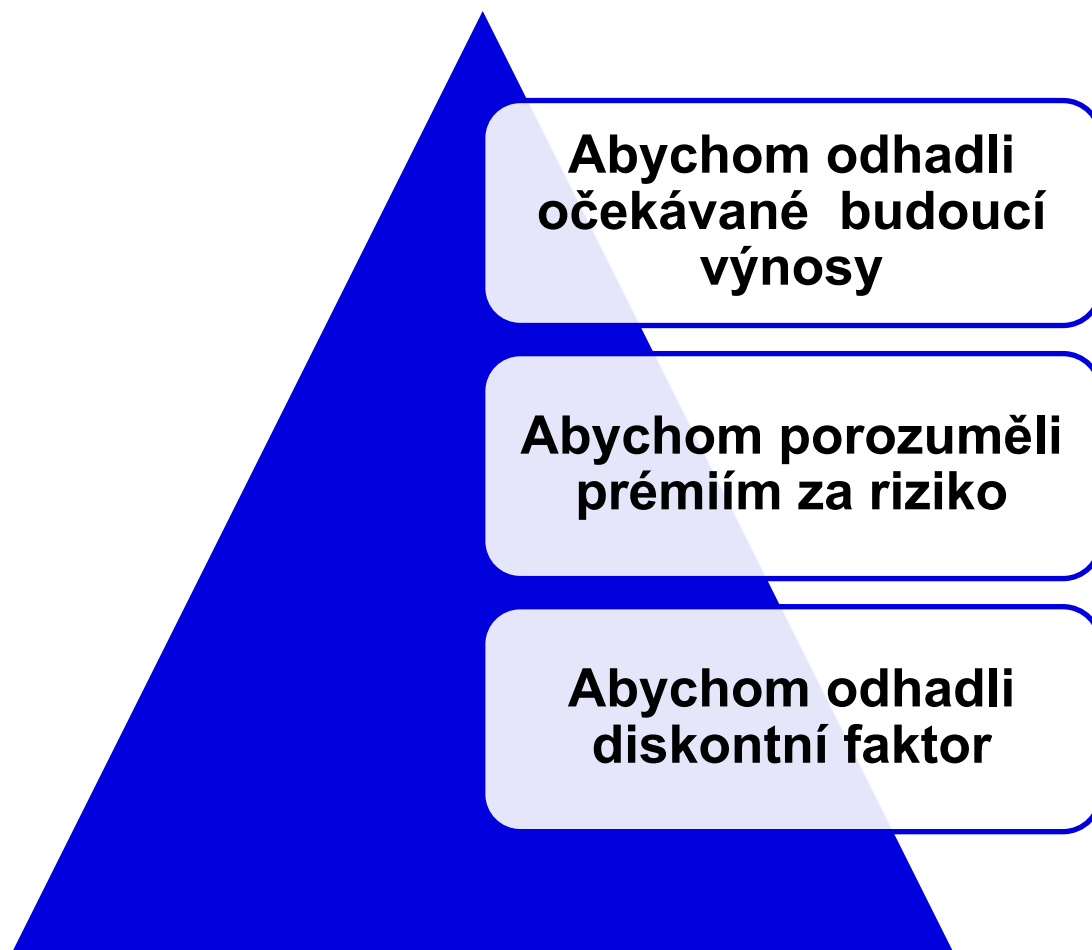


Koncept výnosu

Proč se zaměřit na koncept výnosu?



Výnos za dobu držby

$$r = \frac{D_H + P_H}{P_0} - 1$$

$$r = \frac{D_H}{P_0} + \frac{P_H - P_0}{P_0}$$

Další druhy výnosu

Požadovaná
výnosová
míra

Výnos v
případě
návratu ceny
akcie k
vnitřní
hodnotě

Diskontní
faktor

Internal Rate
of Return
(IRR)

Požadovaná výnosová míra



Odhady prémie za riziko

- Historické odhady
- Forward-Looking odhady
 - Gordon growth model
 - Makroekonomické modely
 - Survey estimates

Problémy vyplývající s využití historických odhadů

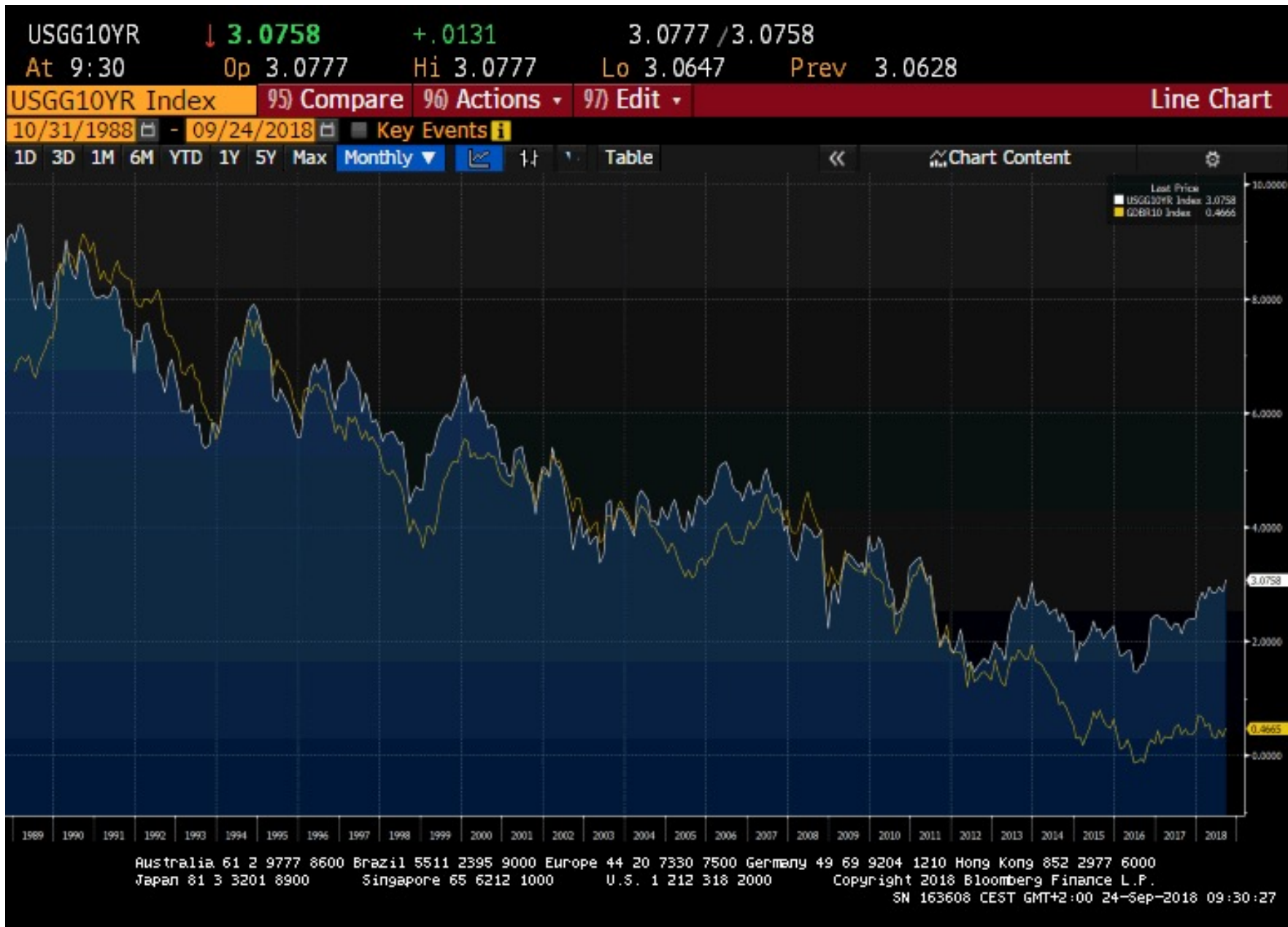
- Délka zkoumané periody
 - Vybalancování důležitosti krátkodobého a dlouhodobého horizontu
- Geometrický vs. Aritmetický průměr
 - Geometrický průměr odráží budoucnost přesněji
- Výběr bezrizikové míry
 - Výnosnost dlouhodobých vládních dluhopisů
- Zkreslení přeživších (Survivorship Bias)
 - Využití výnosů přeživších firem nadhodnocuje průměrnou výnosnost
- Sekvence neobvyklých událostí

1) Fed Fds FOMC »		US T-Bill				EURO\$DEP			Reverse (Bid)		Repo (Ask)		
DFD	1.1600	1.1900	4W	0.96	+0.00	0.96	0.95	3M	1.2500	1.3000	O/N	1.06	1.03
OBFR01	1.16		3M	1.03	+0.01	1.02	1.02	6M	1.3500	1.4000	1W	1.15	1.11
			6M	1.18	-0.01	1.16	1.16	1Y	1.5800	1.7500	2W	1.22	1.17
			1Y	1.29	+0.00	1.27	1.26				1M	1.24	1.21
Dow Jones		S&P 500 mini Future				NASDAQ Composite Index			CRB Commodity Index				
DJIA	22370.80	+39.45	SPX Future	2503.75	-1.00	CCMP	6461.32	+6.68	CRB	182.58	-1.16		
2) US Bonds FIT »						Comm Paper		90D EUR\$ FUT		Funds Future		3) LIBOR Fix	
T 1 ¼	08/31/19	1.393	99-23	99-23¼	+ 00+	15D	1.180	DEC	98.5300	SEP	98.845	O/N	1.17889
T 1 ⅜	09/15/20	1.539	99-16+	99-16¾	+ 00+	30D	1.210		98.4400	OCT	98.840	1W	1.19556
T 1 ½	08/31/22	1.828	99-01¼	99-01+	+ 01	60D	1.260		98.3700	NOV	98.835	1M	1.23611
T 1 ⅞	08/31/24	2.062	98-25	98-25+	+ 02	90D	1.290		98.3150	DEC	98.770	2M	1.26944
T 2 ¼	08/15/27	2.236	100-03+	100-04	+ 02+	120D	1.330		98.2350		98.710	3M	1.32500
T 2 ¾	08/15/47	2.807	98-27	98-27+	+ 06+	180D	1.410		98.1950		98.705	6M	1.47444
												1Y	1.73983
4) Spot FX FXC »		Key Rates		Swaps		10Y Note Future				5) 30Y MBS BBTM »			
JPY	111.4525	Prime	4.25	3Y	1.7520	CBT	126-00+	+ 01					
EUR	1.2002	BLR	3.00	5Y	1.9078	Commodities				GNMA II 3	101-19	101-20	+ 00
GBP	1.3519	FDTR	1.25	10Y	2.1993	NYM WTI	49.78	+0.30	GOLD 3	100-17	100-18	+ 00	
CHF	0.9627	Discount	1.75	30Y	2.4707	GOLD	1312.92	+1.81	FNMA 3	100-17	100-18	+ 00	
CAD	1.2276												

30 Economic Releases ECO »										
	Date Time	A	M	R	Event	Period	Surv(M)	Actual	Prior	Revised
31)	09/20 13:00				MBA Mortgage Applications	Sep 15	--	--	9.9%	--
32)	09/20 16:00				Existing Home Sales	Aug	5.45m	--	5.44m	--
33)	09/20 16:00				Existing Home Sales MoM	Aug	0.2%	--	-1.3%	--
34)	09/20 20:00				FOMC Rate Decision (Upper Bound)	Sep 20	1.25%	--	1.25%	--
35)	09/20 20:00				FOMC Rate Decision (Lower Bound)	Sep 20	1.00%	--	1.00%	--

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Germany		Browse		08:50:44		Treasury & Money Markets						
1) Money Rates		Interbank		EURIBOR Fix		EUR LIBOR Fix		Euro Swaps		OBL/BUNDs		
O/N DEPO	-0.400	O/N	-0.39250	1M	-0.3730	1M	-0.40357	1Y	-0.2571 -0.2542	1Y	-0.71 +0.00	
O/N LEND	0.250	T/N	-0.40750	2M	-0.3410	2M	-0.38857	2Y	-0.1754 -0.1725	2Y	-0.68 +0.00	
1 Week	0.000	1M	-0.40500	3M	-0.3290	3M	-0.37800	3Y	-0.0560 -0.0520	3Y	-0.59 +0.01	
3M Repo	0.000	3M	-0.36000	6M	-0.2710	6M	-0.30429	4Y	0.0820 0.0860	4Y	-0.44 +0.00	
2) Govt Bonds		6M	-0.30750	9M	-0.2190	1Y	-0.22014	5Y	0.2280 0.2300	5Y	-0.27 +0.00	
2Y	-0.682	9M	-0.26750	1Y	-0.1710			6Y	0.3736 0.3777	6Y	-0.15 +0.00	
5Y	-0.267	1Y	-0.21750					7Y	0.5138 0.5179	7Y	-0.01 +0.00	
10Y	0.452	Euro FRAs		Effective O/N				8Y	0.6415 0.6438	8Y	0.13 +0.00	
30Y	1.253	1x4	-0.3280	EONIA	-0.3630	-0.0030			9Y	0.7701 0.7701	9Y	0.30 +0.00
Spot FOREX		3x6	-0.3230	EURONIA	-0.4675	+0.0009			10Y	0.8860 0.9010	10Y	0.45 +0.00
€/GBP	0.8878	6x9	-0.3090	Futures				20Y	1.4801 1.4815	20Y	0.96 +0.00	
€/USD	1.2003	9x12	-0.2875	BUND EUX	161.12	+0.03			30Y	1.5997 1.6086	30Y	1.25 +0.00
€/JPY	133.7740	1x7	-0.2670	BUXL EUX	163.16	-0.08			Stock Indices			
BuBills		3x9	-0.2570	BOBL EUX	131.19	+0.02			DAX	12561.79	+2.40	
1st	-0.697 -0.039	6x12	-0.2350	SCHATZ EUX	112.12	+0.01			HDAX	6783.71	+3.69	
2nd	-0.774 -0.002	12x18	-0.1540	EURIBOR	100.31	+0.00			DAX FUT	12538.50	-12.50	
		18x24	-0.0290	3M EUX	99.66	+0.00						
30 Economic Releases ECO »												
	Date Time	C	A	M	R	Event	Period	Surv(M)	Actual	Prior	Revised	
31)	09/20 08:00	GE			■	PPI MoM	Aug	0.1%	0.2%	0.2%	--	
32)	09/20 08:00	GE			■	PPI YoY	Aug	2.5%	2.6%	2.3%	--	
33)	09/22 09:30	GE			■	Markit/BME Germany Manufacturing PMI	Sep P	59.0	--	59.3	--	
34)	09/22 09:30	GE			■	Markit Germany Services PMI	Sep P	53.7	--	53.5	--	
35)	09/22 09:30	GE			■	Markit/BME Germany Composite PMI	Sep P	55.7	--	55.8	--	
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000												
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
















WCAP

						World Market Cap	
	Current		1 Month	YTD	Pct Of		
	(Mil USD)		% Change	% Change	World		
1) World							
5) World	70484313	02/20	+3.73%	+5.45%	100.00%		
2) Americas							
6) United States	26472831	02/20	+3.91%	+5.03%	37.56%		
7) Canada	2119520	02/20	+4.88%	+6.94%	3.01%		
8) Brazil	838832	02/20	+9.63%	+18.04%	1.19%		
9) Mexico	325577	02/20	+10.70%	+5.23%	.46%		
10) Chile	227042	02/20	+4.83%	+9.30%	.32%		
3) Europe/Africa/ME							
11) United Kingdom	3234446	02/20	+2.96%	+4.46%	4.59%		
12) France	1976742	02/20	-1.17%	+1.44%	2.80%		
13) Germany	1940395	02/20	+1.23%	+3.81%	2.75%		
14) Switzerland	1536484	02/20	+2.73%	+4.91%	2.18%		
15) Spain	659183	02/20	+1.68%	+1.86%	.94%		
4) Asia/Pacific							
16) Japan	5341649	02/20	+2.62%	+5.06%	7.58%		
17) China	6709203	02/20	+4.61%	+3.43%	9.52%		
18) Hong Kong	4332264	02/20	+3.82%	+7.91%	6.15%		
19) India	1738605	02/20	+6.14%	+11.15%	2.47%		
20) Australia	1280252	02/20	+4.15%	+9.63%	1.82%		

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 SN 163608 CET GMT+1:00 G384-1998-1 21-Feb-2017 11:47:14

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9) Output to Excel		Country Risk Premium						
Date	09/19/17	Region	Global	9) Customize				
	Country	Curr	Div Yld	Grwth Rate	Div Pay Ratio	Mkt Return	RF Rate ↓	Premium ↑
1)	 Argentina (CRP AR)	ARS	0.646%	22.685%	21.181%	19.572%	--	--
2)	 UAE (CRP AE)	AED	4.597%	7.321%	55.844%	10.862%	--	--
3)	 Romania (CRP RO)	RON	6.367%	11.601%	58.668%	14.718%	--	--
4)	 Estonia (CRP EE)	EUR	3.619%	6.279%	61.024%	10.446%	--	--
5)	 Saudi Arabia (CRP SA)	SAR	3.867%	17.953%	59.521%	15.160%	--	--
6)	 Qatar (CRP QA)	QAR	4.013%	10.643%	46.663%	13.184%	--	--
7)	 Egypt (CRP EG)	EGP	2.862%	17.165%	37.105%	16.437%	15.975%	0.462%
8)	 Turkey (CRP TR)	TRY	2.380%	17.002%	30.358%	16.523%	10.840%	5.683%
9)	 Switzerland (CRP CH)	CHF	3.240%	9.840%	61.354%	9.859%	-0.043%	--
10)	 Brazil (CRP BR)	BRL	0.706%	14.834%	42.406%	14.446%	9.730%	4.716%
11)	 South Africa (CRP ZA)	ZAr	3.248%	11.948%	51.423%	10.837%	8.427%	2.410%
12)	 Pakistan (CRP PK)	PKR	5.355%	10.144%	60.787%	15.206%	8.260%	6.946%
13)	 Russia (CRP RU)	RUB	4.703%	16.972%	35.864%	19.534%	7.675%	11.859%
14)	 Mexico (CRP MX)	MXN	1.716%	23.531%	39.027%	15.436%	6.840%	8.596%
15)	 India (CRP IN)	INR	1.268%	13.772%	30.216%	10.266%	6.592%	3.674%
16)	 Indonesia (CRP ID)	IDR	2.956%	14.463%	41.684%	11.756%	6.455%	5.301%
17)	 Peru (CRP PE)	PEN	1.363%	12.459%	34.062%	12.235%	6.262%	5.973%
18)	 Philippines (CRP PH)	PHP	1.521%	10.960%	33.510%	8.770%	4.620%	4.150%

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95) Output to Excel		Country Risk Premium						
Date	09/19/17	Region	Global	91) Customize				
	Country	Curr	Div Yld	Grwth Rate	Div Pay Ratio	Mkt Return	RF Rate ↑	Premium
1)	Japan (CRP JP)	JPY	1.716%	9.323%	30.229%	9.104%	0.039%	9.065%
2)	Germany (CRP DE)	EUR	2.534%	8.219%	39.465%	9.252%	0.452%	8.800%
3)	Slovenia (CRP SI)	EUR	5.306%	9.952%	54.628%	12.925%	0.452%	12.473%
4)	Eurozone (CRP EU)	EUR	2.801%	10.494%	47.198%	9.912%	0.452%	9.460%
5)	Denmark (CRP DK)	DKK	2.339%	23.741%	50.491%	16.943%	0.536%	16.407%
6)	Netherlands (CRP NL)	EUR	3.671%	20.037%	53.862%	16.230%	0.576%	15.654%
7)	Finland (CRP FI)	EUR	4.238%	6.070%	67.326%	9.398%	0.617%	8.781%
8)	Austria (CRP AT)	EUR	1.713%	9.592%	40.401%	9.765%	0.626%	9.139%
9)	Belgium (CRP BE)	EUR	3.685%	16.127%	57.786%	12.924%	0.722%	12.202%
10)	France (CRP FR)	EUR	2.967%	8.964%	47.112%	9.521%	0.724%	8.797%
11)	Ireland (CRP IE)	EUR	1.325%	13.403%	25.437%	10.337%	0.725%	9.612%
12)	Sweden (CRP SE)	SEK	3.627%	8.942%	61.885%	10.169%	0.859%	9.310%
13)	Taiwan (CRP Tw)	TwD	3.826%	10.155%	57.369%	11.674%	1.030%	10.644%
14)	Czech (CRP CZ)	CZK	3.733%	-0.262%	51.641%	6.539%	1.173%	5.366%
15)	Britain (CRP GB)	GBp	3.929%	19.136%	55.962%	16.635%	1.329%	15.306%
16)	Norway (CRP NO)	NOK	3.657%	14.228%	54.765%	13.272%	1.554%	11.718%
17)	Spain (CRP ES)	EUR	3.358%	10.983%	55.602%	11.030%	1.556%	9.474%
18)	Hong Kong (CRP HK)	HKD	2.967%	18.441%	38.993%	16.057%	1.584%	14.473%

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95) Output to Excel		99) Admin		Country Risk Premium					
Date	09/17/2018	Region	Global	91) Customize					
	Country	Curr	Div Yld	Grwth	Div Pay	Mkt RF Rate	↑	Premium	▲
1)	Japan (CRP JP)	JPY	2.135%	8.446%	30.937%	8.778%	0.118%	8.660%	
2)	Denmark (CRP DK)	DKK	2.070%	10.464%	45.242%	9.142%	0.393%	8.749%	
3)	Germany (CRP DE)	EUR	2.995%	9.924%	40.273%	11.317%	0.458%	10.859%	
4)	Slovenia (CRP SI)	EUR	7.188%	4.040%	54.148%	9.866%	0.458%	9.408%	
5)	Eurozone (CRP EU)	EUR	3.099%	10.179%	47.578%	10.556%	0.458%	10.098%	
6)	Netherlands (CRP NL)	EUR	3.810%	13.326%	52.485%	13.946%	0.557%	13.389%	
7)	Sweden (CRP SE)	SEK	3.654%	10.730%	64.052%	11.004%	0.608%	10.396%	
8)	Austria (CRP AT)	EUR	2.188%	9.280%	40.373%	10.389%	0.646%	9.743%	
9)	Finland (CRP FI)	EUR	4.502%	5.997%	67.991%	9.026%	0.689%	8.337%	
10)	France (CRP FR)	EUR	3.007%	8.954%	45.276%	9.866%	0.772%	9.094%	
11)	Belgium (CRP BE)	EUR	4.486%	8.869%	61.321%	10.372%	0.780%	9.592%	
12)	Taiwan (CRP TW)	TWD	4.049%	8.193%	58.398%	10.783%	0.830%	9.953%	
13)	Ireland (CRP IE)	EUR	1.636%	9.833%	29.525%	8.814%	0.938%	7.876%	
14)	Spain (CRP ES)	EUR	3.940%	10.267%	56.183%	11.632%	1.488%	10.144%	
15)	Britain (CRP GB)	GBp	4.294%	11.075%	59.896%	13.283%	1.536%	11.747%	
16)	Portugal (CRP PT)	EUR	3.871%	13.123%	59.366%	11.665%	1.831%	9.834%	
17)	Norway (CRP NO)	NOK	3.363%	14.746%	54.107%	13.892%	1.928%	11.964%	
18)	Czech (CRP CZ)	CZK	3.523%	4.926%	54.741%	8.825%	2.170%	6.655%	
19)	Israel (CRP IL)	ILs	1.742%	11.676%	40.815%	12.526%	2.253%	10.273%	

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95) Output to Excel		99) Admin		Country Risk Premium				
Date	09/17/2018	Region	Global	91) Customize				
	Country	Curr	Div Yld	Grwth	Div Pay	Mkt RF Rate ↓	Premium ↑	
1)	South Africa (CRP ZA)	ZAr	3.779%	10.329%	57.553%	12.038%	--	
2)	Argentina (CRP AR)	ARS	0.602%	24.925%	23.268%	19.842%	--	
3)	UAE (CRP AE)	AED	4.700%	9.023%	64.956%	12.420%	--	
4)	Romania (CRP RO)	RON	8.755%	2.174%	58.546%	11.117%	--	
5)	Estonia (CRP EE)	EUR	3.061%	6.341%	61.718%	10.246%	--	
6)	Saudi Arabia (CRP SA)	SAR	3.954%	14.615%	55.023%	13.835%	--	
7)	Qatar (CRP QA)	QAR	4.033%	9.110%	53.672%	11.160%	--	
8)	Turkey (CRP TR)	TRY	4.453%	23.269%	30.428%	21.904%	18.970%	
9)	Egypt (CRP EG)	EGP	2.481%	17.700%	42.891%	18.848%	14.180%	
10)	Brazil (CRP BR)	BRL	0.859%	14.904%	47.795%	15.447%	12.278%	
11)	Pakistan (CRP PK)	PKR	5.339%	12.420%	49.820%	17.347%	10.040%	
12)	Switzerland (CRP CH)	CHF	3.313%	9.443%	57.250%	10.200%	-0.004%	
13)	Russia (CRP RU)	RUB	6.544%	9.673%	36.505%	15.930%	8.984%	
14)	Indonesia (CRP ID)	IDR	2.747%	10.692%	42.322%	10.771%	8.421%	
15)	India (CRP IN)	INR	1.338%	17.686%	32.634%	12.654%	8.098%	
16)	Mexico (CRP MX)	MXN	2.167%	16.626%	42.878%	12.839%	8.047%	
17)	Philippines (CRP PH)	PHP	1.581%	11.095%	30.732%	9.307%	7.536%	
18)	Peru (CRP PE)	PEN	3.258%	6.919%	51.033%	9.423%	5.497%	
19)	Chile (CRP CL)	CLP	2.347%	19.816%	46.239%	15.233%	4.773%	

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Historické odhady prémie za riziko

Interval for Realized Premium x (in percent):

No. of Markets		$1 \leq x < 2$	$2 \leq x < 3$	$3 \leq x < 4$	$4 \leq x < 5$	$5 \leq x < 6$
	8					
7			Switzerland			
6			Spain	France		
5			Norway	Netherlands		
4			Belgium	Canada		Germany
3			Ireland	Italy		Finland
2			Austria	New Zealand	Japan	South Africa
1		Denmark	Sweden	United Kingdom	United States	Australia

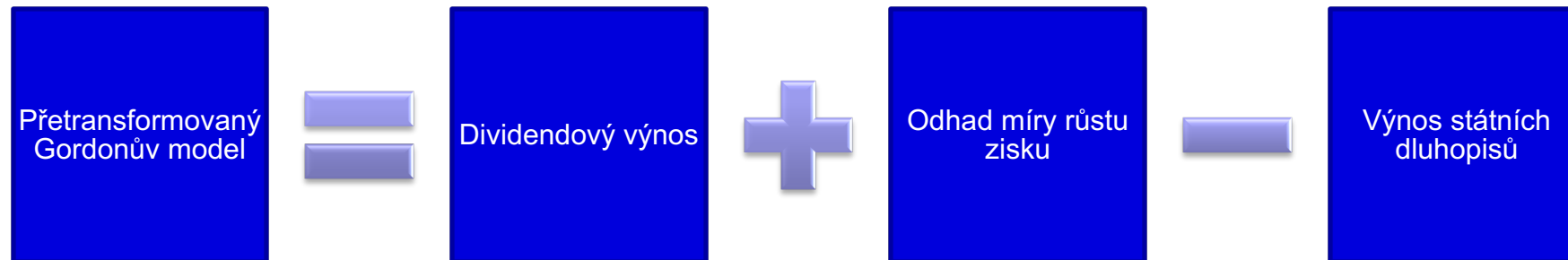
Panel A: Historical Equity Risk Premia Relative to Bonds, 1900–2012

Country	Geometric Mean	Arithmetic Mean	Standard Error	Standard Deviation
Australia	5.6%	7.5%	1.9%	19.9%
Austria	2.8	22.1	14.7	154.8
Belgium	2.3	4.3	2.0	21.0
Canada	3.4	5.0	1.7	18.3
Denmark	1.8	3.3	1.6	17.5
Finland	5.3	8.9	2.8	30.1
France	3.0	5.3	2.1	22.8
Germany	5.2	8.6	2.7	28.4
Ireland	2.6	4.6	1.9	19.8
Italy	3.4	6.8	2.8	29.5
Japan	4.8	8.9	3.1	32.7
Netherlands	3.3	5.6	2.1	22.2
New Zealand	3.7	5.3	1.7	18.1
Norway	2.2	5.2	2.6	27.8
South Africa	5.4	7.1	1.8	19.5
Spain	2.1	4.1	1.9	20.7
Sweden	2.9	5.1	2.0	20.8
Switzerland	2.0	3.5	1.7	17.6
United Kingdom	3.7	5.0	1.6	17.1
United States	4.2	6.2	1.9	20.5
World-ex US	3.0	4.1	1.4	14.7
World	3.2	4.4	1.4	15.3

Panel B: Historical Equity Risk Premia Relative to Bills, 1900–2012

Country	Geometric Mean	Arithmetic Mean	Standard Error	Standard Deviation
Australia	6.6%	8.1%	1.7%	17.6%
Austria	5.6	10.5	3.6	37.7
Belgium	2.7	5.2	2.3	24.0
Canada	4.1	5.5	1.6	17.1
Denmark	2.8	4.6	1.9	20.5
Finland	5.8	9.3	2.8	30.0
France	5.9	8.6	2.3	24.4
Germany	5.9	9.8	3.0	31.7
Ireland	3.2	5.4	2.0	21.3
Italy	5.6	9.5	3.0	31.8
Japan	5.7	8.9	2.6	27.6
Netherlands	4.2	6.4	2.1	22.7
New Zealand	4.2	5.8	1.7	18.3
Norway	2.9	5.8	1.7	18.3
South Africa	6.3	8.3	2.1	21.9
Spain	3.1	5.3	2.0	21.7
Sweden	3.6	5.7	1.9	20.6
Switzerland	3.4	5.1	1.8	18.8
United Kingdom	4.3	6.0	1.9	19.8
United States	5.3	7.2	1.8	19.6
World-ex US	3.5	5.1	1.8	18.6
World	4.1	5.5	1.6	17.0

Forward-Looking odhady prémie za riziko



Forward-Looking odhady prémie za riziko (Ibbotson-Chen model)

Macroeconomic Model Equity Risk Premium (ERP)

$$\text{ERP} = (1 + \text{EINFL})(1 + \text{EGREPS})(1 + \text{EGPE}) - 1 + \text{EINC} - R_F$$

where

EINFL = Očekávaná inflace

EGREPS = Očekávaná míra růstu (reálného) zisku per share

EGPE = Očekávaný růst P/E

EINC = Očekávaný důchod

R_F = Očekávaná bezriziková míra

Příklad: Forward-Looking prémie za riziko

- $Expected\ Inflation = \frac{1+Treasury\ Bond\ yield}{1+TIPS\ yield} - 1$
- $Expected\ Inflation = \frac{1+0.038}{1+0.0018} - 1 = 0.02$

Příklad:

Forward-Looking odhady prémie za riziko

Výnosnost státních dluhopisů	3.8%
Výnosnost tzv. TIPS	1.8%
Očekávaný růst produktivity práce	1.5%
Očekávaný růst nabídky práce	1.0%
Očekávaný růst P/E	0.0%
Očekávaná dividenda	2.7%
Výnosnost z reinvestovaného důchodu	0.1%

Příklad:

Forward-Looking prémie za riziko

$$\begin{aligned}\text{Real earnings growth} &= \text{Labor productivity} + \text{Labor supply growth} \\ &= 1.5\% + 1.0\% \\ &= 2.5\%\end{aligned}$$

$$\begin{aligned}\text{Expected income} &= \text{Dividend yield} + \text{Reinvestment return} \\ &= 2.7\% + 0.1\% \\ &\quad + 2.8\%\end{aligned}$$

Příklad: Forward-Looking prémie za riziko

Macroeconomic model equity risk premium

$$= \text{ERP} = (1 + E_{\text{INFL}})(1 + E_{\text{GREPS}})(1 + E_{\text{GPE}}) - 1 + E_{\text{INC}} - R_F$$

$$= (1 + 0.02)(1 + 0.025)(1 + 0) - 1.0 + 0.028 - 0.038$$

$$= 3.5\%$$

Odhady požadované výnosové míry u

Capital Asset
Pricing Model
(CAPM)

Multifactorové
Modely

- Fama–French model
- Pastor–Stambaugh model

Build-Up Metody

Capital Asset Pricing Model

$$E(R_i) = R_F + \beta_i [E(R_M) - R_F],$$

– Kde

- $E(R_i)$ = požadované výnosová míra akcie i
- R_F = aktuální očekávaná bezriziková výnosová míra
- β_i = Beta akcie i nebo oboru
- $E(R_M)$ = očekávaná výnosnost tržního portfolia
- $E(R_M) - R_F$ = prémie za riziko

– Předpoklady

- Rizikově averzní investoři
- Investice je založena na vztahu mezi mean–variance
- Relevantní riziko je systematické riziko

#<GO> to see historical data

9) Output to Excel


















Country Risk Premium

Date	09/25/16	Region	Global	9) Customize				
	Country	Curr	Div Yld	Grwth Rate	Div Pay Ratio	Mkt Return	RF Rate ↑	Premium
1)	Taiwan (CRP TW)	TWD	3.940%	7.852%	54.519%	10.169%	--	--
2)	Argentina (CRP AR)	ARS	0.642%	13.653%	12.202%	11.643%	--	--
3)	Egypt (CRP EG)	EGP	2.843%	21.989%	37.984%	20.285%	--	--
4)	UAE (CRP AE)	AED	5.229%	3.356%	59.565%	8.813%	--	--
5)	Romania (CRP RO)	RON	6.529%	35.668%	64.544%	30.680%	--	--
6)	Estonia (CRP EE)	EUR	3.786%	0.545%	60.885%	8.695%	--	--
7)	Saudi Arabia (CRP SA)	SAR	4.089%	13.732%	51.745%	13.374%	--	--
8)	Qatar (CRP QA)	QAR	3.726%	10.112%	48.596%	11.625%	--	--
9)	Brazil (CRP BR)	BRL	0.804%	11.395%	42.499%	12.048%	11.872%	0.176%
10)	Switzerland (CRP CH)	CHF	3.210%	7.452%	60.833%	8.904%	-0.462%	--
11)	Germany (CRP DE)	EUR	2.653%	6.863%	43.561%	8.697%	-0.082%	--
12)	Slovenia (CRP SI)	EUR	5.512%	6.900%	43.285%	10.588%	-0.082%	--
13)	Eurozone (CRP EU)	EUR	0.000%	9.006%	49.114%	9.534%	-0.082%	--
14)	Japan (CRP JP)	JPY	1.853%	9.382%	32.054%	9.590%	-0.045%	--
15)	Turkey (CRP TR)	TRY	2.965%	16.112%	30.332%	16.244%	9.510%	6.734%
16)	South Africa (CRP ZA)	ZAr	3.023%	8.693%	53.349%	10.512%	8.563%	1.949%
17)	Russia (CRP RU)	RUB	3.927%	23.329%	34.233%	23.045%	8.198%	14.847%
18)	Pakistan (CRP PK)	PKR	4.514%	10.823%	48.260%	15.010%	7.840%	7.170%

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














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9) Output to Excel		Country Risk Premium						
Date	09/25/16	Region	Global	9) Customize				
	Country	Curr	Div Yld	Grwth Rate	Div Pay Ratio	Mkt Return	RF Rate ↓	Premium
1)	 Denmark (CRP DK)	DKK	2.607%	5.947%	50.876%	8.292%	0.007%	8.285%
2)	 Netherlands (CRP NL)	EUR	4.073%	14.986%	55.804%	15.329%	0.035%	15.294%
3)	 Finland (CRP FI)	EUR	4.725%	3.720%	65.427%	8.164%	0.042%	8.122%
4)	 Austria (CRP AT)	EUR	2.067%	20.443%	36.868%	17.601%	0.122%	17.479%
5)	 Belgium (CRP BE)	EUR	3.701%	3.050%	61.526%	8.818%	0.149%	8.669%
6)	 Sweden (CRP SE)	SEK	4.010%	6.790%	64.020%	8.632%	0.209%	8.423%
7)	 France (CRP FR)	EUR	3.524%	7.132%	49.371%	9.239%	0.215%	9.024%
8)	 Czech (CRP CZ)	CZK	4.757%	6.050%	51.937%	12.031%	0.271%	11.760%
9)	 Ireland (CRP IE)	EUR	0.992%	12.251%	17.349%	10.085%	0.391%	9.694%
10)	 Britain (CRP GB)	GBp	3.778%	10.489%	56.778%	11.515%	0.730%	10.785%
11)	 Spain (CRP ES)	EUR	3.983%	9.326%	57.992%	10.636%	0.967%	9.669%
12)	 Italy (CRP IT)	EUR	4.199%	11.377%	52.399%	12.175%	1.016%	11.159%
13)	 Canada (CRP CA)	CAD	2.811%	16.395%	46.287%	12.539%	1.044%	11.495%
14)	 Hong Kong (CRP HK)	HKD	3.295%	7.544%	37.297%	10.500%	1.062%	9.438%
15)	 Norway (CRP NO)	NOK	4.321%	10.163%	51.185%	11.542%	1.231%	10.311%
16)	 South Korea (CRP KR)	KRW	1.611%	10.346%	18.529%	10.622%	1.502%	9.120%
17)	 United States (CRP US)	USD	2.117%	11.135%	36.084%	9.189%	1.618%	7.571%
18)	 Singapore (CRP SG)	SGD	3.508%	5.751%	50.622%	7.999%	1.770%	6.229%

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9) Output to Excel		Country Risk Premium						
Date	09/19/17	Region	Global	9) Customize				
	Country	Curr	Div Yld	Grwth Rate	Div Pay Ratio	Mkt Return	RF Rate ↓	Premium ↑
1)	 Argentina (CRP AR)	ARS	0.646%	22.685%	21.181%	19.572%	--	--
2)	 UAE (CRP AE)	AED	4.597%	7.321%	55.844%	10.862%	--	--
3)	 Romania (CRP RO)	RON	6.367%	11.601%	58.668%	14.718%	--	--
4)	 Estonia (CRP EE)	EUR	3.619%	6.279%	61.024%	10.446%	--	--
5)	 Saudi Arabia (CRP SA)	SAR	3.867%	17.953%	59.521%	15.160%	--	--
6)	 Qatar (CRP QA)	QAR	4.013%	10.643%	46.663%	13.184%	--	--
7)	 Egypt (CRP EG)	EGP	2.862%	17.165%	37.105%	16.437%	15.975%	0.462%
8)	 Turkey (CRP TR)	TRY	2.380%	17.002%	30.358%	16.523%	10.840%	5.683%
9)	 Switzerland (CRP CH)	CHF	3.240%	9.840%	61.354%	9.859%	-0.043%	--
10)	 Brazil (CRP BR)	BRL	0.706%	14.834%	42.406%	14.446%	9.730%	4.716%
11)	 South Africa (CRP ZA)	ZAr	3.248%	11.948%	51.423%	10.837%	8.427%	2.410%
12)	 Pakistan (CRP PK)	PKR	5.355%	10.144%	60.787%	15.206%	8.260%	6.946%
13)	 Russia (CRP RU)	RUB	4.703%	16.972%	35.864%	19.534%	7.675%	11.859%
14)	 Mexico (CRP MX)	MXN	1.716%	23.531%	39.027%	15.436%	6.840%	8.596%
15)	 India (CRP IN)	INR	1.268%	13.772%	30.216%	10.266%	6.592%	3.674%
16)	 Indonesia (CRP ID)	IDR	2.956%	14.463%	41.684%	11.756%	6.455%	5.301%
17)	 Peru (CRP PE)	PEN	1.363%	12.459%	34.062%	12.235%	6.262%	5.973%
18)	 Philippines (CRP PH)	PHP	1.521%	10.960%	33.510%	8.770%	4.620%	4.150%

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95) Output to Excel		Country Risk Premium						
Date	09/19/17	Region	Global	91) Customize				
	Country	Curr	Div Yld	Grwth Rate	Div Pay Ratio	Mkt Return	RF Rate ↑	Premium
1)	Japan (CRP JP)	JPY	1.716%	9.323%	30.229%	9.104%	0.039%	9.065%
2)	Germany (CRP DE)	EUR	2.534%	8.219%	39.465%	9.252%	0.452%	8.800%
3)	Slovenia (CRP SI)	EUR	5.306%	9.952%	54.628%	12.925%	0.452%	12.473%
4)	Eurozone (CRP EU)	EUR	2.801%	10.494%	47.198%	9.912%	0.452%	9.460%
5)	Denmark (CRP DK)	DKK	2.339%	23.741%	50.491%	16.943%	0.536%	16.407%
6)	Netherlands (CRP NL)	EUR	3.671%	20.037%	53.862%	16.230%	0.576%	15.654%
7)	Finland (CRP FI)	EUR	4.238%	6.070%	67.326%	9.398%	0.617%	8.781%
8)	Austria (CRP AT)	EUR	1.713%	9.592%	40.401%	9.765%	0.626%	9.139%
9)	Belgium (CRP BE)	EUR	3.685%	16.127%	57.786%	12.924%	0.722%	12.202%
10)	France (CRP FR)	EUR	2.967%	8.964%	47.112%	9.521%	0.724%	8.797%
11)	Ireland (CRP IE)	EUR	1.325%	13.403%	25.437%	10.337%	0.725%	9.612%
12)	Sweden (CRP SE)	SEK	3.627%	8.942%	61.885%	10.169%	0.859%	9.310%
13)	Taiwan (CRP Tw)	TwD	3.826%	10.155%	57.369%	11.674%	1.030%	10.644%
14)	Czech (CRP CZ)	CZK	3.733%	-0.262%	51.641%	6.539%	1.173%	5.366%
15)	Britain (CRP GB)	GBp	3.929%	19.136%	55.962%	16.635%	1.329%	15.306%
16)	Norway (CRP NO)	NOK	3.657%	14.228%	54.765%	13.272%	1.554%	11.718%
17)	Spain (CRP ES)	EUR	3.358%	10.983%	55.602%	11.030%	1.556%	9.474%
18)	Hong Kong (CRP HK)	HKD	2.967%	18.441%	38.993%	16.057%	1.584%	14.473%

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Problémy s odhadem beta koeficientu

Výběr tržního indexu

- S&P 500 Index and NYSE Composite v US, atd.

Délka & frekvence dat

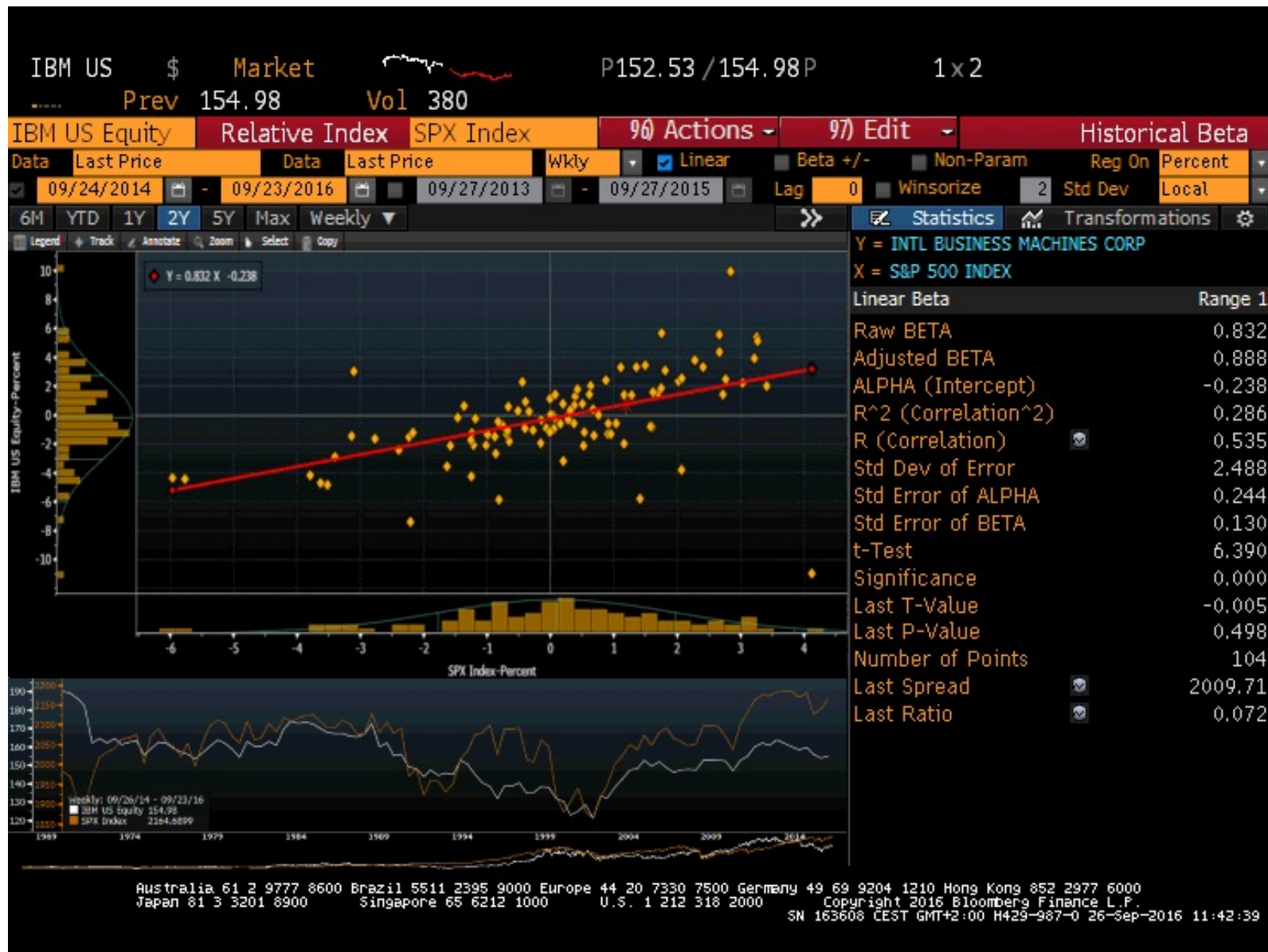
- 5 let na základě měsíčních pozorování


Adjusted Beta

- Beta směřuje v dlouhém horizontu k 1

Málo obchodované a soukromé společnosti

- Přizpůsobení bety porovnatelné společnosti přes finanční páku




IBM US \$ Market  P152.53 / 154.98P 1x2
 Prev 154.98 Vol 380

IBM US Equity 99 Feedback Equity Risk Premium

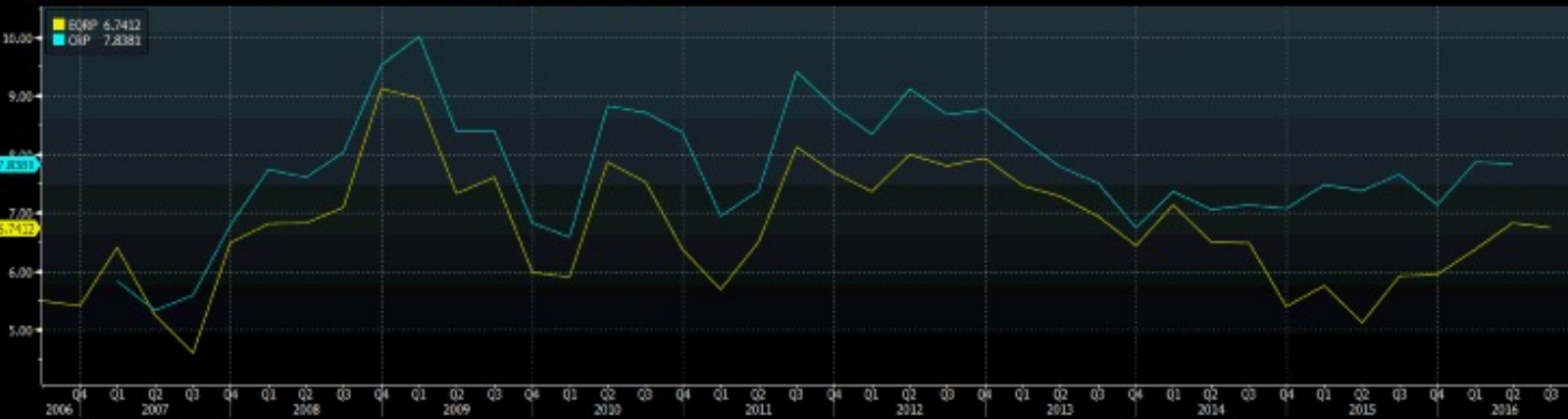
1) Summary 1) History

Period MR 09/26/16 Currency USD International Business Machines Corp (IBM US)
 Country United States

Country Data		Equity Data	
1) Expected Market Return	9.189%	Beta 	0.888
2) Risk Free Rate	1.598%	Equity Risk Premium	6.741%
3) Country Risk Premium	7.592%		

Historical Graph

EQRP CRP RFR Expected Market Return



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Levering a unlevering beta

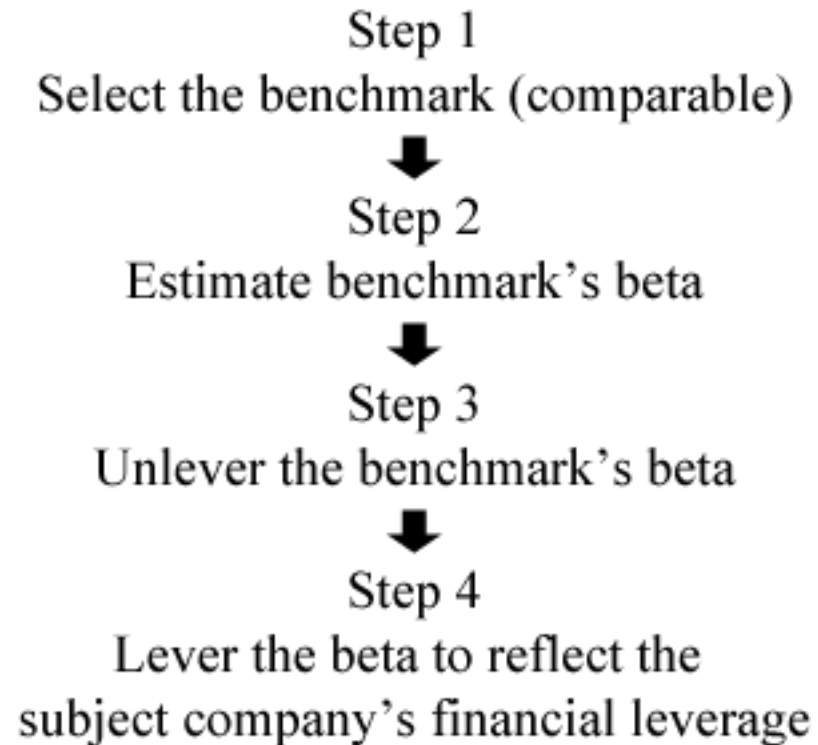
Unleverage beta se získá s bety porovnatelné společnosti odstraněním finanční páky:

$$\beta_{\text{asset}} = \beta_{\text{equity}} \left[\frac{1}{1 + \frac{(1-t)D}{E}} \right]$$

Poté je tato beta přizpůsobena o finanční páku dané společnosti:

$$\beta_{\text{equity}} = \beta_{\text{asset}} \left[1 + \frac{(1-t)D}{E} \right]$$

Levering a unlevering beta



Příklad: Levering and Unlevering Betas

Příklad

	Whatsit Project	Thatsit Company
Debt	€10	€100
Equity	€40	€200
Equity beta	?	1.4

Řešení

$$\beta_{\text{asset}} = 1.4 \{1 \div [1 + (100 \div 200)]\} = 0,9333$$

$$\beta_{\text{equity}} = 0,9333 [1 + ((10 \div 40))] = 1.1666$$

Multifaktorové modely: Fama–French Model



Fama–French Model

$$r_i = R_F + \beta_i^{mkt} \text{RMRF} + \beta_i^{size} \text{SMB} + \beta_i^{value} \text{HML},$$

– kde

- SMB = The výnosnost akcií malých společností minus výnosnost akcií velkých společností
- β^{size} = Citlivost akcie i na pohyb malých společností
- HML = Výnosnost hodnotových akcií minus výnosnost růstových akcií
- β^{value} = Citlivost akcie i na pohyb hodnotových akcií

PASTOR–STAMBAUGH MODEL

$$r_i = R_F + \beta_i^{mkt} \text{RMRF} + \beta_i^{size} \text{SMB} + \beta_i^{value} \text{HML} + \beta_i^{liq} \text{LIQ},$$

– where

- LIQ = Výnosnost nelikvidních akcií minus výnosnost likvidních akcií
- β^{liq} = Citlivost akcie i na pohyb nelikvidních akcií

	July 2018	Last 3 Months	Last 12 Months
Fama/French 3 Research Factors			
Rm-Rf	3.19	6.45	16.20
SMB	-2.18	4.36	6.21
HML	0.49	-5.32	-7.69
Fama/French 5 Research Factors (2x3)			
Rm-Rf	3.19	6.45	16.20
SMB	-1.93	3.75	5.57
HML	0.49	-5.32	-7.69
RMW	1.65	0.65	2.17
CMA	0.54	-0.53	-5.96
Fama/French Research Portfolios			
Size and Book-to-Market Portfolios			
Small Value	1.14	7.63	19.96
Small Neutral	2.24	10.15	21.06
Small Growth	1.21	12.46	25.37
Big Value	4.35	2.75	13.05
Big Neutral	3.49	5.84	11.70
Big Growth	3.31	8.56	23.02
Size and Operating Profitability Portfolios			
Small Robust	1.86	8.66	21.50
Small Neutral	2.25	10.05	18.87
Small Weak	0.85	10.38	24.46
Big Robust	4.18	8.31	22.17
Big Neutral	3.41	5.36	12.72
Big Weak	1.87	5.28	14.87
Size and Investment Portfolios			
Small Conservative	1.46	11.22	22.94
Small Neutral	2.18	9.65	19.45
Small Aggressive	0.73	8.78	23.64
Big Conservative	3.81	5.28	13.03
Big Neutral	3.45	5.06	12.31
Big Aggressive	3.45	8.79	24.24

http://mba.tuck.dartmouth.edu/pages/faculty/ken_french/data_library.html

Exhibit 7. CAPM and FFM Required Return Estimates, Microsoft Corporation

	Model A	Model B
1) Current risk- free rate	0.03%	0.03%
2) Beta	0.93	0.96
3) Market (equity) risk premium	5.9%	5.9%
<i>Premium for stock: (2) × (3) =</i>	5.49%	5.66%
4) Size beta	—	-0.17
5) Size Premium (SMB)	—	2.6%
<i>Premium for stock: (4) × (5) =</i>	—	-0.44%
6) Value beta	—	-0.15
7) Value Premium	—	4.1%
<i>Premium for stock: (6) × (7) =</i>	—	-0.62%
R^2	0.54	0.55
<i>Adjusted R²</i>	0.53	0.52

Build-Up Metody

Požadovaná
výnosová míra

Risk-
Free
Rate

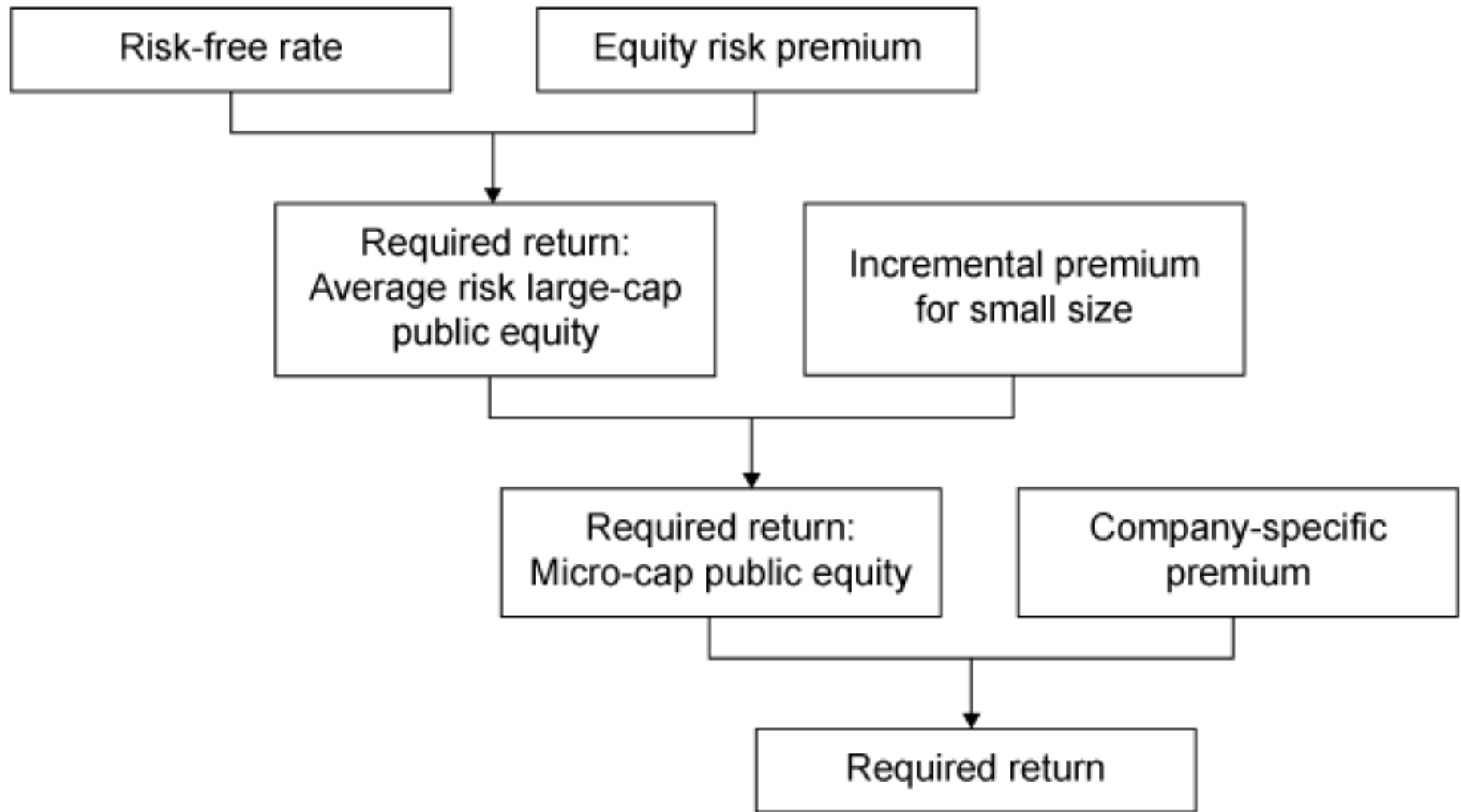
Equity
risk
premium

Další
rizikové
prémie

Případně
rizikové
diskonty

– Pro soukromé společnosti

- Typické rizikové prémie
 - velikost
 - firemně specifické riziko
- Další prémie
 - marketibilita
 - kontrola



Mezinárodní souvislosti v případě požadované výnosové míry

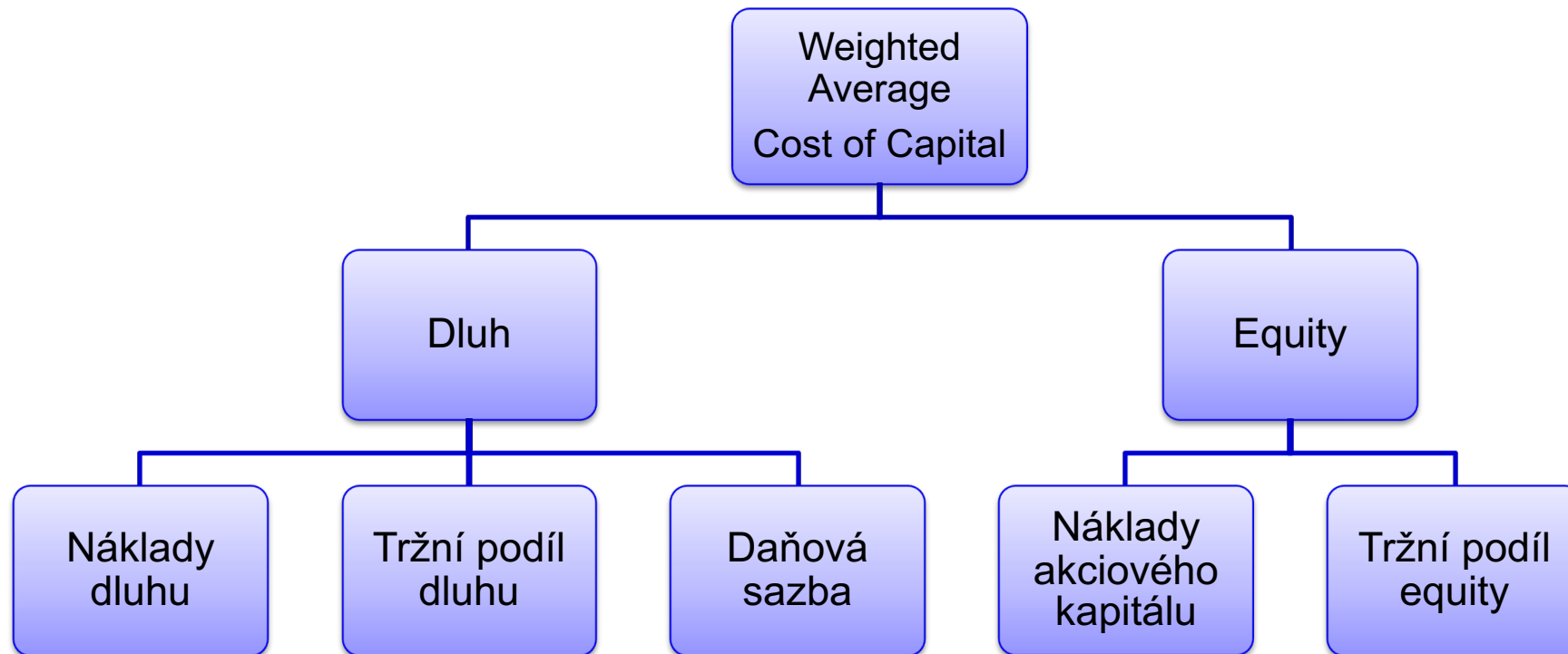


Směnné kurzy

Emerging Markets

- Country spread model

Weighted Average Cost of Capital (WACC)



Weighted Average Cost of Capital

$$\frac{\text{MVD}}{\text{MVD} + \text{MVCE}} r_d (1 - \text{Tax rate}) + \frac{\text{MVCE}}{\text{MVD} + \text{MVCE}} r_e$$

— Where

- MVD = aktuální hodnota dluhu
- MVCE = aktuální hodnota equity
- r_d = náklad dluhu (transformován po náklad dluhu po zohlednění daňové sazby přes $(1 - \text{daňová sazba})$)
- r_e = náklady equity

IBM US

\$

Market

P152.53 / 154.98P

1x2

Prev 154.98

Vol 380

IBM US Equity

1) Create Report

2) Output to Excel

Weighted Average Cost of Capital

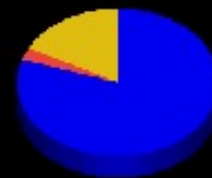
International Business Machines Corp

Period MR 2016 Q2

Cost of Capital - Current Market Value

Capital Structure (Millions of USD)

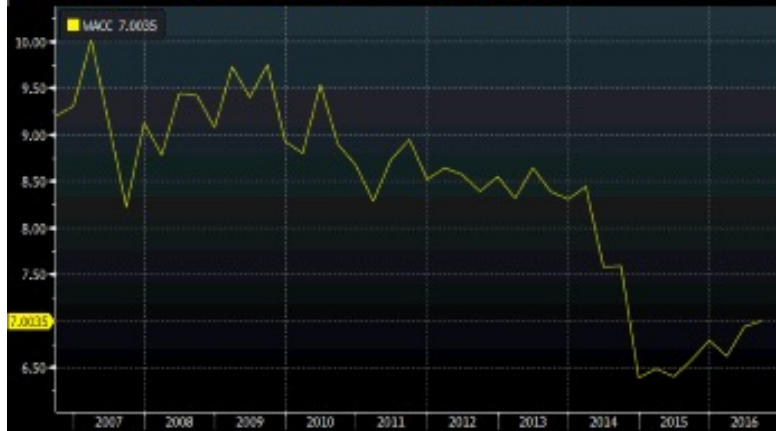
	Weight	Cost	W x C
3) Equity	80.0%	8.3%	6.7%
4) Debt Cost (A-T)	20.0%	1.6%	0.3%
5) Preferred Equity	0.0%	0.0%	0.0%
WACC			7.0%



Market Cap	145,078.0	80.0%
ST Debt	4,887.0	2.7%
LT Debt	31,279.0	17.3%
Pref. Eqty	0.0	0.0%
Total	181,244.0	100.0%

6) History

WACC EVA ROIC EVA Spread



Economic Value Added (Millions of USD)

7) Net Operating Profit	12806.00
8) Cash Operating Taxes	831.73
NOPAT	11974.27
9) Total Investment Capital	71993.00
Capital Charge	5042.03
Economic Value Added	6932.24
ROIC	16.63%
EVA Spread	9.63%

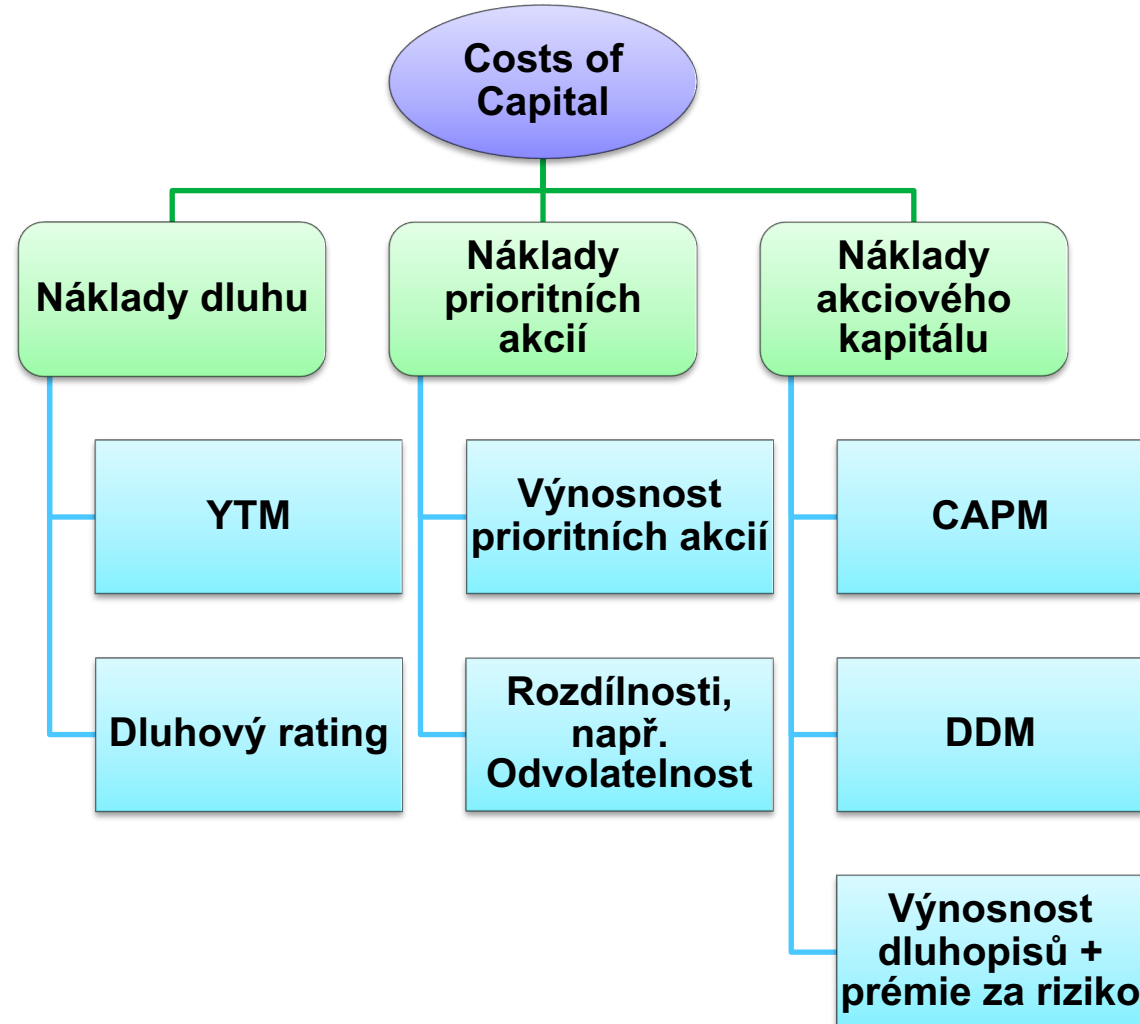
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000

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Daň a náklady kapitálu

- Úrok za dluhová kapitál je daňově odečitatelnou položkou, proto je nutné tento efekt zohlednit .
 - Takto $r_d \times (1 - t)$ což jsou náklady dluhu po zdanění.
- Náklady vlastního kapitálu/ equity daňově uznatelnou položkou nejsou, proto se zde daňová sazba nezohledňuje.

Náklady různých dluhů kapitálu



Příklad: Náklady dluhu

Yield-to-Maturity přístup

Uvažujme společnost s hodnotou dluhu \$100 milionů s průměrnou kupónovou sazbou 5%, 10letou maturitou, a prodejní cenou \$98. Při daňové sazbě 40 procent, jaké jsou náklady dluhového kapitálu? Předpokládejme pololetní připisování úroku.

Řešení:

$$r_d = 0.0526 (1 - 0.4) = 3.156\%$$

Přístup s využitím ratingu

Společnost má dluhopisy v hodnotě \$100 milionů, které nejsou veřejně obchodované ale mají ratingové ocenění AA. Průměrná výnosnost AA dluhopisů se aktuálně pohybuje na úrovni 6.2%. Při daňové sazbě 40 procent, jaké jsou náklady dluhového kapitálu?

Řešení:

$$r_d = 0.062 (1 - 0.4) = 3.72\%$$

Náklady prioritních akcií

Pokud se jedná o prioritní akcie, které jsou neodvolatelné a nekonvertibilní, pak se vchází ze vzorce pro perpetuitní konstantní anuitu:

$$P_p = \frac{D_p}{r_p} \quad \rightarrow \quad r_p = \frac{D_p}{P_p} \quad (3-3)$$

Problém

Společnost emitovala prioritní akcii s dividendou \$1.25 a cenou \$20. Jaké jsou náklady na prioritní akcii?

Řešení

$$r_p = \frac{\$1.25}{\$20} = 0.0625, \text{ or } 6.25\%$$

Volba diskontního faktoru

CFF

- WACC

CFE

- Požadovaná výnosová míra na akciový kapitál

Nominalní
Cash Flows

- Nominální diskontní míra

Reálný
Cash Flows

- Reálná diskontní míra

Table 1. Practices among the US and Canadian Firms

Authors	Gitman and Mercurio (1980)	Gitman and Vandenberg (2000)	Bruner, <i>et al.</i> (1998)	Graham and Harvey (2001)
<i>Country</i>	<i>US</i>	<i>US</i>	<i>US, Canada</i>	<i>US, Canada</i>
CAPM	36%	65%	81%	74%
CAPM including some other risk			4%	34%
APT		1%		
Market return adjusted for risk	23%	14%		
Average historical return				39%
Dividend discount model	32%	14%		16%
Investor expectations				14%
Regulatory decisions				7%
E/P ratio	16%	3%		
Cost of debt + risk premium for equity	13%	17%		
n.a.			15%	
<i>Survey date</i>	<i>1980</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>
<i>Sample size</i>	<i>1,000</i>	<i>1,000</i>	<i>32</i>	<i>4,440</i>
<i>Number of respondents</i>	<i>177</i>	<i>111</i>	<i>27</i>	<i>392</i>
<i>Response rate</i>	<i>18%</i>	<i>11%</i>	<i>84%</i>	<i>9%</i>

Table 2. Practices among European Firms

Authors	McLaney, <i>et al.</i> (2004)		Brounen, <i>et al.</i> (2004)			Truong, <i>et al.</i> (2008)
	<i>UK</i>	<i>UK</i>	<i>Netherlands</i>	<i>Germany</i>	<i>France</i>	<i>Australia</i>
CAPM	47%	47%	56%	34%	45%	72%
CAPM including some other risk		27%	15%	16%	30%	1%
APT						
Market return adjusted for risk						
Average historical return		31%	31%	18%	27%	11%
Dividend discount model	28%	10%	11%	10%	10%	9%
Investor expectations		19%	45%	39%	34%	
Regulatory decisions		16%	4%	0%	16%	4%
E/P ratio	27%					15%
Cost of debt + risk premium for equity						47%
Cost of debt						34%
<i>Survey date</i>	<i>1997</i>	<i>2003</i>	<i>2003</i>	<i>2003</i>	<i>2003</i>	<i>2004</i>
<i>Sample size</i>	<i>1,292</i>				<i>2,500</i>	<i>356</i>
<i>Number of respondents</i>	<i>193</i>	<i>68</i>	<i>52</i>	<i>132</i>	<i>61</i>	<i>87</i>
<i>Response rate</i>	<i>15%</i>				<i>13%</i>	<i>24%</i>

Table 3. Parameters of Cost of Equity Estimation

Parameters	Estimation					
	<i>90-</i>	<i>10Y</i>		<i>10-30Y</i>	<i>30Y</i>	
Risk-free rate	<i>Treasury bill</i>	<i>Treasury bond</i>	<i>20Y Treasury bonds</i>	<i>Treasury bonds</i>	<i>Treasury bonds</i>	<i>Other</i>
Corporations	4%	33%	4%	33%		26%
Advisors	10%			30%	40%	20%
	<i>Published source</i>	<i>Self calculated</i>	<i>Fundamental beta</i>	<i>Advisor's estimate</i>	<i>Other</i>	
Corporations	52%	30%		3%	15%	
Advisors	40%	20%	30%		10%	
		<i>Arithmetic mean</i>	<i>Geometric mean</i>	<i>Arithmetic and geometric</i>	<i>Other</i>	
Risk premium	<i>Fixed rate</i>					
Corporations	44%	4%	4%	10%	38%	
Advisors	60%	10%			30%	

Source: Bruner, *et al.* (1998)

Table 4. Factors in Multibeta CAPM

	Discount rate
Interest rate risk	15.3%
Foreign exchange risk	10.8%
GDP or business cycle risk	6.8%
Risk of unexpected inflation	11.9%
Size	14.6%
Commodity price risk	2.9%
Term structure risk	8.6%
Distress risk	7.4%
"Market to book" ratio	4.0%
Momentum	3.4%

Source: Graham and Harvey (2001)

The Czech Republic

Table 6. Cost of Equity Models

Cost of equity models	Percentage of experts	<i>p-value</i>
CAPM	52.0%	
Build up	36.8%	
Other	11.2%	
<i>Test on population proportion (CAPM vs. build up)</i>		<i>0.04</i>
<i>Test on population proportion (CAPM vs. other)</i>		<i><0.001</i>

Source: Author

Table 16. Parameters CAPM estimation

Risk-free rate					
<i>Country</i>	<i>CR</i>	<i>US</i>	<i>GE</i>	<i>Average</i>	<i>na</i>
Percent of experts	48.1%	37.0%	11.1%	1.9%	1.9%
<i>Bond maturity</i>	<i>> 10Y</i>	<i>1Y to 10Y</i>	<i>< 1Y</i>	<i>Historical long term</i>	<i>na</i>
Percent of experts	85.2%	8.6%	2.5%	1.9%	1.9%
Equity risk premium					
<i>Method of averaging</i>	<i>Arithmetic</i>	<i>Geometric</i>	<i>na</i>		
Percent of experts	7.6%	65.9%	26.5%		
Beta					
<i>Method of estimation</i>	<i>Industry beta</i>	<i>Risk factors based beta</i>	<i>Average of industry betas</i>	<i>Other</i>	
Percent of experts	76.3%	8.3%	7.1%	8.3%	
Risk premiums for unsystematic risk					
<i>Application of premiums</i>	<i>Country risk premium</i>	<i>Size premium</i>	<i>Specific premium</i>	<i>Premium for lack of liquidity</i>	
Percent of experts	92.5%	39.8%	38.5%	22.4%	

Source: Author