

EMERGING CAPITAL MARKETS

Lecture 5: Emerging Stock Markets I

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I. Development of Emerging Stock Markets

- Stock Markets in Emerging Countries have developed rapidly during the last decades, with their stock market capitalization growing from US\$300 billion in 1988 to \$12,500 billion by 2010 (source: IMF).

(in \$ billion)	<u>2010</u>
Asia	6,680
Latin America	2,670
Emerging Europe	1,607
Middle East/Africa	<u>1,675</u>
Total	12,500

- In 2009, the IMF changed the composition of countries considered to be EMs. Several countries were moved from EMs to developed countries (such as all EURO countries, Korea, Taiwan, etc). Therefore, past data on Ems may be misleading.

- The largest markets are in East Asia, including China and India. In Latin America, the markets in Brazil, Mexico and Chile grew rapidly. In Emerging Europe, Russia grew fast. In Africa, stock markets developed in SA, Egypt, and Morocco.
- Five EM countries account for almost 75% of the stock market capitalization of all EMs: China, India, Brazil, Russia, and Mexico.
- EM stock markets are still small in size compared with developed countries : the market capitalization of EMs of \$12.5 trillion is only 22% of the world equity capitalization of \$55.1 trillion in 2010, and less than the market capitalization of the US (\$17.2 tn).
- Nevertheless, the stock market capitalization of countries such as China (\$4.8tn), India (\$1.6tn), Brazil (\$1.5tn), and Russia (\$1.0tn), are comparable in size to those of many developed countries, such as UK (\$3.1bn), France (\$1.9bn), Germany (\$1.4bn), and larger than those of Sweden and Netherlands.

Total International Equity Issuances by EMs

(\$ billions)

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
Developing Asia	35	57	81	22	61	87
Latin America	5	15	47	12	16	27
Central/East Europe	2	3	5	1	4	7
CIS	8	18	36	4	1	7
Mid East/North Afric	2	2	6	4	1	2
Sub-Saharan Africa	3	1	4	9	1	3
Total	53	99	184	45	84	133

In 2010, 5 countries accounted for 80% of the international equity issued by EMs: China (\$45bn), India (\$26bn), Brazil (\$25bn), Poland (\$7bn) and Russia (\$5bn)

<u>Country</u>	<u>S&P Rating</u>	<u>Equity Issuance Abroad (\$bn,'10)</u>	<u>#Listed Compies</u>	<u>Price/Earnings (PE) Ratios</u>							
				<u>'00</u>	<u>'03</u>	<u>'05</u>	<u>'06</u>	<u>'07</u>	<u>'08</u>	<u>'09</u>	<u>'10</u>
Chile	AA	1.2	220	23	21	18	19	19	13	19	22
Mexico	A	0.6	126	12	15	14	15	14	12	23	16
Peru	BBB+	0.2	200	na	na	na	na	na	27	37	43
Colombia	BBB+	0.3	na	na	na	na	20	27	13	25	24
Brazil	BBB+	24.6	370	17	11	10	12	17	7	17	11
Argentina	B	0	120	14	12	9	11	16	4	8	6
China	A+	45.3	2063	45	9	13	20	27	10	21	14
Malaysia	A+	5.8	960	24	12	11	17	15	10	20	15
Thailand	A-	2.0	540	13	11	10	7	14	7	19	15
India	BBB-	26.1	4990	19	9	17	19	26	10	22	24
Philippines	BB	1.0	250	20	12	11	16	14	12	19	21
Indonesia	BB+	0.8	420	8	10	12	18	21	9	16	21
Poland	A	7.4	570	na	na	16	13	15	7	19	20
Russia	BBB+	5.4	345	10	12	17	17	22	4	16	9
Hungary	BBB-	0	56	na	12	19	14	15	3	16	13
Turkey	BB+	0	340	na	na	16	12	11	5	13	13
South Africa	A	2.7	360	13	8	14	15	15	11	17	18
All EMs		133	18000	na	na	15	16	17	9	21	16
USA			4280	26	22	19	18	22	10	22	16

II. Methods of Stock Valuation and Selection

- The key method involves a *Fundamental Analysis* to appraise the firm's prospects by studying past records of sales, earnings, assets, products, management, and markets to predicting future trends in these indicators and how they may affect a company's future success or failure and therefore its stock price.
- An alternative approach looks just at trends (*Technical Analysis*).
- By appraising a firm's prospects, the analysis determine a stock's *intrinsic value* and assess whether a particular stock or group of stocks is undervalued or overvalued at the current *market price*.
- If the intrinsic value is more than the current share price, this stock would be undervalued and a possible candidate for investment.
- The main methods for determining intrinsic value are:
 - A. Discounted cash flow methods.
 - B. Earnings-based ratio valuation methods.
 - C. Assets-based valuation methods.
 - D. Industry-specific benchmarks.
 - E. Other Stock Valuation Factors
 - F. Stock Valuation-Selection based on portfolio diversification.

A. Discounted Cash Flow Method

- When you buy a stock, you are **purchasing future cash flows**: the "intrinsic" value of a stock is a function of the cash payouts that it will make in the future, discounted by the weighted average cost of capital.
- The cost of capital is the required return on the stock, which includes premiums for the time value of money and the riskiness of the stock.
- The future payout will include all future cash payments (dividends) and the stock appreciation at the end of the holding period, say, 1 year:

$$P_0 = D_1/(1 + k_e) + P_1/(1 + k_e)$$

Where: P_0 = Intrinsic Value of the stock

D_1 = Dividend paid at the end of year 1

k_e = Required return on equity investments

P_1 = Stock intrinsic value at the end of period one

Similarly: $P_1 = D_2/(1 + K_e) + P_2/(1 + K_e)$

Therefore: $P_0 = D_1/(1 + k_e) + [D_2/(1 + K_e) + P_2/(1 + K_e)]/(1 + k_e)$

Or: $P_0 = D_1/(1+k_e) + D_2/(1+k_e)^2 + P_2/(1+k_e)^2$

- Therefore, the 1 period model can be generalized to "n" periods as:

$$P_0 = D_1/(1+k_e)^1 + D_2/(1+k_e)^2 + \dots + D_n/(1+k_e)^n + P_n/(1+k_e)^n$$

- If P_n is far in the future, it will not affect P_0 and can be ignored
- Therefore, the model can be rewritten as:

$$P_0 = \sum D_t/(1 + k_e)^t \quad \text{for } t = 1 \text{ to } n, \text{ when } n \text{ is very large } (\infty)$$

- **If dividends do not change, then, this becomes: $P_0 = D / k_e$**
- If $D = \$20$ and $k_e = 15\%$, the stock price *should* be $20/0.15 = \$133$
- The model says that the price of a stock is determined only by its future **“free cash flow”** payments (**dividends**).
- It does not say that stock price appreciation is not important; but that stock appreciation is derived from future dividends.
- If a stock does not currently pay dividends, it is assumed that it will pay someday after the rapid growth phase of its life cycle is over.
- In the meantime, the value will come from stock appreciation.
- Note that we discount “free cash flows” to the investor (the dividend payments) and not earnings, since a portion is reinvested.

The Gordon Growth Model

- Since a portion of earnings is reinvested, a firm could increase its dividends at a constant rate “g”, then:

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_1(1+g)}{(1+k_e)^2} + \frac{D_1(1+g)^2}{(1+k_e)^3} + \dots + \frac{D_1(1+g)^\infty}{(1+k_e)^\infty}$$

Where: D_1 = Dividend in period 1 = $D_0 (1+g)$

g = expected growth rate in dividends

k_e = required return on equity investments

- Then, multiplying both sides by $(1+k_e)/(1+g)$, and subtracting the initial equation, the model can be simplified algebraically to:

$$P_0 = \frac{D_1}{(k_e - g)}$$

- This model assumes that Dividends continue to grow at a constant rate g for ever and the growth rate is less than the required return on equity.
- If this were not so, the price would be implausibly large.

- Example: To find the current "intrinsic value" of a firm's stock whose dividends grow at a constant rate of $g = 5\%$, paid dividends last year of $D_0 = \$20.00$, and the cost of capital $k_e = 15\%$.

$$P_0 = D_1 / (k_e - g)$$

$$\text{But : } D_1 = D_0 (1 + g)$$

$$P_0 = D_0 (1 + g) / (k_e - g)$$

$$P_0 = (\$20.00)(1.05) / (0.15 - 0.05) = \$190$$

- The growth rate of 5% pa changes the stock value from \$133 to \$190
- If the stock is selling for less than \$190, you would purchase it, since its intrinsic value is higher at \$190: the stock price is undervalued.
- Theoretically, the best method of stock valuation is the dividend valuation approach.
- But, if a firm is not paying dividends or has an erratic growth rate, the approach will not work.
- Consequently, other methods will need to be used, which we will discuss now.

Calculating the Equity Value of the firm (V_e)

- Since many companies do not pay dividends, in most cases we cannot use dividend data to calculate the price of a stock.
- But the same concept can be applied realizing that dividends represent the free cash flows of the company available to shareholders (Equity Value V_e , which is the stock price times number of shares outstanding

$$V_e = P_o \times \text{\#shares} \quad \text{or} \rightarrow \quad P_o = V_e / \text{\#shares}$$

- It is normally easier to obtain the Enterprise Value (EV) using the free cash flow available to both shareholders and debtholders (Earnings Before Interests, Taxes, Amortization & Depreciation -- EBITAD).
- Equity Value is the obtained by subtracting debt from EV.

A. Equity Value in a firm that does not use debt (Unleveraged)

$$V_e = \sum (UCF_t) / (1 + K_e)^t$$

- Where V_e is Equity Value, UCF_t is Unleveraged cash flow at time t , and K_e is the required rate of return on equity or cost of equity capital.
- Since no debt is used, Equity Value equals Enterprise Value ($V_e=EV$)

- In order to estimate the unleveraged cash flow (UCF):
 - Financial statements must be analyzed and adjusted to reflect international accounting standards. This can be a major task.
 - Future estimates of Cash Inflows require good market and competitors analyses and consider any delays due to A/Rs.
 - Cash Outflows should include all expenses, including taxes and necessary future capital expenditures (Capex).
 - Cash inflows *minus* Cash Outflows is EBITDA - Capex.
 - Normally, profits for the first five years are calculated in detail, with company-specific assumptions. After year five, it is assumed that the rate of growth of the company's cash flows will revert to the average for similar firms in the market.
 - The cost of equity capital is estimated using local information about the risk-free rate and risk premiums, based on the Capital Assets Pricing Model (to be discussed later).

B. Enterprise Value (EV) in a firm that uses debt (Leveraged)

- If debt is used, there is a need to make adjustments to reflect the impact of debt (increases risks and the K_e , but gives a tax shield):

$$EV = \sum (UFC_t) / (1 + K_{wacc})^t$$

- The Unleveraged free cash flow is similar to the previous calculation (interest payments on debt are not subtracted).
- The discount rate should be now the weighted average cost of capital K_{wacc}

$$K_{wacc} = [E/(D+E)] K_e + [D/(D+E)] K_d (1 - Tc)$$

- K_e , the cost of equity, will be higher than the unleveraged K_e since debt leverage increases risks for the shareholders.
- K_d , the cost of debt, is adjusted by the factor that reflects the lower taxes paid by the company as interest payments are tax deductible (the tax shield). Tc is the rate of corporate taxes.
- Equity Value (V_e) is calculated by subtracting Debt from EV.
- Stock intrinsic value is calculated by dividing V_e by # shares.

B. Earnings-Based Ratios for Valuation

(i) Price-Earnings Ratio

$$\text{PE Ratio} = (\text{Stock Price per Share}) / (\text{Annual Earnings per Share})$$

- The PE ratio (price-earning ratio) of a stock is a **measure of the price paid for a stock share per unit of annual net earnings per share generated by the firm** (e.g., how many dollars is the market willing to pay for the stock **per** dollar of income earned).
- A higher PE ratio means that investors are paying more per unit of earnings compared to the one with lower PE ratio.
- A high PE has three interpretations:
 - *A higher than average PE may mean that the market expects earnings to growth in the future (the growth rate g is large).*
 - *A high PE may indicate that the market thinks the firm's earnings are **low risk** and is willing to pay a premium for them.*
 - *Or a high PE may just mean that the share is overpriced.*

- The PE ratio can be used to estimate the value of a firm's stock.
- This is because similar firms in the same industry are expected to have similar PE ratios in the long run: $(P/E) = (P/E)_{ind}$
- The value of a firm's stock can then be found by multiplying a representative average industry PE ratio times earnings per share:

$$P = (P/E)_{ind} \times E$$

- The average industry PE ratio can be obtained from market data, if the firm is publicly traded, or from past private transactions.
- It is also useful to determine how the current PE ratio compares with past PE ratios for the same company
- Depending on the earnings used, there are various PE ratios:
 - **"Trailing PE"** or "PE ttm": Earnings per share is the net income of the company for the most recent 12 month period, divided by number of shares outstanding.
 - **"Forward PE"**, "PEf", or "estimated PE": Instead of past net income, it uses estimated net earnings over the next 12 months.

- Example: What is the current value of Applebee's shares if earnings per share are projected to be \$1.30? We find out that the average industry PE ratio for restaurants similar to Applebee's is 20.

$$P_0 = (P/E)_{\text{ind}} \times E$$

$$P_0 = 20 \times \$1.30 = \$26.$$

- Advantages of PE valuation:
 - Useful for valuing privately-held firms without share market prices and firms that do not pay dividends.
- Disadvantages:
 - By using an industry average PE ratio, firm-specific factors that might contribute to a long-term PE ratio above or below the average are ignored.
 - The average PE ratio for EMs in 2005-2010 was 15.2
 - PE ratios for firms vary across time, countries and sectors, as shown in the following slides.

Possible Interpretations of PE Ratios

N/A	A company with no earnings has an undefined P/E ratio. By convention, companies with losses (negative earnings) are usually treated as having an undefined P/E ratio, even though a negative P/E ratio can be mathematically determined.
0–12	Either the stock is undervalued (cheap and good buy) or the company's earnings are thought to be in decline. Alternatively, current earnings may be substantially above historic trends or the company may have profited from selling assets; but stock prices have not yet increased.
13–17	For many firms a P/E ratio in this range may be considered fair value.
18–25	Either the stock is overvalued or the company's earnings have increased since the last earnings figure was published. The stock may also be a growth stock with earnings expected to increase substantially in future.
25+	A company whose shares have a very high P/E may have high expected future growth in earnings or the stock may be the subject of a speculative bubble.

Equity Valuation: EMs Price/Earnings Ratios

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
Emerging Markets	15.0	15.7	17.1	8.5	20.6	14.4
Asia	14.2	15.8	19.0	9.4	24.3	15.6
Europe/MEast/Afr	17.3	15.7	14.6	6.7	16.2	13.3
Latin America	14.5	14.7	16.0	9.0	18.3	13.7

Source: MSCI

Country average PE Ratios, as of Jan 2011

• Argentina	13.7	• Hungary	13.4	• Portugal	5.8
• Australia	14.9	• India	24.0	• Romania	13.5
• Austria	18.1	• Indonesia	20.3	• Russia	9.6
• Belgium	12.9	• Ireland	21.7	• Singapore	14.4
• Brazil	14.5	• Israel	13.6	• Slovenia	15.3
• Bulgaria	7.5	• Italy	13.0	• South Africa	19.0
• Canada	19.6	• Japan	15.2	• South Korea	16.1
• Chile	22.8	• Luxemburg	18.1	• Spain	9.5
• China	13.5	• Malaysia	16.5	• Sri Lanka	25.2
• Colombia	21.2	• Malta	5.1	• Sweden	15.6
• Cyprys	6.7	• Mexico	16.5	• Switzerland	12.9
• Czech Rep	10.5	• Netherland	15.0	• Taiwan	15.7
• Denmark	29.9	• New Zealand	24.8	• Thailand	14.9
• Finland	17.1	• Norway	13.7	• Turkey	12.9
• France	15.8	• Pakistan	11.3	• UK	15.4
• Germany	15.3	• Peru	57.9	• USA	17.4
• Greece	17.5	• Philippines	20.7	• USA S&P500	15.8
• Hong Kong	14.7	• Poland	20.2	• Venezuela	3.0

Source: The Financial Times

Country average PE Ratios, as of Jan 2012

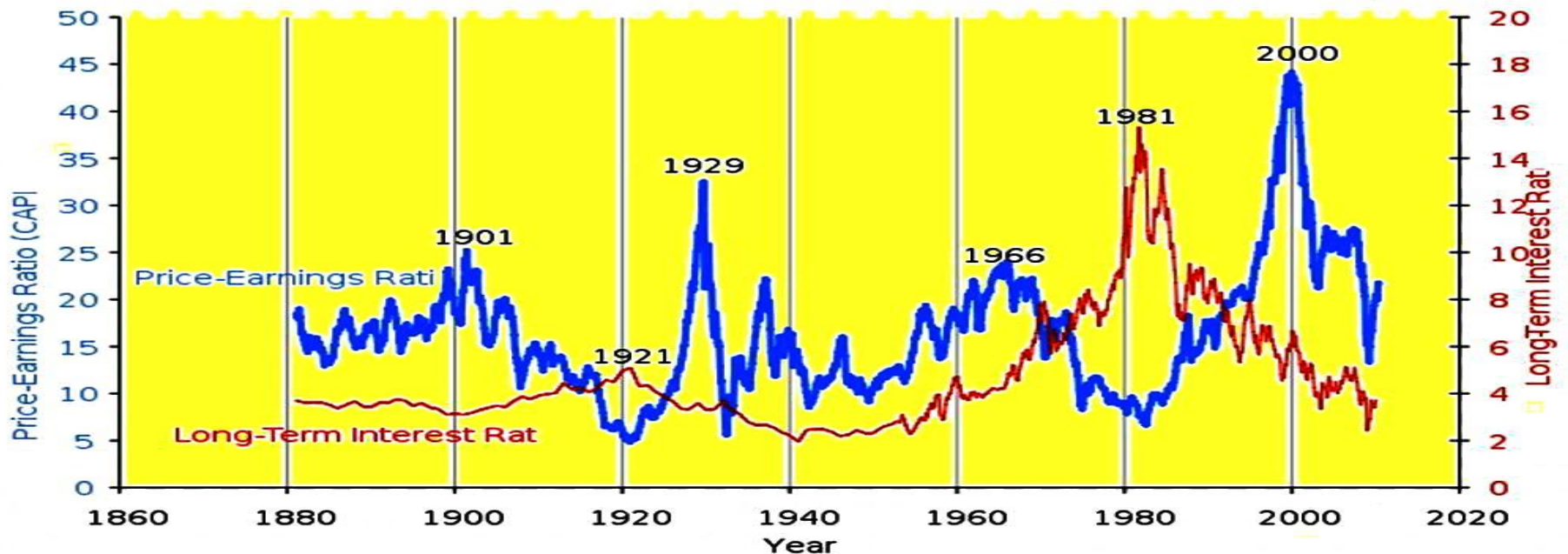
STOCK MARKET - RATIOS

	Jan 12		Jan 11		Week ago			Jan 12		Jan 11		Week ago	
	Yield	P/E	Yield	P/E	Yield	P/E		Yield	P/E	Yield	P/E	Yield	P/E
Argentina	6.6	9.5	6.7	9.4	6.9	9.2	Malta	4.2	12.4	4.2	12.4	4.3	12.3
Australia	4.9	12.4	4.9	12.4	4.9	12.3	Mexico	1.9	14.5	1.9	14.6	1.9	14.4
Austria	3.2	8.6	3.2	8.6	3.2	8.7	Netherland	3.0	11.9	3.0	11.9	3.0	11.9
Belgium	2.4	16.2	2.4	16.2	2.5	16.0	AEX †	4.5	8.6	4.5	8.6	4.5	8.6
Brazil	4.1	11.1	4.1	11.1	4.2	10.9	New Zealand	4.7	14.9	4.7	15.0	4.6	15.2
Bulgaria	1.0	6.1	1.0	6.1	1.1	6.1	Norway	4.6	9.1	4.7	9.0	4.6	9.0
Canada	2.8	14.2	2.8	14.2	2.8	14.1	Pakistan	7.0	8.1	7.0	8.1	6.9	8.3
S&P/TSX	3.1	13.7	3.1	13.7	3.0	13.7	Peru	5.0	35.0	5.0	34.8	5.1	34.7
Chile	2.8	16.0	2.8	16.0	2.8	16.0	Philippines	2.4	23.4	2.4	23.5	2.4	23.0
China	3.5	8.2	3.5	8.1	3.6	7.9	Poland	3.1	9.1	3.2	9.0	3.1	9.1
Colombia	3.1	15.0	3.0	15.3	3.1	15.1	Portugal	8.8	10.2	8.8	10.1	8.8	10.1
Cyprys	11.2	4.1	11.6	3.0	11.4	3.1	Romania	4.0	10.0	4.0	9.9	4.1	9.7
Czech Rep.	7.2	13.5	7.2	13.5	7.1	13.6	Russia	2.6	6.3	2.6	6.3	2.7	6.2
Denmark	1.5	15.3	1.5	15.3	1.5	15.2	Singapore	3.1	7.6	3.1	7.6	3.2	7.6
Finland	5.3	12.3	5.3	12.2	5.4	12.1	Slovenia	3.1	9.9	3.1	10.0	3.0	10.3
France	4.1	10.3	4.1	10.3	4.2	10.1	South Africa	3.4	15.3	3.4	15.2	3.5	15.1
Germany	3.4	10.0	3.4	9.9	3.4	9.8	South Korea	1.5	11.8	1.5	11.7	1.5	11.9
DAX 30 †	3.9	9.8	3.9	9.8	3.9	9.9	Spain	6.7	8.6	6.7	8.6	6.8	8.5
Greece	5.8	9.2	5.8	9.1	5.7	9.3	Ibex 35 †	7.6	8.6	7.6	8.6	7.6	8.6
Hong Kong	2.9	9.4	2.9	9.4	3.0	9.3	Sri Lanka	2.0	21.1	2.0	20.9	2.0	21.1
Hang Seng †	3.7	8.7	3.7	8.7	3.7	8.6	Sweden	3.7	11.6	3.7	11.6	3.7	11.5
Hungary	2.4	9.9	2.5	9.8	2.6	9.5	Switzerland	3.4	15.0	3.4	14.9	3.4	15.0
India	1.6	16.2	1.6	16.2	1.6	15.7	Taiwan	4.5	13.3	4.5	13.3	4.5	13.1
Indonesia	2.1	16.3	2.1	16.3	2.1	16.3	Thailand	3.8	12.1	3.8	12.1	3.8	12.2
Ireland	1.7	18.2	1.7	18.4	1.7	18.0	Turkey	2.8	10.1	2.9	9.9	2.9	9.9
Israel	4.5	10.9	4.5	10.9	4.6	10.8	UK	3.3	10.8	3.4	10.8	3.4	10.8
Italy	5.1	11.5	5.2	11.3	5.1	11.0	USA	2.1	14.5	2.1	14.5	2.1	14.3
Japan	2.5	13.7	2.5	13.8	2.5	13.9	Dow Jones †	2.7	13.4	2.7	13.4	2.7	13.5
Topix †	2.6	12.4	2.6	12.4	2.6	12.5	S&P 500 †	2.6	14.1	2.6	14.1	2.6	14.1
Luxemburg	4.3	12.6	4.3	12.6	4.3	12.7	Venezuela	13.8	5.0	13.9	5.0	13.9	5.0
Malaysia	3.2	15.9	3.3	15.8	3.3	15.7							

Country yields and P/E's relate to a sample of stocks that cover at least 75% of each markets capitalisation. † Losses are excluded from the P/E calculation on country indices. Source: ThomsonReuters

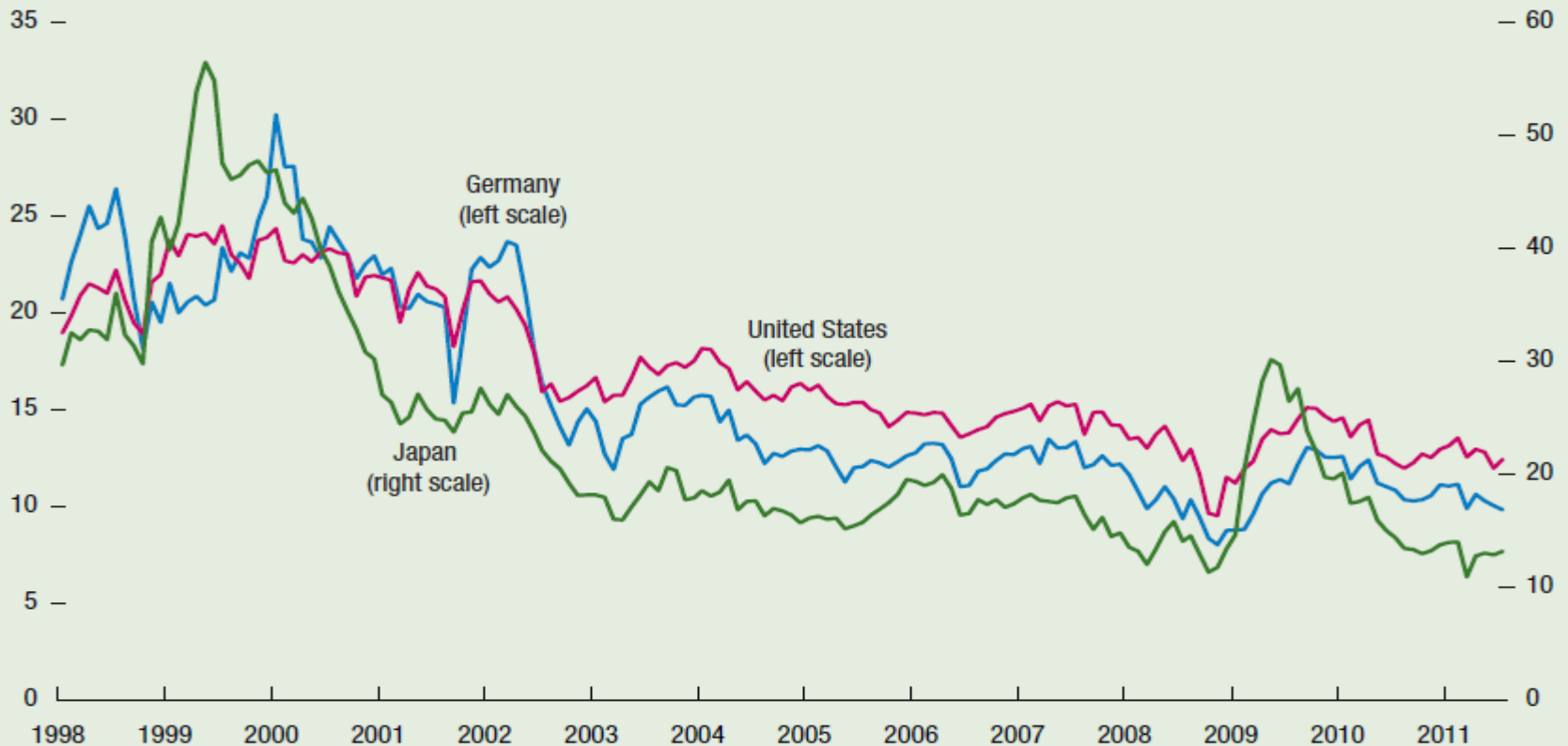
PE Ratios vs Long Term Interest Rates

- Over decades, the average PE ratio in the US has been 15 and varied depending on expected growth of earnings, expected stability of earnings, expected inflation, and yields of competing investments.
- For example, when US treasuries yield high returns, investors pay less for a given stock's earnings per share and P/E's fall.
- That is, as soon as the current low interest rates start to increase, stock prices and PE ratios will decline.



- The forward P/E ratios during 1998-2002 were too high (averaging 23 for the US and Germany and 40 for Japan) and were not sustainable. Today, they are more balanced.

Figure 6. Twelve-Month Forward Price/Earnings Ratios



Source: I/B/E/S.

The PE ratio will tend to be higher in sectors with growth potential:

PE Ratio by Sector

<i>Industry Name</i>	<i>Number of Firms</i>	<i>Price/Current EPS</i>	<i>Price/Forward PE</i>	<i>Expected Growth</i>	<i>Beta</i>
Semiconductor	125	65.24	50.78	15.08%	1.56
Internet	239	52.53	34.72	17.21%	1.04
Telecom. Services	140	44.14	18.60	12.50%	1.10
Wireless Networking	60	43.84	33.34	15.87%	1.50
Biotechnology	121	35.13	27.77	20.28%	1.10
Hotel/Gaming	74	33.89	30.72	8.31%	1.74
Computer Software/Svcs	333	32.49	33.96	17.27%	1.02
Aerospace/Defense	67	31.58	22.24	9.68%	1.19
Electrical Equipment	87	31.07	21.58	9.91%	1.41
Building Materials	53	29.08	32.19	2.95%	1.45
Restaurant	68	29.55	17.76	13.16%	1.34
Retail (Special Lines)	157	28.69	21.24	11.03%	1.43
Recreation	65	27.27	16.38	14.01%	1.43
Air Transport	44	24.99	15.04	11.76%	1.06
Electronics	183	24.61	26.16	12.52%	1.16
Toiletries/Cosmetics	19	24.72	15.42	10.15%	1.23
Food Processing	121	22.45	17.15	14.76%	0.86
Retail Automotive	15	22.52	19.61	10.93%	1.46
Retail/Wholesale Food	32	20.70	15.59	12.64%	0.73
Apparel	56	19.64	16.31	10.45%	1.30
Beverage	41	19.14	15.56	16.50%	1.04

Source: Value Line; As of January 2010

PE Ratio by Sector, Page 2

<i>Industry Name</i>	<i>Number of Firms</i>	<i>Price/Current EPS</i>	<i>Price/Forward PE</i>	<i>Expected Growth</i>	<i>Beta</i>
Beverage	41	19.14	15.56	16.50%	1.04
Cable TV	24	17.70	22.61	21.63%	1.69
Retail Store	43	18.42	14.17	11.27%	1.35
Medical Services	162	18.22	15.82	12.53%	0.97
Entertainment	95	16.15	28.22	15.22%	1.81
Bank	481	16.80	20.48	7.79%	0.75
Steel (General)	20	16.85	18.39	10.75%	1.61
Heavy Construction	14	16.62	17.07	11.42%	1.42
Pharmacy Services	21	16.41	16.41	14.51%	0.88
Electric Util. (Central)	23	16.26	14.18	5.60%	0.79
Publishing	30	15.60	18.09	11.92%	1.43
Household Products	23	14.81	18.60	10.59%	1.15
Machinery	130	14.44	22.21	7.04%	1.32
Natural Gas (Div.)	32	14.72	18.82	6.14%	1.29
Chemical (Basic)	17	10.75	17.14	11.30%	1.27
Metal Fabricating	36	10.12	47.05	2.88%	1.54
Petroleum (Integrated)	24	7.84	17.45	3.37%	1.24
Total Market	7036	29.57	24.37	11.39%	1.17

Source: Value Line, 7036 firms; January 2010

(ii) PEG Ratio: Adding Earnings Growth in the PE ratio

- The PE ratio does not include explicitly the growth rate of earnings, which affects whether the required PE ratio should be high or low.
- Earnings growth could more explicitly be reflected through the so-called **Price-Earnings to Growth (PEG) ratio**.
- The PEG ratio is obtained by dividing the **P/E ratio** by the past or future **annual earnings growth rate: $PEG = (P/E \text{ Ratio}) / \text{Earnings Growth}$** .
- The PEG measures the P/E value per unit of annual earnings growth.
- It is considered a form of normalization because a higher growth rate of earnings should cause a higher P/E ratio.
- If the PEG ratio is around 1, the firm is considered fairly valued.
- A PEG ratio that is much higher than 1 indicates an overvalued company; and a PEG below 1 indicates an undervalued company.
- Some investors want a PEG ratio below 1.2. With a lower PEG ratio, you can purchase its future earnings growth for a lower relative price.
- These rules-of-thumb are based on a belief that P/E ratios should approximate the long-term growth rate of a company's earnings.
- Small, high-growth stocks generally trade at higher PEGs.

Russell 1,000 Stocks w/ Lowest PEG Ratios

Stock	Company	Sector	Price	YTD % Chg	PEG Ratio
VR	Validus Holdings	Financials	30.54	-0.13	0.17
WFT	Weatherford International	Energy	21.37	-6.62	0.19
UTHR	United Therapeutics Corp	Health Care	69.72	9.90	0.19
ANR	Alpha Natural Resources	Energy	55.99	-6.75	0.24
ENH	Endurance Specialty	Financials	50.28	9.12	0.26
WFR	MEMC Electronic Materials	Technology	13.23	17.67	0.27
WLT	Walter Energy Inc	Materials	125.70	-1.60	0.31
SPWRA	SunPower Corp	Technology	17.17	34.14	0.35
BTU	Peabody Energy Corp	Energy	68.65	7.16	0.38
TSO	Tesoro Corp	Energy	24.86	34.06	0.40
AVT	Avnet Inc	Technology	34.71	4.97	0.44
XEC	Cimarex Energy Co	Energy	115.02	29.85	0.46
CEDC	Central European Dist.	Consumer Staples	13.77	-39.61	0.46
DTV	DIRECTV	Cons. Discret.	46.47	16.30	0.46
CNX	Consol Energy Inc	Energy	52.38	7.65	0.47
AGO	Assured Guaranty	Financials	14.03	-20.45	0.48
VSEA	Varian Semiconductor	Technology	49.26	33.31	0.49
AXS	Axis Capital Holdings	Financials	36.53	1.81	0.49
WCRX	Warner Chilcott	Health Care	24.06	6.78	0.51
XRX	Xerox Corp	Technology	10.71	-7.20	0.51
TXT	Textron Inc	Industrials	27.50	15.74	0.53
ETFC	E*Trade Financial Corp	Financials	15.94	-0.19	0.53
WHR	Whirlpool Corp	Cons. Discret.	82.26	-7.33	0.54
HES	Hess Corp	Energy	84.73	10.56	0.56
ARW	Arrow Electronics Inc	Technology	39.66	15.47	0.56
KAR	KAR Auction Services Inc	Industrials	14.18	3.91	0.59
KMT	Kennametal Inc	Industrials	39.76	0.89	0.59
AHL	Aspen Insurance	Financials	29.43	2.90	0.60
IM	Ingram Micro Inc	Technology	20.13	4.98	0.61
GME	GameStop Corp	Cons. Discret.	19.98	-12.63	0.61
CXO	Concho Resources Inc	Energy	108.10	23.65	0.62
RE	Everest Re Group Ltd	Financials	88.45	4.36	0.62
CELG	Celgene Corp	Health Care	54.07	-8.51	0.63
PCS	MetroPCS Communications	Telecom	14.78	17.03	0.65
GILD	Gilead Sciences Inc	Health Care	39.65	9.46	0.67
TER	Teradyne Inc	Technology	18.95	35.90	0.69
CEPH	Cephalon Inc	Health Care	57.74	-6.42	0.70
WDR	Waddell & Reed Financial	Financials	41.10	16.55	0.71
ONNN	ON Semiconductor Corp	Technology	11.10	12.35	0.71
DO	Diamond Offshore Drilling	Energy	78.30	18.48	0.72
BGC	General Cable Corp	Industrials	44.60	27.16	0.73
DISH	DISH Network Corp	Cons. Discret.	23.87	21.41	0.74
MRO	Marathon Oil Corp	Energy	52.21	41.18	0.74
LNC	Lincoln National Corp	Financials	30.83	10.65	0.74

PEG for countries: since GDP growth rates are normally lower than company's profit growth rates, the PEG ratios will be higher, ranging from about 2 to 15, as shown below (2011 data):

Country PEG Ratios				
Country	Index	Current P/E	Est. 2011 GDP Growth	P/E to GDP Growth
China	Shanghai Comp	18.46	9.50	1.94
India	Sensex	16.55	8.50	1.95
Singapore	Straits Times	10.85	5.15	2.11
Russia	Russian Trading	9.66	4.20	2.30
Brazil	Bovespa	12.08	4.45	2.71
Hong Kong	Hang Seng	13.61	5.00	2.72
Malaysia	Kuala Lumpur	16.66	5.40	3.08
Taiwan	TWSE	15.15	4.70	3.22
South Korea	Kospi	14.34	4.30	3.33
Sweden	OMX 30	13.72	4.05	3.39
South Africa	FTSE/JSE Top 40	15.27	3.50	4.36
Mexico	Mexican Bolsa	17.55	4.00	4.39
US	S&P 500	15.59	3.20	4.87
Germany	DAX	14.40	2.60	5.54
Australia	S&P/ASX 200	17.00	2.78	6.11
France	CAC-40	12.16	1.70	7.15
Switzerland	Swiss Market	15.35	1.95	7.87
Canada	S&P/TSX	21.07	2.65	7.95
UK	FTSE 100	13.76	1.70	8.09
Japan	Nikkei 225	19.26	1.54	12.50
Italy	FTSE MIB	14.35	1.10	13.05
Spain	IBEX 35	9.29	0.60	15.48

(iii) Enterprise Value / EBITDA Ratio

$$\text{EV/EBITDA} = \frac{\text{Enterprise Value}}{\text{Earnings Before Interest, Taxes, Deprec \& Amort}}$$

- The total “equity value” of an enterprise can be obtained by multiplying the intrinsic value of one share (obtained from discounted cash flows or PE ratio analysis) by the number of shares outstanding.
- A second approach to get “equity value” is to obtain first the entire Enterprise Value (EV) and then subtract the value of net financial debts.
- The EV can be obtained by multiplying the company's Earnings Before Interest, Taxes, Deprec & Amortiz. (EBITDA) times an industry-wide EV/EBITDA ratio which is available from various sources.

$$\text{EV} = (\text{EBITDA}) (\text{EV/EBITDA})_{\text{industry}}$$

- The EV/EBITDA ratio facilitates comparisons of profitability among firms and across countries, as (i) it eliminates the effects of the firms’ decision on financial structure between equity and debt; (ii) it is not affected by its policies regarding depreciation and provisioning; (iii) it is also a proxy for operating cash flow.
- Large organizations compile these ratios based on their past purchases
- A number of sources provide EV/EBITDA ratios for various countries.

- Depending on sectors and countries, EV/EBITDA ratios range from **4x** for low growth high risk firms (implying a rate of return of about 25%) to **10x** for high growth firms with low risk (implying a rate of return of 10%).
- The Argos Mid-Market index of EV/EBITDA multiples measure the evolution of **Euro-zone** private mid-market company prices.
- The preparation of the index is based on samples of 942 transactions, which met the following criteria: acquisition of a majority stake, equity value in range €15-150m), certain activities excluded (financial, real estate, high-tech).
- By November 2010, the average of the indexes recovered from 6.0x to 6.5x

EV/EBITDA: LBOs vs Strategic Buyers



Source : Argos Mid-Market Index / Epsilon Research

- In 2010 in the US, EV/EBITDA ratios declined to an average 9.2x compared to 10.7x in 2007.
- This reduction in 2010 reflected a larger share of distressed transactions, tight financing, and poor corporate earnings.

Median Implied Enterprise Value / EBITDA (U.S. Targets)

Target's Sector	(As of 1/31/10) Last Twelve Months Ending January 31 st of:							
	2007		2008		2009		2010	
	<\$500M	>\$500M	<\$500M	>\$500M	<\$500M	>\$500M	<\$500M	>\$500M
Consumer Discretionary	10.0x	12.1x	9.5x	11.6x	10.2x	9.4x	8.4x	8.6x
Consumer Staples	9.9x	13.1x	10.2x	10.9x	7.7x	10.1x	7.6x	10.0x
Energy	8.0x	10.1x	6.1x	10.8x	6.9x	11.4x	5.3x	6.7x
Healthcare	14.1x	17.8x	15.4x	16.4x	15.4x	13.2x	8.7x	9.9x
Industrials	6.9x	10.8x	8.8x	12.0x	8.8x	11.7x	8.1x	12.6x
Information Technology	11.4x	15.4x	15.8x	15.7x	11.3x	12.3x	11.3x	13.6x
Materials	6.7x	8.8x	11.3x	8.8x	7.9x	10.7x	9.3x	7.2x
Telecommunication Services	8.7x	11.0x	8.2x	11.2x	7.6x	7.3x	7.0x	7.6x
Utilities	6.0x	11.6x	18.5x	8.8x	8.3x	18.4x	7.2x	16.8x

Source: Capital IQ

C. Asset-Based Valuation Methods

A. Market Value-to-Book Ratios (Price-to-Book Ratios)

- Enterprise Value equals the product of a MV/B ratio for comparable firms times the book value of this company
- This ratio is widely used for bank acquisitions, under which investors pay for the bank's equity about 2.0 times book equity value (in Ukraine in 2005-07, investors paid 7 times).

B. Replacement Value

- Enterprise Value estimated as the cost to build the company from scratch, with/without technology changes.
- But this ignores going its value as an ongoing concern, intangibles assets, human capital.

C. Liquidation Value

- Enterprise Value estimated as the proceeds if all the assets of the company were to be liquidated minus its debts.

Equity Valuation Measures: Price-to-Book Ratios

	2005	2006	2007	2008	2009	2009		2010	
						Q3	Q4	Q1	Q2
Emerging Markets	2.4	2.6	2.9	1.4	2.2	2.0	2.2	2.1	1.9
Asia	2.1	2.4	2.8	1.4	2.2	2.1	2.2	2.2	2.0
Europe/Mideast/Africa	2.9	2.8	2.7	1.2	1.8	1.7	1.8	1.7	1.5
Latin America	2.6	2.8	3.1	1.7	2.4	2.3	2.4	2.4	2.0
Argentina	3.1	3.5	2.9	0.9	1.2	1.4	1.2	1.3	1.1
Brazil	2.4	2.5	3.1	1.5	2.3	2.2	2.3	2.4	1.8
Chile	1.9	2.3	2.4	1.8	2.3	2.2	2.3	2.4	2.5
China	2.1	3.2	4.5	1.8	2.7	2.4	2.7	2.6	2.3
Colombia	3.4	1.9	1.8	1.5	2.3	2.4	2.3	2.1	1.8
Egypt	8.0	4.7	5.5	1.7	2.2	2.4	2.2	2.3	1.8
Hungary	3.0	3.0	2.6	0.9	1.4	1.4	1.4	1.7	1.3
India	4.4	5.2	6.4	2.2	3.8	3.7	3.8	3.4	3.2
Indonesia	3.1	4.4	5.8	2.4	3.9	4.2	3.9	4.2	4.0
Jordan	4.7	2.2	2.4	1.7	2.4	1.9	2.4	2.2	1.8
Malaysia	1.8	2.2	2.5	1.5	2.1	2.0	2.1	2.2	2.1
Mexico	3.3	3.6	3.3	2.4	2.6	2.7	2.6	2.7	2.7
Morocco	2.7	4.2	6.1	5.2	4.0	4.3	4.0	4.5	5.4
Pakistan	3.6	2.9	3.7	1.1	1.9	1.9	1.9	2.0	1.9
Philippines	2.0	2.8	2.9	1.8	2.6	2.4	2.6	2.6	2.7
Poland	2.6	2.6	2.5	1.2	1.6	1.5	1.6	1.7	1.5
Russia	2.4	2.7	2.4	0.7	1.3	1.2	1.3	1.1	1.0
South Africa	3.2	3.3	3.1	1.9	2.4	2.2	2.4	2.4	2.3
Sri Lanka	2.0	2.6	1.7	0.8	2.2	1.9	2.2	2.3	2.4
Thailand	2.4	1.9	2.4	1.1	1.9	1.9	1.9	2.1	1.9
Turkey	2.2	2.0	2.3	1.1	1.9	1.8	1.9	1.9	1.8

Source: Morgan Stanley Capital International.

Note: The country and regional classifications used in this table follow the conventions of MSCI and do not necessarily conform to IMF country classifications or regional groupings.

D. Industry-Specific Valuation Benchmarks

- Many industries have some valuation benchmarks for its physical characteristics that can be used to determine the enterprise value of a company as an initial, back-of-the-envelope estimate.
 - They are based on the premise that investors are willing to pay for market share (such as number of TV subscribers) or other physical aspect (such as square meters) and that normal profitability of businesses in the industry does not vary substantially across firms.
- Some of the typical valuation benchmarks include:
 - **In real estate:** Price/ square meter (such as \$5,000/m² in Kiev)
 - **In hotels:** Price /bed (such as \$900,000/bed in a small hotel)
 - **In cable TV:** Price/subscriber (such as \$200/subscriber in Ukr)
 - **In steel companies:** Price/capacity in tons (such as \$700/ton)

E. Other Stock Valuation Factors

- (1) **Competitive Advantage:** Is there a ‘Niche’ for this company. Does it have a recognized name? Does it possess consumer loyalty?
- (2) **Large Market Share.** Well-managed companies in EMs tend to consolidate and increase market share.
- (3) **Market Capitalization.** Some investors avoid large, well-known companies in favor of small-cap stocks that still contain significant upside potential. A minimum cap is also defined.
- (4) **Good Management.** This is a key factor. Investors look at the training, experience of senior managers.
- (5) **Strategic Relationships.** Does the company have foreign investors? Does it have technology agreements with firms abroad?
- (6) **Export Orientation.** Is a good portion of revenues from exports?
- (7) **Hidden Assets.** In EMs, many companies have hidden assets that may be substantially under-priced.
- (8) **Other Shareholders.** Who they are and their country’s influence.

- (9) **Other financials.** Stable earnings growth for a number of years, and reasonable debt/equity ratio.
- (10) **Value of Real Options:** Value of alternative sources of revenues or savings that the investment can generate, due to irreversibility (sunk costs) and uncertainty (future cash flows), such as:
- (i) Waiting (learning) option value (building now or just wait for better knowledge and potential higher returns)
 - (ii) Additional investment option value (if invest now in project A, later can invest in B with overall higher returns.)
 - (iii) Abandoning option. How much you lose if the company fails.
-

F. Calculation of the Required Rate of Return of a Stock – The Cost of Capital (COC) of a Stock

- Based on the previous equity valuation methods, we can compute the stock's “intrinsic” value.
- Then the decision as to whether or not to buy the stock depends on whether the **current market** (selling) price of the stock is above or below this “**intrinsic**” value.
- An alternative formulation is to ask whether the stock's “**current internal rate of return**” is above or below the “**required rate of return**” for this type of company, which is the **opportunity cost of equity capital (COC)**. **This difference in returns is called Alfa.**
- The “current internal rate of return” is the yield that equalized cash inflows (future cash ins) and outflows (price to be paid) for the company.
- The “required rate of return” for the stock is calculated using the
- Capital Asset Pricing Model (CAPM).

- The required rate of return of a stock $[E(R_i)]$ or the COC should include the sum of the return from a security with zero risk (R_f = risk free rate) plus a risk premium to compensate for the extra risk of holding the stock, compared with the risk-free security.

$$E(R_i) = R_f + \text{Risk Premium} \Rightarrow \text{Risk Premium} = E(R_i) - R_f$$

- That is, the Risk Premium for holding a stock is the difference between the required return on the stock minus the market return.
- One possible measure of the Risk Premium for a stock could be the degree of “variability” of the stock returns over time.
- This variability can be defined as the standard deviation (σ) or the variance (σ^2) of the stock over a number of years.
- However, when several stocks are considered together, we can reduce the variability of this package (portfolio) of stocks.
- That is, by combining stocks we can achieve a “diversification effect” that will reduce the overall risk of the portfolio.

- In 1955, Harry Markowitz of the University of Chicago showed that a favorable “Diversification Effect” can reduce the overall risk of a portfolio even **below** the risks of the individual stocks.
- For example, even if an EM stock has a higher risk than, say, the US market stock, the addition of a more risky EM asset will reduce the total risk of the portfolio even below the risk of the US stock, as long as the correlation (ρ) of the EM asset with the US market is not too large.
- Example:

Correlation of EM and US Mkts: $\rho = 0.15$

Standard Deviation for US: $\sigma_u = 15$; for EM: $\sigma_e = 20$

Standard Deviation of the Portfolio, 50%-50% : $\sigma_{u+e} \rightarrow \sigma_p$

$$\sigma_p^2 = w_u^2 \sigma_u^2 + w_e^2 \sigma_e^2 + 2w_u w_e \text{Cov}(u,e) \quad \text{where } \text{Cov}(u,e) = \sigma_{u,e}$$

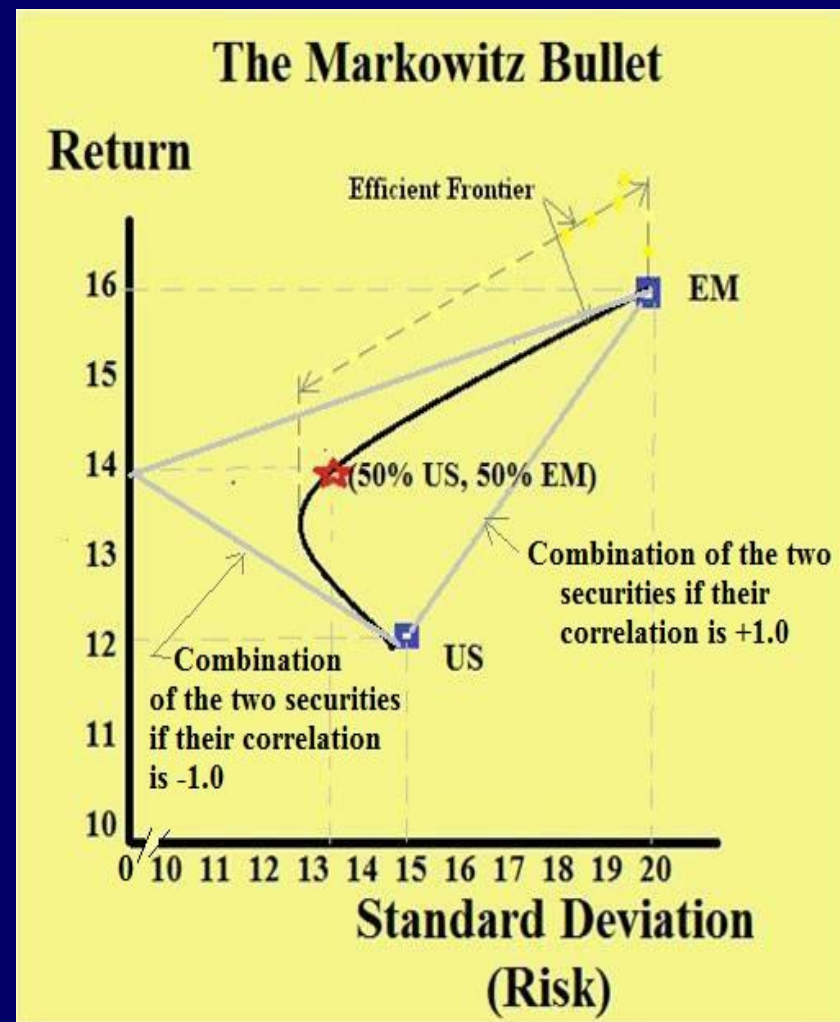
$$\sigma_p^2 = w_u^2 \sigma_u^2 + w_e^2 \sigma_e^2 + 2w_u w_e \rho \sigma_u \sigma_e \quad \text{since: } \sigma_{u,e} = \rho \sigma_u \sigma_e$$

$$\sigma_p^2 = 0.5^2 (\sigma_u^2 + \sigma_e^2 + (2 \rho \sigma_u \sigma_e))$$

$$\sigma_p^2 = 0.25 (225 + 400 + (2 \times 0.15 \times 15 \times 20)) = 178$$

$$\sigma_p = 13.4\%$$

- If the US market return is 12% and the EM return is 16%, then the combination of the two will give a return of 14% with lower risk.
- The combination of best returns and risks give the Markowitz Bullet and the “Efficient Frontier”.
- Another classical example of diversification: at the beach, if in bad weather business is down (selling swim suits) whereas in another business it is up (selling umbrellas), then selling both items will reduce overall risks.



- But there is no need for two assets to be negatively correlated (as in the case above) to get the benefits from diversification. It is enough that their correlation is less than 1. In this example, a correlation of zero still has a lower standard deviation of 12.5%

Correlations between International Markets

- Regardless of the period analyzed, studies show that correlations between international markets are always far from unity: For example, during 1971-94, the correlation between the US stock exchange and the Hong Kong stock exchange was 0.29.
- The common variance between these two markets was 8% ($R^2=0.29^2$).
- That is, only 8% of the HK stock price movements were the results of influences common to the US stock market.
- 92% of the stock price movements were independent.

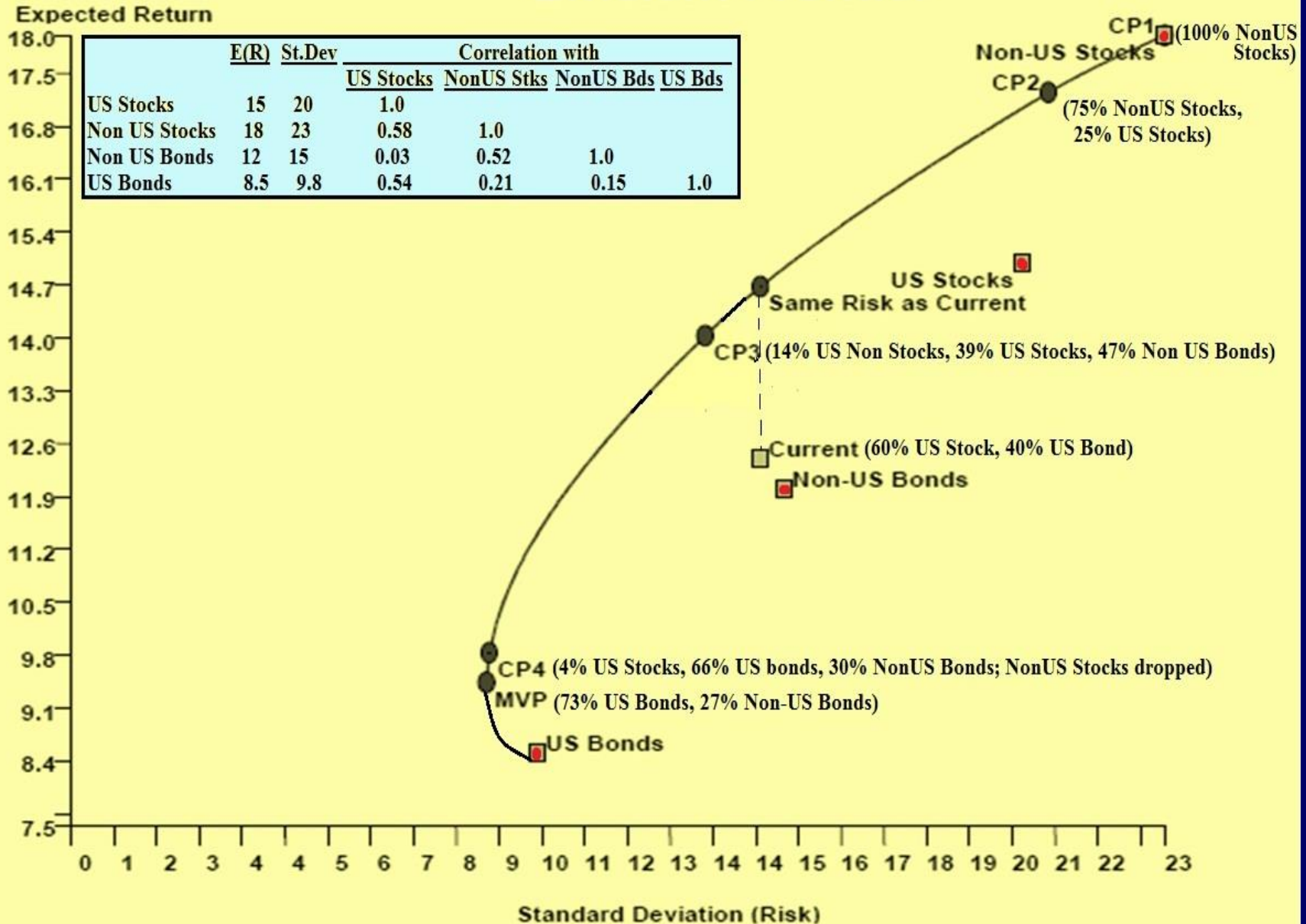
EM's Risk/Returns for 1985-93

<u>Country</u>	<u>Annual Return</u> (%)	<u>Total Risk</u> (\$ StDv)	<u>Correlation</u> with World (R)
Argentina	40	106	-0.06
Brazil	13	70	0.12
Chile	52	27	0.11
Mexico	52	46	0.25
Colombia	41	32	-0.01
Indonesia	-2.6	24	0.11
Korea	22	30	0.30
Zimbabwe	28	32	0.07
USA	16	16	0.70
World	17	16	1.00

EM's Risk/Returns for 1992-97

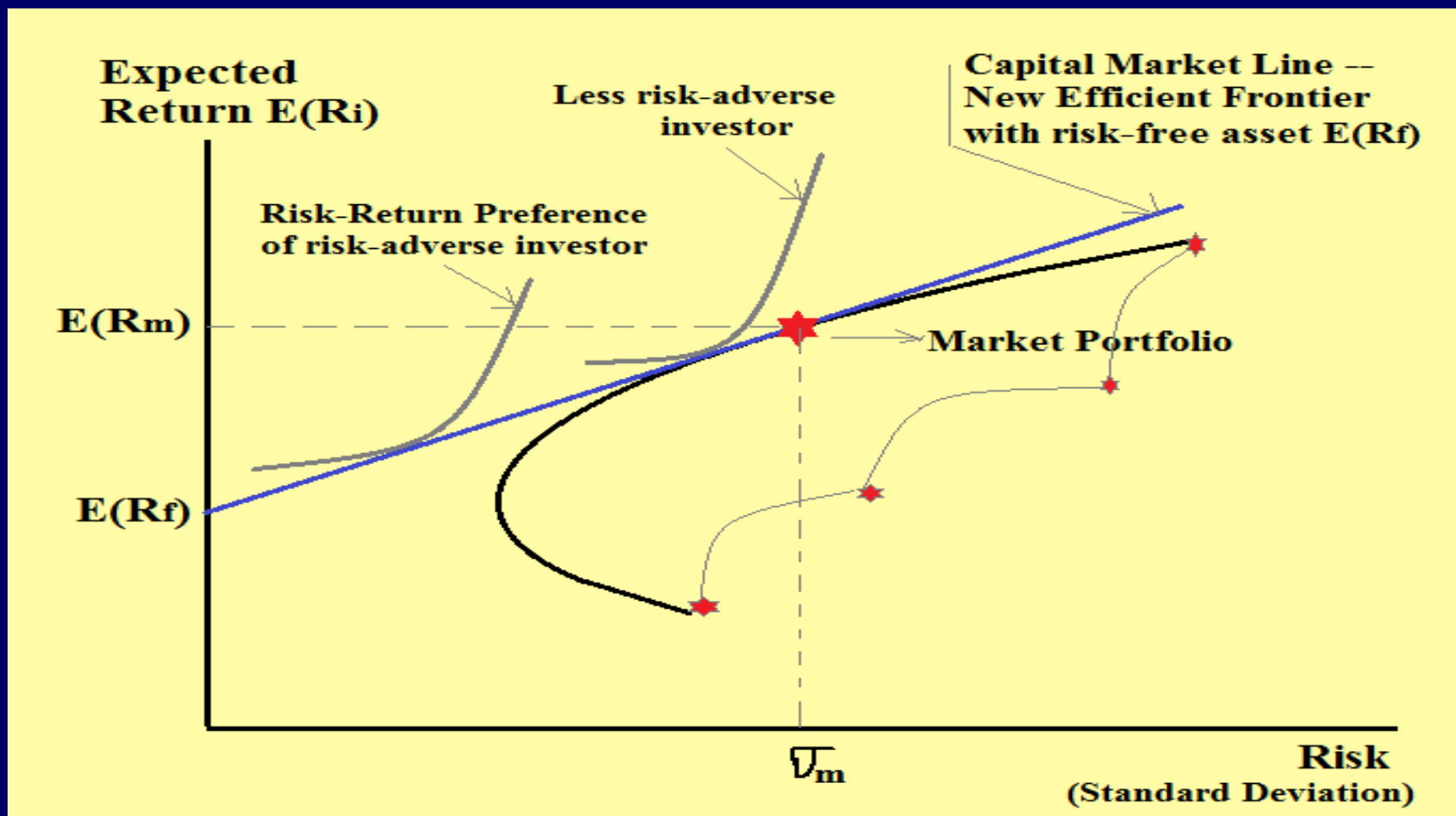
<u>Country</u>	<u>Annual Return</u> <u>(%)</u>	<u>Total Risk</u> <u>(\$ StDv)</u>	<u>Correlation</u> <u>with US (R)</u>
Argentina	20	31	0.48
Brazil	37	38	0.30
Chile	15	24	0.32
Mexico	10	37	0.33
Colombia	15	24	-0.09
Indonesia	-2	38	0.43
Korea	-21	31	0.09
Thailand	-21	39	0.32
Zimbabwe	29	39	0.04
USA	19	11	1.00

Efficient Frontier



Source: Adapted from Paul Kaplan, Asset Allocation Using the Markowitz Approach, Chicago, 1998.

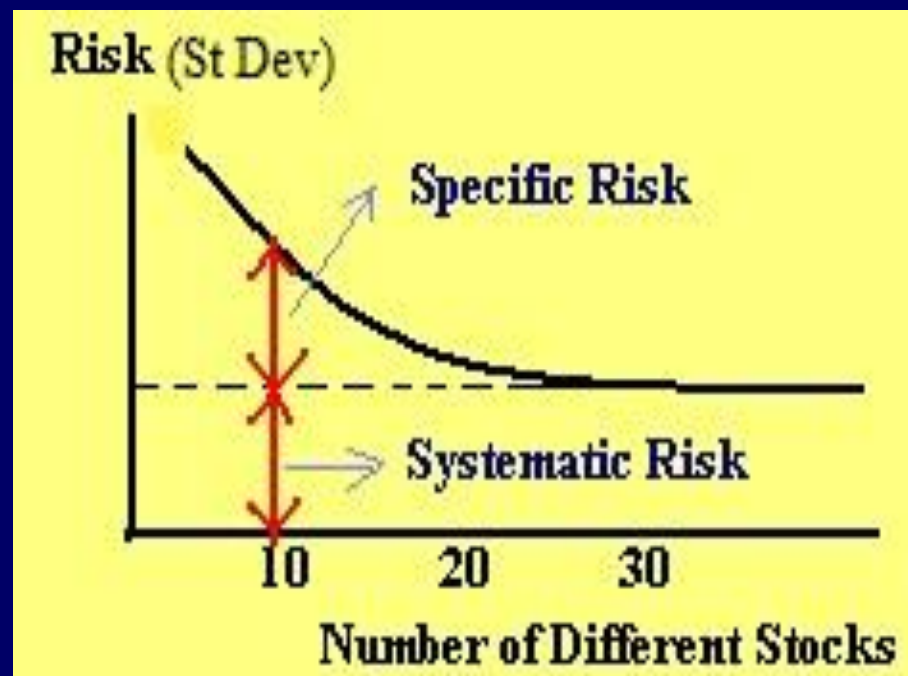
- It is also possible to have portfolios that combine the risk free asset [$E(R_f)$] and a portfolio located on the efficient frontier.
- This line is now the new most efficient frontier and is called the Capital Market Line.



Using the CAPM for Stock Selection

- Markowitz introduced the concept that the “**desirability**” of a stock depends not only on its expected return, but also by the correlation of the stock’s returns with the returns of o other securities in the portfolio.
- A stock is valuable or desirable only if it is on the efficient frontier or moves it upwards.
- In the 1960s, Professor Williams Sharpe of Stanford University expanded the analysis further.
- He accepted that the required stock return [$E(R_i)$] should have a risk premium to compensate for the additional risk of the stock, compared with the return of a risk-free security (R_f):
 - **$E(R_i) = R_f + \text{Risk Premium}$**
- But with wide diversification, **company-specific risks** can be minimized and becomes irrelevant for the investor and the stock’s required value.

- By holding over 20-30 different stocks, one can reduce the standard deviation and eliminate the “**Company Specific**” risk component.
- Only the residual “**Systematic Risk**” would remain -- and for which the investors would demand a premium.
- This systematic risk (called **beta - β**) depends on uncertainties & threats within the economy/sector as a whole and varies by country.
- Therefore, the required **risk premium** for an individual stock will depend only on its systematic risk β_i since other risks can be eliminated by diversification.
- The risk premium due to this systematic risk will depend on the degree to which the returns on the individual stock is affected by movements in the return of the overall sector/economy.

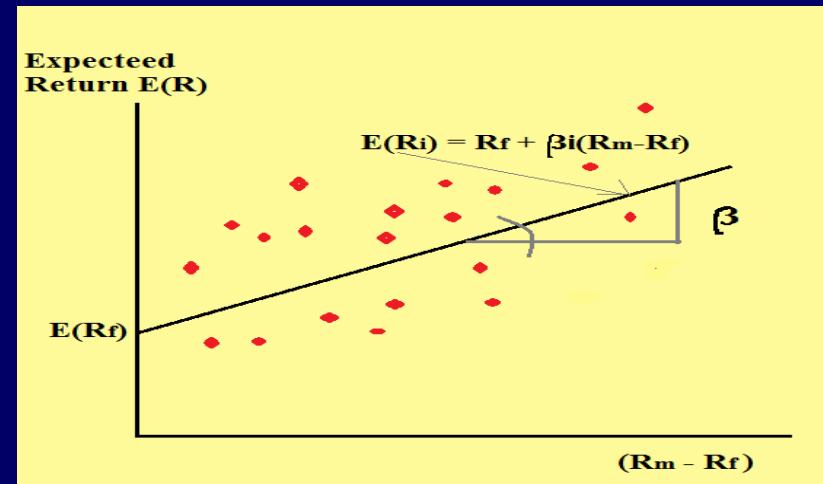


- If the stock return **behaves exactly as the market as a whole**, the risk premium should be equal to the difference between market returns (R_m) and the risk-free return (R_f): **Risk premium = $R_m - R_f$**
- Therefore, its return is: $E(R_i) = R_f + (R_m - R_f)$ or: **$E(R_i) = R_m$**
- In this case, the required return equals the market return.
- But if the stock has **greater variance than the market**, the risk premium would be higher than the market risk premium ($R_m - R_f$) by a factor **greater than 1.0**. This factor is called **beta β_i**
- Similarly, if the stock has lower variability than the market, the risk premium would be lower by a **β_i factor lower than 1.0**
- The expected or required return for this stock [$E(R_i)$] is then:

$$E(R_i) = R_f + \beta_i (R_m - R_f) \Rightarrow \text{the Capital Asset Pricing Model}$$
- The factor β_i (beta) represents the extend to which the stock i return varies more than the market ($\beta_i > 1$) or less than the market ($\beta_i < 1$).
- Risk is now defined as the exposure level of the security's return to fluctuations in the market portfolio, not by its standard deviation.

- The value of β_i for a stock can be obtained statistically as the slope of a regression of the stock's returns to the excess return of a market portfolio (ie, S&P500):

$$E(R_i) = R_f + \beta_i (R_m - R_f)$$



The value of β_i can also be derived mathematically as follows:

- In equilibrium every stock “i” must have the same marginal value “k”:

$E(R_i) - a \sigma_{im} = k$ The marginal value “k” is its return minus a risk factor related to its market sensitivity risk σ_{im} .

$E(R_f) - a \sigma_{fm} = k$ Since $\sigma_{fm} = 0$, then $k = E(R_f) = R_f$

$E(R_m) - a \sigma_m^2 = R_f \rightarrow a = [E(R_m) - R_f] / \sigma_m^2$

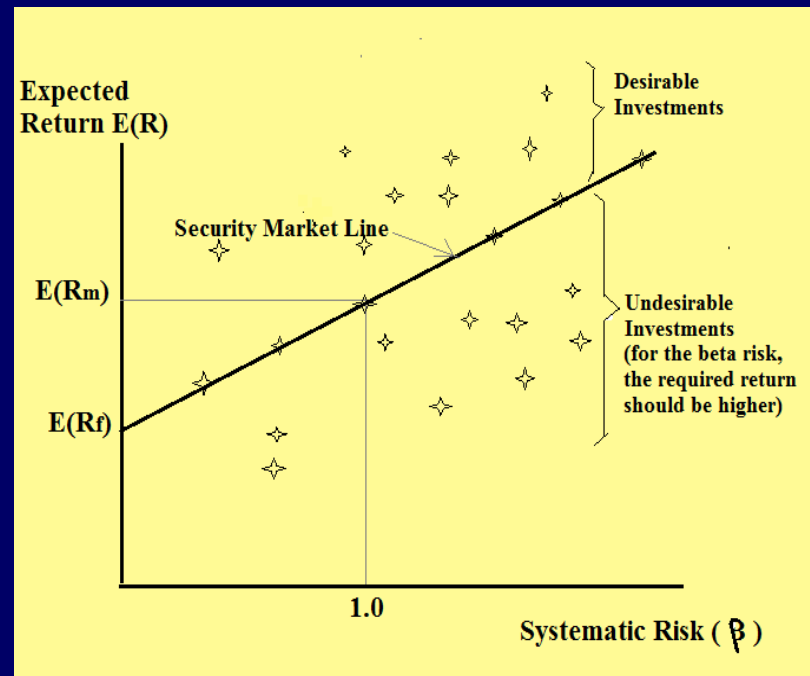
$E(R_i) = k + a \sigma_{im} \rightarrow E(R_i) = R_f + \{ [E(R_m) - R_f] / \sigma_m^2 \} \sigma_{im}$

$E(R_i) = R_f + \{ \sigma_{im} / \sigma_m^2 \} [E(R_m) - R_f]$ Thus: $\beta_i = \sigma_{im} / \sigma_m^2$

Beta is the ratio of the $Cov(R_i, R_m)$ to the $Var(R_m)$

- An equity investment would be “desirable” only if its current internal rate of return R_i (based for example on discounted cash flows) would exceed this “required” rate of return $E(R_i)$ as calculated by the CAPM for the risk.
- This excess return is called **Alpha**.

$$\text{Alpha} = R_i - E(R_i) = R_i - [R_f + \beta_i (R_m - R_f)]$$



- $E(R_i)$ represents the “required” or “demanded” return for an equity investment: **It is therefore, the “cost of capital” for the equity “i”, as it is the minimum return (opportunity cost) that should be sought for an equity investment, given its market/country risks.**
- In an EM such as Ukraine, given Ukraine’s market risks, the cost of equity capital or “required” rate of return $E(R_i)$ is estimated at 20% to 25% in real terms for a “normal” Ukrainian market risk.
- For the S&P500 the “market” $E(R_m)$ has been 7% in real terms.

- **Example:** Suppose your company is considering an equity investment in a small capitalization firm with a new drug process.
- The drug process is inherently risky, i.e. the standard deviation of the project is 75% per year (but this risk can be diversified away).
- The beta for drugs and therefore for this project is only 0.8.
- The risk free rate (R_f) is 3% and the market return $E(R_m)$ is 12%.
- The discounting of Cash Flow of inflows and outflows show that the “intrinsic internal rate of return” of this drug company is 12% (that is, the yield that equals cash ins with outs).
- Would you recommend this investment? What is the required rate of return on the project?
- Theory tells us that the answer does not depend upon the volatility associated with the returns. Instead, we use the beta of the project.
- $E(R_{\text{drug}}) = 3\% + (0.8)(12\% - 3\%) = 10.2\%$
- The drugs investment is indeed desirable, despite its high standard deviation, provided that it is part of a well-diversified portfolio.

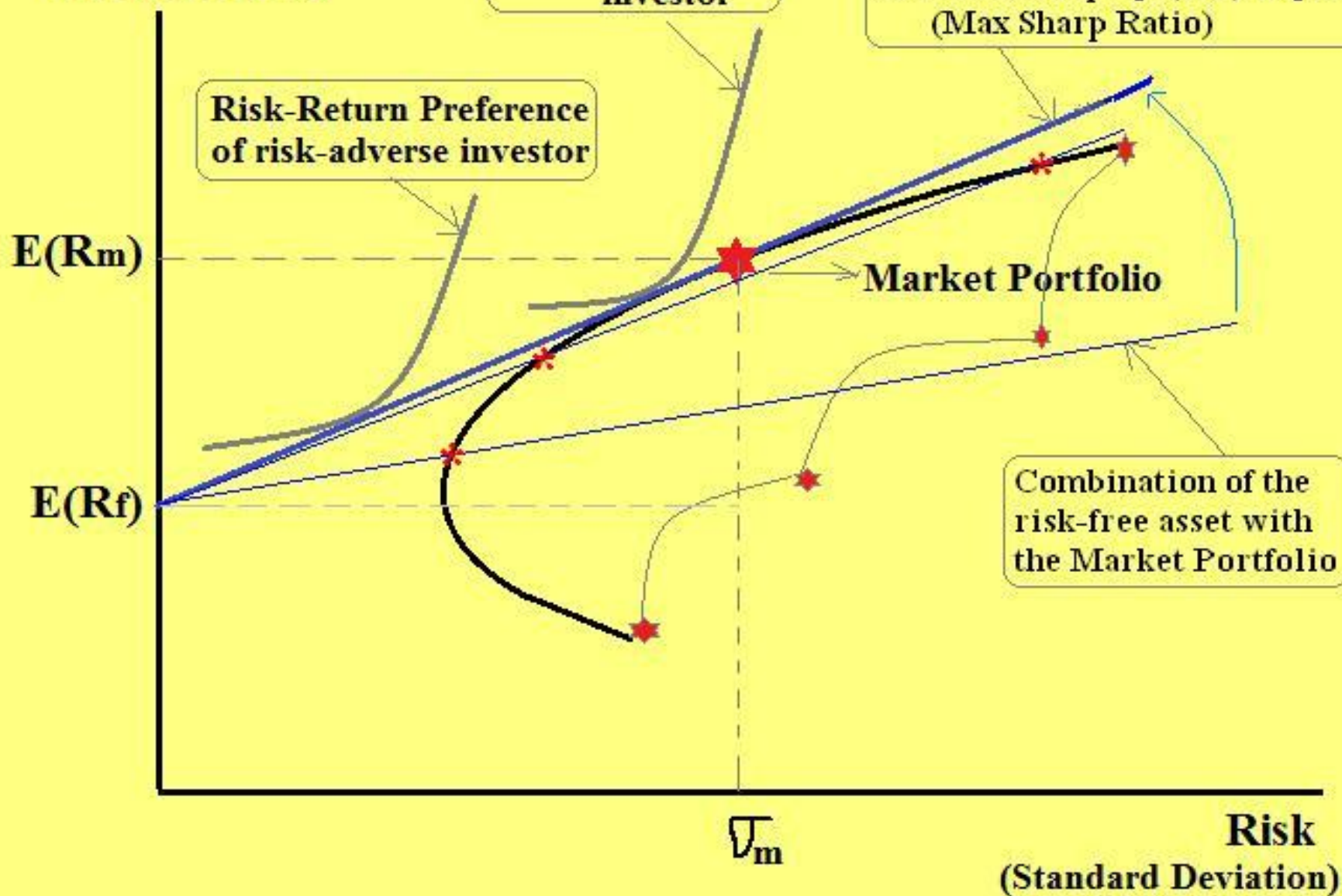
Choosing Among Alternative Investments/Portfolios

- If several investments or portfolios are “desirable” with intrinsic value above their require return or cost of capital, how to choose the best?
- Sharpe developed a ratio that measures the expected **excess return** of the security/portfolio per unit of total security or portfolio **risk**.

Sharpe Ratio:
$$S = \frac{E(R_i) - R_f}{\sigma_i}$$

- The investment or portfolio with the highest Sharpe ratio should be preferred, as it gives more return for the same overall risk.
- As a guide, the long-term return of the S&P500 is 10%, the risk-free rate is 3%, and the S&P500 standard deviation is 22%. Therefore, the average L-T Sharpe for the US market is **0.32**. Now it is about 35%.
- Treynor developed a similar ratio for a well-diversified portfolio, using β_i instead of σ_i which is:
$$T = \frac{E(R_i) - R_f}{\beta_i}$$
- These ratios are used to assess performance of portfolio managers.

Expected
Return $E(R_i)$



Investment Returns in the US – 1926 -2009

	<u>Av Return</u>	<u>St.Dev.</u>
US Small Capitalization stock	12.0%	36%
S&P 500	9.8%	22%
US Long-term Corporate Bonds	5.9%	7%
US Long-term Govt. Bonds	5.4%	8%
US T-bills	3.7%	1%
Inflation Rate	3.0%	

III . Emerging Stock Market Indexes

- Local stock indexes of Emerging Markets returns are seldom used by foreign investors because of their lack of comparability.
- Investor prefer to use emerging market return indexes prepared by recognized international institutions.
- Then ,the performance of a managed portfolio investing in EMs is normally measured relative to these EM indexes.
- The main EM indexes are:
 - S&P/IFC Indexes,
 - Morgan Stanley Capital International indexes (MSCI),
 - ING Baring Indexes,
 - Goldman Sachs-Financial Times Indexes.
- Some of these Indexes are available through the Internet.
- Sector Indexes (such as industry, telecommunications) are also published.

1. S&P/IFC Indexes

Since 1984, the International Finance Corporation (IFC) of the World Bank published, on a daily basis, several indexes for EMs. In April 2000, this business was purchased by S&P. They include:

S&P/IFC Global (S&P/IFCG).

- It covers 32 emerging countries (2,000 stocks), three regional composite indexes (Latin America, Asia, and Europe & Middle East), and industrial sector indexes.
- For each country the target aggregate market capitalization is between 60% and 75% of the total capitalization of the stock exchange.
- S&P/IFC includes only the most actively traded stocks.
- Corporate cross-holdings & Government ownership of shares (that are not traded) are eliminated.
- S&P/IFC seeks industry diversification.
- Each stock enters the index in proportion of its capitalization.

S&P/IFC Investable Index (S&P/IFCI).

- It measures the market for shares *available* to foreign investors.
- It is useful for foreign investors (i) to benchmark their own performance; and (ii) for “*passive management*” investments.
- Adjustments are made to reflect foreign investment restrictions (the weights of China, Taiwan, Korea and India are reduced significantly , and Nigeria is eliminated).
- Stocks must pass size and liquidity screens.

S&P/IFC Frontier Markets.

- It was introduced in 1996 for 19 countries that were borderline but could eventually meet selection criteria when trade volume and liquidity increases. It is published monthly.
- The S&P/IFC indexes include financial information, such as: P/E ratios, P/Book Value ratios, and dividend yields.

2. Morgan Stanley Capital International indexes (MSCI)

- Since 1988, Morgan Stanley Capital International (MSCI) issues two main indexes for 20 Emerging Markets on a daily and price-only basis:
 - MSCI Global
 - MSCI Free, which includes “investable” stocks.
- For each country, the target market capitalization is 60% .
- The MSCI indexes are more selective than IFC’s in choosing stocks:
 - Efforts are made to have very close representation of industrial sector coverage (a key difference with IFC’s).
 - Closely-held and multi-industry companies are eliminated.
- MSCI also publishes composite international indexes:
 - Emerging Markets Global (EMG) with 700 stocks, and
 - Emerging Markets Free (EMF), with 600 stocks.

3. ING Baring Indexes

- Since 1992, Baring Emerging Market Indexes (BEMI) have been covering 20 countries (about 500 stocks), on a daily basis.
- It is more selective and less comprehensive than IFC or MSCI.
- It includes only major, liquid stocks that meet strict standards of availability to foreign investors.
- Each national index consists of 10 to 35 stocks weighted by their market capitalization.
- ING Baring also publishes a BEMI World Index and regional indexes.
- Foreign investment restrictions are reflected in the weightings.
- The indexes are calculated on a price-only and on a total-return basis.

4. Financial Times - Goldman Sachs Indexes

- The Financial times, with the collaboration of Goldman Sachs produces the FT-Actuaries World Indexes for Developed Markets.
- Since 1994, indexes for a number of Emerging Markets, have been added.
- For each index, the following information is provided:
 - Price Index for last three days.
 - Two-year high.
 - Two-year low.
 - Yield.
 - P/E Ratio.

IV. Emerging Stock Market Performance

A. Returns from EM Stocks

- The evidence from empirical studies on whether EM stocks have higher returns than in the US is **mixed**.
- A 1998 study published in the Financial Analysts Journal found that, as a group, EMs have not produced levels of returns higher than the US market, while being more volatile. Indeed, the US did very well in the 1990's until 2000 and then collapsed in 2001.
- Other studies have shown that, over a longer number of years, excess EM returns over the S&P's has been around 4% to 8% pa.
- But all studies show that the correlation with the US market is low enough to provide risk diversification benefits.
- Empirical studies show that EM equity prices are correlated with the rate of **GDP growth**, **country risk**, and the **flows of direct foreign investments**, all of which are affected by macroeconomic policies.

- These studies show that sudden increases in foreign direct investments are **early indicators** that stock prices will increase.
- Studies also show that EM equity prices tend to increase faster during the initial period of "emergence" -- (turn around in economic performance), not much before, not later on. Investors who can detect a forthcoming change in policies can enjoy large returns.
- For the US, studies show that equity prices are positively correlated to expected earnings and negatively correlated to interest rates.

B. Volatility of EM Stocks

- **Equity prices** in EMs have been characterized by wide fluctuations, greater than that of developed markets.
- For example, South Korea's stock price index evolved as follows: 1986-89: a 400% increase; 1989-91: a 35% drop; 1991-1994: a 70% increase; 1994-1998: a 70% drop; 1998-1999: a 400% increase; 1999-2001: a 50% drop. By April 2003 it was 10% up from mid 2001.

- This high **volatility in** equity prices is the result of:
 - Inconsistent application of economic policies in EMs that leads to periodic financial crises.
 - Thin, narrow markets for most EM securities.
 - The tendency of investors to be driven by “the herd” – due to poor information.
- EM price volatility does not follow a normal distribution or any symmetric distribution of returns. As a result, the probability of a large negative price movement can be high. **Therefore, the standard deviation is not a sufficient measure of market risk.**
- Empirical statistical studies also show that equity price volatility is correlated to **inflation rates**: countries with high inflation tend to have larger stock price volatility,
- Inflation, in turn, is caused by the adequacy of **fiscal policies** (the size of fiscal deficits) and **monetary policies** (the balance between money supply and demand).

- EM equity prices drop drastically during periods of **financial crises**.
- The most fundamental causes of a financial crises are inadequate macroeconomic policies, which produce unsustainable **external imbalances** (high current account deficits and unsustainable foreign debt) and **internal imbalances** (high fiscal deficits or low private savings).
- External and internal imbalances lead to internal instability (high inflation) and external instability (currency devaluations).
- The wide fluctuations in the stock prices of EMs should not dissuade investors, given potential returns and diversification benefits.
- But investors should resist the temptation to go to “hot” markets in fashion; instead, they should look at the fundamentals of each market.
- The lesson from the 1990's crises is that investors in EMs should not just look at the financial statements of companies. A fundamental analysis of the overall economy is required.

Total Dollar Return Performance in EMs

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
MSCI EM Free	-8.0	51.6	22.4	29.1	36.8	-54.4	74.1	16.4	-20.4	13.5
Latin America	-24.8	67.1	34.8	39.3	46.9	-52.8	98.1	12.1	-21.9	3.3
Asia	-6.3	47.1	12.2	29.8	38.3	-53.9	68.9	16.6	-19.1	17.0
Europe & ME	4.7	51.2	35.8	21.3	28.9	-56.5	63.3	20.9	-25.3	17.2

Comparators:

World	-21.1	30.8	12.8	17.9	7.1	-40.3	31.5	14.2	-8.6	13.6
US	-23.4	26.8	8.8	13.2	5.6	-37.4	26.3	13.2	-0.7	12.4

How can the better returns of EMs from 2003 to 2007 be explained?

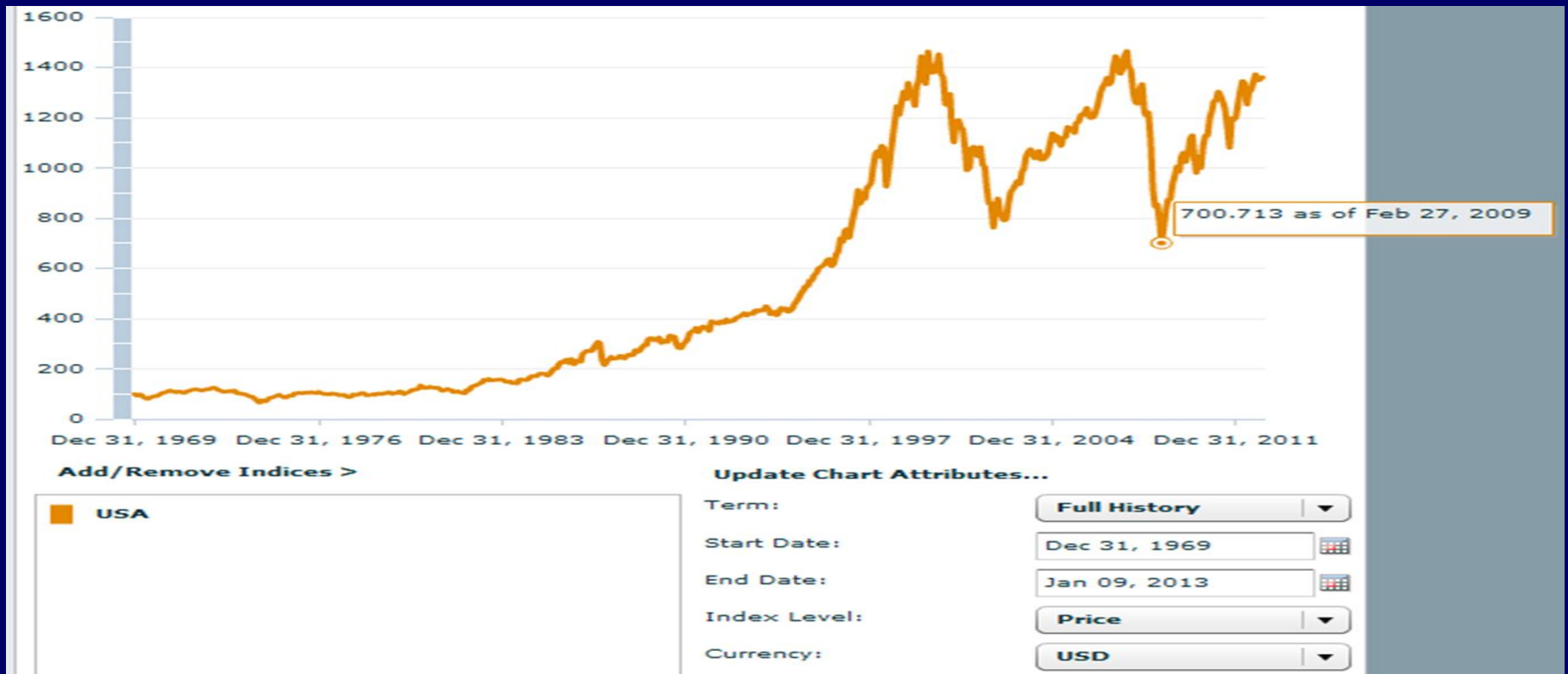
They are not explained by increases in valuation: In fact, the P/E ratios of most EMs did not increase excessively and were below those of developed countries. Better returns in EMs were explained by two factors: (1) the better macroeconomic performance in most EMs in this period, as reflected by higher rates of growth and lower inflation; and (2) Greater “appetite” for EM assets due to high liquidity (investment resources) and lower returns in developed countries.

What explains the collapse in 2008?

The international crisis in developed countries, and excessive borrowings in EMs during 2007 and 2008.

Developed Market Stocks

- All data from MSCI,
- Prices,
- in US Dollars,
- as of January 2013



- The stock bubble of the 1990s (dot-com bubble) was due to the speculation that a “New Economy” -- supported by better technology, computers, e-commerce and other internet applications -- would generate higher productivity growth.
- For several years, this led to a financing boom (supported by new Venture Capital), higher investments, high P/E ratios and high stock prices...until 2000!
- Then after 2001, another stock boom was supported by low interest rates, deregulation of banks and accelerated housing construction....until 2008!!.
- Do we have a new stock bubble in 2013, again supported by low interest rates??

- Europe also had two stock bubbles in the 1990's and 2000's.
- The bubble in the decade of 2000's was supported by the new Euro and exports to Europe's periphery.



For 25 years, since 1988, Japan's stock market has been depressed

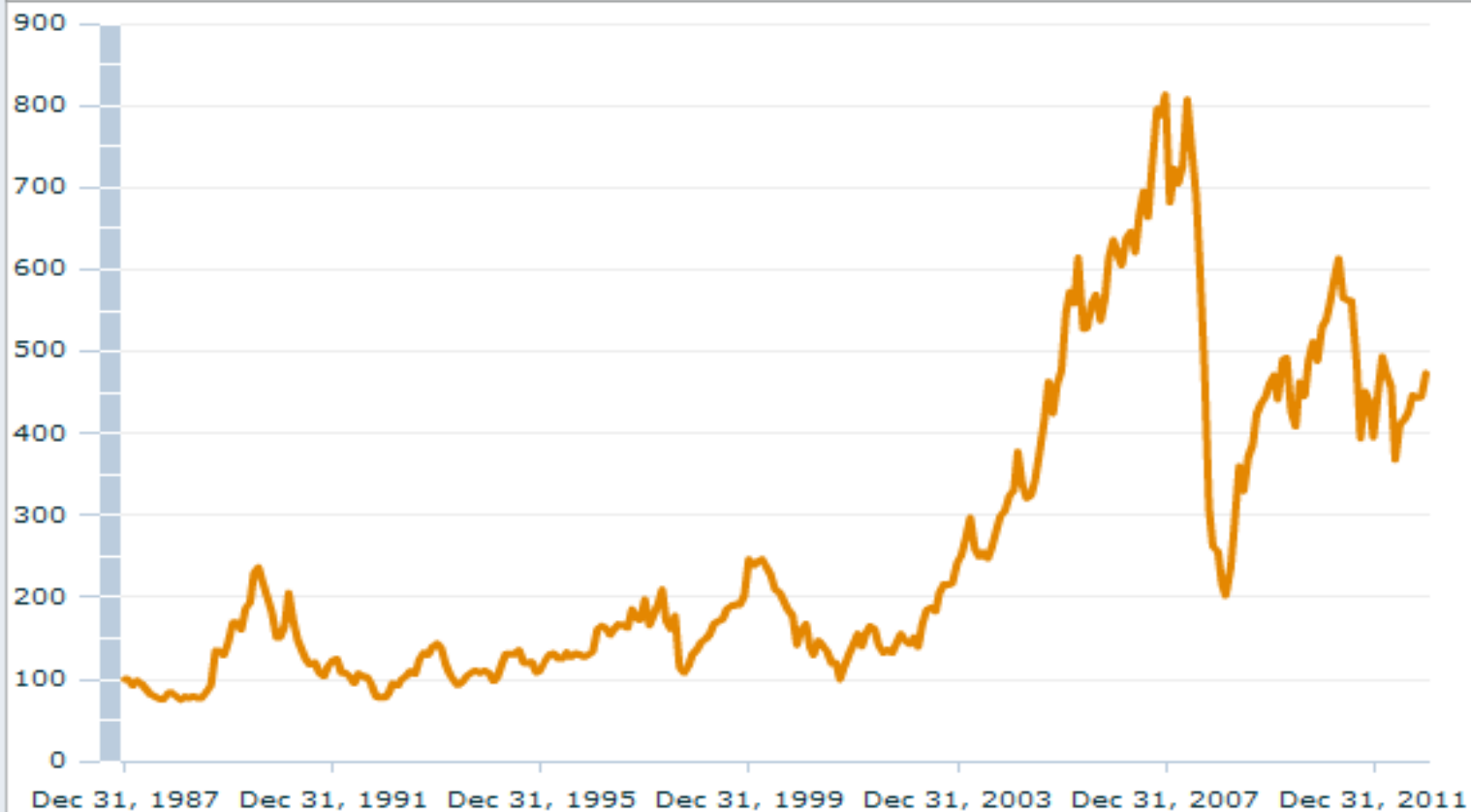


Emerging & Frontier Markets Stocks

- All data from MSCI,
- Stock Prices,
- in US Dollars,
- as of January 2013

EMs have not yet recovered from the downs of 2008 and 2011.





[Add/Remove Indices >](#)

[Update Chart Attributes...](#)

 **EM EUROPE**

Term:

Full History

Start Date:

Dec 31, 1987

End Date:

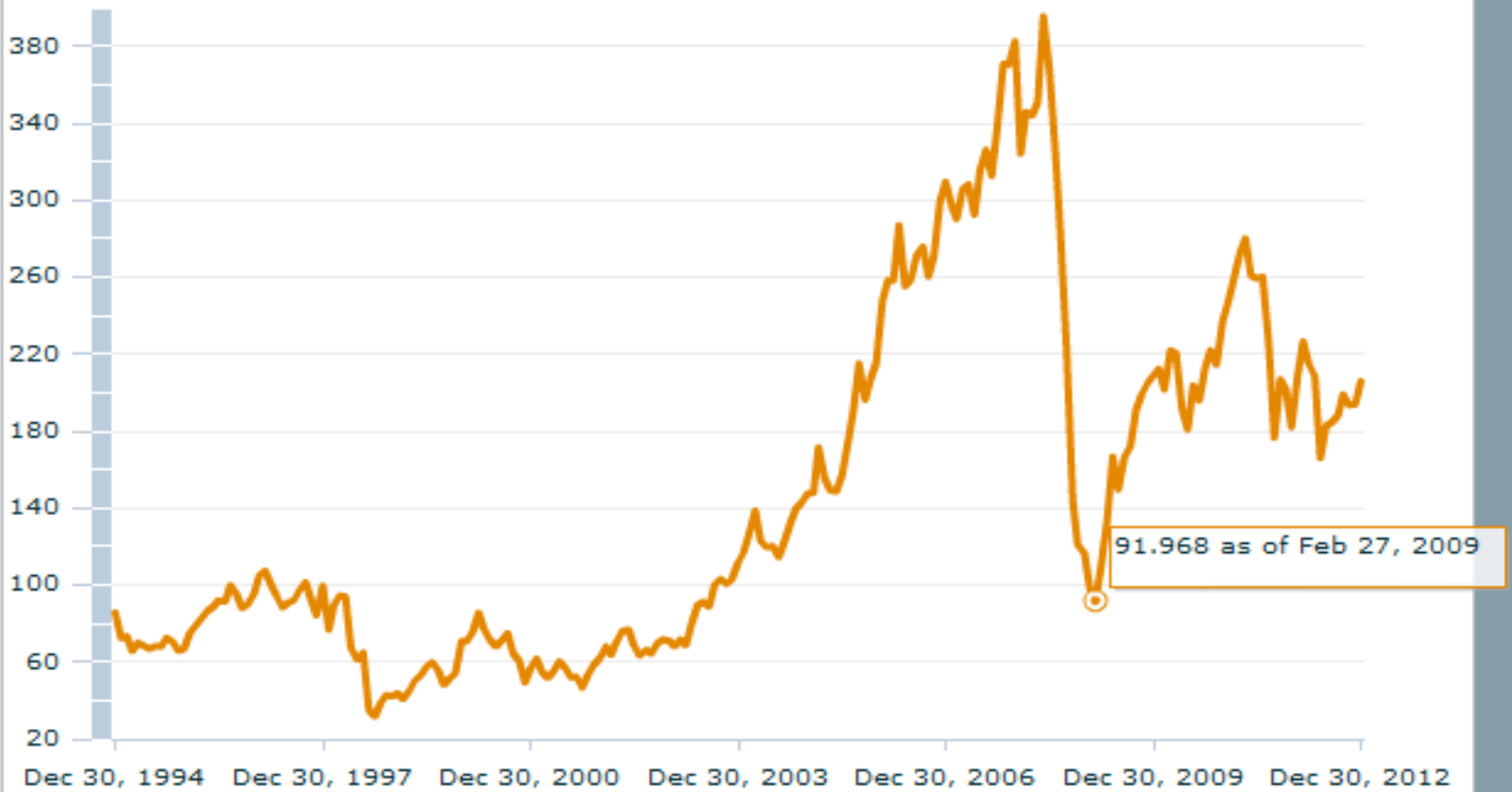
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Index Level:

Price

Currency:

USD



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EM EASTERN EUROPE

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Term:

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End Date:

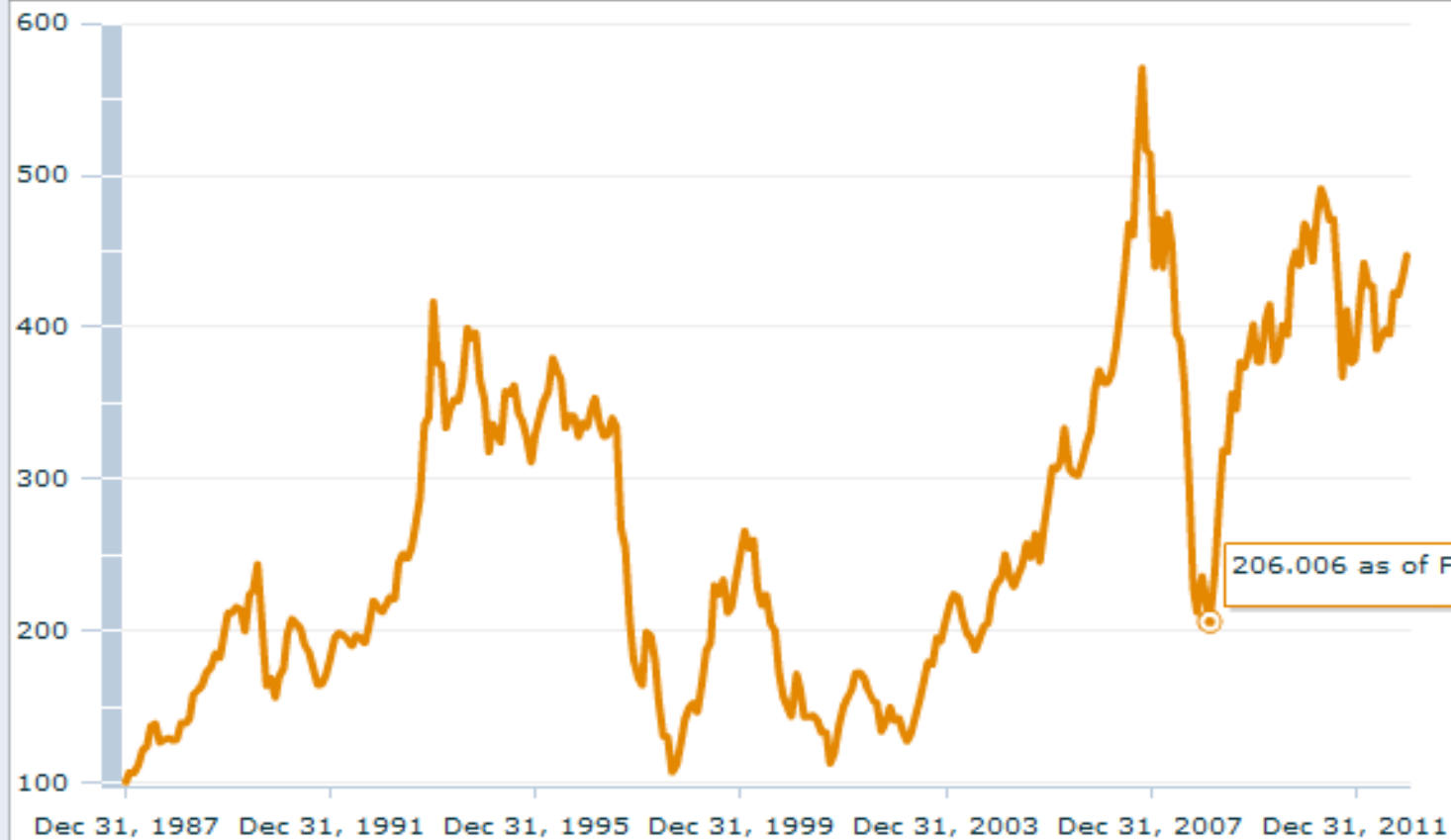
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Index Level:

Price

Currency:

USD



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EM ASIA

Update Chart Attributes...

Term:

Full History

Start Date:

Dec 31, 1987

End Date:

Jan 09, 2013

Index Level:

Price

Currency:

USD



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 **EM LATIN AMERICA**

Term:

Full History

Start Date:

Dec 31, 1987

End Date:

Jan 09, 2013

Index Level:

Price

Currency:

USD



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 **EFM AFRICA**

Term:

Full History

Start Date:

May 31, 2002

End Date:

Jan 09, 2013

Index Level:

Price

Currency:

USD

BEST PERFORMING STOCKMARKETS

2012

Turkey	+65.9%
Kenya	+66.4
Nigeria	+65.8
Estonia	+48.5
Philippines	+44.1
Egypt	+43.8

2011

Indonesia	+4.3%
Qatar	+4.3
Malaysia	-2.9
Philippines	-3.1
Mauritius	-4.8
Thailand	-5.6

WORST PERFORMING STOCKMARKETS

2012

Ukraine	-47.7%
Argentina	-43.1
Bulgaria	-22.6
Morocco	-18.7
Bangladesh	-10.2
Brazil	-7.4

2011

Egypt	-48.8%
Ukraine	-45.8
Bangladesh	-44.2
Argentina	-42.6
India	-38.0
Turkey	-36.8

**BEST PERFORMING
STOCKMARKETS
2010**

Sri Lanka	71%
Argentina	70
Estonia	56
Thailand	50
Peru	49
Ukraine	49

2009

SriLanka	184%
Brazil	121
Indonesia	120
Russia	100
India	95
Chile	82

2008

Tunisia	-8%
Morocco	-12
Lebanon	-22
Israel	- 30
Qatar	-30
Jordan	-35

**WORST PERFORMING
STOCKMARKETS
2010**

Greece	-46%
Spain	-25
Ireland	-19
Italy	-17
Kazakhstan	-17
Slovenia	-16

2009

Bahrain:	-36%
Ghana	-26
Nigeria	-24
Trinidad & Tobago	- 13
Kuwait	-10
Morocco	-8

2008

Ukraine:	-94%
Bulgaria	-82
Russia	-74
UAE	- 73
Pakistan	-72
Estonia	-65