.5	134.6
Russia	127.3	137.3	149.2	163.4	172.7	183.8
San Marino	110.3	112.1	110.9	110.8	112.3	114.8
Saudi Arabia	90.5	84.4	82.1	80.8	78.5	80.3
Singapore	94.3	93.3	92.1	94.3	95.7	101.3
Slovakia	119.1	130.5	134.4	142.7	158.1	171.5
Slovenia	104.2	104.1	104.8	101.4	102.5	107.3
South Africa	97.4	107.7	108.6	104.3	94.9	77.3
Spain	109.2	111.4	113.0	114.9	117.3	120.8
Sri Lanka	98.8	95.1	103.6	110.0	115.4	137.5
Sweden	100.2	101.2	96.9	96.8	98.9	97.3
Switzerland	106.4	105.6	104.0	101.7	98.1	103.1
Taiwan	86.6	85.3	87.8	84.8	80.2	79.2
Thailand	94.8	94.5	96.0	103.8	110.1	109.2
Tunisia	92.5	89.3	85.3	84.6	82.2	81.4
Turkey	94.9	98.0	108.1	107.3	116.7	98.9
Ukraine	98.3	96.1	105.9	111.0	112.6	122.7
UAE	97.7	94.3	96.9	102.2	104.1	107.8
UK	96.1	101.8	101.3	103.2	107.9	95.0
US	98.7	94.1	92.8	92.4	88.8	85.8
Uruguay	68.6	68.3	76.6	78.1	79.6	89.0
Venezuela	72.4	70.1	69.0	73.4	81.2	99.3
Vietnam	90.6	89.3	93.2	96.7	100.6	106.6

Source: IMF, BIS, Eurostat and Fitch estimates

**Data Annex (Continued)**

<b>Real Equity Price Index (2000 = 100)</b>						
	2003	2004	2005	2006	2007	2008e
Argentina	101.9	140.9	174.9	180.8	195.1	133.9
Armenia	...	...	...	...	...	...
Australia	87.1	97.9	113.7	129.7	150.5	111.4
Austria	110.6	165.0	244.7	316.4	363.2	258.0
Azerbaijan	...	...	...	...	...	...
Bahrain	98.1	128.0	154.7	144.7	150.1	144.6
Belarus	...	...	...	...	...	...
Belgium	63.1	79.7	97.2	116.3	128.4	89.3
Benin	...	...	...	...	...	...
Bermuda	138.7	170.3	181.7	230.0	247.5	210.3
Bolivia	...	...	...	...	...	...
Brazil	67.0	94.5	110.0	143.3	194.0	187.1
Bulgaria	254.2	408.5	598.9	653.1	963.1	582.7
Canada	70.6	82.7	94.0	108.9	119.9	105.5
Chile	114.3	141.1	160.0	156.9	198.4	220.4
China	74.7	70.8	53.0	71.5	173.8	119.2
Colombia	181.1	283.5	502.4	770.7	788.2	630.6
Costa Rica	92.5	65.0	67.7	83.0	127.0	138.6
Croatia	120.5	129.3	187.9	259.4	423.6	260.3
Cyprus	17.6	15.3	19.0	39.5	66.0	36.3
Czech Republic	93.2	132.2	201.1	234.6	272.0	195.8
Denmark	68.1	82.0	100.7	114.8	136.8	104.7
Dominican Rep.	269.4	185.5	180.7	226.3	271.0	...
Ecuador	123.0	148.7	174.5	195.9	191.3	167.8
Egypt	119.9	132.7	193.3	231.5	227.6	214.0
El Salvador	...	...	...	...	...	...
Estonia	149.3	204.6	334.7	347.3	418.5	237.5
Finland	36.7	39.2	45.7	56.4	67.9	50.3
France	46.8	54.4	61.7	72.1	78.9	58.5
Georgia	...	...	...	...	...	...
Germany	43.8	53.2	61.5	76.7	93.5	71.7
Greece	41.1	50.6	63.5	77.5	92.3	61.3
Hong Kong	72.0	94.0	104.5	123.4	164.5	137.1
Hungary	77.7	104.1	164.8	187.9	206.6	142.7
Iceland	88.8	160.9	225.1	287.9	350.8	150.4
India	75.6	103.4	131.8	194.5	258.9	230.5
Indonesia	78.6	113.1	135.7	155.0	212.1	174.0
Ireland	72.4	88.8	103.0	123.6	128.9	77.5
Israel	82.9	111.0	134.9	155.0	193.4	154.2
Italy	53.0	59.4	69.2	78.7	84.5	56.9
Japan	62.1	76.4	87.9	113.6	117.0	84.3
Kazakhstan	103.6	145.6	258.5	1068.8	1524.7	1066.3
Korea	85.0	101.4	130.5	165.6	207.4	180.8
Kuwait	256.1	355.1	471.8	457.0	500.5	478.1
Latvia	175.9	223.4	305.1	336.4	313.2	189.0
Lebanon	69.4	84.6	133.2	211.1	174.2	206.2
Lithuania	141.9	225.0	394.3	378.1	435.1	289.0
Luxembourg	48.4	62.1	77.2	98.4	121.4	88.2
Malaysia	80.0	91.1	92.5	94.4	122.8	97.5
Malta	49.9	66.7	89.2	128.0	111.7	90.8
Mexico	81.9	111.7	145.2	198.0	266.2	225.6
Morocco	78.6	96.7	101.3	152.9	206.6	226.6
Netherlands	40.2	43.9	49.5	57.8	63.9	47.3
New Zealand	120.3	148.5	175.0	186.4	205.6	150.2
Nigeria	150.1	200.7	154.4	157.4	257.6	255.4
Norway	65.9	94.9	121.6	152.8	185.2	146.4
Oman	113.5	144.7	178.6	183.8	218.7	250.1
Panama	93.5	105.7	120.0	158.1	198.6	187.6
Peru	121.6	187.9	258.6	481.0	1047.8	715.7
Philippines	67.1	83.8	96.8	110.1	155.3	110.7
Poland	84.7	114.8	137.2	197.0	229.0	230.0
Portugal	44.1	53.6	55.6	68.3	83.8	60.3
Qatar	225.8	340.3	522.1	351.2	301.1	316.4

## Real Equity Price Index (2000 = 100) (Continued)

	2003	2004	2005	2006	2007	2008e
Romania	161.0	239.6	383.7	469.3	501.5	285.9
Russia	170.7	178.0	189.4	300.4	319.5	218.5
San Marino	...	...	...	...	...	...
Saudi Arabia	154.8	253.3	417.9	382.3	296.4	351.0
Singapore	74.2	91.8	106.1	121.4	153.9	116.4
Slovakia	172.8	212.4	424.9	380.5	394.2	391.1
Slovenia	140.4	179.5	180.6	197.8	357.1	260.8
South Africa	86.9	100.6	126.5	167.1	203.6	170.3
Spain	54.2	63.4	73.3	87.0	102.8	79.8
Sri Lanka	154.9	192.4	258.5	269.4	275.1	278.7
Sweden	39.8	50.6	59.8	71.8	82.7	57.3
Switzerland	63.6	75.7	90.2	113.7	129.1	99.5
Taiwan	66.5	78.4	79.7	98.9	122.8	103.6
Thailand	134.7	179.4	178.7	177.9	183.7	157.7
Tunisia	67.8	75.8	81.0	97.6	128.8	134.4
Turkey	31.5	46.4	64.9	79.0	88.5	63.6
Ukraine	88.4	176.4	325.9	364.7	668.8	462.7
UAE	129.1	182.1	465.9	349.5	278.7	265.8
UK	58.5	64.0	71.2	79.7	83.8	68.6
US	78.8	87.8	87.0	91.1	102.4	85.6
Uruguay	...	...	...	...	...	...
Venezuela	107.6	161.1	107.1	130.2	113.8	70.2
Vietnam	96.2	139.1	141.2	253.6	466.3	186.8

Source: IMF, Bloomberg and Fitch estimates

**Data Annex (Continued)**

**Real House Price Index (2000 = 100)**

	2003	2004	2005	2006	2007	2008e
Australia	140.6	144.8	140.7	145.1	155.3	152.3
Austria	99.2	94.9	97.5	98.7	100.3	97.4
Belgium	115.5	124.9	144.5	157.1	168.8	169.0
Canada	109.7	113.4	115.1	123.8	128.9	127.6
China	106.4	108.8	113.6	116.7	117.6	118.9
Cyprus	...	100.0	101.0	103.3	111.8	121.0
Denmark	106.2	113.0	129.1	153.9	158.0	146.5
Estonia	170.5	214.4	261.2	374.4	373.7	314.1
Finland	109.4	116.3	123.0	131.6	135.1	133.2
France	122.8	139.2	157.2	172.0	178.9	177.2
Germany	97.0	94.9	93.3	92.8	91.7	90.4
Greece	130.6	129.3	138.8	150.7	151.6	146.6
Hong Kong	77.3	101.6	120.0	121.3	131.6	146.7
Iceland	104.4	112.6	140.8	150.9	156.5	148.0
Ireland	122.2	133.1	138.8	152.4	149.7	132.0
Israel	90.7	90.0	89.5	88.2	87.2	90.2
Italy	119.6	128.5	135.7	142.1	146.5	145.7
Japan	89.5	85.3	82.4	80.9	81.6	83.3
Korea	121.0	119.1	120.2	128.2	138.2	140.1
Latvia	205.1	207.3	312.5	437.9	467.4	387.5
Lithuania	112.0	138.9	185.1	247.4	279.6	257.6
Malaysia	104.3	107.0	106.6	105.7	107.6	101.5
Malta	117.9	138.8	147.8	149.1	147.2	138.8
Netherlands	107.8	110.0	113.4	115.2	117.6	119.2
New Zealand	124.6	142.1	159.5	168.5	178.9	159.7
Norway	110.3	117.4	116.7	127.2	135.1	112.4
Poland	104.2	105.6	127.1	160.2	224.7	211.3
Singapore	84.0	80.9	82.7	87.6	102.5	113.9
South Africa	128.2	160.6	187.0	201.0	211.2	197.1
Spain	122.4	135.7	146.8	155.5	159.6	156.6
Sweden	115.5	126.0	136.0	150.0	161.0	159.7
Switzerland	107.4	109.3	110.3	111.2	111.5	112.1
Taiwan	93.2	104.6	107.9	109.6	114.1	129.5
Thailand	104.1	110.3	114.1	113.3	106.9	91.8
UK	150.9	168.4	169.8	189.8	197.8	164.0
US	132.4	152.1	172.3	179.2	166.8	136.0

Source: National sources and Fitch estimates

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Special Report

# Bank Systemic Risk Report

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## Related Research

- [Assessing Bank Systemic Risk: A New Product \(July 2005\)](#)
- [Sovereign Comparator \(September 2009\)](#)

## Summary: Signs of Stabilisation

This latest semi-annual report updates the systemic risk indicators Fitch Ratings has published since 2005. For the first time, the number of changes is relatively few and largely reflects technical changes rather than underlying changes in risk. Nevertheless, the level of risk described by the indicators remains high, and it would be premature to say that risk had begun to ease. However, there are at least signs of stabilisation, and when full 2009 data is included in the next report, the chances are there will be as many improvements as deteriorations.

Credit growth has slowed sharply this year, to 2.5% in nominal terms (year-to-date annual rate) for the median of all Fitch-rated sovereigns, compared to over 15% in 2008. By end-2009, Fitch forecasts a slight pick-up, but to a still subdued 5%, or less than 2% in real terms. The main exception is China, which at a forecast 23% will experience the fastest real credit growth anywhere this year and one of the biggest increases in credit to GDP. It has yet to trigger even “moderate” signs of macro-prudential risk based on the indicators in this report, but it could do in the next report if credit growth turns out even slightly faster than currently forecast.

The credit/GDP ratio in general shows little sign of major fall yet, despite the slowdown in credit growth. Indeed, even in some crisis countries such as Iceland and Ireland, the ratio is still rising sharply due to the fall in nominal GDP (a fairly wide-spread phenomenon this year). Moreover, as the warning signals monitored in this report remain in force for three years once triggered, it will be some time before there is substantial improvement in Macro-Prudential Indicator (MPI) scores.

In the next report, however, it is quite likely that the US and Canada will improve (to MPI 2), as house prices and real exchange rates (RERs) respectively peaked relative to trend in 2006 and will drop out of the assessment period in six months’ time. In this report there are no deteriorations in MPI scores and the two changes – Chile and Kazakhstan improve to MPI 2 – are due to data revisions.

The new financial landscape described by the Banking System Indicator (BSI) and noted in the last report is essentially unchanged. Developed-country banking systems are mostly either BSI B or C. None are BSI A, the three systems closest being Australia, Canada and Hong Kong. The three weakest systems remain Belgium and Ireland – both BSI D – and Iceland – BSI E. The typical emerging-market (EM) system meanwhile remains either BSI C or D, though a dozen remain BSI E. Systems closest to improving to BSI B are Bermuda and Chile. Among the weakest EM systems, those nearest to improving are Azerbaijan, Belarus, Estonia and Lithuania.

Five BSI scores change this time, most driven not by underlying Individual Rating changes but by compositional changes as banks change in relative size and new banks are added. Luxembourg improves to BSI C and Sri Lanka and Egypt improve to BSI D; the Netherlands and Vietnam deteriorate to BSI C and E respectively.

After introducing house prices as a formal trigger for the MPI in the last report, Fitch will review the relative merits of equity prices and the RER and of credit growth and the credit/GDP ratio as leading indicators of systemic stress in time for the next report.<sup>1</sup>

<sup>1</sup> A complete list of BSI and MPI scores and a historical times series is in the appendix, together with the usual systemic risk matrix and the underlying credit/GDP, real house price, real equity price and RER

## Macro-Prudential Indicator (MPI)<sup>2</sup>

### Guidelines for Assigning MPI Scores

The MPI seeks to highlight, in as objective a way as possible, the existence and severity of a set of macroeconomic circumstances that has been shown to anticipate a majority of past episodes of banking system distress and in some cases full-blown systemic crises. The methodology identifies instances of rapid credit growth which bring the ratio of private-sector credit to GDP and the RER or real equity or property prices above long-run trend values by certain trigger amounts.<sup>3</sup>

High vulnerability to potential systemic stress is designated MPI 3 and is defined as:

- a ratio of private-sector credit to GDP more than 5pp above trend and
- either real property prices more than 15% above trend
- or real equity prices more than 40% above trend (two years previously)
- or a real effective exchange rate more than 9% above trend.

Moderate vulnerability (MPI 2) occurs when the ratio of credit to GDP is either above or close to its trigger value and other indicators are close to or above their trigger values respectively, as summarised in the table below. An MPI score of '1' denotes low potential vulnerability.

### Guidelines for Assigning MPI Scores

Exchange rate or asset price trigger	On <sup>a</sup>	Close <sup>b</sup>	Off
<b>Credit/GDP vs. trend</b>			
> 5pp above	3	2	2
> 3pp above	2	2	1
< 3pp above	1	1	1

<sup>a</sup> House prices, equity prices and the RER more than 15%, 40% and 9% above trend respectively

<sup>b</sup> House prices, equity prices and the RER more than 10%, 30% and 6% above trend respectively

Source: Fitch

The assessment is based on three years of annual data, with a trigger in any of the three years being relevant to a country's MPI score. The MPI aims to highlight potential systemic stress which could materialise up to three years after an early warning is first indicated. The three-year horizon is designed to be long enough to take account of the time it can take for banking system stress to emerge, but not so long as to reduce the indicator's analytical usefulness.<sup>4</sup>

The reference period in this report remains 2006-2008. Data for 2009 will not be formally incorporated until more complete data are available next year. All the data used in this exercise are subject to sometimes major revision, are volatile and are difficult to forecast. Also, the trends against which the data are assessed are sensitive to the development of actual data and will change over time.

data. The data are also available in Fitch's quarterly "Sovereign Comparator" and the Peer Analysis Tool, together with other system-wide bank prudential indicators, e.g. risk-weighted capital ratios and ownership data.

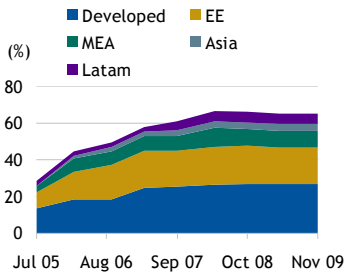
<sup>2</sup> The MPI aims to identify potential systemic stress of a type often preceded by a combination of rapid bank lending growth and bubbles in asset markets and/or the RER. Risk is measured on a scale from '1' (low) through '2' (moderate) to '3' (high). MPI 2 can be triggered by rapid lending growth alone, while MPI 3 requires further triggers.

<sup>3</sup> The primary data source is the IMF's "International Financial Statistics". Private-sector credit is a broad definition, including bank lending and other debt instruments. The RER is based on relative consumer prices. An alternative data source for equity prices is Bloomberg. House price data are from a variety of national sources, where available.

<sup>4</sup> The equity price trigger works with an even longer lag, as equities have been a leading indicator of wider asset price trends, notably property, as well as developments in the real economy. A trigger in year t would not affect the MPI score for a further two years. Thus, banking system problems might materialise up to five years after an equity price peak in time t.

### Macro-Prudential Risk Stabilises

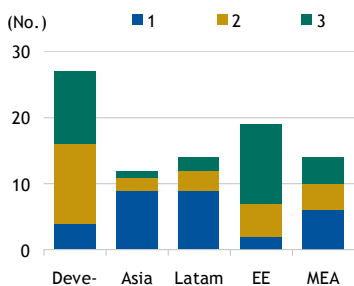
Countries scored MPI 2 or 3



Source: Fitch

### MPI Scores by Region

No. of countries



Source: Fitch

## Results

Compared to the substantial number of changes in the last report, only two MPI scores change this time, both due to data revisions: Chile and Kazakhstan no longer trigger MPI 3.<sup>5</sup>

The number of countries in the MPI 3 category therefore drops to 30. However, this still amounts to over one-third of the 86 countries included in this report. The region with proportionately most MPI 3s (63%) remains Emerging Europe (EE), followed by developed countries (41%) and the Middle East and Africa (MEA) with 29%. Latin America and Asia have the lowest proportion of MPI 3s at 14% and 8% respectively. The proportion of countries in the MPI 2 and MPI 3 categories combined is also of interest, as both scores require credit/GDP or credit growth to exceed critical thresholds. The rank order is the same, with 90% of EE in one of these two categories, 85% of developed markets, and 57% of MEA, with significantly fewer in Latin America (36%) and Asia (25%).

## MPI 3 Countries

Combination of credit and real house price trigger	First triggered by data in
Belgium	2007
Denmark	2006
Estonia	2006
France	2007
Latvia	2006
New Zealand	2007
Sweden	2007
UK	2007
US	2006
Combination of credit and RER trigger	MPI 3 dating from
Armenia	2008
Australia	2007
Azerbaijan	2006
Brazil	2008
Canada	2007
Colombia	2008
Czech Republic	2009
Georgia	2009
Iceland	2006
Ireland	2006 (and house prices)
Korea	2007
Nigeria	2009
Romania	2008
Russia	2006
Slovakia	2008
South Africa	2005 (and house prices)
Turkey	2008
Ukraine	2009
Combination of credit and real equity price trigger	MPI 3 dating from
Lithuania	2009
Qatar	2008
UAE	2008

Source: Fitch

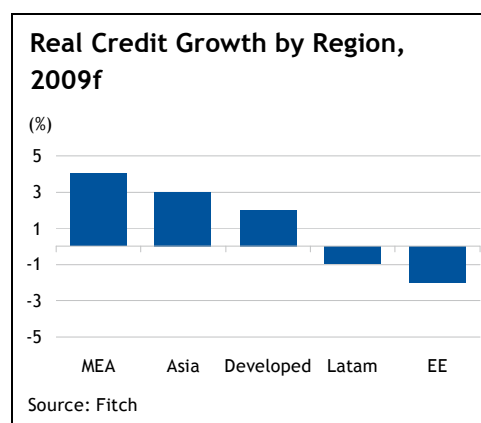
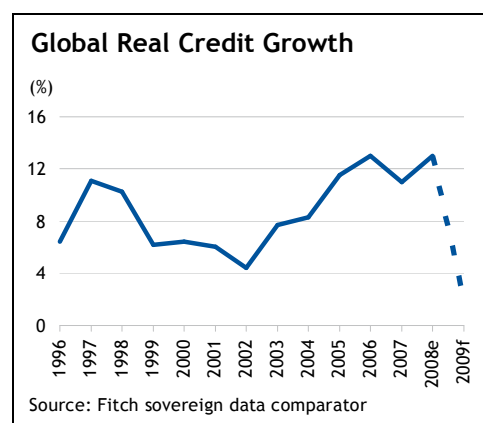
## Developments in 2009

Credit growth has slowed sharply in most countries this year. Across all countries rated by Fitch, median nominal year-to-date credit growth has slumped to 2.5%, compared to over 15% last year. By end-2009, Fitch forecasts nominal credit growth to pick up slightly, but to a still subdued 5%, or less than 2% in real terms.

<sup>5</sup> The second BSR report of the year usually sees fewer changes because it remains based on the previous year's annual data. Nevertheless, when credit growth was rapid and rising, annual outturns were firmed up in this report, often resulting in upward revisions to bank lending data, which led to changes in MPI scores even at this late stage in the year.

Advanced economies (as defined by the IMF) will see 2% median real credit growth this year – the same as the global median. Most countries will see growth of less than 4% and a third of countries will see negative real growth, with the UK's expected 3% drop second only to Iceland's 5% drop.

Credit growth is holding up better in MEA and emerging Asia, where median real credit growth will be 4% and 3% respectively, with China (23%) and Ghana (16%) leading the field. In total just seven countries will see double-digit real credit growth this year compared to over 60 last year. Both Latin America and EE will see negative real credit growth of -1% and -2% respectively. In the former, only Peru and Brazil will see significant positive growth, while more than half the EE region is seeing real declines in credit extension, notably the Baltics and also Armenia and Georgia.



With regard to the macro-prudential credit triggers monitored in this report, only three countries will breach the 15% real credit growth “speed limit” in 2009 – China, Belarus and Ghana. Of these, only China's credit growth is accelerating and it is also the only country where growth is accelerating from a high base. By contrast, the pick-up in credit growth in Kazakhstan and a few developed countries this year follows negative real growth in 2008. Taking 2008 and 2009 together, a further 11 countries will breach the speed limit – see table – but in all these countries credit growth has slowed significantly this year.

### Real Credit Growth of 15% or More, 2008-2009

(%)	2008	2009	2008-2009 average	MPI
Belarus	35	17	26	2
Ukraine	56	-4	22	3
Poland	32	13	22	2
Libya	41	4	21	n.a.
PNG	30	12	21	n.a.
Nigeria	47	-1	21	3
Azerbaijan	49	-3	20	3
Cyprus	35	4	19	2
China	14	23	18	1
Ghana	21	16	18	n.a.
Bahrain	40	0	18	2
Peru	28	8	17	1
Qatar	23	10	17	3
Oman	28	4	15	1

Source: Fitch

Despite the slowdown in credit growth, the credit/GDP ratio continues to rise or at least stabilise in most countries. And some of the biggest increases continue to be in countries which have seen the most severe banking system stress, including Ireland and Iceland, where the ratio will rise by around 20pp this year, because the contraction of credit is overwhelmed by the contraction in nominal GDP. Indeed,

nominal GDP is forecast to contract this year in almost half the countries rated by Fitch, notably in the Baltics, but also in most oil producers. Apart from these special cases, the biggest increase in credit to GDP will be China's 17pp.

On the basis of Fitch's forecasts for 2009 credit growth, few further deteriorations in MPI scores seem likely in the next report, assuming house prices, RERs and equity prices remain at their latest levels for the rest of the year. Some deterioration cannot be ruled out, however, since equity prices trigger with a lag and peaked in many countries in 2007 and so could trigger higher MPI scores once the assessment period is rolled forward a year. Cyprus, India and Vietnam come under this category as does China, but credit growth would also have to accelerate more than currently envisaged in China for it to trigger MPI 3 next time. RERs are also appreciating sharply in some countries. In the next report, Fitch will review the evidence for using equity prices and the RER as early-warning indicators, as well as the relative merits of credit growth and the credit/GDP ratio.

Despite the slowdown in credit growth, prospective improvement in MPIs is likely to be gradual, as triggers have a three-year lifespan. In the next report, however, 2006 data will no longer be included in the analysis and this should result in an improved MPI for the US – where the peak deviation of house prices from trend was in 2006 – and in Canada – where the RER trigger dates from 2006.

### **Banking System Indicator (BSI)**

The BSI is a summary measure of intrinsic banking system quality, or strength, derived from Fitch's long-standing Individual Ratings for banks. The BSI measures system quality or strength on a scale ranging from 'A' (very high), through 'B' (high), 'C' (adequate) and 'D' (low), to 'E' (very low). The BSI deliberately abstracts from potential support from shareholders or governments (as measured by Fitch's bank Support Ratings) since the objective of the methodology is to highlight systemic weakness which might trigger the need for such support.

The BSI is essentially a rounded version of the system average Individual Rating, which is an asset-weighted average of Fitch's bank Individual Ratings for a critical mass – at least two-thirds – of banks in any banking system, including, where necessary, systemically important unrated banks. Scores are rounded to the nearest letter grade, whether up or down.

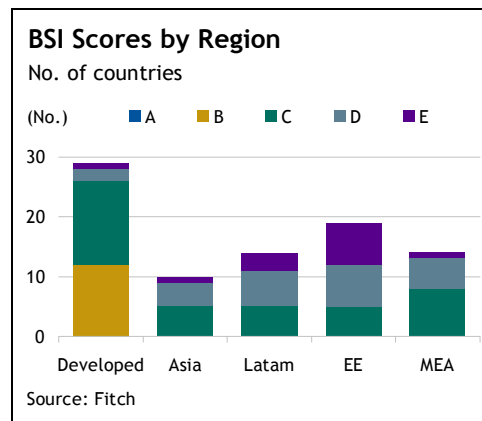
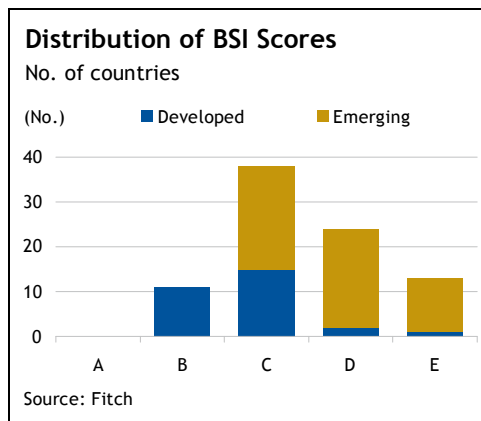
### **Results**

There are five changes to BSI scores this time, due to a combination of Individual Rating changes and compositional changes. Where a banking system's average Individual Rating is on the cusp of adjacent letter categories, the score may change as the relative size of component banks change, using more up-to-date balance sheet data. This explains the improvement in Luxembourg and Sri Lanka to 'C' and 'D' respectively and the deterioration in the Netherlands to 'C'. Coverage may also change due to new banks being added: this explains Egypt's improvement to BSI D. By contrast, the deterioration in Vietnam to 'E' reflects a component bank downgrade.

The new global financial landscape as summarised in the BSI and noted in the last report remains essentially unchanged. The typical developed-country banking system is now either BSI B or BSI C with only a few at BSI D (Ireland and Belgium) and E (Iceland). The typical EM system is either BSI C or BSI D but with around a dozen systems still at BSI E. No system is BSI A: the closest to getting there are Australia, Canada and Hong Kong. The closest to BSI B are Bermuda, Chile and the Netherlands. Amongst the weakest EM systems, the ones closest to graduating to BSI D are Azerbaijan, Belarus, Estonia and Lithuania.

Among EM regions, Asia and MEA have the strongest profile, with around half their systems BSI C, including all the Gulf Cooperation Council countries as well as South

Africa. Latin America has a weaker profile overall, with a slightly higher proportion of systems at BSI D and more at BSI E. EE has the widest spread of systems, with similar numbers at BSI C, D and E.



## Appendix 1: Bank Systemic Risk Matrix

The matrix below brings together the two systemic risk indicators – the BSI and MPI – to emphasise their complementarity. Fitch regards high MPI scores as a greater concern when the banking system is already weak, as indicated by the BSI. Weak banking systems are less able to absorb increased stress of the type that a high MPI may portend. Thus, for a given BSI, countries with a higher MPI present more cause for concern and, for a given MPI, countries with a weaker BSI suggest potentially more problematic situations.

### Bank Systemic Risk Matrix

Banking System Indicator	Macro-Prudential Indicator			No. of countries
	1	2	3	
<b>A</b>				<b>0</b>
<b>B</b>	Hong Kong Singapore	Finland Norway Portugal Spain	Australia Canada Denmark New Zealand Sweden	<b>11</b>
<b>C</b>	Austria Bermuda Germany Israel Japan Malaysia Mexico Oman Panama Peru Taiwan Thailand	Bahrain Chile Cyprus Greece India Italy Kuwait Luxembourg Malta Netherlands Poland San Marino Saudi Arabia Slovenia Switzerland	Brazil Czech Republic France Korea Qatar Slovakia South Africa Turkey UAE UK US	<b>38</b>
<b>D</b>	Benin China Croatia Dominican Republic Ecuador Egypt El Salvador Hungary Indonesia Lebanon Philippines Sri Lanka Tunisia	Bulgaria Costa Rica Morocco Venezuela	Armenia Belgium Colombia Georgia Ireland Nigeria Romania Russia	<b>25</b>
<b>E</b>	Argentina Bolivia Uruguay	Belarus Kazakhstan Vietnam	Azerbaijan Estonia Iceland Latvia Lithuania Ukraine	<b>12</b>
<b>Number of countries</b>	<b>30</b>	<b>26</b>	<b>30</b>	<b>86</b>

Source: Fitch

## Appendix 2: Bank Systemic Risk Indicators

### Banking System Indicator (BSI) and Macro-Prudential Indicator (MPI)

	BSI	MPI		BSI	MPI
Argentina	E	1	Kuwait	C	2
Armenia	D	3	Latvia	E	3
Australia	B	3	Lebanon	D	1
Austria	C	1	Lithuania	E	3
Azerbaijan	E	3	Luxembourg	C (D)	2
Bahrain	C	2	Malaysia	C	1
Belarus	E	2	Malta	C	2
Belgium	D	3	Mexico	C	1
Benin	D	1	Morocco	D	2
Bermuda	C	1	Netherlands	C (B)	2
Bolivia	E	1	New Zealand	B	3
Brazil	C	3	Nigeria	D	3
Bulgaria	D	2	Norway	B	2
Canada	B	3	Oman	C	1
Chile	C	2 (3)	Panama	C	1
China	D	1	Peru	C	1
Colombia	D	3	Philippines	D	1
Costa Rica	D	2	Poland	C	2
Croatia	D	1	Portugal	B	2
Cyprus	C	2	Qatar	C	3
Czech Republic	C	3	Romania	D	3
Denmark	B	3	Russia	D	3
Dominican R.	D	1	San Marino	C	2
Ecuador	D	1	Saudi Arabia	C	2
Egypt	D (E)	1	Singapore	B	1
El Salvador	D	1	Slovakia	C	3
Estonia	E	3	Slovenia	C	2
Finland	B	2	South Africa	C	3
France	C	3	Spain	B	2
Georgia	D	3	Sri Lanka	D (E)	1
Germany	C	1	Sweden	B	3
Greece	C	2	Switzerland	C	2
Hong Kong	B	1	Taiwan	C	1
Hungary	D	1	Thailand	C	1
Iceland	E	3	Tunisia	D	1
India	C	2	Turkey	C	3
Indonesia	D	1	Ukraine	E	3
Ireland	D	3	UAE	C	3
Israel	C	1	UK	C	3
Italy	C	2	US	C	3
Japan	C	1	Uruguay	E	1
Kazakhstan	E	2 (3)	Venezuela	D	2
Korea	C	3	Vietnam	E (D)	2

Figures in brackets are results from the May 2009 report  
Source: Fitch

### Appendix 3: Bank Systemic Risk Indicators Since 2005

#### Bank Systemic Risk Indicators

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09		Nov 09	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Argentina	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Armenia	-	-	-	-	-	-	D	2	D	2	D	2	D	3	D	3	D	3
Australia	B	2	B	2	B	2	B	3	B	3	B	3	B	3	B	3	B	3
Austria	C	1	C	1	C	2	C	1	C	1	C	1	C	1	C	1	C	1
Azerbaijan	E	1	E	3	E	3	E	3	E	3	E	3	E	3	E	3	E	3
Bahrain	C	1	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Belarus	-	-	-	-	-	E	2	E	2	E	2	E	2	E	2	E	2	E
Belgium	B	1	B	1	B	1	B	2	B	2	B	3	D	3	D	3	D	3
Benin	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Bermuda	B	1	B	1	B	1	B	1	B	1	B	1	B	1	C	1	C	1
Bolivia	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Brazil	C	1	C	1	C	1	C	1	C	2	C	3	C	3	C	3	C	3
Bulgaria	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Canada	B	1	B	1	B	1	B	3	B	3	B	3	B	3	B	3	B	3
Chile	C	1	C	1	C	1	C	1	C	1	C	2	C	2	C	3	C	2
China	E	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Colombia	D	1	D	1	D	1	D	1	D	2	D	2	D	3	D	3	D	3
Costa Rica	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	2
Croatia	D	2	D	2	D	2	D	2	D	2	D	2	D	2	D	1	D	1
Cyprus	D	1	D	1	D	1	C	1	C	1	C	2	C	2	C	2	C	2
Czech R.	C	1	C	1	C	2	C	2	C	2	C	2	C	2	C	3	C	3
Denmark	B	1	B	1	B	1	B	2	B	3	B	3	B	3	B	3	B	3
Dominican R.	D	2	D	2	D	2	D	1	D	1	D	1	D	1	D	1	D	1
Ecuador	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Egypt	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	D	1
El Salvador	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Estonia	C	2	C	2	C	2	C	2	C	3	C	3	D	3	E	3	E	3
Finland	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2
France	B	1	B	1	B	1	B	2	B	2	B	3	B	3	C	3	C	3
Georgia	-	-	-	-	-	D	2	D	2	D	2	D	2	D	3	D	3	3
Germany	C	1	C	1	C	1	C	1	C	1	B	1	C	1	C	1	C	1
Greece	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Hong Kong	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Hungary	C	3	C	2	C	2	C	1	C	1	C	1	C	1	D	1	D	1
Iceland	C	2	C	3	C	3	C	3	C	3	C	3	E	3	E	3	E	3
India	D	1	D	1	D	2	D	2	C	2	C	2	C	2	C	2	C	2
Indonesia	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Ireland	B	2	B	3	B	3	B	2	B	2	B	3	B	3	D	3	D	3
Israel	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Italy	B	2	C	1	B	1	B	2	B	2	B	2	C	2	C	2	C	2
Japan	D	1	D	1	C	1	C	1	C	1	C	1	B	1	C	1	C	1
Kazakhstan	D	1	D	2	D	2	D	2	D	2	D	3	D	3	E	3	E	2
Korea	C	1	C	1	C	1	C	1	C	3	C	3	C	3	C	3	C	3
Kuwait	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Latvia	C	2	C	2	C	2	C	2	C	3	C	3	D	3	E	3	E	3
Lebanon	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Lithuania	C	2	C	2	C	2	C	2	C	2	C	2	D	2	E	3	E	3
Luxembourg	B	1	B	2	B	2	B	2	B	2	B	2	C	2	D	2	C	2
Malaysia	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Malta	C	1	C	2	C	1	C	2	C	2	C	2	C	2	C	2	C	2
Mexico	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Morocco	-	-	-	-	-	-	D	1	D	2	D	2	D	2	D	2	D	2
Netherlands	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	C	2
New Zealand	B	1	B	2	B	2	B	2	B	2	B	2	B	3	B	3	B	3
Nigeria	-	-	-	-	-	-	D	1	D	2	D	2	D	2	D	3	D	3
Norway	B	1	B	3	B	2	B	2	B	2	B	2	B	2	B	2	B	2
Oman	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Panama	D	1	D	1	D	1	D	1	D	1	C	1	C	1	C	1	C	1
Peru	D	1	D	1	D	1	D	1	D	1	D	1	D	1	C	1	C	1
Philippines	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Poland	D	1	D	1	D	1	C	1	C	1	C	2	C	2	C	2	C	2
Portugal	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2

**Bank Systemic Risk Indicators (Cont.)**

	Jul 05		Feb 06		Sep 06		Mar 07		Sep 07		Apr 08		Oct 08		Apr 09		Nov 09	
	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI	BSI	MPI
Qatar	C	1	C	2	C	2	C	2	C	2	C	3	C	3	C	3	C	3
Romania	D	1	D	2	D	2	D	2	D	2	D	3	D	3	D	3	D	3
Russia	D	2	D	3	D	3	D	3	D	3	D	3	D	3	D	3	D	3
San Marino	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2	C	2
Saudi Arabia	B	1	B	2	B	2	B	2	B	2	B	2	B	2	C	2	C	2
Singapore	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1
Slovakia	D	1	D	1	C	2	C	2	C	2	C	3	C	3	C	3	C	3
Slovenia	C	1	C	1	C	2	C	2	C	2	C	2	C	2	C	2	C	2
South Africa	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	3	C	3
Spain	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2	B	2
Sri Lanka	-	-	-	-	-	-	E	1	E	1	E	1	E	1	E	1	D	1
Sweden	B	1	B	1	B	1	B	2	B	2	B	3	B	3	B	3	B	3
Switzerland	B	1	B	1	B	1	B	1	B	2	B	2	B	2	C	2	C	2
Taiwan	D	1	D	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Thailand	D	1	D	1	C	1	C	1	C	1	C	1	C	1	C	1	C	1
Tunisia	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1	D	1
Turkey	D	1	D	2	D	2	C	2	C	2	C	3	C	3	C	3	C	3
Ukraine	D	1	D	2	D	2	D	2	D	2	D	2	D	2	E	3	E	3
UAE	C	1	C	1	C	1	C	2	C	2	C	3	C	3	C	3	C	3
UK	B	2	B	2	B	2	B	2	B	2	B	3	B	3	C	3	C	3
US	B	1	B	2	B	2	B	3	B	3	B	3	B	3	C	3	C	3
Uruguay	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1	E	1
Venezuela	D	1	D	1	D	1	D	2	D	2	D	2	D	2	D	2	D	2
Vietnam	E	1	E	2	E	2	E	2	D	2	D	2	D	2	D	2	E	2

Source: Fitch

## Appendix 4: Credit/GDP Ratios

<b>Bank Credit to Private Sector</b>						
(% of GDP)	2003	2004	2005	2006	2007	2008e
Argentina	10.6	10.3	11.4	12.6	13.9	13.1
Armenia	5.7	7.0	8.0	8.8	13.6	17.4
Australia	98.3	102.0	107.5	113.3	122.9	127.3
Austria	105.6	106.8	113.7	114.7	115.0	119.1
Azerbaijan	7.0	9.3	9.5	12.1	15.1	16.4
Bahrain	47.9	51.4	51.8	52.5	62.6	74.4
Belarus	11.7	14.0	15.9	20.2	25.1	28.8
Belgium	74.1	71.5	74.1	82.2	91.1	94.6
Benin	13.7	13.6	15.3	15.8	18.4	21.0
Bermuda	116.2	123.1	121.4	127.2	125.5	127.2
Bolivia	47.9	42.7	39.8	35.2	34.3	31.5
Brazil	29.9	30.1	34.1	41.1	51.1	58.3
Bulgaria	27.4	36.3	43.6	47.1	66.8	74.5
Canada	117.1	119.5	125.9	138.5	127.1	128.5
Chile	66.1	66.9	68.3	67.3	74.0	85.0
China	141.4	137.9	125.0	121.1	121.3	123.1
Colombia	33.7	33.8	32.1	39.3	43.3	45.0
Costa Rica	31.3	32.0	35.6	37.9	44.4	50.8
Croatia	46.1	48.9	53.0	60.2	63.1	64.9
Cyprus	163.4	163.7	164.5	175.8	204.5	257.1
Czech Republic	31.8	32.6	37.0	41.1	48.0	52.7
Denmark	151.6	158.2	171.8	186.2	203.4	218.8
Dominican Rep.	37.1	23.4	23.3	19.6	21.6	20.9
Ecuador	20.0	21.5	23.1	23.9	24.6	26.7
Egypt	53.9	54.0	51.2	49.3	46.4	47.0
El Salvador	41.2	41.2	42.2	42.4	42.3	40.5
Estonia	70.7	80.9	82.5	89.6	96.1	98.7
Finland	64.1	67.7	75.2	78.2	81.6	85.7
France	88.2	90.5	92.3	97.9	105.1	107.9
Georgia	8.7	9.7	14.8	19.5	28.3	33.3
Germany	115.3	112.6	111.8	109.2	105.3	108.0
Greece	64.6	69.9	77.7	83.4	91.8	93.5
Hong Kong	148.8	147.6	146.1	139.4	139.7	142.8
Hungary	42.3	45.9	51.3	55.4	61.4	69.6
Iceland	130.4	164.9	247.8	319.7	400.0	444.1
India	32.1	36.6	40.6	45.0	47.3	51.4
Indonesia	22.9	26.4	26.4	24.6	25.5	26.5
Ireland	114.6	134.3	160.8	182.0	199.1	218.1
Israel	86.3	85.7	90.4	87.5	90.1	91.5
Italy	83.6	85.3	89.4	94.9	101.2	105.1
Japan	172.0	164.9	162.0	155.5	149.7	150.6
Kazakhstan	22.7	26.5	35.4	47.5	59.7	51.6
Korea	95.6	90.1	93.0	95.1	99.6	109.1
Kuwait	59.5	56.4	50.9	51.2	63.2	59.3
Latvia	40.2	50.8	68.2	87.5	88.7	90.2
Lebanon	78.6	75.9	68.5	70.5	73.5	76.3
Lithuania	22.8	28.8	40.9	50.1	60.3	62.7
Luxembourg	103.2	106.0	129.4	154.7	190.3	192.1
Malaysia	136.8	126.3	123.2	118.2	114.3	111.5
Malta	101.2	106.6	106.5	115.0	118.1	126.2
Mexico	25.9	22.9	23.4	24.5	25.6	23.9
Morocco	57.2	58.2	61.9	65.0	77.6	84.5
Netherlands	148.0	157.8	165.0	167.3	188.7	189.0
New Zealand	116.2	103.4	114.4	127.1	136.5	150.8
Nigeria	13.8	13.1	13.2	13.2	25.6	34.9
Norway	77.3	77.7	81.4	87.0	96.5	96.5
Oman	36.9	34.4	30.8	31.1	35.9	37.7
Panama	87.1	85.1	87.1	88.4	92.0	90.8
Peru	20.2	18.1	19.1	17.6	20.8	24.9
Philippines	34.9	32.4	28.5	27.3	26.9	28.1
Poland	28.1	28.1	28.9	33.3	39.5	50.0
Portugal	140.2	140.8	145.6	157.2	168.6	179.8
Qatar	30.0	29.0	35.4	38.6	46.7	46.0

**Bank Credit to Private Sector (Cont.)**

(% of GDP)	2003	2004	2005	2006	2007	2008e
Romania	13.7	15.7	20.0	25.9	35.8	39.3
Russia	21.0	24.1	25.7	30.9	37.9	41.0
San Marino	197.1	245.0	263.6	332.0	360.0	395.0
Saudi Arabia	28.4	33.4	36.9	35.6	40.1	41.8
Singapore	109.8	100.4	94.3	90.0	92.5	104.1
Slovakia	31.8	30.4	35.1	38.6	42.4	44.7
Slovenia	41.4	48.1	56.4	66.0	81.2	86.8
South Africa	69.1	70.2	75.0	83.3	88.1	88.5
Spain	113.2	124.9	145.3	166.4	182.5	201.4
Sri Lanka	28.9	30.6	32.9	34.0	33.3	28.9
Sweden	101.0	102.7	109.2	114.5	123.9	129.6
Switzerland	156.9	158.8	164.6	170.7	176.7	168.4
Taiwan	122.6	130.0	137.4	139.2	135.1	139.6
Thailand	119.1	114.6	111.2	104.1	99.2	99.2
Tunisia	60.6	61.1	62.6	61.0	61.0	66.0
Turkey	15.8	18.2	23.0	26.6	30.5	33.4
Ukraine	24.6	25.2	32.2	44.4	58.2	73.7
UAE	53.0	54.6	58.6	64.4	72.7	83.2
UK	143.1	150.8	159.6	171.1	188.1	210.7
US	183.4	190.3	194.6	201.7	209.2	191.2
Uruguay	46.5	25.1	23.5	24.3	23.7	24.7
Venezuela	8.2	10.8	12.8	16.4	23.1	20.5
Vietnam	51.8	61.9	65.9	71.2	93.4	90.6

Source: IMF and Fitch estimates

## Appendix 5: Real Exchange Rates

### Real Effective Exchange Rate Index (2000 = 100)

	2003	2004	2005	2006	2007	2008e
Argentina	47.7	46.0	45.9	45.2	42.9	46.5
Armenia	82.6	87.2	97.5	106.4	122.7	136.8
Australia	112.6	121.2	124.8	124.8	133.3	131.8
Austria	104.2	105.7	105.9	105.6	106.9	107.8
Azerbaijan	75.0	74.0	86.0	89.0	93.0	106.0
Bahrain	93.0	86.7	84.2	81.7	76.0	70.9
Belarus	67.9	66.2	66.1	64.5	61.0	60.9
Belgium	106.9	108.6	109.5	109.5	110.9	115.0
Benin	113.1	116.0	118.9	120.2	122.6	122.6
Bermuda	101.2	102.1	101.8	101.7	102.7	103.7
Bolivia	89.1	83.4	79.8	79.5	81.8	93.9
Brazil	77.2	80.6	99.4	111.1	120.2	126.2
Bulgaria	114.0	119.6	120.3	125.5	134.0	146.1
Canada	107.0	112.8	119.7	126.8	132.3	130.2
Chile	82.0	87.0	91.9	96.7	95.2	97.3
China	95.2	92.7	92.5	94.5	98.5	107.5
Colombia	85.0	92.9	105.6	103.8	116.0	120.6
Costa Rica	94.8	91.9	91.9	92.7	95.3	100.4
Croatia	105.4	107.6	109.8	112.0	113.0	118.4
Cyprus	111.0	113.0	112.9	113.1	113.1	117.1
Czech Republic	116.8	118.3	125.4	132.5	136.9	157.9
Denmark	108.2	109.3	108.5	108.5	109.8	112.3
Dominican Rep.	74.6	79.3	104.5	99.1	100.9	101.7
Ecuador	162.4	154.5	148.0	147.1	138.5	137.7
Egypt	59.1	56.7	61.5	64.5	66.2	75.4
El Salvador	97.1	96.4	98.7	98.5	97.7	96.8
Estonia	105.7	107.1	108.2	108.6	111.8	117.0
Finland	106.9	107.0	104.9	104.1	106.3	109.3
France	106.7	108.4	108.0	107.7	109.0	111.3
Georgia	87.3	91.9	95.3	98.7	100.1	108.5
Germany	106.3	107.7	106.5	106.2	108.5	109.8
Greece	126.2	128.5	113.7	114.7	116.9	120.1
Hong Kong	89.3	84.5	82.8	81.8	77.4	73.2
Hungary	121.6	130.0	132.8	127.2	142.7	148.0
Iceland	98.9	101.7	114.6	106.9	112.9	89.1
India	96.5	99.0	104.4	102.7	110.9	105.3
Indonesia	122.5	116.7	114.8	134.0	133.4	128.6
Ireland	120.3	123.1	123.6	126.0	133.2	140.8
Israel	84.9	79.7	78.0	78.0	79.4	89.2
Italy	110.2	112.1	111.0	110.9	112.4	114.9
Japan	83.6	84.5	79.4	72.0	66.6	72.7
Kazakhstan	88.9	94.4	100.3	100.9	111.2	124.1
Korea	99.6	100.7	112.5	120.6	119.5	97.3
Kuwait	96.7	91.8	93.7	94.5	95.3	102.2
Latvia	102.8	101.7	96.8	97.7	100.5	106.6
Lebanon	88.4	82.4	79.1	80.9	77.2	72.5
Lithuania	102.8	101.7	96.8	97.7	100.5	106.6
Luxembourg	105.4	106.6	107.2	108.2	109.6	111.5
Malaysia	99.2	94.9	91.4	94.3	101.2	103.3
Malta	108.5	112.9	112.7	113.9	117.3	121.5
Mexico	95.1	90.8	94.2	94.2	94.0	90.0
Morocco	94.6	93.5	91.9	92.9	92.6	93.7
Netherlands	112.5	113.3	112.8	112.0	113.6	115.7
New Zealand	121.7	130.2	137.6	128.2	137.8	128.9
Nigeria	105.0	107.8	124.3	133.3	130.7	144.7
Norway	111.0	107.0	111.2	111.3	112.3	113.4
Oman	95.4	89.6	88.7	88.7	87.4	90.0
Panama	86.4	82.2	87.6	83.4	81.7	82.0
Peru	99.1	98.2	104.0	105.9	106.5	102.3
Philippines	89.1	86.2	92.3	102.5	112.3	118.7
Poland	96.3	96.2	107.6	110.0	114.3	125.6
Portugal	109.6	110.7	110.9	111.6	113.6	115.0
Qatar	95.5	95.4	102.1	110.6	117.8	123.7

**Real Effective Exchange Rate Index (2000 = 100) (Cont.)**

	2003	2004	2005	2006	2007	2008e
Romania	99.1	101.6	119.9	129.0	140.6	134.7
Russia	127.3	137.3	149.3	163.5	172.8	184.1
San Marino	110.2	112.1	111.0	110.9	112.4	114.9
Saudi Arabia	90.5	84.4	82.2	80.8	78.5	80.3
Singapore	94.3	93.3	92.1	94.3	95.1	101.3
Slovakia	119.1	130.5	134.6	142.9	158.3	171.6
Slovenia	104.2	104.1	104.8	101.4	102.5	107.3
South Africa	97.1	107.1	105.7	99.5	90.9	76.9
Spain	109.2	111.4	113.0	115.0	117.3	120.9
Sri Lanka	98.8	95.1	103.6	110.0	115.4	137.5
Sweden	100.2	100.9	97.0	96.9	98.9	97.5
Switzerland	106.4	105.6	104.1	101.9	98.1	103.2
Taiwan	86.6	85.3	87.8	84.8	80.2	79.2
Thailand	96.0	95.5	96.9	105.0	111.1	110.9
Tunisia	92.5	89.3	85.3	84.6	82.3	81.7
Turkey	94.9	98.0	108.1	107.3	116.0	117.5
Ukraine	98.3	96.1	106.0	111.1	113.2	123.1
UAE	97.7	94.3	96.9	102.2	104.1	107.8
UK	96.1	101.8	101.4	103.2	108.0	95.0
US	98.7	94.1	92.8	92.5	88.9	85.8
Uruguay	68.6	68.3	76.6	78.1	79.6	89.0
Venezuela	72.3	70.0	68.3	73.3	81.0	99.0
Vietnam	90.6	89.3	99.8	96.8	100.5	121.9

Source: IMF, BIS, Eurostat and Fitch estimates

## Appendix 6: Equity Prices

### Real Equity Price Index (2000 = 100)

	2003	2004	2005	2006	2007	2008e
Argentina	102.0	141.0	175.1	180.9	195.2	134.0
Armenia	-	-	-	-	-	-
Australia	87.1	98.0	113.7	129.8	150.6	111.5
Austria	110.5	164.9	244.5	316.4	362.9	258.0
Azerbaijan	-	-	-	-	-	-
Bahrain	98.1	128.0	154.7	144.7	150.1	144.6
Belarus	-	-	-	-	-	-
Belgium	63.0	79.7	97.2	116.2	128.4	89.3
Benin	-	-	-	-	-	-
Bermuda	138.7	170.3	181.7	230.0	247.1	210.3
Bolivia	-	-	-	-	-	-
Brazil	67.0	94.4	109.9	143.2	193.9	187.1
Bulgaria	255.1	408.4	599.1	653.1	963.3	582.7
Canada	70.6	82.6	94.0	109.1	119.8	105.4
Chile	114.3	141.1	159.7	157.4	198.1	189.0
China	74.7	70.7	53.1	71.5	173.8	119.2
Colombia	180.9	283.4	502.1	770.1	787.4	630.6
Costa Rica	92.5	65.0	67.7	83.0	127.0	138.6
Croatia	120.4	129.3	187.9	259.4	423.3	260.3
Cyprus	17.6	15.3	19.0	39.4	65.5	35.9
Czech Republic	93.2	132.2	200.9	234.5	272.2	195.8
Denmark	68.1	81.9	100.6	114.8	136.6	104.8
Dominican Rep.	269.4	185.5	180.7	17.8	155.0	393.6
Ecuador	123.1	148.8	174.5	195.9	191.3	167.8
Egypt	119.9	132.7	193.3	231.4	227.6	214.0
El Salvador	-	-	-	-	-	-
Estonia	149.1	204.6	334.6	347.4	418.4	231.3
Finland	36.7	39.2	45.7	56.4	67.9	50.3
France	46.8	54.4	61.8	72.2	79.0	58.5
Georgia	-	-	-	-	-	-
Germany	43.8	53.2	61.5	76.7	93.5	71.7
Greece	41.1	50.6	63.5	77.5	92.3	61.3
Hong Kong	72.1	94.0	104.5	123.3	164.6	137.1
Hungary	77.8	104.2	164.7	187.5	205.2	142.7
Iceland	88.7	160.9	224.9	287.6	350.4	153.0
India	75.5	103.4	131.6	194.4	258.7	232.2
Indonesia	78.6	113.1	135.7	155.0	212.1	174.0
Ireland	72.1	88.8	103.6	124.0	130.5	73.1
Israel	82.9	111.0	134.9	155.0	193.4	154.2
Italy	52.9	59.3	69.2	78.7	84.3	56.8
Japan	62.0	76.4	87.8	113.6	116.9	84.1
Kazakhstan	103.6	145.6	258.5	1068.8	1524.7	1066.3
Korea	84.9	101.4	130.5	154.6	192.0	167.1
Kuwait	256.1	355.1	471.8	457.0	500.5	478.1
Latvia	175.9	223.3	304.9	336.3	313.0	189.0
Lebanon	69.4	84.6	133.2	211.1	174.2	206.2
Lithuania	141.9	224.9	394.6	378.2	435.3	289.0
Luxembourg	48.4	62.1	77.2	98.4	121.4	88.2
Malaysia	79.8	91.0	92.6	94.4	122.8	97.6
Malta	49.9	66.8	89.3	128.2	111.6	91.2
Mexico	81.7	111.5	145.0	197.8	265.8	225.3
Morocco	78.5	96.6	101.3	152.8	206.3	226.6
Netherlands	40.3	44.0	49.5	57.8	63.9	47.2
New Zealand	120.3	148.6	175.2	187.7	206.3	159.1
Nigeria	150.1	200.7	154.4	157.4	257.6	255.4
Norway	65.9	94.9	121.6	152.8	185.2	134.3
Oman	113.5	144.7	178.6	183.8	218.7	250.1
Panama	93.5	105.7	120.0	158.1	198.6	187.6
Peru	121.4	187.8	258.2	480.6	1045.6	714.9
Philippines	67.1	83.8	96.8	110.1	155.3	110.7
Poland	84.7	114.8	137.2	197.0	229.0	230.0
Portugal	44.1	53.6	55.6	68.3	83.8	60.3
Qatar	225.8	340.3	522.1	351.2	301.1	316.4

**Real Equity Price Index (2000 = 100) (Cont.)**

	2003	2004	2005	2006	2007	2008e
Romania	160.7	240.2	384.3	469.0	511.0	285.9
Russia	170.7	178.0	189.4	300.4	319.5	218.5
San Marino	-	-	-	-	-	-
Saudi Arabia	154.8	253.3	417.9	382.3	296.4	351.0
Singapore	75.8	93.8	108.4	124.1	157.3	119.0
Slovakia	172.8	212.3	424.8	380.7	394.1	391.1
Slovenia	140.3	179.4	180.5	197.7	357.1	260.8
South Africa	86.8	100.5	126.4	166.9	203.4	170.4
Spain	54.2	63.4	73.3	87.0	102.8	79.8
Sri Lanka	132.7	165.6	221.4	228.7	231.8	168.3
Sweden	39.8	50.6	59.8	71.8	82.7	57.3
Switzerland	63.7	75.7	90.2	113.7	129.1	99.5
Taiwan	66.5	78.4	79.7	98.9	122.6	103.5
Thailand	134.8	179.5	178.8	178.1	183.8	157.8
Tunisia	67.8	75.8	81.0	97.6	128.8	134.4
Turkey	31.5	46.4	64.9	79.0	88.5	63.6
Ukraine	88.4	176.4	325.9	364.7	668.8	462.7
UAE	129.1	182.1	465.9	349.5	278.7	265.8
UK	58.5	63.6	71.1	79.4	83.8	68.6
US	78.8	87.8	86.9	91.1	102.4	85.7
Uruguay	-	-	-	-	-	-
Venezuela	107.8	161.2	107.2	130.3	113.9	95.0
Vietnam	96.2	139.1	141.2	253.6	466.4	188.2

Source: IMF, Bloomberg and Fitch estimates

## Appendix 7: House Prices

### Real House Price Index (2000 = 100)

	2003	2004	2005	2006	2007	2008e
Australia	140.7	144.8	140.7	145.2	155.4	152.0
Austria	107.6	102.9	105.7	107.1	108.7	105.6
Belgium	127.9	138.4	160.0	174.0	187.0	180.0
Canada	109.7	113.3	115.1	123.8	128.8	127.4
China	106.4	108.8	113.7	116.8	117.6	118.9
Cyprus <sup>a</sup>	-	99.0	100.0	102.3	110.7	118.4
Denmark	106.2	112.9	129.0	153.8	157.8	145.0
Estonia	170.5	214.4	261.2	374.4	373.7	314.1
Finland	109.4	116.3	123.0	129.1	132.0	129.3
France	122.8	139.3	157.3	172.2	179.1	177.1
Germany	97.0	94.8	93.3	92.8	91.7	90.3
Greece	154.3	152.7	163.9	178.2	179.2	173.3
Hong Kong	77.3	101.6	120.0	121.2	131.7	146.8
Iceland	127.1	137.1	171.3	183.6	190.3	180.1
Ireland	144.3	157.8	165.3	181.2	178.0	157.0
Israel	90.7	90.0	89.5	88.2	87.2	90.2
Italy	137.3	147.5	155.9	163.2	167.8	167.2
Japan	89.5	85.3	82.4	80.9	81.5	83.2
Korea	120.8	119.0	120.1	119.6	127.8	129.6
Latvia	205.1	207.3	312.5	437.9	467.4	387.5
Lithuania	112.0	138.9	185.1	247.4	279.6	257.6
Malaysia	104.3	107.0	106.6	105.7	107.6	101.5
Malta	136.3	160.4	170.9	172.3	170.3	160.6
Netherlands	107.8	110.0	113.4	115.2	117.5	118.9
New Zealand	140.0	159.9	179.6	190.7	201.9	180.2
Norway	110.2	117.3	116.6	127.1	135.1	112.0
Poland	104.2	105.6	127.1	160.2	223.3	211.3
Singapore	85.8	82.7	84.5	89.5	104.7	116.3
South Africa	177.2	222.0	258.5	277.9	291.9	272.6
Spain	122.3	135.6	146.8	155.6	159.6	156.5
Sweden	115.5	126.0	135.9	150.0	161.0	160.8
Switzerland	107.4	109.3	110.3	111.2	111.5	112.0
Taiwan	93.2	104.6	107.9	109.6	114.1	129.5
Thailand	104.0	110.3	114.2	113.3	106.9	91.8
UK	151.2	167.5	169.3	189.3	197.0	163.9
US	149.7	172.1	194.8	202.6	188.5	153.7

<sup>a</sup> 2005 = 100

Source: National sources and Fitch estimates

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