

Best Markets for Entrepreneurial Finance

2005 Capital Access Index

Securitization in Financing Economic Activities

James R. Barth, Tong Li, Sangeetha Malaiyandi, Donald McCarthy,
Triphon Phumiwasana and Glenn Yago

The Milken Institute is an independent economic think tank whose mission is to improve the lives and economic conditions of diverse populations in the U.S. and around the world by helping business and public policy leaders identify and implement innovative ideas for creating broad-based prosperity. We put research to work with the goal of revitalizing regions and finding new ways to generate capital for people with original ideas.

We do this by focusing on *human capital* – the talent, knowledge and experience of people, and their value to organizations, economies and society; *financial capital* – innovations that allocate financial resources efficiently, especially to those who ordinarily would not have access to it, but who can best use it to build companies, create jobs and solve long-standing social and economic problems; and *social capital* – the bonds of society, including schools, health care, cultural institutions and government services, that underlie economic advancement.

By creating ways to spread the benefits of human, financial and social capital to as many people as possible – *the democratization of capital* – we hope to contribute to prosperity and freedom in all corners of the globe.

We are nonprofit, nonpartisan and publicly supported.



Table of Contents

I. Executive Summary 1

II. Best Markets for Entrepreneurial Finance: 2005 Capital Access Index 7

III. Securitization and Financing of Economic Activities..... 12

IV. Conclusions 40

V. References41

VI. Appendices..... 44



Executive Summary

Entrepreneurship is a defining component of a market economy and a key driver of economic growth and development. To encourage entrepreneurship, however, an economy must have well-functioning financial institutions and capital markets, educated and skilled workers, and few impediments to the competitive trading of goods and services.

The fundamental objective of the Capital Access Index (CAI) is to evaluate the ability of new and existing businesses to access capital in countries around the world. This is important because the ability of businesses to access capital is crucial for entrepreneurship. The index also indicates which countries have yet to take adequate action to reduce barriers to capital access and promote the development of necessary financial infrastructures that support entrepreneurial activities.

Key Findings

- The United Kingdom moves to first place in the ability of entrepreneurs to access capital.
- Among the countries in the top half of the Index, New Zealand emerges as the country with the largest improvement in its score (from 6.60 in 2004 to 7.04 in 2005), while Mexico and Bulgaria moved up the most in the rankings (eight positions). Another country that improved considerably in this year's Index is Argentina, which jumped 10 positions from 76th in 2004 to 66th in 2005.
- Malaysia (16) and Chile (18) rank high in capital access, ranking among the most industrialized countries.
- The Philippines (down nine positions) and Thailand (down six) suffered large declines in capital access, and Asian countries in general show a continued lack of progress in bond market development, despite reform measures taken since the Asian Crisis.
- Ongoing weaknesses continue in Africa: 17 of the bottom 20 countries on the Index are in Africa.
- A country with the issuance securitized financial instruments, on average, has a 2.39-point higher capital access score than a country with no issuance, showing the value of this key financial innovation. (The median score for all 121 countries is 4.34.)
- By diversifying risk and increasing liquidity, a broader securitization of home and commercial mortgages, receivables and business loans could substantially increase overall capital access and economic growth.
- The securitization of mortgage loans has not only lowered the cost of mortgages and expanded credit where available, but also allowed for the removal of illiquid assets from bank balance sheets, insulating those institutions more from financial shocks.
- The United States and Western Europe account for 90 percent of the regional share of global securitization; recent activities in Asia, Latin America and Eastern Europe will be important for future financial expansion and economic growth.



Due to the greater integration of the world's financial markets and a series of technological and financial innovations, the cost of financing economic activity has significantly declined. This is a result of stronger linkages between entrepreneurs and the investors who are willing to provide funds in exchange for a share of the potential upside gains from start-up operations. As a result, more innovative ideas make it to the marketplace, technological progress accelerates, and overall social welfare improves.

The annual Index always includes an in-depth analysis of a topic that explores how to enhance access to financial capital. This year the accompanying report focuses on how securitization, a relatively new innovation, helps finance economic activities. This is important, because our research shows that individuals and businesses in countries that are actively engaged in securitization or have the necessary infrastructure to support securitization are better able to access funds and accelerate economic growth.

Significant improvements have been made in this year's Capital Access Index. The index integrates several new variables that are important to the financing of economic activity, including credit card usage, syndicated lending practices, the availability of credit information, and the issuance of securitized instruments. As a result the number of countries covered by the index has increased to 121 from 88 last year; these countries account for 82 percent of world land area, 93 percent of world population, 92 percent of world GDP and 90 percent of world financial assets.

2005 Capital Access Index Ranking

Table 1 presents the 2005 Capital Access scores for the 121 countries covered. The United Kingdom moved to first place in this year's Index, from eighth place in 2003 and third place in 2004. In 2005, Hong Kong is in second place and Singapore in third.

This year's Capital Access Index:

- Expands coverage to 121 countries representing 92 percent of global GDP.
- Ranks countries according to the ability of new and existing entrepreneurs to finance their strategies and investments for job creation and capital formation.
- Identifies the fundamental factors that collectively indicate the strength of a country's financial markets and its ability to accelerate economic growth – or expose it to economic shocks that can negatively affect its prospects for growth because of gaps in the financial system.
- Details the depth and breadth of each country's financial system, including macroeconomic environment, strength of economic institutions, financial and banking institutions, equity and bond markets, availability of alternative sources of capital and ability to access funds internationally.
- Provides an in-depth look at the evolution and diffusion of securitization, one of the most important financial innovations.



Table1: 2005 Capital Access Index

RANK 2005	RANK 2004	COUNTRY	CAI 2005	0	MEAN: 4.59	10	RANK 2005	RANK 2004	COUNTRY	CAI 2005	0	MEAN: 4.59	10
1	3	United Kingdom	8.01				62	77	Papua New Guinea	4.31			
2	1	Hong Kong, China	7.84				63	65	Croatia	4.30			
3	2	Singapore	7.77				64	59	Sri Lanka	4.27			
4	6	United States	7.75				65	62	Armenia	4.26			
5	4	Sweden	7.62				66	76	Argentina	4.23			
6	9	Denmark	7.61				67	67	Dominican Republic	4.13			
7	7	Australia	7.60				68	60	Botswana	4.11			
8	13	Norway	7.47				69	63	Jamaica	4.09			
9	5	Finland	7.46				70	68	Moldova	3.93			
10	10	Canada	7.42				71	74	Ghana	3.88			
10	11	Ireland	7.42				71	84	Ukraine	3.88			
12	7	Switzerland	7.39				73	72	Kenya	3.87			
13	12	Netherlands	7.20				74	73	Macedonia	3.79			
14	18	New Zealand	7.04				74	70	Pakistan	3.79			
15	16	Germany	6.93				76	71	Nicaragua	3.78			
16	14	Malaysia	6.88				77	81	Mongolia	3.73			
17	15	Spain	6.80				77	79	Uganda	3.73			
18	18	Chile	6.78				79	69	Iran	3.66			
19	21	Japan	6.76				80	94	Venezuela	3.65			
20	17	France	6.62				81	75	Romania	3.62			
21	20	Estonia	6.59				82	77	Tanzania	3.60			
22	26	Austria	6.41				83	92	Syria	3.59			
23	28	South Korea	6.37				84	82	Honduras	3.53			
24	29	South Africa	6.36				85	84	Uruguay	3.48			
25	23	Taiwan, China	6.34				86	79	Bosnia & Herzegovina	3.46			
26	25	Portugal	6.31				87	99	Bangladesh	3.43			
27	27	Israel	6.19				88	96	Belarus	3.36			
28	22	Belgium	6.17				88	90	Mozambique	3.36			
29	32	Greece	5.85				90	88	Bolivia	3.32			
30	24	Thailand	5.71				91	86	Guatemala	3.30			
31	30	Italy	5.66				92	89	Egypt	3.24			
32	34	Czech Republic	5.58				93	90	Lesotho	3.19			
33	36	Saudi Arabia	5.56				94	101	Burkina Faso	3.18			
34	37	Kuwait	5.52				94	83	Nigeria	3.18			
35	35	Lithuania	5.51				96	93	Cambodia	3.14			
36	31	Hungary	5.36				97	97	Paraguay	3.12			
37	41	Oman	5.30				98	87	Vietnam	3.10			
38	43	China	5.17				99	95	Zambia	3.07			
39	42	United Arab Emirates	5.14				100	111	Mauritania	3.03			
40	33	Brazil	5.13				101	97	Senegal	2.92			
40	39	Panama	5.13				102	102	Angola	2.88			
42	47	Jordan	5.11				103	109	Benin	2.80			
43	51	Mexico	5.05				104	105	Malawi	2.74			
43	44	Slovak Republic	5.05				104	115	Sierra Leone	2.74			
45	46	Poland	4.98				106	117	Niger	2.67			
46	39	Latvia	4.92				107	100	Haiti	2.66			
47	45	El Salvador	4.90				108	110	Burundi	2.59			
48	38	Lebanon	4.87				108	107	Mali	2.59			
49	48	Peru	4.69				110	114	Rwanda	2.57			
50	57	Colombia	4.68				111	107	Togo	2.56			
51	49	Russia	4.67				112	106	Ethiopia	2.55			
51	54	Tunisia	4.67				113	113	Cameroon	2.54			
53	61	Bulgaria	4.58				114	111	Yemen	2.50			
53	51	India	4.58				115	119	Central African Republic	2.46			
55	58	Slovenia	4.56				115	103	Zimbabwe	2.46			
56	55	Costa Rica	4.49				117	118	Laos	2.36			
57	53	Indonesia	4.48				117	103	Madagascar	2.36			
58	49	Philippines	4.44				119	116	Guinea	2.24			
59	56	Morocco	4.40				120	121	Republic of Congo	1.63			
60	66	Turkey	4.37				121	120	Chad	1.62			
61	64	Namibia	4.34										

The U.K. rose to the top primarily because of its vibrant equity market. Over the past few years, the London Stock Exchange has had lower volatility and an expanded number of listings. In addition, the liquidity of the market as measured by traded value to capitalization has increased considerably.

Hong Kong has maintained its ranking as one of the top two countries in the world for business financing for three consecutive years. The financial environment in Hong Kong is among the world's best. It has a sound banking system, a relatively large equity market and many alternative sources of business funding, including



venture capital. The development of the bond market and related supporting institutional infrastructures, such as collateral registering and bankruptcy processes, however, still lag behind those of industrialized nations.

Like Hong Kong, a modern financial infrastructure has allowed Singapore to maintain its ranking within the top five countries. The bond market in Singapore (which was already larger than Hong Kong's market as a percent of GDP) expanded further in 2004, while that of Hong Kong contracted. Asset-backed securities as a percent of GDP in Singapore are nearly double the ratio in Hong Kong. However, the use of alternative sources of funding and the overall institutional environment for business financing score lower than in Hong Kong.

Although not regaining its 2003 ranking, the United States (in fourth place) improved its ranking from sixth place last year. This improvement was due to an improved economic environment, with greater interest rate stability in 2004 compared with 2003. In particular, the U.S. equity market relative to GDP was larger, more liquid, and most importantly, less volatile than it was in 2003.

Among the top 10 countries, more favorable macroeconomic environments contributed to the higher CAI scores for six countries. At the same time, eight of the top 10 countries scored lower than they would have otherwise because of a low level of alternative sources of funding. Among the top 10, Sweden (5th) declined one place, whereas Denmark's ranking (6th) improved three places. Australia's (7th) ranking, however, remained unchanged while Norway (8th) was a new addition to the top 10 this year, ranking just ahead of Finland, which fell to ninth place from fifth place in 2004. Canada and Ireland tied for the 10th rank this year, while Switzerland dropped out of the top 10, falling to 12th place.

Among those countries in the top half of the Index, New Zealand (14th) showed the largest improvement in terms of its capital access score, and moved up four spots; Mexico and Bulgaria moved up the most in the rankings (eight positions). Another country that moved up considerably in this year's Index is Argentina, which jumped 10 positions – from 76th in 2004 to 66th in 2005.

New Zealand in 2004, venture capital as a percent of GDP was nearly nine times greater than it was the previous year, and credit card usage grew significantly faster than GDP growth. In addition, the New Zealand Stock Exchange also performed relatively well in 2004, with higher market capitalization, more liquidity, less volatility and additional listings.

In 2005, Thailand had the biggest decline in CAI score, dropping six places in the ranking, to 30th. A higher inflation rate caused by its heavy dependence on imported oil, and greater interest rate volatility were the major causes of the decline. Another Asian country that fell considerably in the Index is the Philippines, which dropped nine places to 58th.



An important finding among the lower 50 percent of countries is a significant improvement in the CAI score for Argentina, which displayed the second largest improvement among those countries.¹ The improvement was mainly due to a better macroeconomic environment, including significantly lower inflation and interest rates, as well as less volatility in 2004.

Table 2 shows the Capital Access Index and its sub-components by regions. Though Asian countries have the highest average CAI scores among developing regions, the level of capital access still lags those of industrialized countries. As the table illustrates, Asia's sound macroeconomic environment is the strongest component contributing to its CAI score, while bond market development is its weakest component.²

Table 2: Average of Sub-components for 2005 Capital Access Index by Region³

	2005 CAI	Macroeconomic Environment (ME)	Economic Institutions (IE)	Financial and Banking Institutions (FI)	Equity Market (EM)	Bond Market (BM)	Alternative Capital (AC)	International Access (IA)
Industrialized Countries	7.02	7.23	7.82	7.11	7.02	6.76	6.23	5.48
Africa	3.12	4.85	4.22	3.11	1.31	0.18	0.75	3.15
Americas and the Caribbean	4.22	5.68	4.79	4.06	2.51	1.97	3.12	4.34
Asia	4.87	6.12	5.41	5.00	4.28	2.90	3.21	4.51
Europe	4.57	6.61	5.01	4.90	2.63	1.95	2.66	4.48
Middle East	4.61	7.18	5.03	4.65	3.67	1.23	2.06	3.94

Six of the seven sub-category scores for the Asian countries are higher than those in other developing regions. The only exception is that of macroeconomic environment; scores for this category are higher in the Middle East than in Asia, due to the fact that both personal and corporate income tax rates in some Middle

¹ Papua New Guinea achieved the largest improvement in its CAI score, moving from 77th place to 64th. This improvement was due to the significant reduction in the inflation rate—to two from 14 percentage points in 2003, which in turn lowered interest rates and their volatility. Madagascar showed the biggest decline, dropping 14 places to 118th. Its downward shift was due mainly to higher inflation plus higher and more volatile interest rates. In addition, bank lending to the private sector declined almost 80 percent from a year earlier. Papua New Guinea achieved the largest improvement in its CAI score, moving from 77th place to 64th. This improvement was due to the significant reduction in the inflation rate—to two from 14 percentage points in 2003, which in turn lowered interest rates and their volatility.

² See Barth and Yago, *Milken Institute Series on Financial Innovation and Economic Growth, Asia's Debt Capital Market Prospects and Strategies for Development*, (forthcoming).

³The classification of regions is similar to the International Financial Statistics released by the International Monetary Fund, except for Hong Kong and Singapore, which are classified as industrialized countries.



East countries are zero.⁴ Oil revenues help some governments finance public infrastructure, allowing corporations and individuals in those countries to retain more income due to lower tax rates and use it as an internal source of capital.

Developing countries in Europe rank higher than those in the Americas and the Caribbean. Europe has better macroeconomic environments, economic institutions, financial and banking institutions, equity markets and international access, while the Americas and the Caribbean have an edge in both bond markets and alternative sources of capital.

Africa as a region has the lowest capital access score in the world, with relatively few countries having equity markets and almost none having bond or alternative sources of capital. Of the bottom 20 countries on the Index, 17 are in Africa. The two most important sources of capital in Africa are international capital and domestic banking institutions.

Though the scores show that the weakest factor in terms of capital access in Africa is the weak development of bond markets, it is even more important to stress that the macroeconomic environment and economic institutions in the region are also very weak. Strength in these latter two factors is crucial to developing well-functioning financial institutions, equity markets, bond markets and alternative sources of capital, which are important for entrepreneurship and economic prosperity.

⁴Saudi Arabia and Kuwait are the only two countries with a perfect macroeconomic environment score. Both not only have tax-free environments, but they have low inflation and interest rates.



I. Best Markets for Entrepreneurial Finance: 2005 Capital Access Index

The fundamental objective of this report is to evaluate the ability of individuals and businesses to access capital in countries around the world. The Milken Institute Capital Access Index (CAI) assigns scores to more than 100 countries based upon the ability of individuals and businesses to gain access to financial capital.

This year the index encompasses seven broad dimensions of capital access. Underlying these seven categories are 56 quantitative and qualitative variables from multiple data sources.⁵ These variables collectively capture the diverse elements underlying the progress being made by country in the democratization of capital.

Due to changes in methodology this year, Table 3 includes comparable 2003 and 2004 CAI scores for purposes of comparison of rankings over time. (Scores were assigned to new countries on the Index for all three years, while scores for previous countries were recalculated for 2003 and 2004 based on the new methodology.) For the three years in question, there has been relatively little change in terms of the average score for all countries. The average scores for the 121 countries in 2003, 2004 and 2005 are 4.57, 4.60 and 4.59, while the median scores are 4.21, 4.37 and 4.34, respectively.

Between 2004 and 2005, financial and banking institutions, followed by international access, were the two subcategories most responsible for lowering scores. The average score for the top half of countries was 2.72 (5.94-3.24) points higher than for the bottom-half. Though the relative spreads in CAI scores within the top half and the bottom half countries were not very different, relative changes in the individual rankings among the bottom countries varied more than in the top half.

⁵ See Appendix I for definitions, sources, composition of sub-categories. Appendix II shows the seven sub-category scores for 121 countries.

Table 3: Capital Access Index and Country Rankings⁶

	2005		2004		2003	
	CAI	Rank	CAI	Rank	CAI	Rank
United Kingdom	8.01	1	7.92	3	7.67	8
Hong Kong, China	7.84	2	8.00	1	7.86	2
Singapore	7.77	3	7.99	2	7.77	5
United States	7.75	4	7.76	6	7.96	1
Sweden	7.62	5	7.81	4	7.82	3
Denmark	7.61	6	7.61	9	7.50	9
Australia	7.60	7	7.63	7	7.79	4
Norway	7.47	8	7.33	13	7.48	10
Finland	7.46	9	7.78	5	7.68	7
Canada	7.42	10	7.53	10	7.31	13
Ireland	7.42	10	7.52	11	7.32	12
Switzerland	7.39	12	7.63	7	7.77	5
Netherlands	7.20	13	7.51	12	7.47	11
New Zealand	7.04	14	6.60	18	7.02	16
Germany	6.93	15	7.06	16	7.04	15
Malaysia	6.88	16	7.22	14	7.18	14
Spain	6.80	17	7.08	15	6.81	17
Chile	6.78	18	6.60	18	6.14	27
Japan	6.76	19	6.55	21	6.59	19
France	6.62	20	6.62	17	6.80	18
Estonia	6.59	21	6.57	20	6.06	28
Austria	6.41	22	6.26	26	6.30	23
South Korea	6.37	23	6.20	28	6.44	20
South Africa	6.36	24	6.03	29	6.20	25
Taiwan, China	6.34	25	6.43	23	6.30	23
Portugal	6.31	26	6.29	25	6.16	26
Israel	6.19	27	6.21	27	5.85	29
Belgium	6.17	28	6.51	22	6.43	21
Greece	5.85	29	5.58	32	5.59	31
Thailand	5.71	30	6.30	24	6.33	22
Italy	5.66	31	5.67	30	5.62	30
Czech Republic	5.58	32	5.46	34	5.45	32
Saudi Arabia	5.56	33	5.40	36	4.75	50
Kuwait	5.52	34	5.21	37	5.40	34
Lithuania	5.51	35	5.41	35	5.12	40
Hungary	5.36	36	5.59	31	5.43	33
Oman	5.30	37	5.08	41	5.21	39
China	5.17	38	5.04	43	5.38	35
United Arab Emirates	5.14	39	5.07	42	4.99	45
Brazil	5.13	40	5.56	33	5.35	36
Panama	5.13	40	5.09	39	5.26	37
Jordan	5.11	42	4.91	47	5.00	44
Mexico	5.05	43	4.69	51	4.81	48
Slovak Republic	5.05	43	4.99	44	5.12	40
Poland	4.98	45	4.93	46	4.39	57
Latvia	4.92	46	5.09	39	4.88	46
El Salvador	4.90	47	4.94	45	5.12	40
Lebanon	4.87	48	5.13	38	5.22	38
Peru	4.69	49	4.79	48	5.03	43
Colombia	4.68	50	4.56	57	4.64	52
Russia	4.67	51	4.71	49	3.85	72
Tunisia	4.67	51	4.67	54	4.79	49
Bulgaria	4.58	53	4.37	61	4.13	63
India	4.58	53	4.69	51	4.83	47
Slovenia	4.56	55	4.50	58	4.18	62
Costa Rica	4.49	56	4.63	55	4.69	51
Indonesia	4.48	57	4.68	53	4.40	56
Philippines	4.44	58	4.71	49	4.63	54
Morocco	4.40	59	4.57	56	4.35	58
Turkey	4.37	60	4.21	66	3.96	67
Namibia	4.34	61	4.32	64	4.21	61
Papua New Guinea	4.31	62	3.63	77	3.63	79
Croatia	4.30	63	4.26	65	3.94	69

⁶“Country” in this report does not always refer to a territorial entity that is a state as understood by law and practice; the term also covers non-sovereign territorial entities, for which data are provided on a separate basis.



Table 3: Capital Access Index and Country Rankings (continued)

	2005		2004		2003	
	CAI	Rank	CAI	Rank	CAI	Rank
Sri Lanka	4.27	64	4.48	59	4.26	60
Armenia	4.26	65	4.36	62	4.32	59
Argentina	4.23	66	3.67	76	3.79	74
Dominican Republic	4.13	67	4.14	67	3.95	68
Botswana	4.11	68	4.47	60	4.64	52
Jamaica	4.09	69	4.35	63	4.51	55
Moldova	3.93	70	4.07	68	4.07	64
Ghana	3.88	71	3.82	74	3.66	78
Ukraine	3.88	71	3.53	84	3.61	81
Kenya	3.87	73	3.89	72	4.00	66
Macedonia	3.79	74	3.88	73	3.75	76
Pakistan	3.79	74	3.94	70	4.02	65
Nicaragua	3.78	76	3.91	71	3.90	71
Mongolia	3.73	77	3.58	81	3.85	72
Uganda	3.73	77	3.60	79	3.78	75
Iran	3.66	79	3.95	69	3.27	93
Venezuela	3.65	80	3.17	94	3.12	95
Romania	3.62	81	3.68	75	3.46	87
Tanzania	3.60	82	3.63	77	3.94	69
Syria	3.59	83	3.22	92	3.61	81
Honduras	3.53	84	3.56	82	3.56	83
Uruguay	3.48	85	3.53	84	3.55	84
Bosnia and Herzegovina	3.46	86	3.60	79	3.63	79
Bangladesh	3.43	87	3.00	99	3.12	95
Belarus	3.36	88	3.11	96	2.93	99
Mozambique	3.36	88	3.27	90	3.32	91
Bolivia	3.32	90	3.41	88	3.55	84
Guatemala	3.30	91	3.52	86	3.44	88
Egypt	3.24	92	3.30	89	3.69	77
Lesotho	3.19	93	3.27	90	3.36	89
Burkina Faso	3.18	94	2.82	101	2.80	104
Nigeria	3.18	94	3.54	83	3.30	92
Cambodia	3.14	96	3.18	93	3.36	89
Paraguay	3.12	97	3.07	97	2.86	100
Vietnam	3.10	98	3.45	87	3.47	86
Zambia	3.07	99	3.14	95	3.17	94
Mauritania	3.03	100	2.54	111	2.59	112
Senegal	2.92	101	3.07	97	2.73	108
Angola	2.88	102	2.81	102	2.82	102
Benin	2.80	103	2.71	109	2.57	113
Malawi	2.74	104	2.76	105	2.77	106
Sierra Leone	2.74	104	2.40	115	2.95	98
Niger	2.67	106	2.36	117	2.25	119
Haiti	2.66	107	2.90	100	3.02	97
Burundi	2.59	108	2.67	110	2.83	101
Mali	2.59	108	2.72	107	2.54	115
Rwanda	2.57	110	2.45	114	2.81	103
Togo	2.56	111	2.72	107	2.43	116
Ethiopia	2.55	112	2.73	106	2.78	105
Cameroon	2.54	113	2.50	113	2.61	111
Yemen	2.50	114	2.54	111	2.63	110
Central African Republic	2.46	115	2.33	119	2.41	117
Zimbabwe	2.46	115	2.79	103	2.75	107
Laos	2.36	117	2.35	118	2.30	118
Madagascar	2.36	117	2.79	103	2.56	114
Guinea	2.24	119	2.39	116	2.68	109
Republic of Congo	1.63	120	1.80	121	1.73	120
Chad	1.62	121	1.81	120	1.69	121



The top 20 and bottom 20 country rankings offer several striking features. For example, 18 of the top 20 are industrialized countries. The only two non-industrialized countries in the top 20 are Malaysia (16th) and Chile (18th). Seventeen of the bottom 20 are African countries. Laos, moreover, is the only Asian country ranked in the bottom 20.

Table 4 shows the average of the sub-components of the capital access index by ranking. Unsurprisingly, the average sub-component scores in all seven categories are higher in the top 20 than in the bottom 20. Bond market development is among the lowest sub-components, highlighted by its lowest score in the bottom 20 and second-lowest among the top 20. However, the widest gap between these two groups of countries is in equity market development. All of the top 20 countries have at least one established local equity market, whereas only Zimbabwe (115th) in the bottom 20 has an equity market. The second largest gap in capital access between these two groups is in bond market development, followed by alternative sources of capital.

Table 4: Average Sub-components of 2005 Capital Access Index by Ranking

	2005 CAI	Macroeconomic Environment (ME)	Economic Institutions (IE)	Financial and Banking Institutions (FI)	Equity Market (EM)	Bond Market (BM)	Alternative Capital (AC)	International Access (IA)
Top 20	7.32	7.67	8.15	7.53	7.28	6.43	6.58	5.83
Top 60	5.95	7.03	6.46	6.19	5.38	4.43	4.69	5.13
All	4.59	6.07	5.31	4.66	3.35	2.38	2.86	4.22
Bottom 60	3.24	5.11	4.14	3.10	1.33	0.38	1.06	3.34
Bottom 20	2.48	4.20	3.54	2.34	0.26	0.00	0.25	2.57

A notable aspect of the global Capital Access Index is the weakness of the bond market relative to other sources of capital (third row of Table 4). That is a particularly noteworthy metric, given that securitization is the focus of this year's CAI, as the availability of securitized instruments is one of the variables taken into account when calculating the bond market development score.

Table 5 shows that the correlations between the index, its sub-components and the issuance of securitized instruments are all positive and significant. As expected, the highest correlation for issuance of securitized instruments is with bond market development.



Table 5: Correlation between Sub-components of 2005 Capital Access Index and Issuance of Securitized Instruments

	Correlation Coefficient*
Macroeconomic Environment	0.25
Economic Institutions	0.38
Financial and Banking Institutions	0.35
Equity Market	0.37
Bond Market	0.47
Alternative Capital	0.40
International Access	0.25
Capital Access Index	0.42

* All coefficients are statistically significant at the 10 percent level.

A simple regression between the Capital Access Index and whether a country has issued securitized instruments reveals that on average a country issuing securitized instruments has a 2.39 point higher capital access score than a country with no issuance of such an instrument.⁷ For countries that have some issuance of securitized instruments, the marginal effect on the capital access index is 0.068 points for each one percentage point increase in the issuance relative to GDP.⁸ All else constant, a country without any securitized instrument issuance would increase its 2005 CAI score by 0.33 points if it had securitized instruments equal to that of the average industrialized economy (4.8 percent of GDP). Such an improvement would be enough to increase the ranking of Estonia (21st, and a country without issuance of securitized instruments in 2004) by five places, putting it just below Germany (15th).

⁷ The simple regression is a bivariate regression with Capital Access Index as the dependent variable. Independent variables are a constant, and a dummy variable equaling one when securitization exists. Coefficients are 3.72 and 2.39, respectively. All three coefficients are significant at the 5 percent level.

⁸ The calculation of marginal effect is based on a simple multivariate regression, with Capital Access Index as the dependent variable. Independent variables include a constant, a dummy variable equaling one when securitization exists, and the issuance of securitized instruments relative to GDP. Coefficients are 3.72, 2.17 and 0.068, respectively. All three coefficients are significant at the 5 percent level.



II. Securitization and Financing of Economic Activities

The focus of this year's Milken Institute Capital Access Index report is on the role of securitization in financing economic activity.

Securitization is the term used to describe the process of issuing securities backed by the cash flows from a pool of underlying assets. These assets can be of various types, including commercial and residential mortgages, leases, credit card receivables and manufactured home loans. They may even include exotic assets such as royalties from intellectual property or tax receivables.

As shown in Table 6, a great many unusual securitizations have occurred. In the usual industry parlance, securitization refers only to transactions that involve a so-called special purpose vehicle (SPV), but for our purposes we include in this discussion securities that are backed by assets without an SPV. The use of a broader definition allows for a discussion of asset-covered bonds that are of great importance in Europe and also to a lesser extent in Asia.

Although it is generally believed that securitization was pioneered in the United States in the 1970s, the history of securitization extends as far back as the 1770s in central Europe. The securitizations that occurred 200 years later in the United States, however, marked an important milestone, with the development of the modern securitization process and the widespread adoption of this type of financing. Today securitization has become a pervasive financing mechanism, with total worldwide issuance of \$4.7 trillion in 2004.

The ability to borrow on the basis of both personal credit standing and against one's home is vital for start-up and early-stage financing of businesses. Sources of financing for most small-scale entrepreneurs include personal savings, personal borrowings (including the use of personal credit cards), and loans from family and friends.⁹

In the United States, the securitization of mortgage loans has not only lowered the cost of mortgages and expanded credit to the real estate sector, but also allowed for the removal of illiquid assets from bank balance sheets. Securitization, more broadly, has increasingly provided individuals and businesses with greater access to lower-cost capital though a general lowering of interest rates on securitizable borrowings.

⁹ *World Development Report*, 2005, p. 116.

**Table 6: Unusual Securitizations**

Pension Fund Contributions: In 2005, a 6 billion euro offering in bonds collateralized by pension fund contributions was made by the former Deutsche Bundespost (since privatized as Deutsche Telekom, Deutsche Post and Deutsche Postbank).

Timber: MAXXAM Group issued notes collateralized by the firm's timber property assets and the database it uses to manage them.

Gambling revenues: Nomura acquired bookmaker William Hill, and funded the acquisition through a securitization of revenues.

Oil: Empresa Colombiana de Petroleos (Ecopetrol), the Colombian nationalized oil company, issued bonds backed by the future sales of crude oil.

Train lease revenues: Train operating firm Stagecoach issued bonds serviced by rental income from leases of trains to the train operators.

Car and boat sales revenues: "Dealer Floorplan" securitizations were issued representing future cash flows from sales by dealers of automobiles or boats.

Diamonds: Rosy Blue, a Belgium-based diamond company, offered a securitization of its entire stock of rough and polished diamonds.

Taxes: Tax liens were first securitized in Jersey City, NJ by then Mayor Schundler who sought to turn the city's huge amount of property tax receivables into cash.

Metals: Grupo Minero Mexico issued a guaranteed senior note issue backed by warranties on the company's export receivables, principally copper, zinc, and silver.

Intellectual Property: Single A rated bonds issued were backed by future revenues from royalties of songs written by David Bowie and James Brown.

II.A. Costs and Benefits of Securitization

In a world of complete and perfect markets where all possible risks can be hedged, securitization offers no benefits. That is because it is not possible to alter the value of a pool of assets merely by engaging in a financial transaction that rearranges the structure of its cash flow (Diamond, 1967, Radner, 1972 and Hart, 1975).

However, global capital markets fall short of this ideal; individual assets exist that are illiquid and non-tradable in their unsecuritized form. In today's capital markets, therefore, securitization can be a valuable tool for firms and institutions to remove individual assets from their balance sheets and thereby satisfy a broader demand through a wider variety of collateralized securities with more tailored risk and return features. Indeed, as will be described later, the securitization of assets can be a positive sum transaction that benefits the holders of the assets that are securitized, the issuers of the asset backed securities, and the buyers of those securities.



In addition, it may also benefit borrowers of securitizable assets as a whole and, under certain conditions, society in general. Yet, these benefits are not without potential risks.

II.A.1 Benefits of Securitization

II.A.1.1 Liquidity

The creation of liquid, marketable and tradable securities collateralized with a pool of individual illiquid assets is a benefit of securitization. Jones (1962) was an early proponent of mortgage securitization for this very reason, and Frame and White (2005) note that the introduction of mortgage-backed securities allowed the trading of mortgages among investors for the first time ever. Santomero and Trester (1994) further note that securitization can reduce a bank's vulnerability to adverse liquidity shocks by enabling it to remove assets from its balance sheets. In addition, Black, Garbade and Silber (1981) and Passmore and Sparks (1996) draw attention in particular to the implicit government guarantee of Government Sponsored Enterprises (GSE) which provides a liquidity enhancement to their issuance of mortgage-backed securities. Ketka and Ratha (2001) argue that securitization – especially of future flow receivables – makes an emerging market borrower less vulnerable to liquidity crises.

II.A.1.2 Diversification

A second benefit of securitization is that it allows for greater portfolio diversification. For instance, a corporate loan originator can diversify its portfolio to avoid overexposure to individual borrowers while at the same maintaining a relationship with them. Hess and Smith (1988) note the value of securitization in allowing increased diversification and, thus, better risk management. Securitization can also reduce the risk of holding individual assets in a portfolio by pooling them and then issuing securities with various degrees of risk and associated expected returns (De Marzo, 2001).

II.A.1.3 Cost of Funds

A key benefit of the securitization of loans – and the benefit that has been most widely studied from an empirical standpoint – is the lowering of interest rates on the types of loans being securitized. Hendershott and Shilling (1988), for example, find that securitization lowers the interest rates on conforming mortgages (i.e., loans that meet the size and other qualifications of Fannie Mae and Freddie Mac for securitization) and the home loans just above the conforming loan limit.



The effect is non-trivial, as they find that loans far above the conforming level, and hence non-securitizable, have yields of 15 to 30 basis points over otherwise comparable conforming loans. Cotterman and Pearce (1996) also find evidence of a 30 basis point spread between conforming and non-conforming home loans, while Passmore, Sparks and Ingpen (2001) find a spread between conforming and non-conforming home loans of 18 to 23 basis points.

These papers consider specifically the impact of GSE securitization. Similar results for the impact of securitization on mortgage rates more broadly are reported by Kolari, Fraser and Abari (1998). They find a longer-term and negative relationship between the volume of securitized mortgages and mortgage yields. The impact of collateralized mortgage obligations (CMOs) on the spread between mortgage and Treasury yields was investigated by Jameson, Dewan and Sirmans (1992), who found that the introduction of CMOs led to reduced mortgage yield spreads.

II.A.2 Costs of Securitization

II.A.2.1 Moral Hazard

The economic theory of banking posits that an important function of a bank is to monitor a borrower's creditworthiness and that the incentive to engage in monitoring is greatest when the bank holds a borrower's loan to maturity (Diamond, 1991; Gorton and Pennachi, 1990). Moreover, relationship lending achieves the best result in this framework as it avoids costly monitoring duplication, and it also removes a bank's ability to "free ride" on other lenders' monitoring activities, which can occur when loans are passed on to other parties (Freixas and Rochet, 1997).

In the context of securitization, the same incentive to free ride holds true: this situation may lead to insufficient monitoring of the underlying loans that have been securitized.

II.A.2.2 Adverse Selection

The second main cost of securitization is, like moral hazard, another asymmetric information problem, namely, adverse selection. Simply put, sellers have superior information about the quality of loans that collateralize a securitized product compared with the buyers of that product. This asymmetric information provides underwriters with an incentive to sell the lower-quality loans and retain the better ones in their portfolios. Thus the market becomes a classic "market for lemons" (Akerlof, 1970).



Passmore and Sparks (1996) and Cutts, Van Order and Zorn (2001) draw attention to the ability of securitizers to be selected against, i.e., to be unwittingly sold low quality loans by underwriters.

II.A.2.3 Inefficient Liquidations

Ayotte and Gaon (2005) show that securitizations that involve the transfer of “necessary assets” (inventories, fixed assets and intangibles such as patents or other intellectual property) which cannot be readily replaced to a special purpose vehicle can lead to the liquidation of firms with positive NPV projects in Chapter 11 proceedings. This inefficient liquidation of insolvent firms that have securitized necessary assets can occur if the SPV’s investors attempt to exploit their power – which is due to the difficulty of quickly replacing necessary assets – in bankruptcy negotiations characterized by imperfect information about the value of the firm’s future projects’ NPVs.

II.B. Net Effects of Benefits and Costs

Financial innovations such as securitization typically are increasing as they represent general welfare. This is because they are a further step towards more complete and perfect markets, and therefore allow firms and institutions to hedge or to protect better against future shocks.

However, as discussed earlier, securitization is a mixed blessing. The extent to which securitization provides benefits that exceed costs is determined by the extent to which the welfare effects of its benefits exceed its costs. Technical developments, such as credit scoring, which reduce the asymmetric information problem of adverse selection, and credit rating, which to some extent provides a substitute for bank monitoring, have tended to increase the net benefits of securitization. In addition, as Boot and Thakor (1993) conclude, the pooling and diversification of risks inherent in some forms of securitization reduce asymmetric information. That is because these factors decrease the difficulty of evaluating the assets’ yields, as they reduce asset-specific idiosyncrasies.



II.C. The History of Securitization

The term securitization was first used in print in a 1977 “Heard on the Street Column” in the *Wall Street Journal*, but it had been in industry use for some time prior to this (Barth, 2002). Likewise, the origins of securitization are often traced to the 1970s – specifically the 1970 issuance of mortgage-backed securities (MBSs) using an SPV structure in the United States by Ginnie Mae (see Exhibit 1).¹⁰

While these securities, collateralized by Federal Housing Authority and Veterans Administration mortgages, were indeed the first collateralized bonds to make use of an SPV, they were not in fact the first more broadly defined example of securitization in the world. One must look to 18th century Prussia to find the first such transaction.

Frederick the Great created the first mortgage bond market, known as “Pfandbriefe” (literally, “letters of pledge”), in 1769. The market financed a growing demand for housing in a rapidly developing Prussia following the Wars of Austrian Succession and the Seven Years’ War. To date, there have been no defaults on Pfandbriefe; the closest such occurrence was the 1897 collapse of the German housing bubble.¹¹ The creation of the first mortgage bond market was followed by the Danish analogue some 80 years later and by the Swiss Pfandbriefe market in 1930.

The early history of securitization therefore is more of a European than a U.S. phenomenon. But after the introduction of the Ginnie Mae MBS, most innovations – with a number of exceptions – have taken place in the United States and later transferred to the European and ultimately to the Asian and Latin American capital markets.

To date, securitization has made few inroads into the Middle East and Africa, although a number of modestly-sized transactions have occurred in both regions. As the timeline in Table 7 shows, the market for securitized assets was in its infancy – with the exception of the well-developed Pfandbriefe markets – until the latter half of the 1980s, although the 1970s saw the first mortgage securitization using an SPV and the first non-mortgage securitization. The latter was a securitization of computer lease receivables for the U.S. firm Sperry Computers. This 1975 transaction involved bonds collateralized by future computer leases, as computers were commonly leased at that time.

¹⁰ Government National Mortgage Corporation

¹¹ Although Preußische and Pommeranische Hypothekbank banks failed, they made good on their Pfandbriefe obligations.



This transaction marked the first time that securitization was used not to finance investment in housing and the consumption of housing services, but rather to finance a business. It marked a key milestone in the development of securitization as a tool for accessing capital from broader and more diverse sources.

The first half of the 1980s brought the first U.S. mortgage securitization whereby the cash flows of a pool of mortgages were used to issue bonds of differing levels of seniority (so-called collateralized mortgage obligation). In addition, in 1985, the first mortgage securitizations were issued in the United Kingdom and in Canada. In the later half of the 1980s, the market for securitized assets expanded into Japan (1986), the Pacific Rim (1986-7), Latin America (1987) and South Africa (1989). Brady Bonds—the first bonds collateralized by U.S. government bonds—also appeared in 1989, which marked the first time that securitization was used to allow an emerging market country to maintain access to capital during a crisis.

A near frenzy of innovation occurred in the 1990s, including the first nonperforming loan securitization in 1993, which was part of the cleanup of the savings and loan debacle. It also included the start of credit derivatives and the birth of synthetic collateralized debt obligations in 1997. The latter mimic the risk-return characteristics of a pool of assets but are not collateralized by the assets themselves.

The decade also saw the introduction of aircraft lease securitizations (1994), the first Eastern European securitization (1996) and the first securitization in China (1996). It closed with more exotic transactions, such as the first intellectual property securitization (1998), the first securitization of the cash flows of an entire business (1999), the first champagne securitization (2000) and the first securitization of a textile firm's stocks of wool (2000).

By the end of the century, securitization was no longer just a housing finance tool, but also a business finance technique for entrepreneurial financing. The pace of innovation appears to be continuing during the first few years of the 21st century with the introduction of the securitization of private equity (collateralized fund obligations) and of microcredit receivables.



Table 7: A Timeline of Securitization

Year	Country	Detail
1769	Prussia	Start of the mortgage-covered bond (Pfandbriefe) market
1850	Denmark	First Danish mortgage-covered bond issued
1930	Switzerland	First Swiss mortgage-covered bond issued
1970	United States	First mortgage-backed security issued (Ginnie Mae)
1975	United States	First derivative on mortgage-backed security created
	United States	World's first non-mortgage securitization
	United States	World's first future flow securitization (computer lease receivables)
1977	United States	The term "securitization" first appears in a "Heard on the Street" column in <i>The Wall Street Journal</i>
1983	United States	World's first collateralized mortgage obligation (CMO)
1984	Canada	First Canadian mortgage securitization (CMHC)
1985	United Kingdom	First U.K. mortgage securitization
1986	Japan	First Asian securitization
	Japan	First Japanese securitization
	Singapore	First Singaporean mortgage bond (Hong Leong)
1987	Mexico	First emerging market future flow securitization
	Mexico	First Latin American securitization
	Malaysia	First Asian mortgage-covered bond (Cagamas Berhad)
1989	United States/Mexico	First bonds collateralized by U.S. Treasury (Brady Bonds)
	South Africa	First African mortgage securitization (Allied Building Society)
1991	South Africa	First African non-mortgage securitization (Sasfin)
1993	United States	First securitization of non-performing loans (RTC 'N' series)
	United Kingdom	First credit default swaps traded
1994	United States	First aircraft lease securitization (Northwest Airlines)
	Hong Kong	First Hong Kong securitization (Bank of America)
1996	Czech Republic	First Eastern European covered bond (HypoVereinsBank)
	Czech Republic	First Czech mortgage-covered bond (HypoVereinsBank)
	China	First Chinese securitization (Zhuhai People's Government)
1997	United Kingdom	First synthetic CDO (Swiss Banking Corporation)
1998	United Kingdom	First securitization of music royalties in the world (Bowie Bonds)
	Singapore	First Singaporean asset backed security (Neptune Orient Lines)
	Australia	First non-U.S. aircraft lease securitization (Ansett Australia)
	Hungary	First Hungarian mortgage-covered bond (FHB)
1999	United Kingdom	First whole business (principal finance) securitization
	United States	First securitization of tobacco settlement payments (New York City)
	Canada	First securitization of personal loan receivables (Bank of Nova Scotia)
	South Korea	First Korean mortgage securitization (KoMoCo)
	Japan	First Japanese mortgage securitization (Sanwa Bank)
	Japan	First non-performing loan securitization outside the U.S.
	Poland	First Polish securitization (Urtica)
	Latvia	First Baltic mortgage-covered bond (Latvijas Hipoteku and Zemes Banka)
Slovakia	First Slovak mortgage-covered bond (Všeobecná Uverová Banka)	
2000	Argentina	First use of political risk insurance for a mortgage-backed security
	France	First champagne inventory securitization (Marne et Champagne)
	France	First wool inventory securitization (Chargeurs)
	India	First mortgage-backed security issued in India (National Housing Board)
	Poland	First Polish mortgage-covered bond (Bank Hipoteczny)
2001	Israel	First Middle Eastern securitization (Makhteshim-Agan Industries)
	Bolivia	First Bolivian securitization (Nacional Financiera Boliviana)
	Bulgaria	First Bulgarian mortgage-covered bond (Bulgarian American Credit Bank)
	France	First French whole business securitization (Saint Louis Sucre)
2002	United States	First collateralized fund obligation
	Ireland	First asset-covered bond issued in Ireland (DEPFA, WestLB)
2003	United Kingdom	First mortgage-covered bond issued in U.K.
2004	United Kingdom	First social housing mortgage-covered bond issued in U.K. (HBOS)
	Hong Kong	First non-mortgage securitization in Hong Kong (toll receivables)
	Ireland	First mortgage-covered bond issued in Ireland (Bank of Ireland)
	Lithuania	First Lithuanian mortgage-covered bond (AB Bankas Nord)
2005	Bangladesh	First securitization of microfinance receivables
	Norway	First Norwegian mortgage-covered bond
	Sweden	First Swedish mortgage-covered bond



II.D Types of Securitizations

The following section refers directly to the typology flowchart on the back cover of this report, which helps clarify the relationships between various types of securitizations as well as illustrate their similarities and differences. As the end-page chart indicates, the first major division in the securitization market is by balance sheet treatment.

There are two broad types of securitization wherein the assets remain on an issuer's balance sheet. These are asset-covered securities (ACS) and synthetic collateralized debt obligations. However, in most types of securitizations, the collateral is transferred off an issuer's balance sheets.

II.D.1 Off-Balance Sheet Securitizations

In these types of transaction, the arranger of the securitization (who may indeed be the holder of the assets serving as collateral) creates a special purpose vehicle (SPV). This is a separate legal entity that exists only for the purpose of the securitization and whose operations are limited to the acquisition and servicing of specific assets. The SPV purchases the assets through what is referred to as a "true sale" or an assignment of the assets.

An SPV is designed to be "bankruptcy remote" from the asset seller, and indeed from the arranger of the securitization. Thus the failure of the asset seller does not affect the SPV that has purchased the assets, and the sellers' creditors will not have access to its assets.

This has the effect of insulating the buyer of the securities from any credit risk associated with the asset seller and can, under appropriate circumstances, lead to a credit rating on the pool of assets that is substantially higher than the rating of the seller of the assets. Indeed, one potential benefit of securitization for less creditworthy firms and institutions is that it can provide them access to funding at a lower cost—due to the higher rating of the collateralized securities—than they would have to pay when issuing more conventional securities backed by a pool of assets retained on the balance sheet.

Next we will examine the two types of true sale securitizations—pass-through structures and pay-through structures.

II.D.1.1 Pass-Through Structures

These are the simplest of true sale securitizations and were the first to be transacted. A pass-through

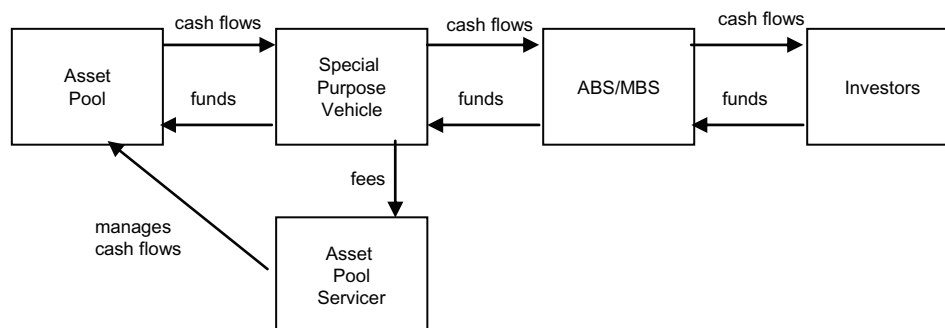


structure involves the creation of a bankruptcy remote SPV which issues debt and uses the proceeds to purchase a pool of assets – most often residential mortgages. The cash flows of the assets are then “passed through” the SPV to investors in the issued securities.

Figure 1 shows a generic pass-through securitization. In essence, a pass-through securitization is the sale of shares in the cash flows arising from the pool of assets. Pass-through structure securitizations can further be divided based on the collateral that generates the cash flows passed through to the investors (see end page). In general, the market distinguishes between structures with mortgage collateral and those with non-mortgage collateral. The first are referred to as mortgage backed securities (MBS) and the latter as asset backed securities (ABS), though the latter may, paradoxically, also include MBS.

In the case of MBS, the cash flows have three components: scheduled interest payments, scheduled principal repayments and (unscheduled) principal prepayments. Thus MBS do not provide any provision to protect the buyers of the securities from the risk of early prepayments and for this reason, they tend (as do all callable bonds) to have what market participants refer to as “negative convexity.” That is, as interest rates fall, prepayment increases and the value of the MBS falls quite sharply (other things being equal). However, if interest rates rise, the converse increase in the value of the MBS is less marked (Mattey, 2000).

Figure 1: Generic Pass-Through Securitization Structures



ABS can be backed by any type of non-mortgage assets that can be securitized. Commonly securitized assets include credit card debt, manufactured housing loans, automobile loans, student loans and home equity loans. In the U.S. ABS market, home-equity loans accounted for some 25 percent of outstanding ABS in 2004, credit card debt accounted for 21 percent and automobile loans accounted for 13 percent. In recent years, pay-through securitization issues (which will be discussed in the next section) have been used as



collateral for ABS issues. In 2004 they accounted for 15 percent of outstanding ABS.

In the European ABS market (where only issuance data, as opposed to volume outstanding data, are available), 33 percent of ABS issued in 2003 (the latest year available) were collateralized with pay-through issues, with a further 25 percent accounted for by aircraft leases and shipping, and oil and trade receivables. In Europe, credit card debt accounts for seven percent of ABS, while auto and other consumer loans account for five percent.

As shown on the end page, ABS and MBS structures can be divided further, into term and conduit structures. A term structure involves a single asset holder that sells all or part of a portfolio of assets to an SPV that then issues liabilities backed by these assets. A conduit structure is somewhat different; it involves an SPV purchasing assets from a variety of holders and then issuing liabilities. Conduits can engage in lengthy “warehousing” periods where assets pools are accumulated prior to issuance of asset of mortgage backed securities and may also, in the case of revolving conduit securitizations, periodically use principal repayments to purchase new assets.

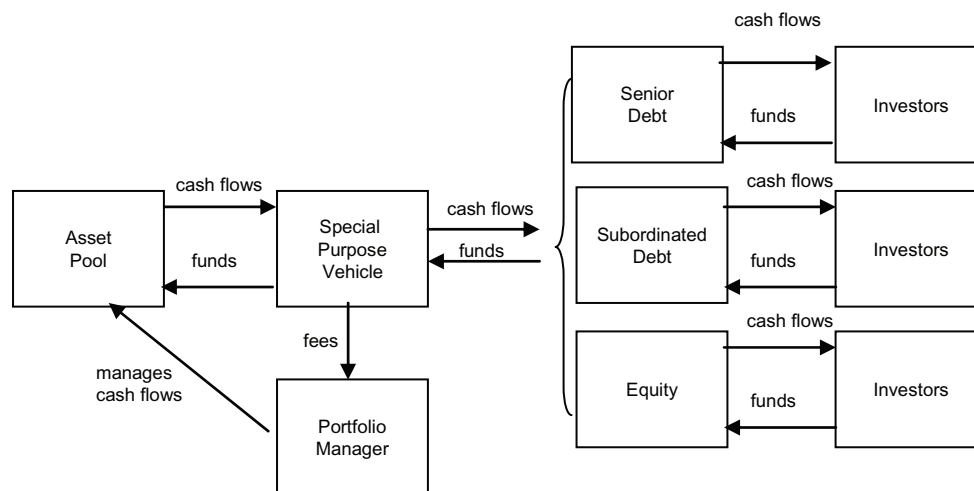
II.D.1.2 Pay-Through Structures

The first pay-through structure securitization was issued in 1983, 13 years after the first pass-through structure. As was the case with the pass through, the collateral was again residential mortgages. Indeed, one of the principal reasons for the creation of the pay through was to allow for the purchasers of some of the securities to be insulated from prepayment risk, a key risk of mortgages. Pay-through structures, the bulk of which are also known as collateralized debt obligations (CDOs)¹², are more complex than pass-throughs. Yet, they all have the common feature of the slicing or tranching of the SPV’s securities by various levels of seniority, a feature that was designed to allow prepayment risk to be eliminated for more senior investors. This tranching is evident in Figure 2.

¹² A recently introduced pay-through structure that is not a CDO is a collateralized fund obligation (CFO) which has private equity forming the asset pool. While it is included in the schematic (Appendix One) for completeness, it will not be further discussed in this paper.



Figure 2: Generic Collateralized Debt Obligation Structure



II.D.1.3 Balance Sheet Collateralized Debt Obligations

The holders of the most junior securities – typically an equity (residual) or junior subordinated debt tranche – absorb the bulk of the risk of the underlying assets. For example, in a very simple CMO, one with sequential pay classes, the holders of a given class of debt receive principal payments from the underlying mortgages only after the most senior holders of debt have been paid off in full. Thus the more-senior debt holders have their claims paid in full before the more-junior debt holders receive any principal payments. The junior debt holders do, however, receive interest payments during this period.

It is further possible to divide CDOs into balance sheet CDOs, and warehouse or arbitrage CDOs. The main difference between these types of CDOs is in the source of the underlying assets, but there is also typically a difference in the motivation of the CDO arranger. As shown in Table 8, most CDOs issued today are arbitrage CDOs.

Table 8: Estimated Collateralized Debt Obligation Issuance, 2005

	Value Billions USD	Share
Arbitrage	\$ 97.00	84%
Balance Sheet	\$ 19.00	16%
Total	\$ 116.00	100%

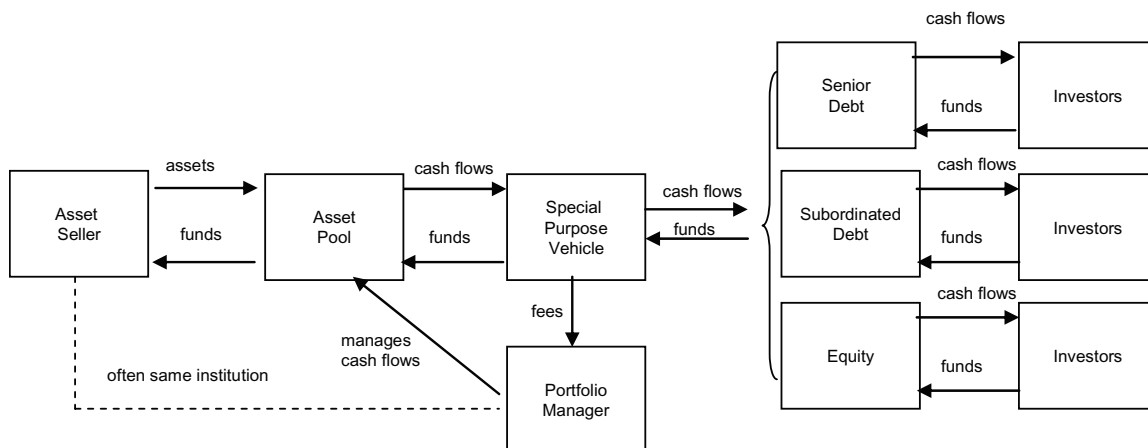
Source: Bond Market Association



A balance sheet CDO is typically arranged by the holder of a pool of securitized assets – for instance a commercial bank holding C&I loans or a credit card company holding credit card debt – and the motivation for their arrangement is to take the assets off the institution’s balance sheet. There are a number of reasons for this; three of the most important are: to reduce credit risk, to reduce the regulatory capital the institution must hold, and to increase the liquidity of the balance sheet.

Figure 3 shows a generic balance sheet CDO. The transaction involves one holder of an asset pool (the holder is also typically the arranger and may even be the servicer). The assets are transferred to the SPV in an assignment and the SPV issues securities with interest and principal payments made from the assets’ cash flows. These securities are tranching by seniority; the most senior debt is investment grade (often AAA) and the junior-most tranche is an unrated or speculative grade.

Figure 3: Generic Balance Sheet Collateralized Debt Obligation Structure

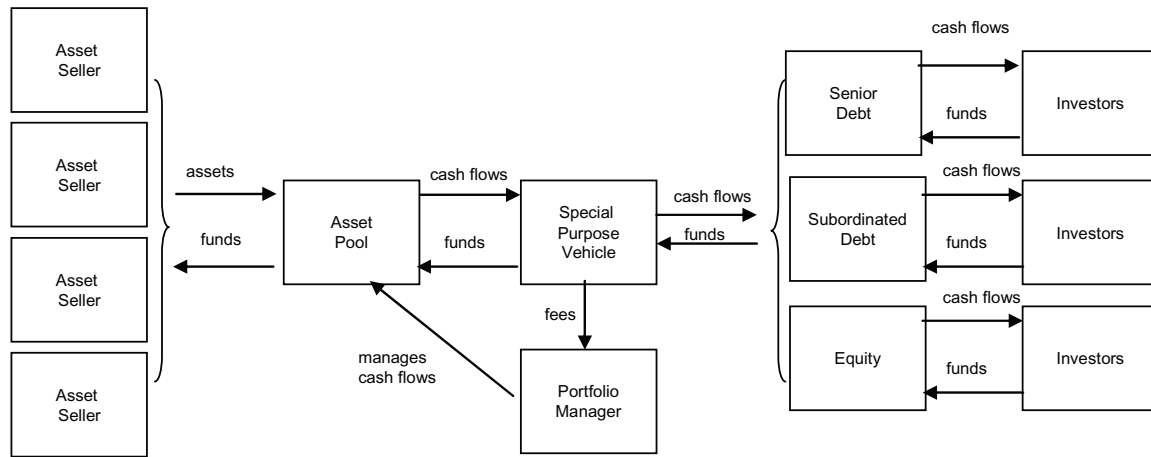


II.D.1.4 Arbitrage Collateralized Debt Obligations

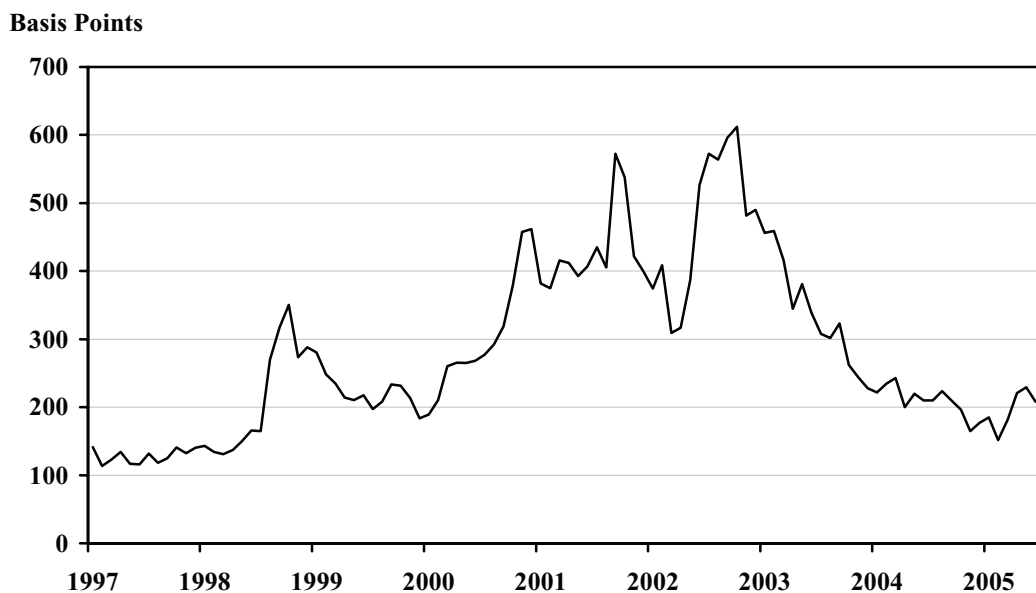
Unlike balance sheet CDOs, arbitrage (or warehouse) CDOs involve multiple asset pools from a number of different holders and are arranged by investment banks or other institutions that are not, themselves, the holders of the assets. The assets that are used in an arbitrage CDO are often non-investment-grade debt. The term “warehouse” is used because arrangers assemble assets from multiple and at times diverse, sources and then bundle them together during a so-called warehousing period prior to the issuance of liabilities by the SPV. A generic arbitrage or warehouse CDO is shown in Figure 4.



Figure 4: Generic Arbitrage Collateralized Debt Obligation Structure



The alternative term “arbitrage” CDO is somewhat misleading, as there is no actual arbitrage involved in the true sense of risk-free profit. Rather, the term refers to the fact that the arranger of such a transaction is motivated by a desire to take advantage of a spread between the yield on the pool of assets and the cost of funds of the SPV’s liabilities. The spread between the assets and liabilities of a hypothetical arbitrage CDO can be seen in Figure 5. It is calculated using the yields on a portfolio of assets that is 50 percent Ba rated and 50 percent Baa rated and the yields on another portfolio of liabilities that is 70 percent Aaa rated, 20 percent A rated, 10 percent Baa rated and 10 percent Ba rated. Both portfolios use Merrill Lynch yield-to-maturity index data provided by Bloomberg.

**Figure 5: Spread of a Hypothetical Arbitrage CDO**

Sources: Merrill Lynch, Milken Institute

As is evident from the chart on the end page, balance sheet CDOs can be divided further into cash flow and market value structures. Cash flow structures are of the “buy-and-hold” type, where the underlying pool of assets is not traded actively, although some strictly controlled buying of assets is allowed. The role of the portfolio manager in a cash flow structure is rather limited; it is primarily to ensure that the present value of the cash flows from the asset pool match the present value of the issued liabilities.

If the cash flows of the underlying assets are insufficient to satisfy those of the liabilities, payments are suspended to holders of the most junior trenches of liabilities until the cash flows of assets match those of liabilities.

The role of the portfolio manager in a market value structure is an active one – trading assets into and out of the asset pool in an effort to maximize the yield and market value of the portfolio. Unlike cash flow CDOs, payment suspension to junior liability holders occurs not when the cash flows of the asset pool fail to match the SPV’s liabilities but when the market value of the asset pool is less than the present value of the SPV’s liabilities.

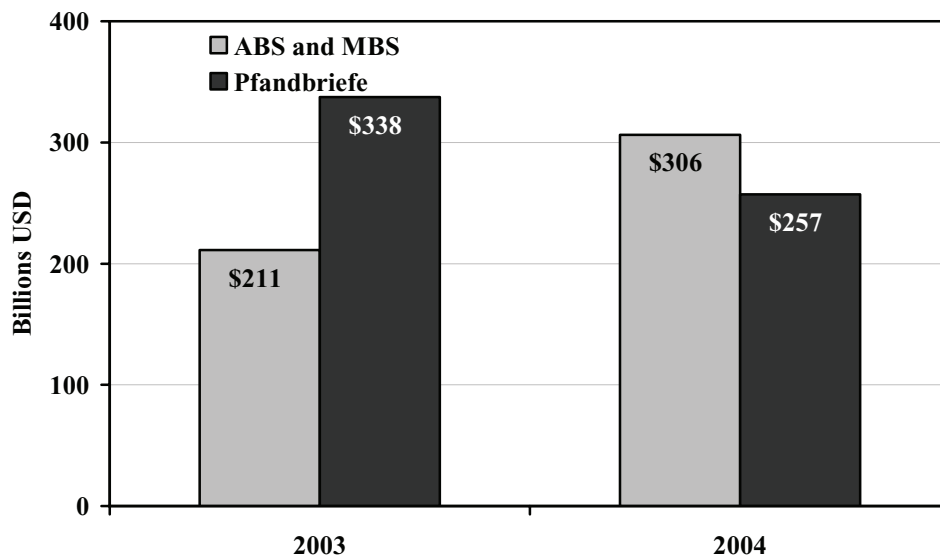


II.D.2 On-Balance Sheet Securitizations

II.D.2.1 Asset Covered Securities

There are two types of securitization whereby the pool of assets remains on the holder's balance sheet. These are asset covered securities (ACS) and synthetic CDOs. ACS structures are, in industry discussions, typically not included as securitizations; however, in our broader framework, they warrant inclusion. As mentioned above, the ACS market is far older than the MBS or ABS markets and began in the form of the market for Pfandbriefe in 18th century Prussia. In addition to Pfandbriefe in Germany, Austria and Switzerland, obligations foncières in France and cédulas hipotecarias in Spain are also classified as asset-covered securities.

Asset covered securities remain the dominant collateralized asset class in all the European markets. As seen in Figure 6, they comprised more than 60 percent of new collateralized debt issuance in Western Europe in 2003 and nearly 50 percent in 2004. One reason ACS are more prevalent in Europe than ABS or MBS is because they enjoy a more favorable regulatory environment than other types of corporate bonds, including ABS and MBS under Article 22(4) of the Co-ordination Directive on Undertakings for Collective Investment in Transferable Securities. This directive allows member states to assign a 10 percent risk weighting to asset covered bonds.

**Figure 6: Collateralized Debt Issuance in Western Europe**

Sources: European Securitisation Forum, Milken Institute

The essential difference between an asset covered and an asset backed security is that with a covered security, the assets that are used as collateral continue to remain on the security issuer's balance sheet and are not transferred to an SPV. For this reason, purchasers of ACS products remain exposed to any credit risk associated with the holder of the assets. The securities are sold with recourse to the seller in the event of a credit problem. While credit risk remains, any prepayment risk associated with the security is absorbed by the issuer, not by the purchaser of the bond. Perhaps primarily due to this reason, asset covered structures have not made use of the tranching that has been so prevalent in off balance sheet securitizations, which arose as an effort to manage prepayment risk.

Covered bonds are additionally characterized by the "cover principle" whereby the outstanding bonds must at all times be matched by underlying assets of equal or greater face value and yielding equal or greater interest. The salient differences between asset covered bonds and asset-backed securities are summarized in Table 9 on the next page.

**Table 9: Covered Bonds Compared To ABS/MBS**

	Covered Bonds	ABS/MBS
Balance Sheet Treatment	Assets remain on originator's balance sheet	Assets transferred off originator's balance sheet
Risk Exposure		
<i>Credit</i>	Issuer	Investor
<i>Pre-Payment</i>	Issuer	Investor
<i>Market</i>	Investor	Investor
Investor Protection in Case of Bankruptcy	Investor claims are senior to all other creditors	Bankruptcy remoteness guaranteed by true sale

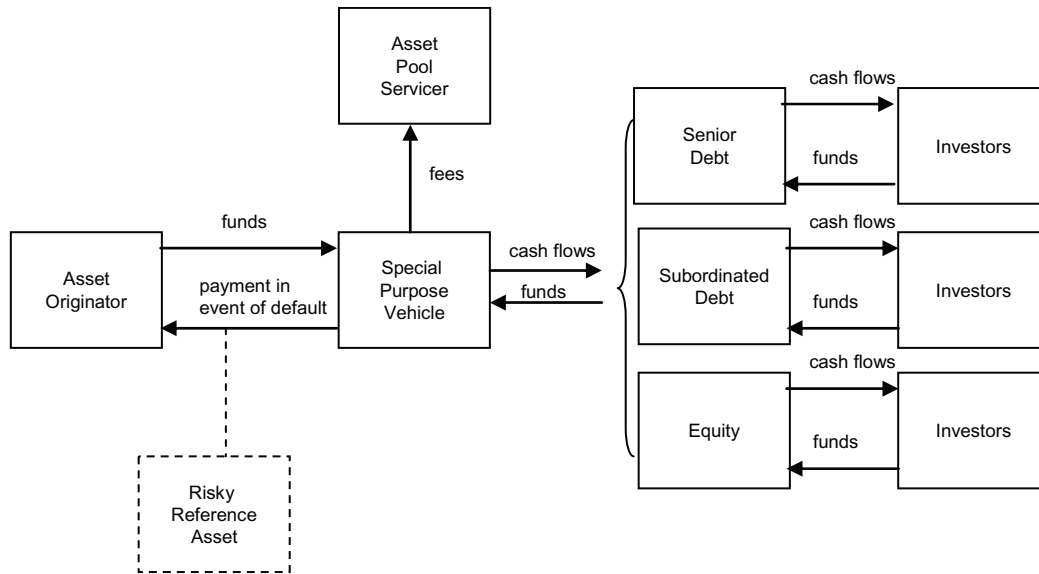
Source: European Mortgage Federation

II.D.2.2 Synthetic Collateralized Debt Obligations (CDO)

A synthetic CDO is somewhat unique to the extent that it involves the use of an SPV yet the assets in question remain on the originator's balance sheet. It is not the assets themselves that are transferred off the balance sheet to the SPV, but the credit risk of the assets. This is a reason why these structures may be appealing to issuers who do not wish to transfer the actual assets off the balance sheet. Synthetic CDOs often make use of a credit default swap in which an SPV enters into a transaction in which it receives periodic payments from the holder of a risky asset (reference asset) in return for the provision of a payment triggered by an adverse credit event such as a downgrade or default on the reference asset. A generic synthetic CDO is shown in Figure 7.



Figure 7: Generic Synthetic Collateralized Debt Obligation Structure



Synthetic CDOs have a cost advantage over cash CDOs insofar as they do not necessarily require an upfront cash payment to purchase the collateral. Thus a synthetic CDO with \$100 million in liabilities need not raise an equivalent amount to purchase underlying assets to match these liabilities. Despite this cost advantage, synthetic CDOs are less important than cash CDOs in issuance value (Table 10).

Table 10: Estimated CDO Issuance, 2005

	Value Billions USD	Share
Cash	\$ 94.00	81%
Synthetic	\$ 22.00	19%
Total	\$ 116.00	100%

Source: Bond Market Association



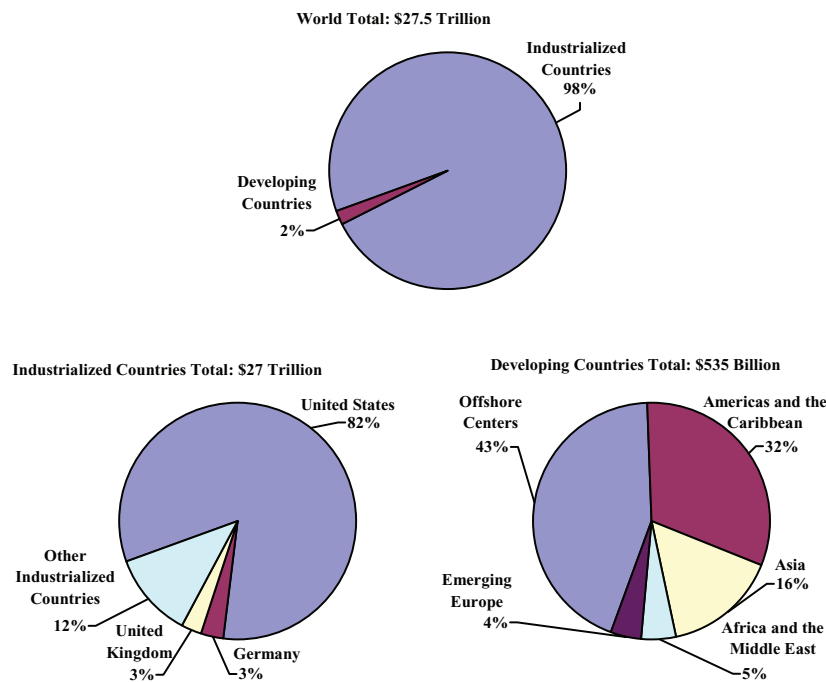
II.E Global Securitization Markets

Although an increasing number of countries are utilizing securitization as a method of financing, 98 percent of these instruments are still being issued in industrialized countries and a mere 2 percent in developing countries. Figure 8 shows this large disparity.

Surprisingly, securitized instrument issuance is concentrated specifically in one industrialized country, the United States. Industrialized nations accounted for \$27 trillion of securitized instrument issuance from 1990 to 2004, of which the United States alone accounted for 82 percent, followed by Germany and the United Kingdom at a mere 3 percent each.

A somewhat similar situation is observed in the developing world, with offshore financial centers accounting for 43 percent of the securitized instrument issuance between 1990 and 2004. South America and the Caribbean, both featuring developed bond markets and a healthy issuance of Brady bonds and future flows securitizations, ranked second among developing regions.

Figure 8: Cumulative Issuance of Securitized Instruments, 1990-2004



Source: Securities Data Corporation



The largest market for securitized instruments is, by far, that of the United States with 2004 issuance of \$2.4 trillion. United States issuance accounted for 75 percent of the world issuance of securitized instruments in this single year, while the country accounted for just 29 percent of world GDP in the same year¹³ (Table 11).

Table 11: Regional Share of 2004 World GDP and Securitized Instruments

	GDP	Securitization
United States	29.0%	74.7%
Western Europe	31.7%	20.0%
Japan, Canada, Australia and other Industrialized Countries	15.8%	2.2%
Asia	10.4%	0.4%
Latin America and the Caribbean	4.9%	2.4%
Eastern Europe	4.5%	0.2%
Africa and the Middle East	3.7%	0.1%
World	100%	100%

Note: Excludes asset covered securities

Source: World Bank and Securities Data Corporation

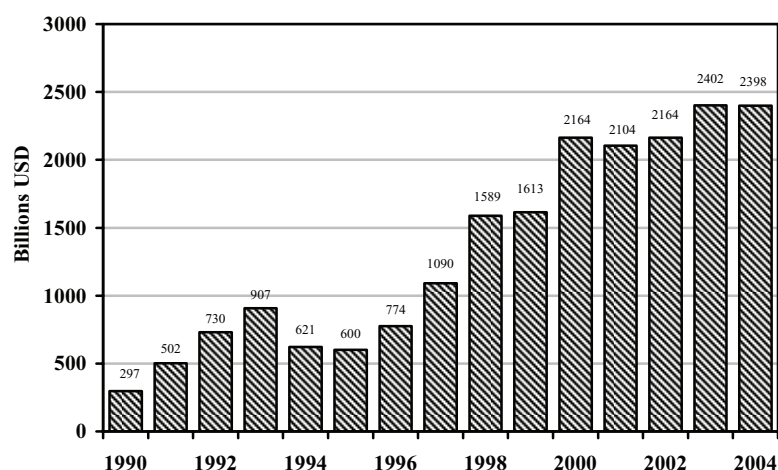
The first securitization in the United States occurred in 1970, with the market for securitized instruments growing rapidly from the 1980s onward. In 1990, total new issuance was \$297 billion (Figure 9). Over the following 14 years, it grew to \$2,398 billion, an increase of 707 percent or an annualized rate of growth of 16 percent.

As the market grew in size, it expanded from simply pass-through securities to more elaborate tranching pay-through structures, and from a market based on mortgage assets to one that includes a great many diverse assets including credit card debt, manufactured housing loans, trade receivables and manufacturing inventories.

¹³Not including Pfandbriefe.



Figure 9: Issuance of Securitized Instruments in the United States, 1990-2004



Source: Securities Data Corporation

The securitization market in Western Europe is the oldest in the world and dates to the 18th century. In addition, it is the largest and most active securitization market after the United States, with total 2004 issuance of \$588 billion (not including Pfandbriefe and other asset covered securities¹⁴ for which data are presented in Figure 6). As seen in Table 11, Western Europe accounts for 32 percent of 2004 GDP but 20 percent of 2004 issuance of securitized instruments.

The first securitizations to occur outside the well-established asset covered security market were the 1980s issuance of mortgage-backed bonds in the United Kingdom. But issuance remained low for nearly a decade and, in fact, declined for a number of years in the early 1990s, falling by 35 percent, from \$46 billion in 1992 to \$30 billion in 1995 (Figure 10). This stagnation ended in 1996, with new issuance rising 147 percent. From 1995 to 2004, new issuance rose from \$30 billion to \$588 billion, representing 24 percent annualized growth and an overall increase of 1,860 percent.

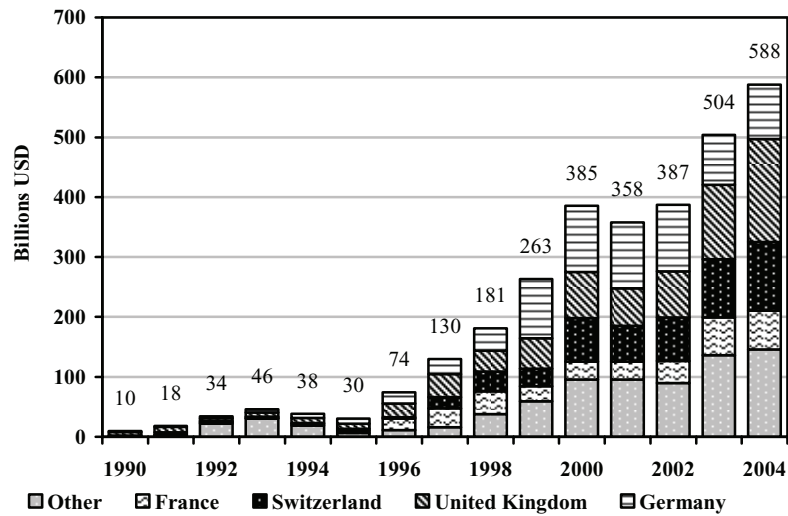
This period also saw the development of a number of innovations in the Western European market, including whole business securitization and the creation of credit derivatives (which allowed for the creation of synthetic CDOs).

New issuance of securitized instruments is concentrated in four countries in the region – the United Kingdom, Germany, Switzerland and France – which together accounted for an average of 72 percent of new issues from 1990 to 2004, yet represented 59 percent of real GDP for the region over the same period.

¹⁴Data on Pfandbriefe are not available from Securities Data Corporation.



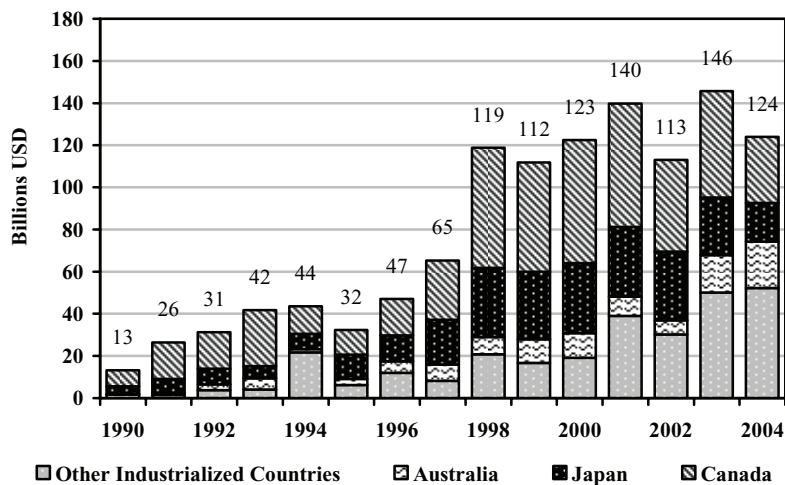
Figure 10: Issuance of Securitized Instruments in Industrialized European Countries, 1990-2004



Source: Securities Data Corporation

Figure 11 shows the consistent and rapid increase of securitization in non-European industrialized countries, excluding the United States, from 1990 to 2004. Although Japan, Australia and Canada initially comprised a majority of the securitized issuance in this group of countries in the early 1990s, it is apparent that other industrialized non-European countries are taking active roles in the securitized issuance market.

Figure 11: Issuance of Securitized Instruments in non-European Industrialized Countries, excluding the United States, 1990-2004



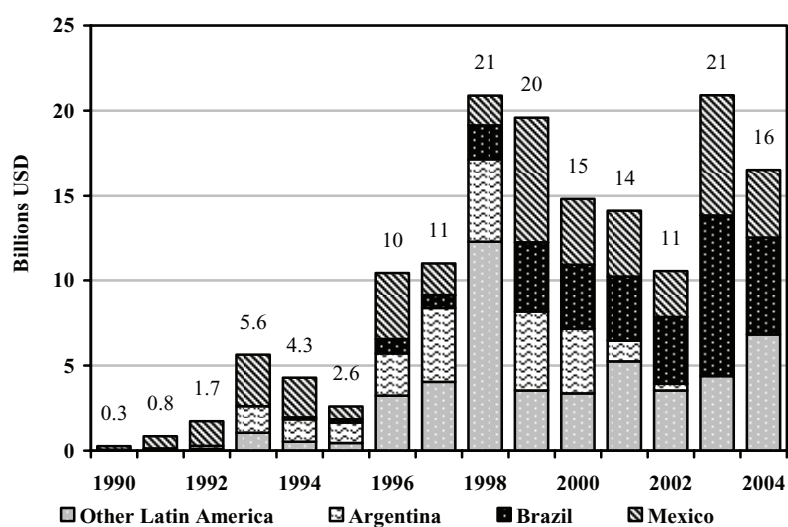
Source: Securities Data Corporation



Latin America and the Caribbean saw early securitizations compared with other emerging market areas, exemplified by the securitization of future flows (telephone service receivables) in Mexico in 1987. Despite this early adoption, the market saw little volume until 1993, when \$5.6 billion of securitized instruments were issued (Figure 12). The Tequila Crisis of 1994 saw a collapse in new issues that did not recover until 1996, when \$10 billion of issuance occurred.

Securitization volumes in the late 1990s were healthy. Dominated by three countries – Argentina, Brazil and Mexico – these countries’ average 77 percent share of issuance over the period was just slightly higher than their average 73 percent share of real regional GDP. Following Argentina’s sovereign default, issuance from that country, unsurprisingly fell, from 16 percent of new issuance the year preceding Argentina’s default to 4 percent one year after the default, and to 0 percent in 2003 and 2004.

Figure 12: Issuance of Securitized Instruments in the Americas and the Caribbean, 1990-2004



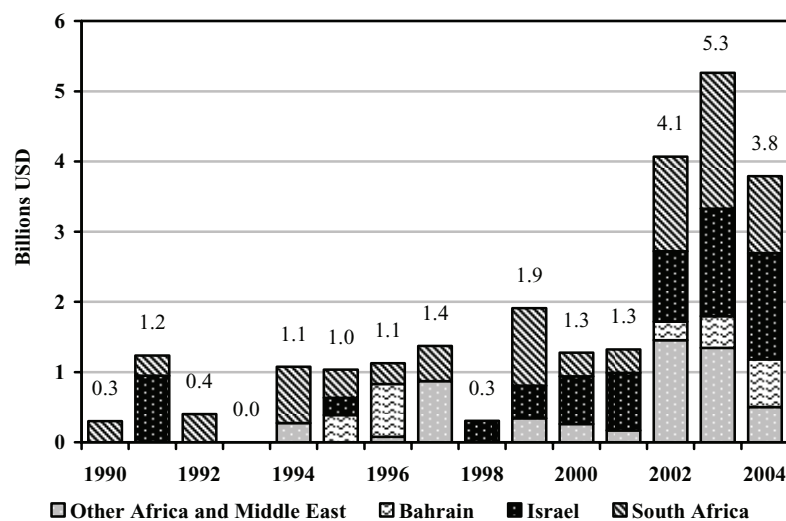
Source: Securities Data Corporation

The issuance of securitized instruments in Asia accounts for 0.3 percent of the world’s total, or less than 1 percent of U.S. issuance in 2004. Leading issuers in the region are South Korea and the Philippines, accounting for 56 and 32 percent of the total Asian issuance, respectively (Figure 13).

There was a significant decrease in total Asian issuance of securitized instruments in 2000 and 2001, largely because of the financial reform in the Philippines after the currency crisis in 1997. Since 1993, China has also become an active player. In 2004, the country accounted for 10 percent of Asian issuance.



Figure 13: Issuance of Securitized Instruments in Asia, 1990-2004



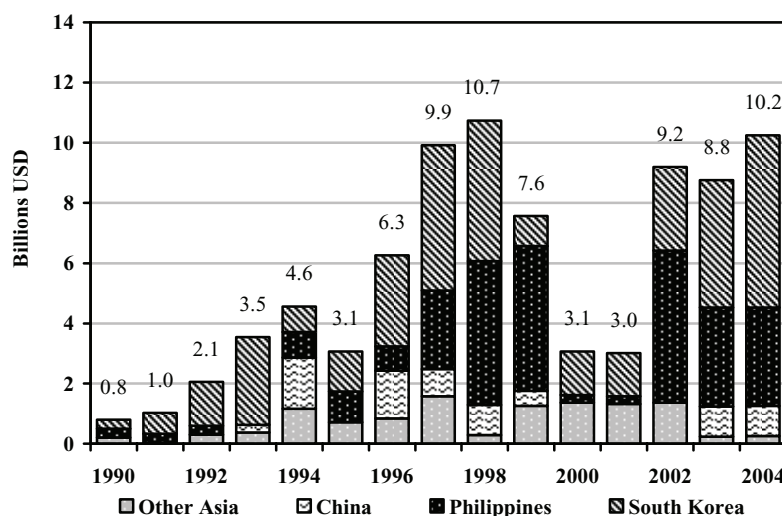
Source: Securities Data Corporation

The issuance of new securitized products in the Middle East and Africa has grown strongly over the last several years, rising from just \$1.9 billion in 2000 to \$4.1 billion in 2002 (Figure 14). Issuance peaked at \$5.3 billion in 2003, declining to \$3.8 billion in 2004. However, this figure is nearly 300 percent higher than the level for 2001. The total issuance for the 12 years from 1990 to 2001 represented just 86 percent of the value of new securitizations issued in 2002, 2003 and 2004.

The first securitization in this region was a 1989 mortgage securitization issued by South Africa's Allied Building Society. South Africa and Israel dominate securitization in the Middle East and Africa. Between 1990 and 2004, the combined issuance for Israel and South Africa averaged 74 percent of the region's total and fell below 50 percent of the total in just two years – 1996 and 1997. This is particularly striking given their relatively low 22 percent average combined share of regional real GDP.



Figure 14: Issuance of Securitized Instruments in Africa and the Middle East, 1990-2004



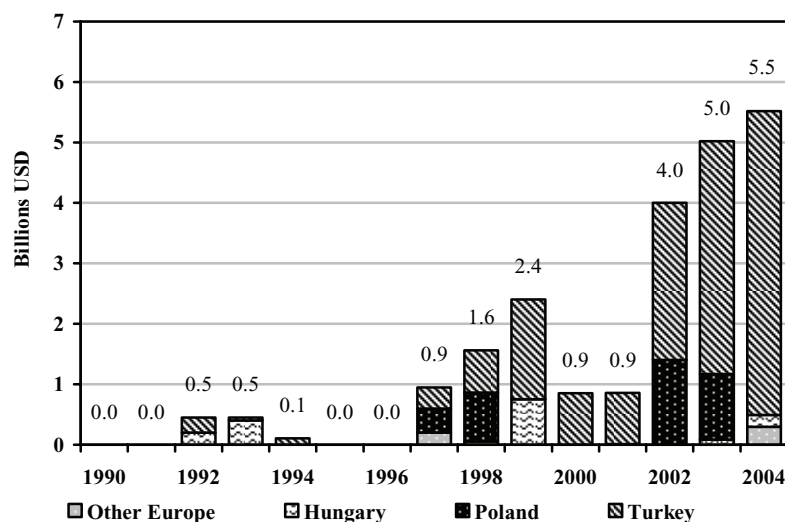
Source: Securities Data Corporation

The securitization market in Emerging Europe is comprised chiefly of Turkey and the transition countries of the former Soviet Union and Eastern Europe. This market was largely moribund between 1990 and 1996, with a mere handful of securitizations occurring in Hungary and Turkey. It exceeded \$500 million in new issues in 1997 and \$1 billion in 1998 (Figure 15). In 2000, new issuance fell dramatically, and it was not until 2002 that the market recovered; since that year, new issuance has grown steadily, and in 2004 it reached \$5.5 billion, with 91 percent issued by Turkey.

As with the Middle East and Africa, the securitization landscape of Emerging Europe has seen most of its activity in recent years. Total issuance in 2002, 2003 and 2004 was equal to 190 percent of the value of all securitizations issued between 1990 and 2001. Interestingly, the market is even more concentrated in terms of issuer countries than the Middle East and Africa; between 1990 and 2004, Turkey accounted for an average of 62 percent of all new issuance but just 14 percent of average regional real GDP.



Figure 15: Issuance of Securitized Instruments in Eastern Europe, 1990-2004



Source: Securities Data Corporation

II.F. Impediments to Securitization

As is clearly evident, securitization has flourished mainly in the United States, to a far lesser extent in other industrialized countries, and to a negligible amount in developing countries. Given rapid growth in consumer credits, credit card usage and mortgages in Asia, Eastern Europe and Latin America, there are large and growing pools of assets that can be securitized in developing countries.

This begs the question as to why securitization has not spread wider and faster around the world. Some of the major impediments to its greater use include the lack of liquid domestic bond markets, cumbersome legal and regulatory procedures that discourage securitization, high issuance costs, and non-standard underwriting procedures.

A liquid yield curve could be established if there was a broad and liquid domestic bond market offering actively traded highly rated government bonds across a range of maturities. This could provide the basis for developing a market for securitized instruments. In most developing markets, illiquid domestic bond markets with mainly short-term securities are a major impediment to the development of yield curves and thus the accurate pricing of securitized instruments. The absence of such curves greatly hampers securitization.



Legal and regulatory frameworks are also important impediments to securitization. Laws must be structured to facilitate foreclosure and seizure of collateral if asset-covered securities are to be issued. In many countries, laws have not been framed with the development of securitization in mind. For example, there may be laws that allow for the foreclosure of property, but the procedures that support foreclosure are cumbersome, making the recovery of assets difficult and costly. This decreases the recovery values of defaulted securities and increases the risks for investors and thus the prices of securitized instruments.

Such laws must allow for the true sale assignment of assets if off balance sheet securitizations are to be created. Tax and accounting rules must also not heavily penalize the true sale of assets.

Laws must also clearly state the allowable securitization structures (pass through or pay through) and specify the activities and assets that may be associated with such structures. This is important not only to investors, but also to regulators, so they may evaluate the risks of this type of transaction.

High issuance costs discourage the establishment of primary and secondary markets for securitized instruments. One type of common issuance cost is a stamp tax that includes a mixture of fixed and variable costs based on the face value of the securities. If the tax is excessively high, it will likely make the securitized instruments too expensive for investors.

Finally, the lack of standardization in loan and mortgage underwriting procedures is another major impediment. Securitization causes the disintermediation of money from investors and borrowers; in order to better protect investors, there must be a framework that minimizes moral hazard and encourages transparency of the financial transactions. Thus, the underwriting process should be equipped with procedures, controls, safeguards and accurate sources of information that would allow originators to appropriately quantify borrower risk, and the securitization underwriter to appropriately build standard profiles of the asset pool. To standardize underwriting procedures, a database of credit histories should be established. Then credit scores could be assigned to individuals and businesses, which would eventually foster the development of a risk-oriented culture.



III. Conclusions

As noted above, financial innovations such as securitization are thought by economists to be beneficial, as they represent an additional step towards complete and perfect markets, and thereby allow firms and institutions opportunities to hedge against future unknown events.

This theoretical benefit is supported by a large body of empirical evidence and, as shown earlier, a country issuing securitized instruments has a 2.39 point higher capital access score than a country with no issuance of such an instrument. Furthermore, for countries that have some issuance of securitized instruments, the marginal effect on the capital access index is 0.068 points for each one percentage point increase in the issuance relative to GDP. However, the welfare-increasing effects of securitization have yet to benefit the bulk of countries around the world, because 98 percent of securitization has occurred in industrialized countries. Furthermore, 83 percent has taken place in just one country – the United States.

These facts are even more remarkable when one considers that the country with the second-highest level of securitized instrument issuance for the years 1990-2004, the United Kingdom, accounts for just 3 percent of issuance. Clearly policies designed to increase the ability of firms and innovations to securitize assets can increase capital access and social welfare.

Indeed, a country without any securitized instrument issuance would increase its 2005 CAI score by 0.33 points if it had securitized instruments equal to that of the average industrialized economy (4.8 percent of GDP). Such an improvement would be enough to increase the ranking of Estonia (21st), a country with no securitized instrument issuance in 2004, by five places, bringing it up to just below Germany, which is in 15th place.



References

- Akerlof, George. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *Quarterly Journal of Economics*, 84, no. 3 (1970): 488-500.
- Ayotte, Kenneth and Stav Gaon. "Asset-Backed Securities: Costs and Benefits of Bankruptcy Remoteness." Working paper, Columbia Business School, 2004.
- Barth, James R., "Discussion" of "Consumer Loan Securitization" by Kathleen Johnson. In *The Impact of Public Policy on Consumer Credit*, edited by Thomas A. Durkin and Michael E. Staten Boston, 287-313. Boston, MA: Kluwer Academic Publishers, 2002.
- Barth, James R. and Glenn Yago, series editors. *Milken Institute Series on Financial Innovation and Economic Growth, Asia's Debt Capital Market: Prospects and Strategies for Development*, edited by Douglas Arner, Jae-Ha Park, Paul Lejot and Qiao Liu, Boston, MA, Springer, forthcoming 2005.
- Bascom, Wilbert. "Credit Securitization and Developing Countries' Debt". In *The Latin American Debt*, edited by Antonio Jorge, 100-114. New York: St. Martin's Press, 1992.
- Basel Committee on Banking Supervision. Working Paper on the Treatment of Asset Securitizations, Bank for International Settlements, 2001.
- Basel Committee on Banking Supervision. Second Working Paper on Securitisation. Bank for International Settlements, 2002.
- Basel Committee on Banking Supervision. Changes to Securitisation Framework, Bank for International Settlements, 2004.
- Benjamin, John, Andrea Heuson, and C.F. Sirmans. "The Effect of Origination Strategies in the Pricing of Fixed-Rate Mortgage Loans." *Journal of Housing Research*, 6, no. 1 (1995): 137-148.
- Black, Deborah G., Kenneth D. Garbade, and William L. Silber. "The Impact of the GNMA Pass-Through Program on FHA Mortgage Costs." *Journal of Finance* 36, no. 5 (1981): 457-469.
- Boot, Arnoud and Anjan V. Thakor. "Security Design." *Journal of Finance*, 48, no. 9 (1993): 1349-1378.
- Calomaris, Charles and Joseph Mason. "Credit Card Securitization and Regulatory Arbitrage." Working Paper No. 03-07 of the Federal Reserve Bank of Philadelphia, 2003.
- Cutts, Amy, Robert Van Order, and Peter Zorn. "Adverse Selection, Licensing and the Role of Securitization in Financial Market Evolution, Structure and Pricing." <http://ssrn.com/abstract=280388>.
- Dahiya, Sandeep, Manju Puri, and Anthony Saunders. "Bank Borrowers and Loan Sales: New Evidence on the Uniqueness of Bank Loans." *University of Chicago Press Journal of Business*, 76, no. 4 (2003): 563-582.
- De Marzo, Peter. "The Pooling and Tranching of Securities: A Model of Informed Intermediation." *Review of Financial Studies*, 18, no. 1 (2005): 1-35.
- Diamond, Douglas. "Monitoring and Reputation: The Choice Between Bank Loans and Directly Placed Debt." *Journal of Political Economy*, 99, no. 4 (1991): 689-721.
- Diamond, P.A. "The Role of a Stock Market in a General Equilibrium Model with Technological Uncertainty." *American Economic Review*, 57, (1967): 759-76.



- Esty, Benjamin C. and William L. Megginson. "Creditor Rights, Enforcement, and Debt Ownership Structure: Evidence from the Global Syndicated Loan Market." *Journal of Financial and Quantitative Analysis* 38, no. 1 (2003): 37-59.
- Fannie Mae. "Preliminary Response to Wayne Passmore Federal Reserve Working Paper: 'The GSE Implicit Subsidy and Value of Government Ambiguity.'" 7 January 2004.
- Frame, Scott and Lawrence White. "Fussing and Fuming over Fannie and Freddie: How Much Smoke, How Much Fire?" NYU Stern Working Paper No. 04-27; FRB Atlanta Working Paper No. 2004-26, 2005.
- Freixas, Xavier and Jean-Charles Rochet. *The Microeconomics of Banking*. Cambridge, MA: MIT Press, 1997.
- Gangawani, Sunil. "MBS Structuring: Concepts and Techniques." *The Securitization Conduit*, 1, no. 3 (1998): 26-37.
- Gaur, Vishal, Sridhar Seshadri and Marti Subrahmanyam. "Market Incompleteness and Super Value Additivity: Implications for Securitization." EFA 2004 Maastricht Meetings Paper No. 2714, 2003.
- Gorton, Gary. "Special Purpose Vehicles and Securitization." NBER Working Paper Series 11190, 2005.
- Gorton, Gary and George Pennacchi. "Banks and Loan Sales: Marketing Non-Marketable Assets." NBER Working Paper Series 3551, 1990.
- Hart, O.D. "On the Optimality of Equilibrium When the Market Structure Is Incomplete." *Journal of Economic Theory*, 11, (1975): 418-43.
- Hendershott, Patric and James Shilling. "The Impact of the Agencies on Conventional Fixed Rate Mortgage Yields." NBER Working Paper Series 2646, 1998.
- Heuson, Andrea, Wayne Passmore, and Roger Sparks. "Credit Scoring and Mortgage Securitization: Implications for Mortgage Rates and Credit Availability." Board of Governors Federal Reserve System Working Research Paper Series 2000-44, 2000.
- Hill, Claire. "Securitization: A Low-Cost Sweetener for Lemons." *Journal of Applied Corporate Finance*, 10, no. 11 (1997): 55-65.
- Jones, Oliver. "The Development of an Effective Secondary Mortgage Market." *Journal of Finance*, 17, no.2 (1962): 358-370.
- Karaoglu, Emre. "Regulator Capital and Earnings Management in Banks: The Case of Loan Sales and Securitizations." FDIC Center for Financial Research Working Paper No. 2005-05, 2005.
- Ketkar, Suhas and Dilip Ratha. "Development Financing During a Crisis: Securitization of Future Receivables." The World Bank Policy Research Working Papers Series 2582, 2001.
- Kolari, James, Donald Fraser, and Ali Anari. "The Effects of Securitization on Mortgage Market Yields: A Cointegration Analysis." *Journal of Real Estate Economics*, 26, no.4 (1998): 677-693.
- Lumpkin, Stephen. "Trends and Developments in Securitization," *Financial Market Trends*, 74, (1999): 25-59.
- Minton, Bernadette, Tim Opler, and Sonya Stanton. "Asset Securitization Among Industrial Firms." Ohio State University Working Paper, 1997.



- Passmore, Wayne and Roger Sparks. "Automated Underwriting and the Profitability of Mortgage Securitization." *Journal of Real Estate Economics*, 28, (2000): 285-305.
- Passmore, Wayne, Shane Sherlund, and Gillian Burgess. "The Effect of Housing Government-Sponsored Enterprises on Mortgage Rates." Finance and Economics Discussion Series of the Federal Reserve Board, Washington D.C. Working Paper, 2005-6.
- Passmore, Wayne, Roger Sparks, and Jamie Ingpen. "GSEs, Mortgage Rates, and the Long-Run Effects of Mortgage Securitization." Finance and Economics Discussion Series of the Federal Reserve Board, Washington D.C. Working Paper, 2001-26.
- Passmore, Wayne and Roger Sparks. "Putting the Squeeze on a Market for Lemons: Government Sponsored Mortgage Securitization." *Journal of Real Estate Finance and Economics*, 13, no. 1 (1996): 27-43.
- Radner, Roy. "The Existence of Equilibrium of Plans, Prices and Price Expectations in a Sequence of Markets," *Econometrica*, 40, no.2 (1972): 289-303.
- Santomero, Anthony and Jeffrey Trester. "Financial Innovation and Bank Risk Taking," *Journal of Economic Behavior & Organization*, 35, no. 1 (1998): 25-37.
- Skarabot, Jure. "Asset Securitization and Optimal Asset Structure of the Firm," prepared for EFMA 2001 Lugano Meetings, 21 March 2001.
- Yip, Jim. "Commercial Mortgage-Backed Securities (CMBS) – An Alternative Debt Financing Instrument for Developers," Asian Financial (Research), Hong Kong, 2001.



Appendix I: Methodology

The Milken Institute Capital Access Index has served well for the past seven years as an indicator of entrepreneurs' access to capital.

The 2005 Capital Access Index marks an improvement in the Index, as it includes several key additional variables that are important to entrepreneurial finance, including credit card usage, syndicated lending and the availability of credit information.

In addition, though some subjectivity in methodology selection and aggregation remain, the score assignment for each variable has been improved by standardization of the methodology. As a result, the new scores are not directly comparable to the past years' scores; therefore, for the purpose of comparison across time periods, the previous two years' scores have been recalculated.

Some variables are compiled differently from a conventional method. For example, in the Index, inflation is the absolute value of inflation, which reflects the fact that a deflationary macroeconomic environment is less desirable than a zero inflation environment. The description, source and directional relationship to capital access of each variable are described in detail in the following table.

There are six sub-categories: Macroeconomic Environment (ME), Institutional Environment (IE), Financial and Banking Institutions (FI), Equity Market Development (EM), Bond Market Development (BM), Alternative Sources of Capital (AC) and International Access (IA).

The Macroeconomic Environment (ME) category captures the extent to which a country's macroeconomic environment is favorable to the running and financing of a business. Macroeconomic variables include low and stable inflation and interest rates, low tax rates, and a level of financial sophistication compared with international norms.

Institutional Environment (IE) reflects the extent to which a country has the institutions needed to support and enhance business financing activities. That includes enforceable property rights, an efficient judicial system, efficient bankruptcy procedures and a low-corruption environment.

Financial and Banking Institutions (FI) measures the level of involvement of deposit-taking institutions in financing businesses. Some of the variables included in FI are the level of private sector credit extended by deposit taking institutions, the soundness of financial institutions, the ease of access to bank loans, and the efficiency of the banking system.

Equity Market Development (EM) reflects the extent to which financing of business operations is important for a given country. Some of the EM variables include: stock market capitalization to GDP, the liquidity of the stock market, and changes in the number of listings.

Bond Market Development (BM) captures the importance of bond financing of business operations. Some of the BM variables include: the size of private and public bonds to GDP and the securitized asset issuance to GDP.

Alternative Sources of Capital (AC) measures a country's use of such financing tools as venture capital, private placements and credit cards.

International Access (IA) measures the level of foreign capital available to businesses in a particular country and includes variables such as the volatility of exchange rates, international reserve holdings, portfolio and FDI capital inflows and outflows, and sovereign ratings.



Capital Access Index Variables

Code	Category	Variable	Source	Directional relationship
ME01	Macro Environment	Absolute Inflation Rate	IFS	-
ME02	Macro Environment	Lending Rate	IFS	-
ME03	Macro Environment	Absolute Value Of Difference Between Interest Rate Volatility And SDR LIBOR Volatility	IFS	-
ME04	Macro Environment	Corporate Tax	Heritage	-
ME05	Macro Environment	Personal Tax	Heritage	-
ME06	Macro Environment	Financial Market Sophistication	WEF	+
IE01	Economic Institution	Contract Enforcement (Procedures, Days, And Costs)	WBD	-
IE02	Economic Institution	Absence Of Corruption	ICRG	+
IE03	Economic Institution	Property Rights (Procedures, Days, And Costs)	WBD	-
IE04	Economic Institution	Minimum Paid In Capital % Of GNI	WBD	-
IE05	Economic Institution	Cost To Create And Register Collateral	WBD	-
IE06	Economic Institution	Index Of Legal Rights Of Borrowers And Lenders	WBD	+
IE07	Economic Institution	Index Of Credit Information Availability	WBD	+
IE08	Economic Institution	Coverage Of Public Registries	WBD	+
IE09	Economic Institution	Disclosure Requirements	WBD	+
IE10	Economic Institution	Bankruptcy (Procedure And Costs)	WBD	-
IE11	Economic Institution	Bankruptcy Recovery Rate Per Dollar	WBD	+
IE12	Economic Institution	Effectiveness Of Bankruptcy Law	WEF	+
IE13	Economic Institution	Judicial Independence	WEF	+
IE14	Economic Institution	Efficiency Of Legal Framework	WEF	+
IE15	Economic Institution	Property Rights	WEF	+
IE16	Economic Institution	Intellectual Property Protection	WEF	+
IE17	Economic Institution	Burden Of Local Government Regulation	WEF	+
FI01	Bank	Claims To Non-Financial Firms/GDP	IFS	+
FI02	Bank	Bank Assets/GDP	IFS	+
FI03	Bank	Domestic Assets/Foreign Assets	IFS	+
FI04	Bank	Moody's Deposit Rating	Moody's	+
FI05	Bank	Net Interest Margin	IFS	-
FI06	Bank	Syndicated Loans/GDP	SDC, IFS	+
FI07	Bank	Actual Reserves % Assets	IFS	-
FI08	Bank	Soundness Of Banks	WEF	+
FI09	Bank	Access To Credit	WEF	+
FI10	Bank	Ease Of Access To Loans	WEF	+
EM01	Equity	Equity Market Cap/GDP	EMFB	+
EM02	Equity	Equity Market Liquidity (Turnover Ratio)	EMFB	+
EM03	Equity	Relative Equity Market Volatility (Standard Deviation Of 12-Month Daily Returns/Average Market Cap)	Datastream	-
EM04	Equity	Change In Number Of Listings	EMFB	-
EM05	Equity	Local Equity Market Access	WEF	+
EM06	Equity	Regulation Of Securities Exchange	WEF	+
BM01	Bond	Private Sector Bond/GDP	BIS, IFS	+
BM02	Bond	Public Sector Bond/GDP	BIS, IFS	+
BM03	Bond	Private – Public Sector	BIS	+
BM04	Bond	% Change In Number Of Issuance	BIS	+
BM05	Bond	Securitized Bond Issuance/GDP	SDC, IFS	+
AC01	Alternative Funds	Venture Capital Funds/GDP	SDC, IFS	+
AC02	Alternative Funds	Private Placements/GDP	SDC, IFS	+
AC03	Alternative Funds	Credit Card United States/GDP	NIL	+
AC04	Alternative Funds	Venture Capital Availability	WEF	+
IA01	International Access	Total International Reserves/Annual Imports	IFS	+
IA02	International Access	Relative Currency Volatility	Datastream	-
IA03	International Access	Portfolio Inflow/GDP	IFS	+
IA04	International Access	Portfolio Outflow/GDP	IFS	-
IA05	International Access	Direct Investment Inflow/GDP	IFS	+
IA06	International Access	Direct Investment Outflow/GDP	IFS	-
IA07	International Access	Fitch Rating	Fitch	+
IA08	International Access	S&P Ratings	S&P	+

Notes

IFS: International Financial Statistics,

Heritage: Heritage Foundation

WEF: World Economic Forum, The Global Competitiveness Report, Various Issues

WBD: World Bank Doing Business Database <http://rru.worldbank.org/DoingBusiness/>

ICRG: International Country Risk Guide

Moody's: Moody's Ratings

SDC: Thomson Financial SDC Platinum

EMFB: S&P Emerging Market Factbook

BIS: Bank of International Settlements, BIS Quarterly Report

Datastream: Thomson Financial Datastream

NIL: The Nilson Report, Various Issues

Fitch: Fitch Ratings

S&P: Standard and Poor's Ratings



To calculate the various scores, first the non-surveyed or missing variables in FI, EM, BM, AC and IA sub-categories are assigned a score of zero. This reflects the fact that the industry or sector in question is either missing or so small that its effect on capital access is immaterial.

In some countries, non-survey variables are missing due to slow data reporting; still, the industry exists as evidenced from prior years' data. In these cases, the prior year's values are used for the current year rather than assigning a zero or missing value.

Second, the variables are ranked by every decile according to the directional relationship to capital access. The resulting scores of one to 10 are then assigned for countries ranking lowest to highest in terms of capital access. The score for each sub-category is calculated by a simple average of the variables, but only if the data in the category is greater or equal to 50 percent of the total variables in that category.

Third, the Capital Access Index is calculated using the weighted average of the seven subcategories. The first two subcategories—ME and IE—are weighted 25 percent each, and the other five sub-categories—FI, EM, BM, AC and IA—each are weighted as 10 percent of the final CAI score.

Theoretically, the scores can range from zero to 10. However, because every country has some kind of macroeconomic and institutional structure, the minimum for each of these two categories is one; therefore the lowest possible score can only be 0.5.



Appendix II: Capital Access Index Sub-Components

Appendix II.1: The Macroeconomic Environment (ME)

ME captures the extent to which a country's macroeconomic environment is favorable to the running and financing of a business.

RANK	COUNTRY	ME	0	MEAN:6.07	10	RANK	COUNTRY	ME	0	MEAN:6.07	10
1	Kuwait	10.00				57	Nicaragua	6.00			
1	Saudi Arabia	10.00				57	Niger	6.00			
3	Canada	9.17				64	Bangladesh	5.83			
4	Estonia	8.83				64	Belgium	5.83			
4	Hong Kong, China	8.83				64	China, Mainland	5.83			
6	Oman	8.80				64	Croatia	5.83			
7	Syria	8.60				64	Indonesia	5.83			
8	Denmark	8.50				64	Namibia	5.83			
9	Chile	8.33				64	Peru	5.83			
9	Singapore	8.33				64	Sri Lanka	5.83			
11	Lithuania	8.17				72	Kenya	5.67			
12	Lebanon	8.00				72	Mauritania	5.67			
12	Sweden	8.00				72	Ukraine	5.67			
12	United Kingdom	8.00				75	Angola	5.60			
15	Ireland	7.83				76	Argentina	5.50			
15	Norway	7.83				76	Austria	5.50			
15	Switzerland	7.83				76	Hungary	5.50			
15	United States	7.83				76	India	5.50			
19	United Arab Emirates	7.75				80	Benin	5.33			
20	Finland	7.67				80	Bolivia	5.33			
21	Armenia	7.60				80	Jamaica	5.33			
22	Germany	7.50				80	Paraguay	5.33			
22	Japan	7.50				80	Senegal	5.33			
22	Latvia	7.50				85	Lesotho	5.20			
22	Macedonia	7.50				86	Costa Rica	5.17			
22	Malaysia	7.50				87	Central African Republic	5.00			
22	Panama	7.50				87	Ghana	5.00			
28	Cambodia	7.40				87	Honduras	5.00			
29	Poland	7.33				87	Tunisia	5.00			
30	Bulgaria	7.00				91	Botswana	4.83			
30	Burkina Faso	7.00				91	Morocco	4.83			
30	Italy	7.00				93	Iran	4.80			
30	Mexico	7.00				93	Sierra Leone	4.80			
30	Papua New Guinea	7.00				95	Turkey	4.75			
30	Slovak Republic	7.00				96	Nigeria	4.67			
30	South Africa	7.00				96	Togo	4.67			
37	Czech Republic	6.83				96	Venezuela	4.67			
37	Jordan	6.83				99	Cameroon	4.60			
37	New Zealand	6.83				99	Haiti	4.60			
37	Russia	6.83				101	Colombia	4.50			
37	South Korea	6.83				101	Ethiopia	4.50			
42	Uganda	6.80				101	Guatemala	4.50			
43	El Salvador	6.75				101	Romania	4.50			
43	Taiwan, China	6.75				101	Uruguay	4.50			
45	Australia	6.67				106	Mongolia	4.40			
45	Bosnia & Herzegovina	6.67				107	Yemen	4.33			
45	Greece	6.67				108	Laos	4.20			
45	Israel	6.67				109	Malawi	4.00			
45	Spain	6.67				109	Mali	4.00			
50	Tanzania	6.60				111	Burundi	3.80			
51	Portugal	6.50				112	Pakistan	3.75			
52	Netherlands	6.33				113	Rwanda	3.67			
52	Philippines	6.33				113	Vietnam	3.67			
52	Thailand	6.33				113	Zambia	3.67			
55	France	6.17				116	Madagascar	3.50			
55	Slovenia	6.17				117	Guinea	3.20			
57	Belarus	6.00				118	Egypt	3.17			
57	Brazil	6.00				119	Zimbabwe	3.00			
57	Dominican Republic	6.00				120	Chad	2.67			
57	Moldova	6.00				121	Republic of Congo	2.50			
57	Mozambique	6.00									



Appendix II.2: Institutional Environment (IE)

IE reflects the extent to which a country has the institutions needed to support and enhance business financing activities.





Appendix II.3: Financial and Banking Institutions (FI)

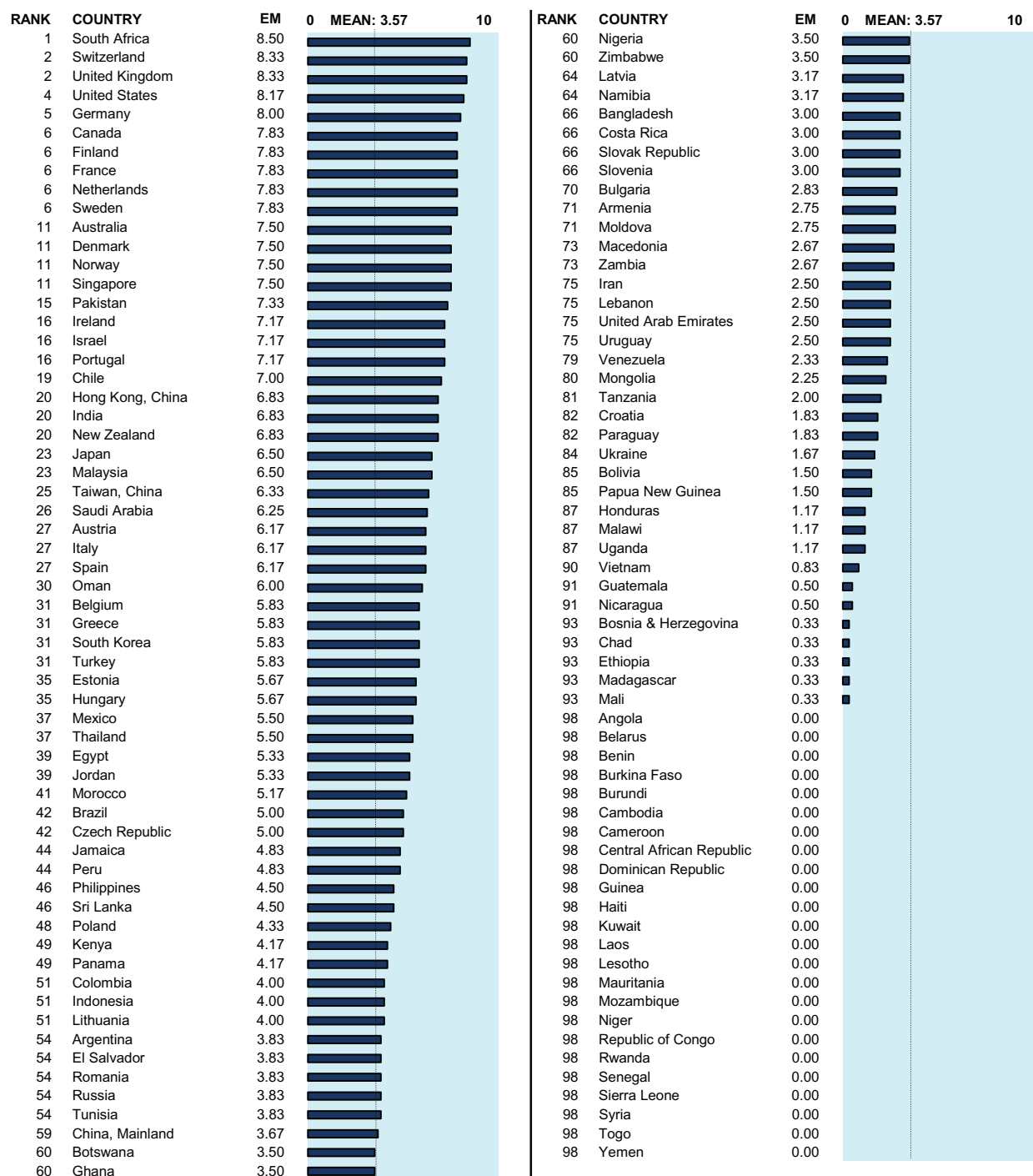
FI measures the level of involvement of deposit-taking institutions in financing businesses.





Appendix II.4: Equity Market Development (EM)

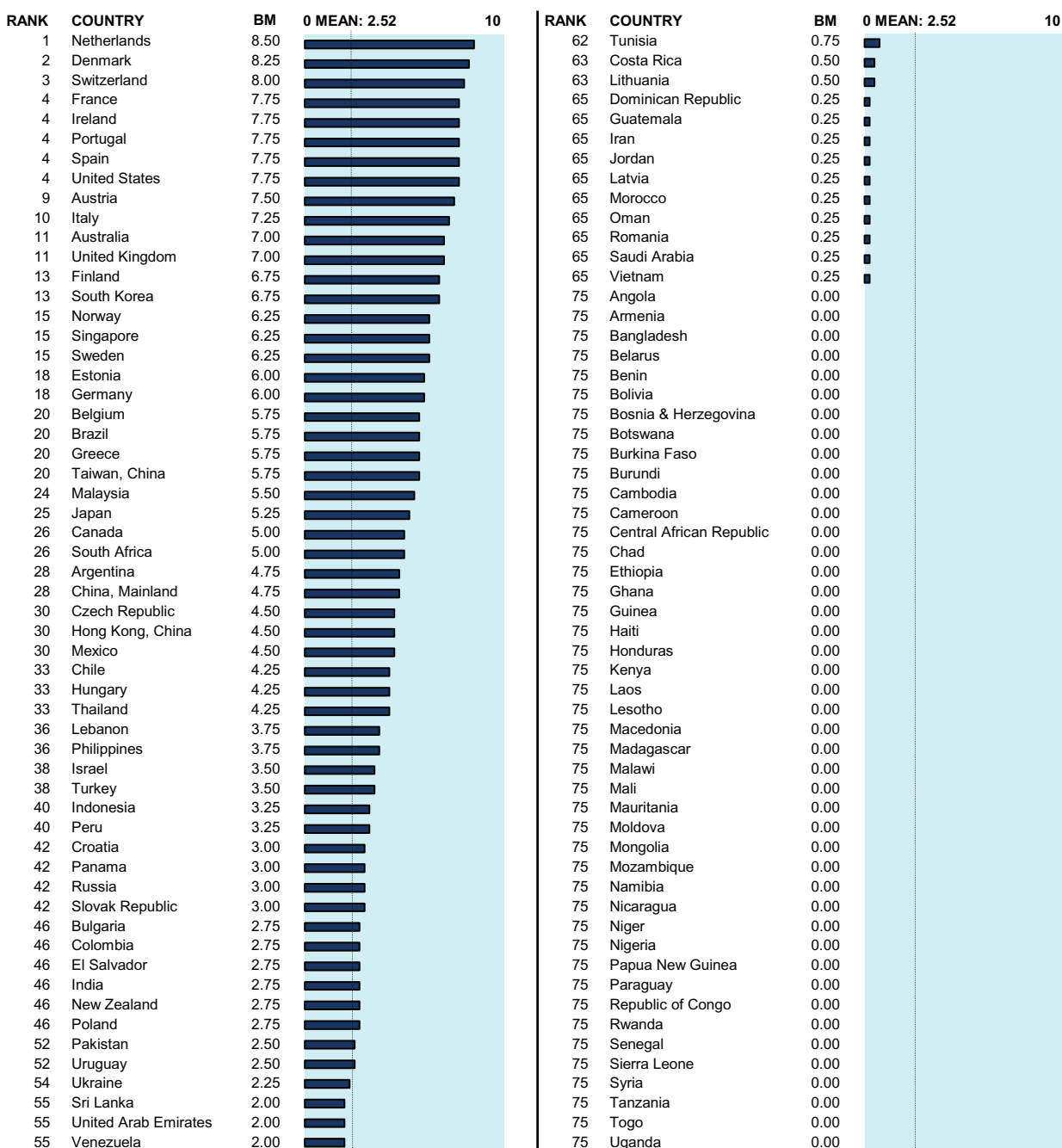
EM reflects the extent to which financing of business operations is important for a given country.





Appendix II.5: Bond Market Development (BM)

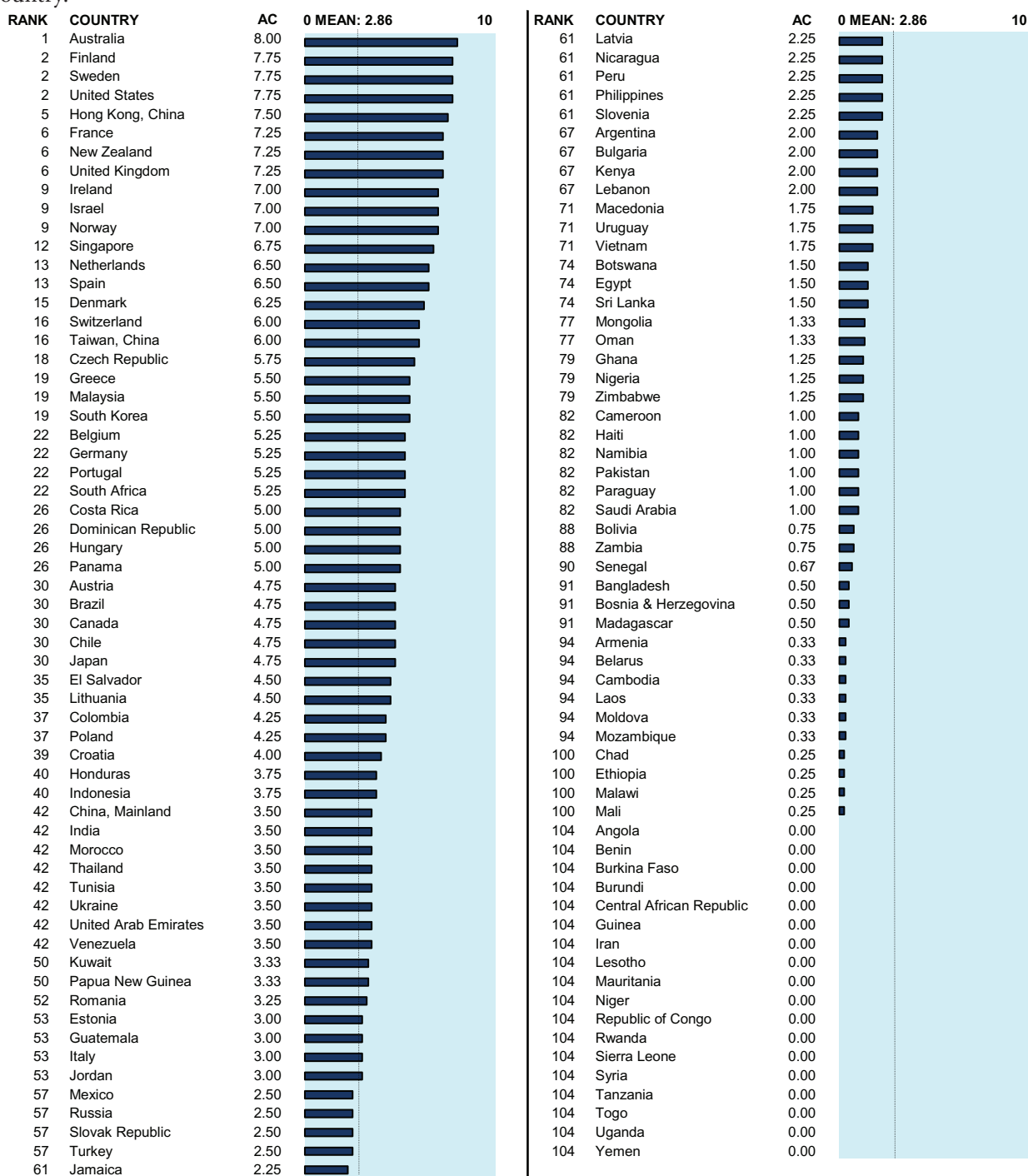
BM captures the importance of bond financing of business operations.





Appendix II.6: Alternative Sources of Capital (AC)

AC measures the use of the financing tools such as venture capital, private placements and credit cards in a country.





Appendix II.7: International Access (IA)

IA measures the level of foreign capital available to businesses in a country.





About the Authors

James R. Barth is the Lowder Eminent Scholar in Finance at Auburn University and a Senior Fellow at the Milken Institute. His research has focused on financial institutions and capital markets, both domestic and global, with special emphasis on regulatory issues. Barth was the chief economist of the Office of Thrift Supervision until November 1989 and has previously served as the chief economist of the Federal Home Loan Bank Board. He has also held the positions of professor of economics at George Washington University, associate director of the economics program at the National Science Foundation, and Shaw Foundation Professor of Banking and Finance at Nanyang Technological University. He has been a visiting scholar at the U.S. Congressional Budget Office, Federal Reserve Bank of Atlanta, Office of the Comptroller of the Currency, and the World Bank. He is a member of the Advisory Council of Georgetown University's Credit Research Center and is associated with Cornerstone Research. Most recently, Barth was the international team leader of an Asian Development Bank project providing technical advice to the People's Bank of China on reforming the legal and regulatory framework for China's banking industry. Barth earned his Ph.D. in economics at Ohio State University.

Cindy Li is a Research Analyst at the Milken Institute. Her research interests include financial institutions, microfinance, banking regulation and economic development. Prior to joining the institute, she was involved in teaching several upper-division undergraduate economics courses at the University of California, Riverside. In June 2004, Cindy Li earned her Ph.D. in economics with a concentration in development economics and econometrics from the University of California, Riverside, where she also received her MS degree in 2002. She received her BA degree in international finance from Peking University in 2000.

Sangeetha Malaiyandi is a Research Assistant at the Milken Institute. Her research interests include economic development and financial systems. She spent a summer working at the U.S. Embassy in Sri Lanka, where she assisted in conducting assessments on the political and economic climate during the ceasefire in 2002. Prior to joining the Milken Institute, she attended Oxford University, where she received an MS degree. She received her BS degree in mathematics and economics from UCLA.

Donald McCarthy is a Senior Research Analyst at the Milken Institute. His research focuses on fixed-income markets including syndicated loans, emerging market economies with special emphasis on Russia, pension systems and reform, and financing development in U.S. urban and low-income areas. He has authored and co-authored papers on the leveraged loan market, the industrial structure of the Los Angeles city economy, the U.K. pension industry, and the Asian bond market. Prior to joining the Milken Institute, he worked as an economist at a leading London-based public policy think tank, where he focused on Eastern European emerging markets and was second to serve as an advisor to the United Kingdom's Shadow Chancellor and the Shadow Treasury research department. He is a graduate of the London School of Economics and the University of Essex.

Triphon Phumiwasana is a Senior Research Analyst at the Milken Institute. His research focuses on banks, non-bank financial institutions, capital markets, banking regulation, corporate governance and economic development with special emphasis on global issues. Phumiwasana has regularly co-authored a number of Milken Institute publications, including policy briefs and articles in *The Milken Institute Review*. His research also featured in the *Financial Markets, Institutions and Instruments Journal*, *MIT Sloan Management Review* and *Regulation of Financial Intermediaries in Emerging Markets*. Phumiwasana's research has been well received by both researchers and practitioners. Phumiwasana earned his Ph.D. in economics with a concentration in international money and finance from Claremont Graduate University. His dissertation is on financial structure, economic growth and stability.

Glenn Yago is Director of Capital Studies at the Milken Institute. He specializes in financial innovations, financial institutions and capital markets, and has extensively analyzed public policy and its relation to high-yield markets, initial public offerings, industrial and transportation concerns, and public and private sector employment. Before coming to the Institute, Yago was Director of the Center for Capital Studies in New York, which he founded in 1992 to develop insight into the process of capital access and ownership change. He was a faculty member of the City University of New York Graduate Center Ph.D. Program in Economics, and a Senior Research Associate at the Center for the Study of Business Government at Baruch College—City University of New York. He has held the positions of Faculty Fellow at the Rockefeller Institute of Government, Director of the Economic Research Bureau at the State University of New York at Stony Brook and Associate Professor of Management at Stony Brook's Harriman School for Management and Policy.



Timeline of Securitization

Year	Country	Detail
1769	Prussia	Start of the mortgage covered bond (Pfandbriefe) market
1850	Denmark	First Danish mortgage covered bond issued
1930	Switzerland	First Swiss mortgage covered bond issued
1970	United States	First mortgage backed security issued (Ginnie Mae)
1975	United States	First derivative on mortgage backed security created
	United States	World's first non-mortgage securitization
	United States	World's first future flow securitization (computer lease receivables)
1977	United States	The term "securitization" first appears in a "Heard on the Street" column in the Wall Street Journal
1983	United States	World's first collateralized mortgage obligation (CMO)
1984	Canada	First Canadian mortgage securitization (CMHC)
1985	United Kingdom	First UK mortgage securitization
1986	Japan	First Asian securitization
	Japan	First Japanese securitization
	Singapore	First Singaporean mortgage bond (Hong Leong)
1987	Mexico	First emerging market future flow securitization
	Mexico	First Latin American securitization
	Malaysia	First Asian mortgage covered bond (Cagamas Berhad)
1989	United States/Mexico	First bonds collateralized by US Treasury (Brady Bonds).
	South Africa	First African mortgage securitization (Allied Building Society)
1991	South Africa	First African non-mortgage securitization (Sasfin)
1993	United States	First securitization of non-performing loans (RTC 'N' series)
	United Kingdom	First credit default swaps traded
1994	United States	First aircraft lease securitization (Northwest Airlines)
	Hong Kong	First Hong Kong securitization (Bank of America)
1996	Czech Republic	First Eastern European covered bond (HypoVereinsBank)
	Czech Republic	First Czech mortgage covered bond (HypoVereinsBank)
	China	First Chinese securitization (Zhuhai People's Government)
1997	United Kingdom	First synthetic CDO (Swiss Banking Corporation)
1998	United Kingdom	First securitization of music royalties in the world (Bowie Bonds)
	Singapore	First Singaporean asset backed security (Neptune Orient Lines)
	Australia	First non-US aircraft lease securitization (Ansett Australia)
	Hungary	First Hungarian mortgage covered bond (FHB)
1999	United Kingdom	First whole business (principal finance) securitization
	United States	First securitization of tobacco settlement payments (New York City)
	Canada	First securitization of personal loan receivables (Bank of Nova Scotia)
	South Korea	First Korean mortgage securitization (KoMoCo)
	Japan	First Japanese mortgage securitization (Sanwa Bank)
	Japan	First non-performing loan securitization outside the US
	Poland	First Polish securitization (Urtica)
Latvia	First Baltic mortgage covered bond (Latvijas Hipoteku and Zemes Banka)	
2000	Slovakia	First Slovak mortgage covered bond (Všeobecná úverová banka)
	Argentina	First use of political risk insurance for a mortgage backed security
	France	First champagne inventory securitization (Marne et Champagne)
	France	First wool inventory securitization (Chargeurs)
	India	First mortgage backed security issued in India (National Housing Board)
2001	Poland	First Polish mortgage covered bond (Bank Hipoteczny)
	Israel	First Middle Eastern securitization (Makhteshim-Agan Industries)
	Bolivia	First Bolivian securitization (Nacional Financiera Boliviana)
	Bulgaria	First Bulgarian mortgage covered bond (Bulgarian American Credit Bank)
2002	France	First French whole business securitization (Saint Louis Sucre)
	United States	First collateralized fund obligation
2003	Ireland	First asset covered bond issued in Ireland (DEPFA, WestLB)
	United Kingdom	First mortgage covered bond issued in UK
2004	United Kingdom	First social housing mortgage covered bond issued in UK (HBOS)
	Hong Kong	First non-mortgage securitization in Hong Kong (toll receivables)
	Ireland	First mortgage covered bond issued in Ireland (Bank of Ireland)
	Lithuania	First Lithuanian mortgage covered bond (AB Bankas Nord)
2005	Bangladesh	First securitization of microfinance receivables
	Norway	First Norwegian mortgage covered bond
	Sweden	First Swedish mortgage covered bond

