Special Report

Bank Systemic Risk Report

Analysts
Richard Fox
+44 20 7417 4357
richard.fox@fitchratings.com

Gerry Rawcliffe
+44 20 7417 4019
gerry.rawcliffe@fitchratings.com

This report is the first semi-annual update of the bank systemic risk indicators introduced by Fitch last July and described in the criteria report published at that time[1]. In the intervening period Fitch has discussed the results and the methodology with a number of investors, market participants, as well as officials in a number of central banks, supervisory authorities, finance ministries and multilateral organisations. The feedback has been generally very positive and Fitch will continue these discussions in order to further enhance the methodology and monitoring process.

There has been a general increase in bank systemic risk in the last six months. Over 40% of countries now exhibit either 'moderate' or 'high' vulnerability to potential systemic stress due to rapid lending growth combined with strong real exchange rate appreciation and/or asset price growth. This compares with less than 30% last time. To a large extent this reflects the inclusion of 2005 data for the first time, which captures advancing credit cycles in several countries, but it also reflects a slight modification of the methodology applied to Central and Eastern Europe, where three-quarters of countries are now in the MPI 2 or MPI 3 categories.

Six countries (previously two) now exhibit the highest level of macro-prudential vulnerability (MPI 3). Of these, **Iceland** is the most extreme case, with huge credit growth and major real exchange rate, equity and property price increases. The picture in **Ireland** is similar in nature though not in degree. Macro-prudential trends in **Norway** and **South Africa**, the latter highlighted in the last report, also give cause for concern. However, all these countries have 'high quality' banking systems, as measured by a Banking System Indicator (BSI) of 'B'. By contrast **Russia** and **Azerbaijan,** which also move into the MPI 3 category, due to the combination of rapid credit growth and appreciating real exchange rates, have weak BSIs, putting them in the weakest area (D3 and E3 respectively) of the Systemic Risk Matrix.

12 countries move from the MPI 1 to the MPI 2 category. These include the **US** and **Luxembourg**, with the result that there are now no countries in the strongest cell (A1) of the Systemic Risk Matrix. Three oil producers – **Saudi Arabia, Qatar** and **Bahrain** – also move to MPI 2, reflecting intermediation of record high oil revenues – as do two emerging markets – **Turkey** and **Vietnam.**

Because of the difficulties in assessing credit trends in CEE, Fitch has modified its methodology slightly as applied to this region, introducing the concept of lending 'speed limits'. This has the effect of moving five countries – **Kazakhstan, Romania, Ukraine**, as well as Azerbaijan and Russia – into higher MPI categories. By contrast, **Hungary** moves from MPI 3 to MPI 2.

Only one BSI changes – Iceland's, from 'C' to 'B'. There is also improvement in Japan, Poland, Saudi Arabia and Turkey, but not enough to affect their BSIs.

[1] 'Assessing Bank Systemic Risk', July 2005

Introduction

This report is the first of what will be semi-annual updates of the bank systemic risk indicators introduced by Fitch last July and described in detail in the criteria report published at that time[2]. In the intervening period, Fitch has discussed the results and the underlying methodology with investors, market participants, as well as officials in a number of central banks, supervisory authorities, finance ministries and multilateral organisations. The feedback has been generally very positive and Fitch will continue these discussions in order to further enhance the methodology and monitoring process over time. We continue to encourage feedback.

The calculation of the Banking System Indicator (BSI), which measures a banking system's intrinsic quality or strength, abstracting from potential support, is unchanged. However, two changes affect the Macro-prudential Indicator (MPI). Firstly, the data on which the assessment is based includes Fitch's best estimates of 2005 outturns; the July report was based on data up to 2004 only. Secondly, Fitch has taken a closer look at the data for Central and Eastern Europe (CEE). In our July report, we noted that the assessment of potential macro-prudential stress was more problematic for CEE countries because many of the required data series were relatively short-lived, in some cases subject to major breaks, and sometimes unavailable. A particular problem is the assessment of trend credit levels in countries where bank lending is rising very rapidly but is still at a relatively low level. As a result of a careful study of these issues, which has benefited from discussion with officials at the European Commission, IMF and EBRD, the latter having adopted a modified version of Fitch's methodology specifically for application in CEE, Fitch has introduced the concept of 'speed limits' on lending growth for CEE countries, which supplements the analysis of credit levels relative to trend applied in other regions. If these speed limits are exceeded, the macro-prudential indicator can be raised to MPI 2 or MPI 3, even if the level of credit remains close to trend. As a result, five countries move into higher MPI categories. Further details are provided later in the report.

The focus of this latest report is on changes since the July report. However, a complete list of the BSI and MPI indicators is provided in the annex.

[2] 'Assessing Bank Systemic Risk', July 2005

Banking System Indicator

The starting point for the analysis of systemic vulnerability is a measure of intrinsic banking system quality, or strength, derived from Fitch's long-standing Individual bank ratings. The Banking System Indicator, or BSI, is a summary measure of banking system quality ranging from 'very high' (BSI A), through 'high' (BSI B), 'adequate' (BSI C), and 'low' (BSI D), to 'very low' (BSI E). It should be recalled that this measure abstracts from potential support from shareholders or governments as the objective of the methodology is to highlight potential systemic stress which might trigger the need for such support.

As explained in the July criteria report, the BSI is essentially a rounded version of the System Average Individual Rating (SAIR), which is an asset-weighted average of Fitch's Individual bank ratings for a critical mass of banks in any banking system.

Relationship of the SAIR to the BSI

SAIR	BSI
A	A
A/B	A
B	B
B/C	B
C	C
C/D	D
D	D
D/E	E
E	E

Source: Fitch

The resulting BSI can be modified where specific systemic risks are present in most banks in a system and it is felt that these are not fully incorporated in existing bank Individual ratings. Nine specific risk categories are identified, including high borrower indebtedness, common lending and deposit concentrations, including foreign currency and sovereign exposure, inter bank exposures, and weaknesses of supervision and/or transparency. For the most part, however, Fitch regards these common risk factors to be already reasonably well incorporated in existing bank Individual ratings.

Given that the BSI is derived from a weighted average of Individual ratings for banks covering at least two-thirds of system-wide assets, a change in the Individual rating of one bank is unlikely to change the system-wide SAIR, and hence the BSI, unless that bank is particularly large or the SAIR is very close to the adjacent category. Over the last six months, although there have been movements within BSI categories, only one country – **Iceland** – has moved to a different BSI category. This is due to improved Individual ratings of the three largest

banks rated by Fitch, from C to B/C. A key factor is the growing diversification of their revenues. Icelandic banks' foreign operations have grown rapidly over the past two years, through a combination of acquisitions and organic growth. Domestic loan growth has also been significant, supported by the rapid expansion of some Icelandic corporates and the entry of commercial banks into the residential mortgage market in 2004, a market until then controlled almost exclusively by the government-owned Housing Financing Fund. Increased diversification has, however, taken place in the context of an accelerating credit boom which, as described in the next section, raises macro-prudential concerns.

In moving to the BSI B category, Iceland joins the majority of developed country banking systems which have a 'strong' (B) Banking System Indicator. The only developed countries that remain in lower BSI categories are Germany, Austria and San Marino at C and Japan at D. **Japan**'s banking system has strengthened since the last report, though this has not been sufficient to move it into a higher BSI category. The banking systems of **Poland**, **Saudi Arabia** and **Turkey** have also strengthened within their existing BSI designation; **Indonesia's** has weakened a little.

■ Macro-Prudential Indicator

This indicator seeks to highlight, in as objective a way as possible, the existence and severity of a set of macro-economic 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 highlights instances of rapid credit growth which bring the ratio of private sector credit to GDP and the real exchange rate or real equity or property prices above long-run trend values by certain trigger amounts.

A high level of vulnerability to potential systemic distress 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 equity or property prices more than 40% above trend
- *or* a real effective exchange rate more than 9% above trend

Moderate vulnerability (MPI 2) occurs when either the ratio of credit to GDP is 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	Close*	Off
Credit/GDP Versus Trend			
>5 Percentage Points Above	3	2	2
>3 Percentage Points Above	2	2	1
<3 Percentage Points Above	1	1	1

* Exchange rate and asset price triggers respectively more than 6% and 30% above trend
Source: Fitch

The methodology makes use of annual data and the results in this report incorporate Fitch estimates of 2005 outturns for the first time. This results in three additional countries falling into the highest (MPI 3) category as credit/GDP and other macro-prudential indicators have moved further away from trend and now breach critical trigger values. These are **Iceland, Ireland** and **Norway. South Africa** remains MPI 3, as described in the July report. (Hungary is no longer designated MPI 3, as explained in the next section)

The credit boom in **Iceland** gives most cause for concern. It has been evident for some time but accelerated further last year and has now reached unprecedented proportions. Private sector credit increased by an estimated 45% of GDP in 2005 and has now doubled in three years. There are a number of factors which help explain this huge increase: bank finance for a number of mega industrial projects; to fund domestic corporate acquisitions and bank and corporate overseas acquisitions; and bank entry into the mortgage market since 2004. The acceleration in bank lending has also been accompanied by an appreciating real exchange rate, especially last year, and a boom in the stock market and domestic property prices. These trends are flattering the financial performance of domestic banks for the time being. However, the risk is that if the credit cycle turns and equity and property prices fall sharply, banks will suffer a deterioration in loan quality with an adverse impact on financial performance. Icelandic banks, through a combination of direct equity holdings and collateralised exposure to Icelandic corporates, have a relatively large exposure to the small and volatile stock market. Inflation is already well above target, interest rates are rising and probably have further to rise.

Iceland: Macro-Prudential Indicators

(% Change)	2003	2004	2005e
Private Credit (% GDP)	135.3	**173.0**	**218.1**
Real Exchange Rate	5.5	2.6	**12.7**
Real Equity Prices	56.7	**54.6**	**8.3**
Real Property Prices	9.5	9.7	34.2

Bolded cells denote when a trigger value is breached
Source: Fitch

Credit has also continued to grow rapidly in **Ireland** and combines with real exchange rate appreciation since 2003 to trigger the MPI 3 designation in 2004 and 2005. Equity and property prices also continue to rise strongly in real terms, although critical values have not yet been breached.

Ireland: Macro-Prudential Indicators

(% Change)	2003	2004	2005e
Private Credit (% GDP)	148.3	**173.7**	**212.9**
Real Exchange Rate	9.7	**2.8**	**6.6**
Real Equity Prices	-7.6	23.3	28.9
Real Property Prices	14.5	5.6	4.5

Bolded cells denote when a trigger value is breached
Source: Fitch

By comparison with Iceland and Ireland, credit growth in Norway has been much less strong. Nevertheless, events in 2005 are sufficient to push Norway into the highest MPI 3 category. The impact of high oil prices on its macro-prudential indicators, notably the real exchange rate and also equity prices is an important contributory factor. (A number of other oil producers have moved into higher MPI categories on the basis of developments in 2005, including Saudi Arabia, Qatar and Bahrain, as described later).

Norway: Macro-Prudential Indicators

(% Change)	2003	2004	2005e
Private Credit (% GDP)	78.9	80.2	**87.7**
Real Exchange Rate	**-0.5**	**-2.8**	**6.6**
Real Equity Prices	44.8	32.0	**33.6**

Bolded cells denote when a trigger value is breached
Source: Fitch

South Africa remains in the MPI 3 category. It has seen a substantial increase in credit to GDP, the real exchange rate and real equity prices since their most recent lows in 2002. Private sector credit has risen by more than 20% of GDP over this period while the real exchange rate has strengthened by one-third and real equity prices by almost half. Property prices are also at unprecedented levels; even allowing for some change in trend since the mid-1990s, Fitch estimates that real property prices exceed their trend by one-third.

S. Africa: Macro-Prudential Indicators

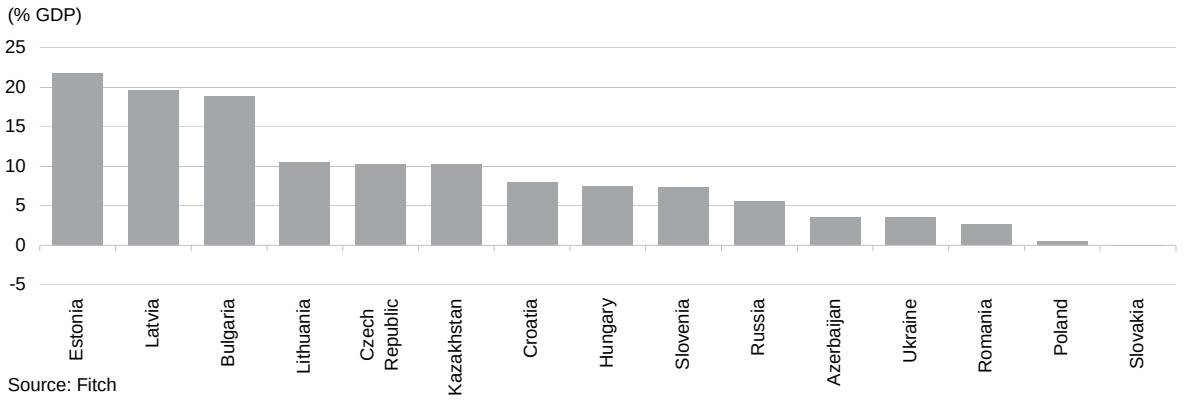
(% Change)	2003	2004	2005e
Private Credit (% GDP)	**82.4**	**82.6**	**91.1**
Real Exchange Rate	29.8	**10.0**	**-7.0**
Real Equity Prices	7.3	1.0	**35.6**
Real Property Prices	15.3	24.4	11.0

Bolded cells denote when a trigger value is breached
Source: Fitch

While there are reasons to expect credit:GDP to rise more rapidly in South Africa than in the past, as bank and credit penetration increases, the pace at which this is happening could nonetheless be problematic. The process has some similarities with previous periods of banking sector liberalisation in many developed countries, which was often followed by systemic problems, though to varying degrees. South Africa has also seen major swings in the exchange rate since the Rand was floated and a future period of Rand weakness cannot be ruled out. This could increase inflationary pressures, causing the central bank to raise interest rates in order to keep inflation within target. This in turn would increase debt service costs and perhaps trigger a correction of property prices, causing difficulties for some borrowers and potentially jeopardising bank loan quality.

Virtually all the countries in the table below, currently experiencing rapid credit growth, exhibit at least moderate (MPI 2) vulnerability to potential systemic distress. The number of countries in this category has increased from 21 in July 2005 to 30 in the current report. Amongst developed countries

CEE Private Sector Credit Growth
2003–2005



Source: Fitch

such as **Luxembourg, Malta, New Zealand** and the **USA,** this reflects, for the most part, the progression of ongoing credit cycles. In **Saudi Arabia, Qatar and Bahrain** it reflects a general phenomenon currently evident in Gulf oil producers of rapid credit growth as record high oil revenues are intermediated by banks. (Kuwait is already designated MPI 2. However, the UAE does not yet fall into this category since rapid increases in credit have not yet been sufficient to lift credit:GDP the requisite degree above trend). In **Turkey** it reflects continued rapid recovery of credit from the lows reached in the 2001-2 financial crisis and in **Vietnam** it accompanies the accelerating pace of economic growth.

■ Central and Eastern Europe

The assessment of macro-prudential risk is problematic in Central and Eastern Europe for a number of reasons, as explained in Fitch's July 2005 criteria report. Firstly, the key credit data is sometimes only available from the mid-1990s and is then often subject to major discontinuities as these countries experienced jarring changes in the early stages of the transition to market economies. Secondly, credit series are also subject to discontinuity as definitions have converged on IMF and EC norms. The same is also true, to a slightly lesser extent, for the real exchange rate data. Thirdly, property price data is largely unavailable and even equity price data is lacking for a few countries e.g. Azerbaijan and Kazakhstan.

Finally, and more fundamentally, even when a reliable credit series is available, structural changes in these economies make it difficult to assess the most appropriate period for measuring trends. Many countries experienced drops in the ratio of private credit to GDP at some (and different) points in the 1990s, associated with economic or banking sector crises, only to be followed by inexorable rapid credit growth as the process of convergence has gathered pace. On the one hand, structural breaks mean that the experience of the early or mid-1990s appears to have little relevance to current dynamics. At the same time, starting to measure trends from the late 1990s may also be misleading as the period may relate mainly to the boom phase of the economic or credit cycle and may not be sustainable. In some countries, the period has also included perhaps temporary factors, such as the exceptional initial bounce-back from economic crises, unusually high oil prices, positive news on EU accession and the release of pent up demand after bank work-outs and privatisations.

Fitch would expect a rapid pace of deepening of financial intermediation as part of the convergence process as countries' financial structures and income levels converge on Western European levels. However, economic theory does not provide clear answers about a safe speed of financial convergence. And although fundamentals may justify rapid expansion, excessive optimism and banks' aggressive pursuit of market share in the context of low interest rates, open capital accounts and, in many countries, pegged exchange rates, may give rise to over-lending or poor quality lending and subsequent problems in banking sectors, particularly in the event of negative shocks.

In only three countries - Estonia, Poland and Slovakia - has credit:GDP showed signs of slowing to a more moderate pace or, in the case of Slovakia, actually declining. At the same time, the sheer pace of credit growth in many countries, while having been sustained up to now, nevertheless raises concerns about longer term sustainability.

Hungary, which was designated MPI 3 in the previous report, is one country where credit data go back to the early 1990s. However, as in Azerbaijan, Czech Republic, Croatia, Kazakhstan, Lithuania, Poland and Slovenia, credit fell sharply as a percentage of GDP in the early 1990s before beginning its subsequent long and rapid increase. Given the similarity of Hungary's historical credit pattern to that of other CEE countries, Fitch has re-estimated the credit trend in Hungary from the mid- rather than the early-1990s, with the result that trend credit growth increases appreciably from about 1% to about 3% of GDP per annum. Using this updated credit trend leaves the current level of credit:GDP just below the 5% divergence trigger rather than significantly above it, with the result that Hungary's macro-prudential score is reduced from MPI 3 to MPI 2. The real exchange rate and real equity prices continue to exceed their trigger values. It is worth noting that if credit were to grow at the same pace in 2006 as in 2005, Hungary's macro-prudential score would remain MPI 2.

The EBRD's 2005 Transition Report introduced its own version of Fitch's Bank Systemic Risk methodology, for application solely to its client countries. In so doing it faced the same problem of defining parameters for credit growth as described above. Rather than measuring the divergence of credit from trend, the EBRD instead bases its MPI assessment on a threshold credit growth of 15% per annum in real terms over a two year period. If this threshold is breached, a country is designated at least MPI 2.[3] Higher designations require in addition that the real exchange rate or real asset prices also be

[3] EBRD designates four MPI categories. MPI 1 and MPI 2 are the same as Fitch's but Fitch's MPI 3 is subdivided into two categories – MPI 3 and MPI 4 - depending on whether either one or both of the real exchange rate and real equity price triggers are activated.

above trend, in a similar way to the Fitch methodology. Fitch agrees that the concept of a 'speed limit' on credit growth in CEE countries is a useful adjunct to the analysis of bank macro-prudential trends in this region, certainly until it is possible to estimate more precise credit trends, for example when these countries have been through a full credit cycle. Fitch therefore proposes to adopt the EBRD's speed limit of an average annual increase in real private sector credit of 15% over two years. The table below shows that credit growth in nine out of the 15 CEE countries exceeds this speed limit in 2004-5. Yet in four of these countries – Azerbaijan, Russia, Romania and Ukraine – credit has not risen significantly as a percentage of GDP.

CEE Credit Growth – 2004-5

	Average Annual Real Credit Growth (%)	Change in Credit: GDP (% Points)
Azerbaijan	41.7	1.6
Estonia	38.5	10.9
Kazakhstan	36.5	5.2
Bulgaria	36.3	9.5
Latvia	34.1	9.9
Lithuania	32.9	5.3
Romania	23.7	1.3
Russia	19.7	2.8
Ukraine	15.3	1.8
Slovenia	13.0	3.7
Hungary	12.7	3.8
Croatia	11.7	4.0
Czech Republic	9.8	5.2
Poland	4.8	0.3
Slovakia	3.6	0.0

Source: Fitch estimates

Application of this speed limit approach has resulted in Fitch raising the MPI score for five countries in the CEE region: **Azerbaijan** (from 1 to 3); **Russia** (from 2 to 3); and **Kazakhstan, Romania** and **Ukraine** (from 1 to 2). In both Azerbaijan and Russia, it is recent real exchange rate appreciation which triggers the highest (MPI 3) designation.

■ Systemic Risk Matrix

The Systemic Risk Matrix brings together the two systemic risk indicators, the BSI and MPI, and emphasises their complementarity.

Fitch regards high MPI scores being of most concern where the banking system is already weak, as measured by a high BSI. Weaker banking systems are less able to absorb increased stress of the type that a high macro-prudential indicator may portend. Thus, for a given BSI, countries with higher MPI scores present more cause for concern; and for a given MPI, countries with weaker BSI scores suggest potentially more problematic situations.

The updated Systemic Risk Matrix features a number of changes.

- With the movement of Luxembourg and the USA from 'A1' to 'A2', there are no longer any countries in the strongest (A1) cell of the matrix.
- The elevation of Azerbaijan and Russia to MPI 3 puts these two countries in the highest risk cells of the matrix. By contrast, the other four MPI 3 countries – Iceland, Ireland, Norway and South Africa – all have 'strong' banking systems (BSI B), putting them in a strong position to weather the problems that a downturn in the credit cycle might bring in terms of loan quality deterioration
- Of the 15 countries with 'weak' or 'very weak' banking systems and exhibiting 'moderate' or 'high' macro-prudential vulnerability, 11 are in CEE (Azerbaijan, Bulgaria, Croatia, Hungary, Kazakhstan, Latvia, Lithuania, Romania, Russia, Turkey and Ukraine) two are in Latin America (Costa Rica and Dominican Republic), one in the Middle East (Iran) and one in Asia (Vietnam).

Bank Systemic Risk Matrix

	Macro-Prudential Indicator		
Banking System Indicator	**1**	**2**	**3**
A		Australia, Luxembourg Netherlands UK, USA	
B	Belgium, Bermuda Canada, Chile Denmark, France Hong Kong, Italy Singapore, Sweden Switzerland	Estonia Finland Greece Kuwait New Zealand Portugal Saudi Arabia Spain	Iceland Ireland Norway South Africa
C	Austria, Czech Rep. Germany, Korea Malaysia, Mexico Slovenia, UAE	Bahrain Malta Qatar San Marino	
D	Benin, Brazil Colombia, Cyprus El Salvador, India Indonesia, Israel Japan, Lebanon, Oman Panama, Peru Philippines, Poland Slovakia Taiwan, Thailand Venezuela	Bulgaria Costa Rica Croatia Hungary Kazakhstan Latvia Lithuania Romania Turkey Ukraine	Russia
E	Argentina, Bolivia, China, Ecuador Egypt, Tunisia Uruguay	Dominican Republic Iran Vietnam	Azerbaijan

Source: Fitch

Annex: Results

Banking System Indicator (BSI) and Macro-prudential Indicator (MPI)

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