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External Debt Management and Capital Flows: Issues and Challenges in Pakistan

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External Debt Sustainability

- Economists have used indicators of the burden of external debt, e.g.,
 - Debt to exports,
 - Debt to GDP,
 - Debt service to exports
 - Debt to government revenue.
- However, there are not well demarcated flag posts, which could signal an unacceptable level of indebtedness.
- Disagreements can easily arise as to the prudent level of debt because there are no universally accepted limits to debt levels, and economists differ widely as to the future course of the economy.

An Alternative Approach

- This paper examines the Pakistan's external debt position using an alternative approach.
- It examines the marginal costs of external debt as indicated by:
 - the yields on the country's Eurobonds and
 - the spreads on Credit Default Swaps (CDS).
- *A sharp increase in the bond yields or in the CDS spreads would signal that the country's external debt may be approaching an unsustainable level.*

Emerging Challenges and Issues

The paper also reviews the country's external debt using:

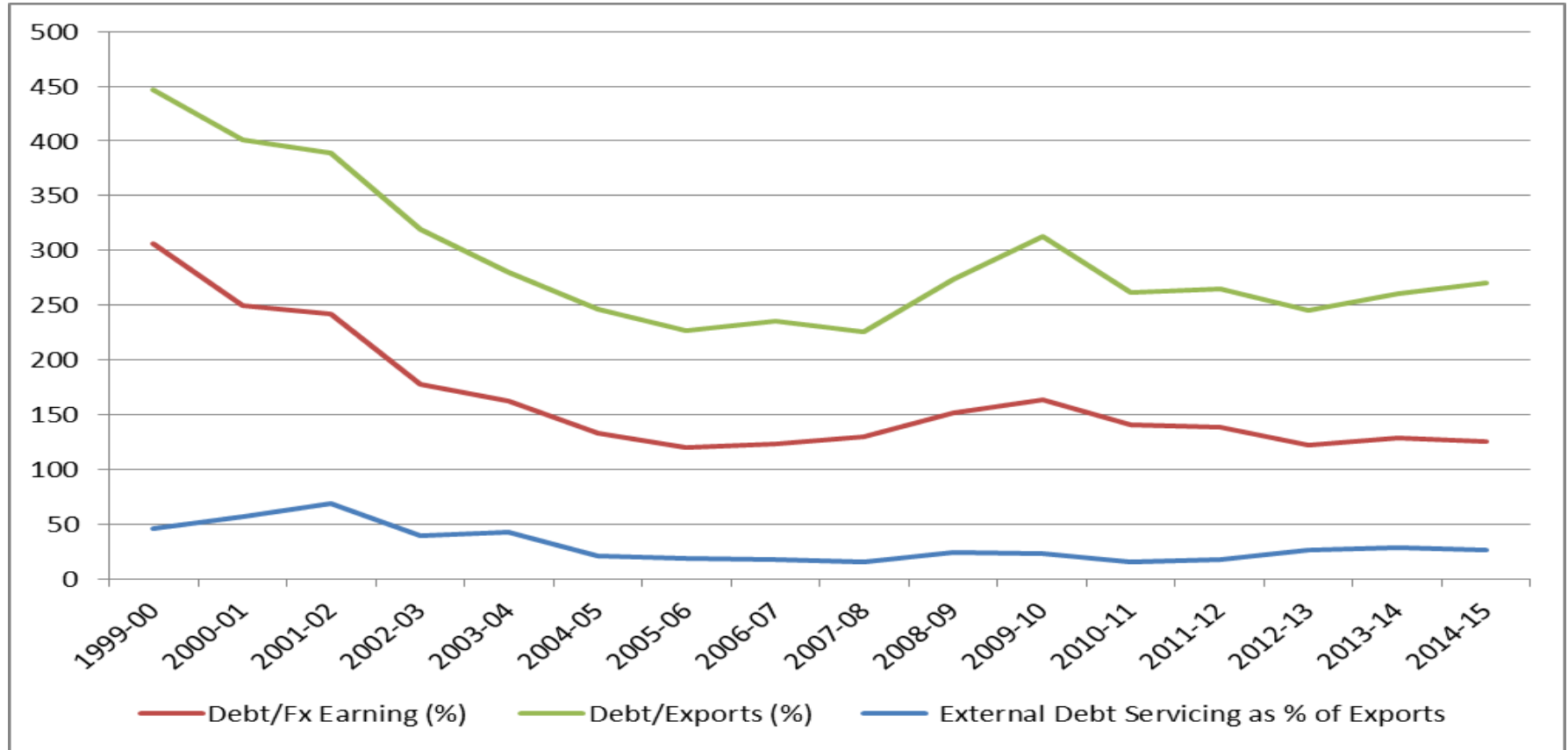
- An assessment employing market based indicators.
- An econometric study of the linkages of the yields on the debt with the international yields results and implications.
- The risk factors to the debt sustainability in the short- and medium term, in view of:
 - The changing global financial environment.
 - Financing requirements for the projects to be undertaken under the China-Pakistan Economic Corridor (CPEC).
 - issues related to the management of capital flows.

Conventional Assessment of Pakistan's External Debt

- A number of economic experts have raised concerns over the Pakistan's growing external debt.
- The arguments are based on analysis using conventional ratios and on projections of the country's GDP and exports growth.
- In the absence of hard optimum or cutoff debt-burden ratios such data is prone to be interpreted differently with diverse prognoses by judiciously selecting time periods and the statistical series.
- The conventional approach is illustrated in the next two figures.

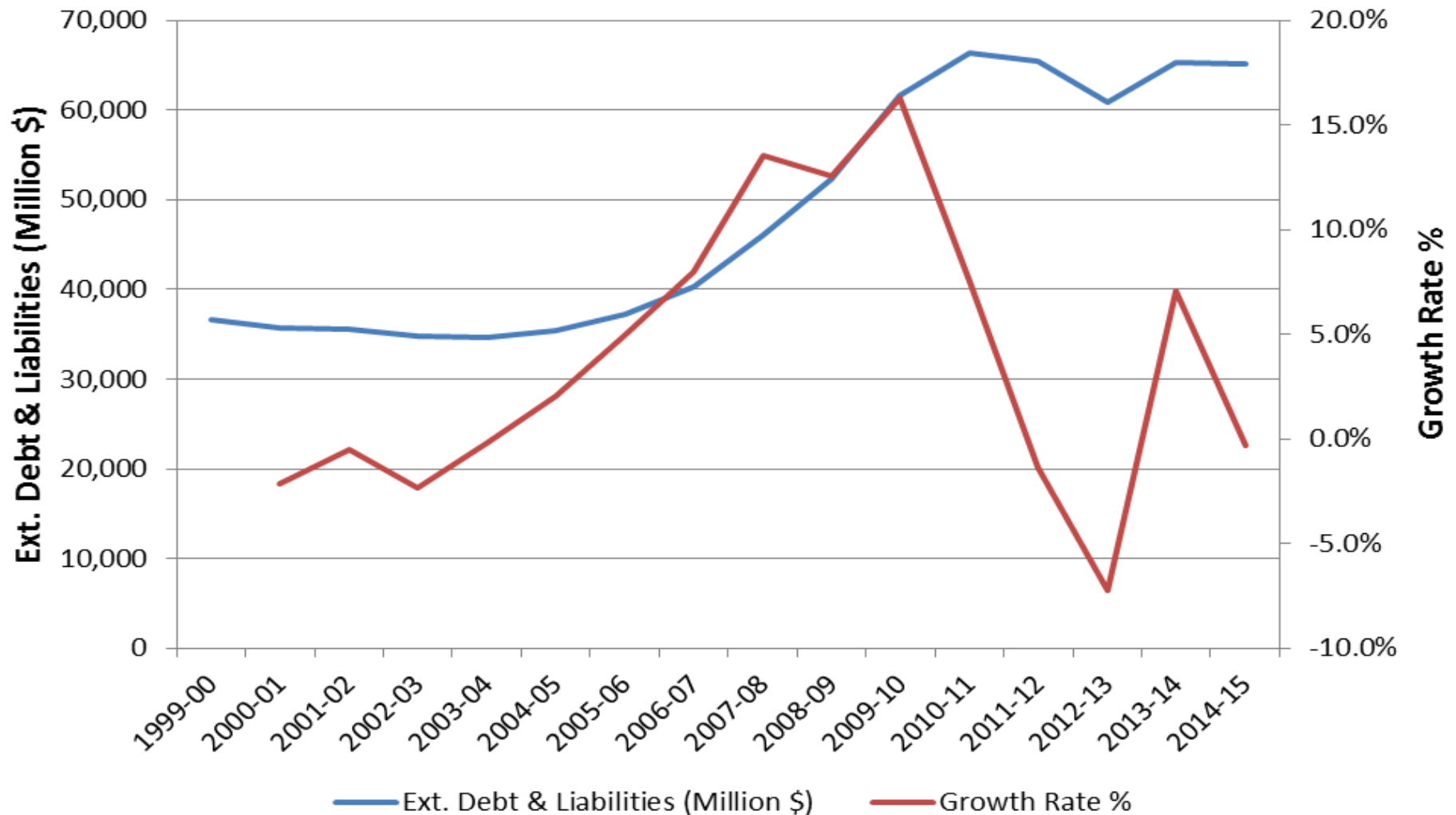
Pakistan's External Debt Ratios

Figure : Debt Ratios



The recent trend (since 2011) in the debt ratios does not seem to be too alarming.

External Debt-Amount and Growth



The average compound rate of growth in the external debt and liabilities for the period 1990-2015 is 3.85%, however, for the sub-period 1999-2006 it is 0.30%, for the middle period 2006-2011 it is 11.56%, but for the more recent period 2012-15 it is negative 0.45%.

Net or Gross Debt?

Table 2: External Debt			
	(\$ billion)	June-2013	June-2016
External Public Debt		48.10	57.70
SBP FX Reserves		4.00*	18.10
Net external public debt		44.10	39.60
<i>Reduction in indebtedness</i>			4.50
Note: * does not include \$2 billion of short term FX swap			

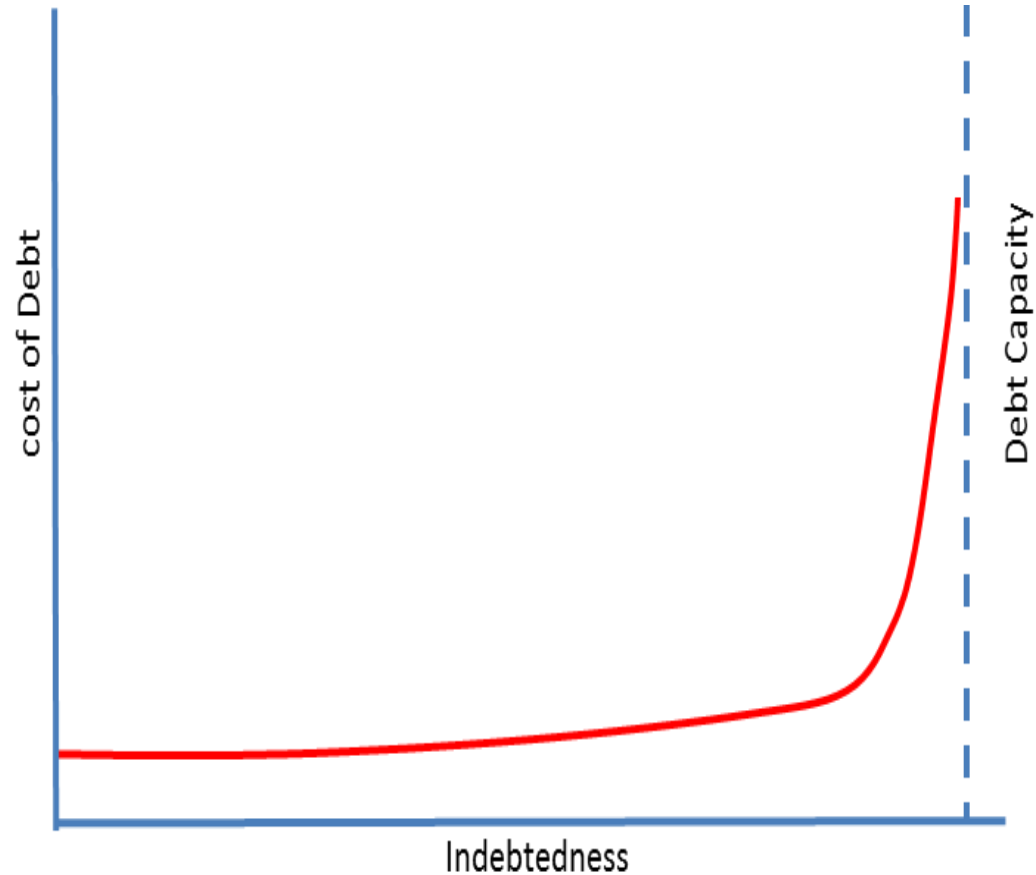
Using the net debt amount, is it shown that the indebtedness of the country improved by \$4.5 billion by end of June 2016 compared with June 2013.

Plenty of room to interpret data!

Alternative Approach

The finance theory suggests that as a country gets closer to its debt capacity its marginal cost of borrowing would increase sharply.

Figure : Cost of Debt and Debt Capacity



Market Based Approach

Examine the marginal costs of external debt as indicated by:

- the yields on the country's Eurobonds and
- the Credit Default Swaps (CDS) spreads being traded in the international markets.
- A sharp increase in the bond yields or in the CDS rates would signal that the country's external debt may be reaching an unsustainable level.

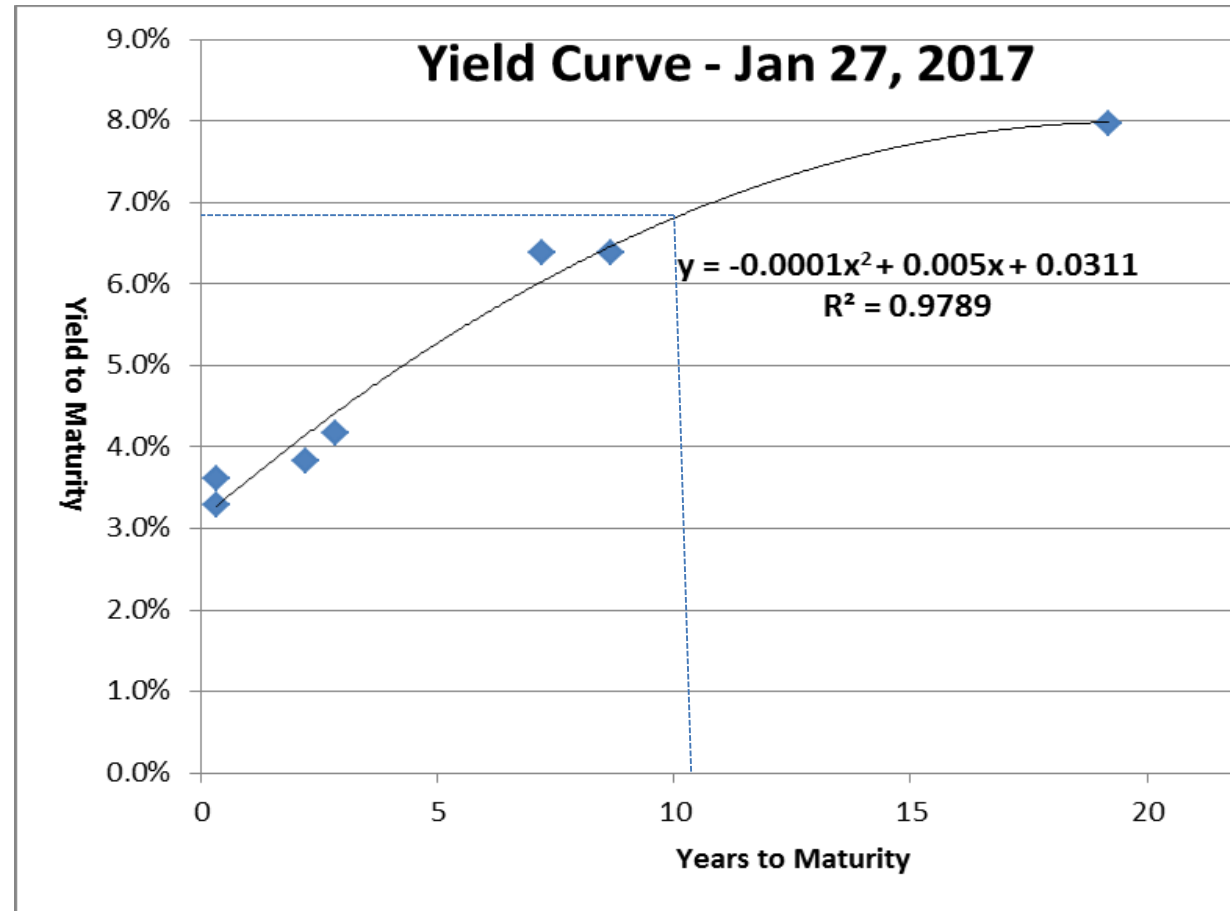
Assessment of External Debt Using Market Based Indicators

- The market price information on the Eurobonds/sukuk allows us to compute Yield to Maturity on the securities. In addition, Credit Default Swaps are traded against the Sovereign and sovereign guaranteed securities.

Yield to Maturity

- From the quoted prices yield-to-maturity is computed on a daily basis.
- Yield curve is constructed for each day which is then employed to construct **constant-maturity-yield** series for various tenures.

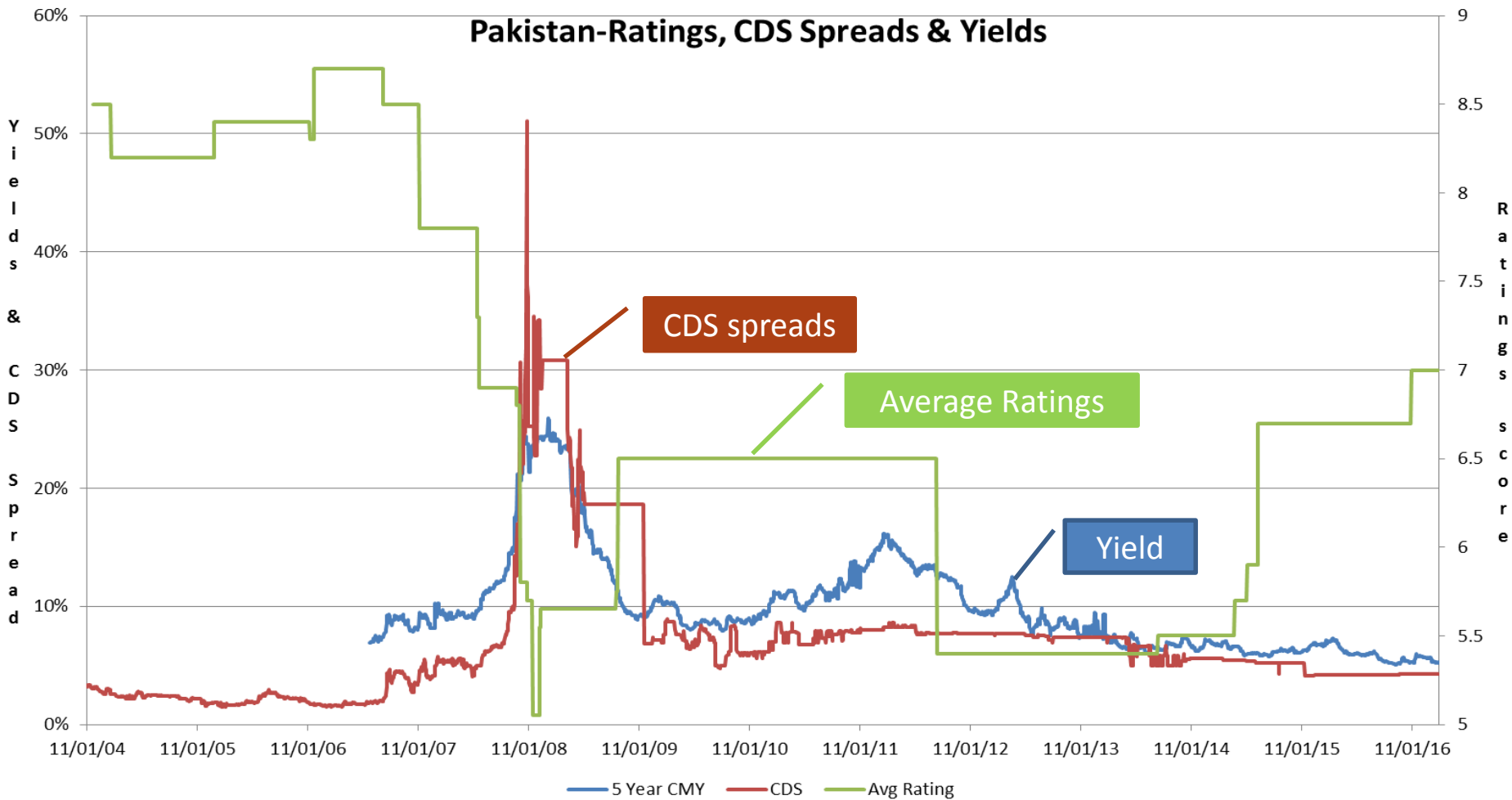
Figure : Determining Constant Maturity Yield



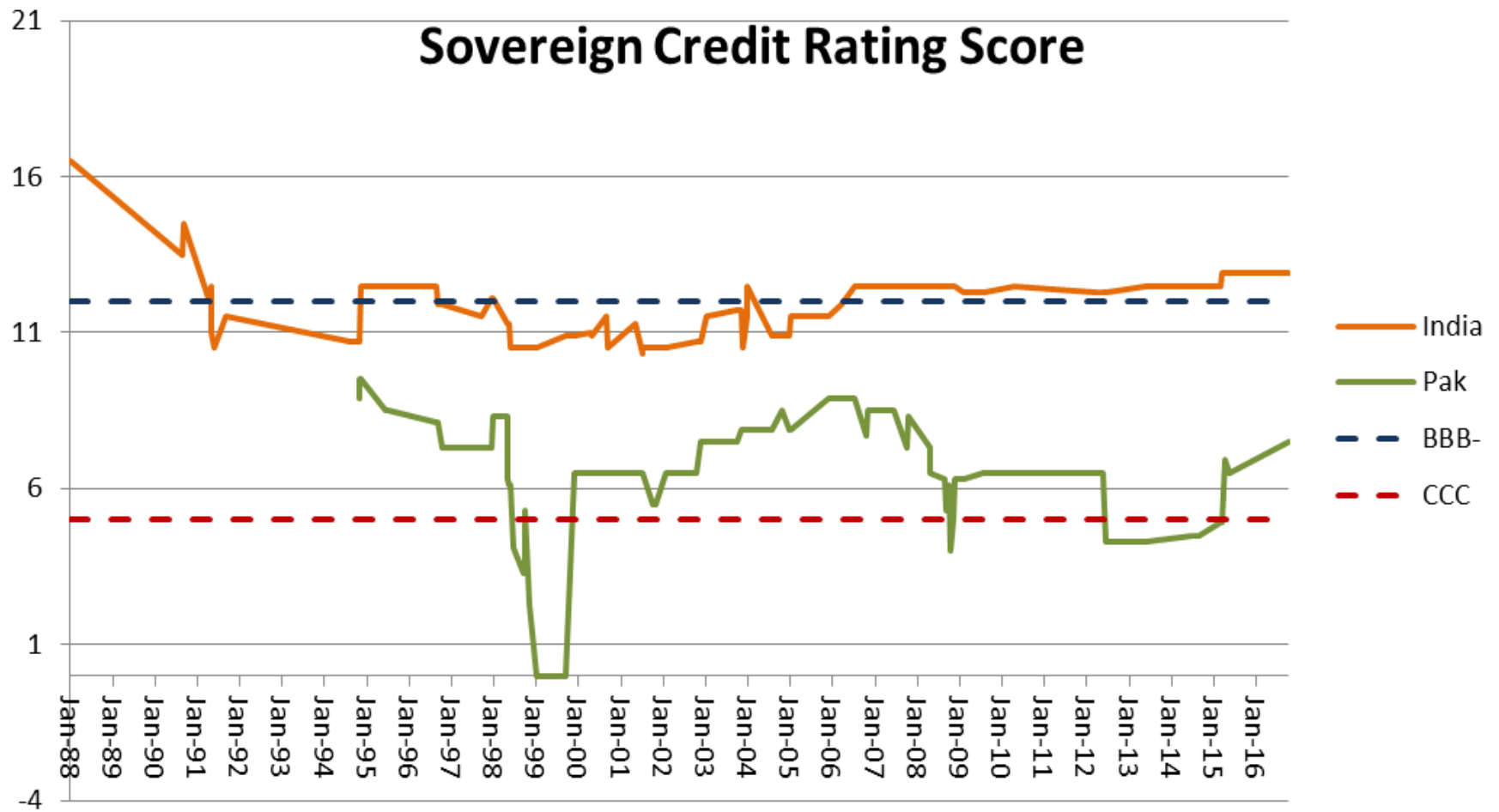
Market Based Indicators

- *J. P Morgan Emerging Market Bond Indices (EMBI):*
- *Country Credit Ratings:*
- *Credit Default Swap (CDS):*

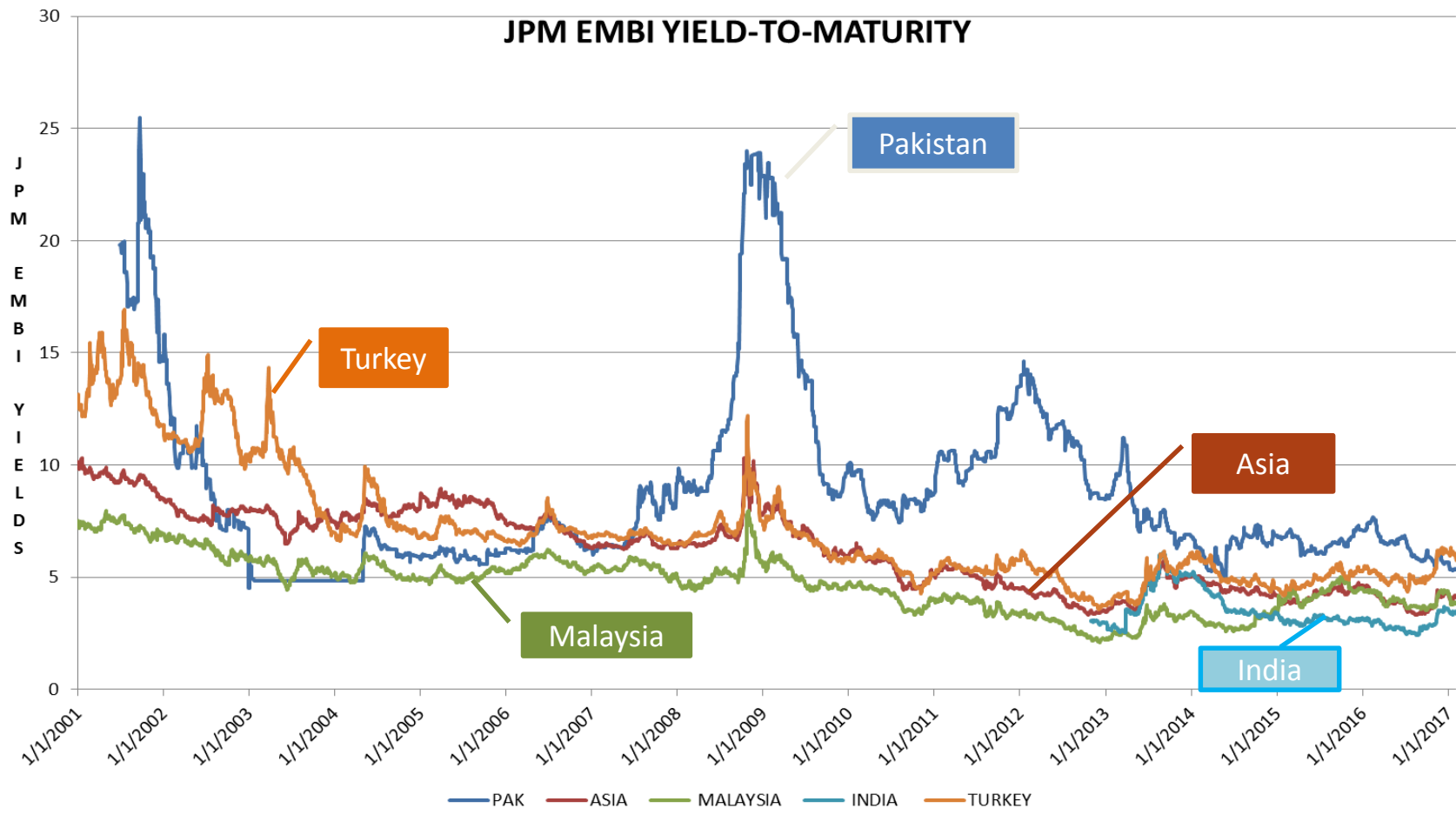
Pakistan-Ratings, CDS Spreads & Yields



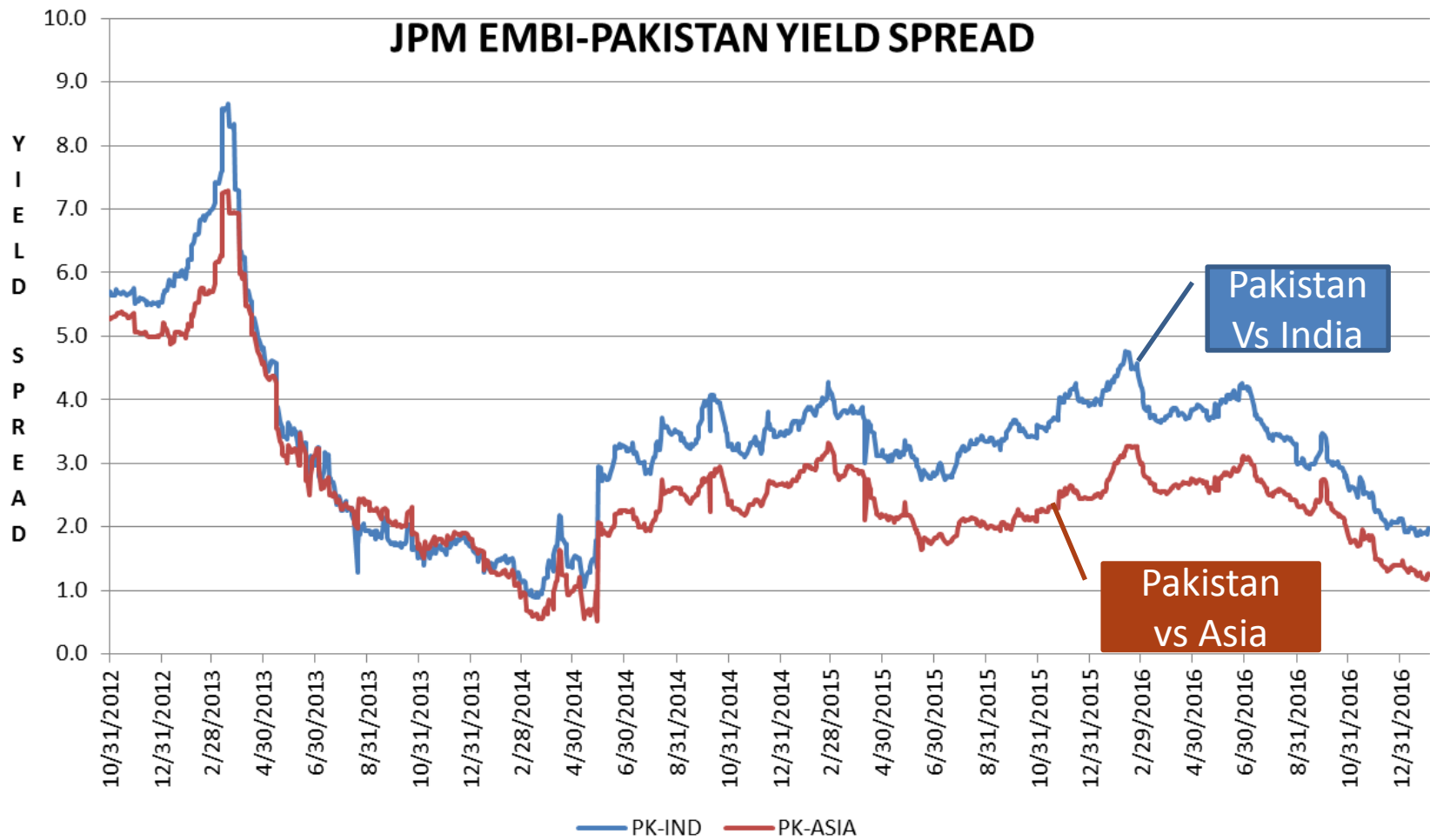
Sovereign Credit Rating Score



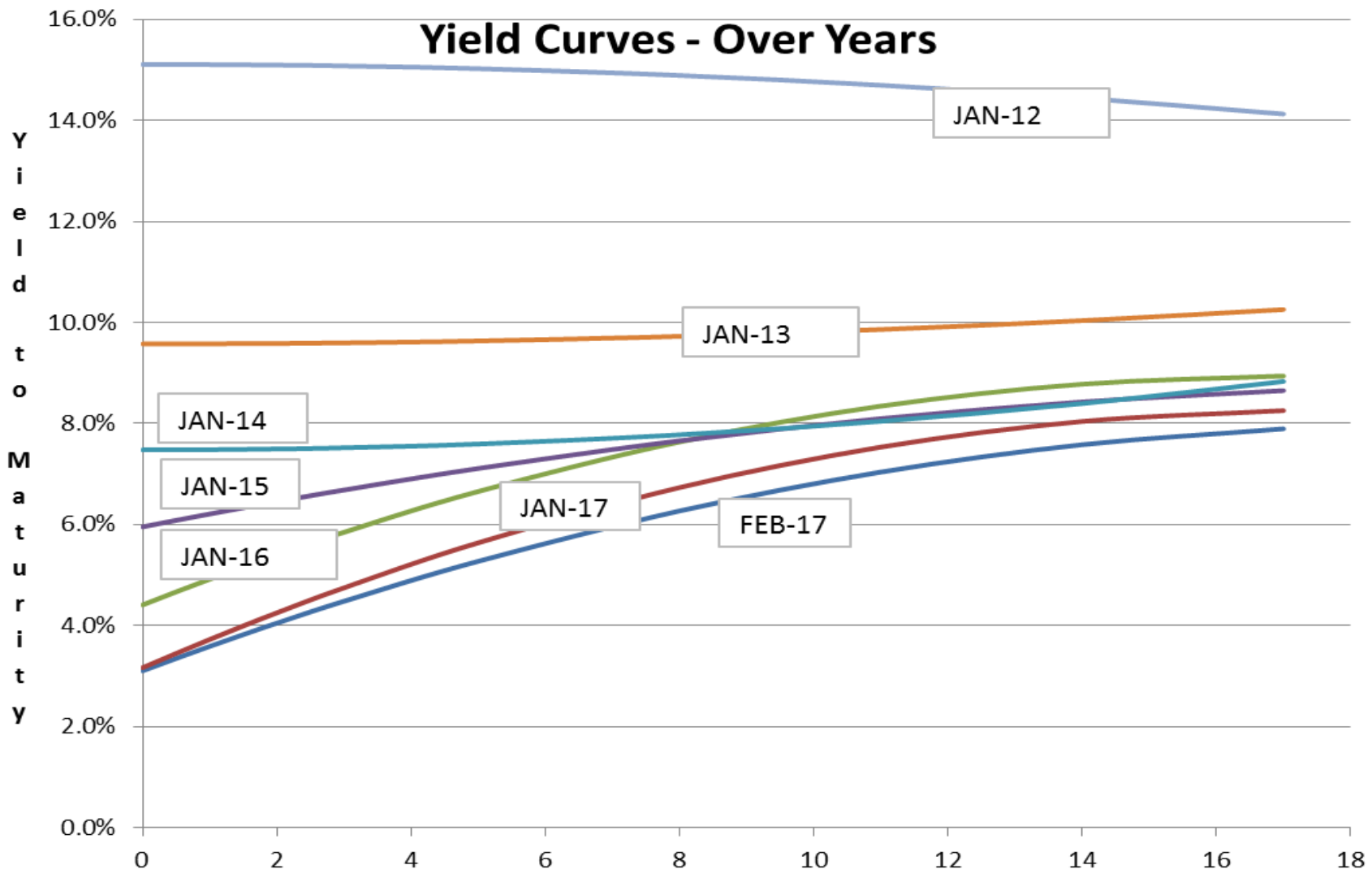
JPM EMBI YIELD-TO-MATURITY



JPM EMBI-PAKISTAN YIELD SPREAD



Yield Curves - Over Years



Feb-17 Jan-17 Jan-16 Jan-15 Jan-14 Jan-13 Jan-12

Empirical Tests on Yields

- We examine the trend in the yields on the Pakistani bonds (JPM EMBI-Pakistan) over time as impacted by the international and Asian yields.
- Independent variables:
 - US Treasury yields (constant 5 year maturity)
 - JPM EMBI Asian yields.
 - Spreads on the Pakistan CDS (5 year).
- The long-term relationship is studied employing two empirical models:

Sample and Time Periods

The data covers period is from Nov 2004 to Jan 2017, divided into sub-periods as follows:

- | | |
|----------------------------|------------------------|
| A. Full Sample: | 11/1/2004 to 1/27/2017 |
| B. Pre-GFC Period: | 11/1/2004 to 4/2/2007 |
| C. GFC Period: | 7/2/2007 to 6/30/2009 |
| D. Post GFC Full sample: | 7/1/2009 to 1/27/2017 |
| E. Post GFC sub-sample I: | 7/1/2009 to 6/30/2013 |
| F. Post GFC sub-sample II: | 7/1/2013 to 1/27/2017 |

Econometrics Models

- $$\Delta PKY_t = \alpha_1 + \gamma_1(ECT_t) + \delta_{1,1}\Delta PKY_{t-1} + \delta_{1,2}\Delta PKY_{t-2} + \delta_{1,3}\Delta ASY_{t-1} + \delta_{1,4}\Delta ASY_{t-2} + \delta_{1,5}\Delta UTY_{t-1} + \delta_{1,6}\Delta UTY_{t-2} + \delta_{1,7}\Delta CDS_{t-1} + \delta_{1,8}\Delta CDS_{t-2} + \varepsilon_{1,t} \quad \dots (1)$$
- $$\Delta ASY_t = \alpha_1 + \gamma_2(ECT_t) + \delta_{2,1}\Delta PKY_{t-1} + \delta_{2,2}\Delta PKY_{t-2} + \delta_{2,3}\Delta ASY_{t-1} + \delta_{2,4}\Delta ASY_{t-2} + \delta_{2,5}\Delta UTY_{t-1} + \delta_{2,6}\Delta UTY_{t-2} + \delta_{2,7}\Delta CDS_{t-1} + \delta_{2,8}\Delta CDS_{t-2} + \varepsilon_{1,t} \quad \dots (2)$$
- $$\Delta UTY_t = \alpha_1 + \gamma_3(ECT_t) + \delta_{3,1}\Delta PKY_{t-1} + \delta_{3,2}\Delta PKY_{t-2} + \delta_{3,3}\Delta ASY_{t-1} + \delta_{3,4}\Delta ASY_{t-2} + \delta_{3,5}\Delta UTY_{t-1} + \delta_{3,6}\Delta UTY_{t-2} + \delta_{3,7}\Delta CDS_{t-1} + \delta_{3,8}\Delta CDS_{t-2} + \varepsilon_{1,t} \quad \dots (3)$$
- $$\Delta CDS_t = \alpha_1 + \gamma_4(ECT_t) + \delta_{4,1}\Delta PKY_{t-1} + \delta_{4,2}\Delta PKY_{t-2} + \delta_{4,3}\Delta ASY_{t-1} + \delta_{4,4}\Delta ASY_{t-2} + \delta_{4,5}\Delta UTY_{t-1} + \delta_{4,6}\Delta UTY_{t-2} + \delta_{4,7}\Delta CDS_{t-1} + \delta_{4,8}\Delta CDS_{t-2} + \varepsilon_{1,t} \quad \dots (4)$$
- Where the four variable time (t) series are defined as below:

 - PKY \equiv Yield on JPM-EMBI index for Pakistan
 - ASY \equiv Yield on JPM-EMBI index for Asia
 - UTY \equiv 5-year Constant Maturity Yield on US Treasury Bonds
 - CDS \equiv Credit Default Swap Spread for Pakistan

The error correction term

The error correction term is:

- $$ECT_t = \alpha_0 + PKY_{t-1} - \beta_1 \cdot ASY_{t-1} - \beta_2 \cdot UTY_{t-1} - \beta_3 \cdot CDS_{t-1} \dots (5)$$

	Full Sample				Pre-GFC Period				GFC Period			
	11/1/2004	to	1/27/2017		11/1/2004	to	4/2/2007		7/2/2007	to	6/30/2009	
Cointegrating Eq:	observations: 3191				observations: 627				observations: 588			
PAK-Y(-1)	1.0000				1.0000				1.0000			
ASIA-Y(-1)	-91408.37				1.0138				18.4286			
<i>t-Stat</i>	-25.91				7.82				12.79			
USTY(-1)	50514.31				-1.3835				-13.0839			
<i>t-Stat</i>	9.11				-8.13				-4.59			
CDS(-1)	21553.33				-1.6674				-3.9410			
<i>t-Stat</i>	40.54				-13.76				-19.52			
Constant	-0.9641				0.0000				0.0004			
Error Correction:	D(PAKY)	D(ASIAY)	D(USTY)	D(CDS)	D(PAKY)	D(ASIAY)	D(USTY)	D(CDS)	D(PAKY)	D(ASIAY)	D(USTY)	D(CDS)
Coint Equation	0.0000	0.0000	0.0000	-0.0001	-0.3578	-0.0960	0.1386	0.4681	-0.0023	-0.0040	0.0029	0.3719
<i>t-Stat</i>	-0.34	6.43	-3.37	-36.92	-8.33	-2.83	5.02	11.66	-0.42	-1.61	1.79	17.66
D(PAK-Y(-1))	-0.6638	0.0180	0.0033	0.1662	-0.4426	0.0714	-0.0609	-0.2617	-0.6671	0.0402	0.0021	0.0441
<i>t-Stat</i>	-39.47	2.40	0.56	2.86	-9.38	1.91	-2.01	-5.93	-16.88	2.26	0.18	0.29
D(PAK-Y(-2))	-0.3343	0.0097	0.0040	-0.0067	-0.2291	0.0798	-0.0461	-0.1020	-0.3330	0.0216	0.0087	-0.1233
<i>t-Stat</i>	-19.89	1.29	0.67	-0.12	-5.94	2.62	-1.86	-2.83	-8.44	1.22	0.76	-0.82
D(ASIA-Y(-1))	0.1397	-0.3441	-0.0408	-2.9425	0.2497	-0.4536	-0.0868	-0.3041	0.2101	-0.2878	-0.0496	-3.5363
<i>t-Stat</i>	2.85	-15.74	-2.38	-17.39	4.27	-9.82	-2.31	-5.57	1.79	-5.46	-1.45	-7.90
D(ASIA-Y(-2))	-0.0385	-0.2118	-0.0029	-2.3234	0.2683	-0.2161	-0.0470	-0.0390	-0.1104	-0.2587	0.0072	-3.5639
<i>t-Stat</i>	-0.89	-11.01	-0.19	-15.61	5.06	-5.16	-1.38	-0.79	-1.06	-5.54	0.24	-8.99
D(USTY(-1))	0.0538	-0.0354	-0.6481	1.9961	-0.2681	-0.0841	-0.5098	0.5588	0.0412	-0.0938	-0.6426	3.4090
<i>t-Stat</i>	1.09	-1.60	-37.47	11.68	-3.79	-1.51	-11.23	8.46	0.30	-1.50	-15.80	6.41
D(USTY(-2))	0.0429	-0.0030	-0.3807	0.8045	-0.2795	-0.0371	-0.2822	0.1864	0.1315	0.0152	-0.4005	1.1618
<i>t-Stat</i>	0.90	-0.14	-22.89	4.90	-4.46	-0.75	-7.01	3.18	0.98	0.25	-10.26	2.27
D(CDS(-1))	0.0025	-0.0288	0.0071	0.0871	-0.4131	-0.1324	0.1436	-0.1952	-0.0066	-0.0236	0.0069	0.2118
<i>t-Stat</i>	0.31	-8.11	2.57	3.17	-7.18	-2.91	3.88	-3.63	-0.38	-3.05	1.37	3.23
D(CDS(-2))	-0.0085	-0.0087	0.0028	0.1225	-0.2570	-0.0407	0.0751	-0.1978	-0.0093	-0.0034	0.0022	0.2088
<i>t-Stat</i>	-1.62	-3.74	1.54	6.77	-6.20	-1.24	2.82	-5.11	-0.84	-0.67	0.67	4.91
Constant	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>t-Stat</i>	0.00	0.01	-0.01	0.01	0.01	0.01	-0.01	0.01	-0.03	0.00	-0.02	0.00
R-squared	0.3382	0.2084	0.3508	0.5887	0.4355	0.2466	0.3443	0.5160	0.3518	0.2013	0.3616	0.6299
Adj. R-squared	0.3364	0.2061	0.3489	0.5875	0.4272	0.2356	0.3348	0.5089	0.3417	0.1889	0.3517	0.6242
F-statistic	180.65	93.04	190.96	505.80	52.88	22.44	36.00	73.08	34.85	16.19	36.38	109.31
Akaike AIC	-9.65	-11.27	-11.76	-7.18	-11.47	-11.94	-12.36	-11.60	-8.38	-9.98	-10.84	-5.70
Schwarz SC	-9.63	-11.25	-11.74	-7.16	-11.40	-11.87	-12.28	-11.53	-8.30	-9.90	-10.77	-5.62
Akaike info crit.	-40.00				-47.49				-35.08			
Schwarz criterion	-39.91				-47.18				-34.75			

	Post GFC Full sample:				Post GFC-sub sample I				Post GFC-sub sample II			
	7/1/2009	to	1/27/2017		7/1/2009	to	6/30/2013		7/1/2013	to	1/27/2017	
Cointegrating Eq:	observations: 1977				observations: 1043				observations: 934			
PAK-Y(-1)	1.0000				1.0000				1.0000			
ASIA-Y(-1)	-11.6258				14.5811				-2.1170			
<i>t-Stat</i>	-15.86				6.81				-16.94			
USTY(-1)	19.9405				-42.1088				1.6587			
<i>t-Stat</i>	24.55				-18.13				11.54			
CDS(-1)	-1.0115				2.1169				0.4113			
<i>t-Stat</i>	-8.36				7.29				10.28			
Constant	-0.0001				0.0001				0.0000			
Error Correction:	D(PAKY)	D(ASIAY)	D(USTY)	D(CDS)	D(PAKY)	D(ASIAY)	D(USTY)	D(CDS)	D(PAKY)	D(ASIAY)	D(USTY)	D(CDS)
CoInt Equation	-0.0034	0.0252	-0.0386	0.1039	-0.0082	-0.0078	0.0208	-0.0712	-0.4827	0.1759	-0.0923	-0.7564
<i>t-Stat</i>	-0.67	13.83	-20.19	7.69	-2.28	-6.52	17.19	-6.79	-9.81	7.88	-3.80	-8.41
D(PAK-Y(-1))	-0.6483	-0.0332	0.0176	-0.0153	-0.6117	-0.0187	-0.0249	0.0779	-0.4081	-0.1221	0.0767	0.5301
<i>t-Stat</i>	-30.05	-4.31	2.17	-0.27	-20.48	-1.88	-2.46	0.89	-9.61	-6.34	3.65	6.83
D(PAK-Y(-2))	-0.3372	-0.0256	-0.0005	-0.0281	-0.2849	-0.0202	-0.0281	0.0421	-0.2968	-0.0692	0.0560	0.1877
<i>t-Stat</i>	-15.83	-3.37	-0.07	-0.50	-9.67	-2.06	-2.81	0.49	-9.03	-4.64	3.45	3.12
D(ASIA-Y(-1))	0.2118	-0.4092	-0.2972	0.7826	0.3914	-0.5041	-0.1481	0.7074	-0.4942	-0.3764	-0.2361	-0.9812
<i>t-Stat</i>	3.06	-16.53	-11.43	4.26	4.08	-15.77	-4.55	2.51	-5.11	-8.57	-4.94	-5.55
D(ASIA-Y(-2))	0.1830	-0.1433	-0.1363	0.4804	0.2450	-0.1508	-0.0506	0.5992	-0.0727	-0.1447	-0.1641	-0.3859
<i>t-Stat</i>	3.02	-6.62	-5.99	2.99	2.67	-4.94	-1.63	2.23	-0.98	-4.30	-4.48	-2.85
D(USTY(-1))	0.1089	-0.2317	-0.1520	-1.5915	-0.1709	-0.1740	-0.0575	-2.2643	0.6833	-0.0091	-0.6114	0.9157
<i>t-Stat</i>	1.26	-7.52	-4.69	-6.95	-1.36	-4.16	-1.35	-6.14	7.82	-0.23	-14.17	5.73
D(USTY(-2))	-0.0051	-0.1189	-0.1087	-0.5755	-0.1265	-0.0682	-0.0613	-0.7797	0.2688	-0.0272	-0.3155	0.5114
<i>t-Stat</i>	-0.08	-5.33	-4.64	-3.48	-1.37	-2.22	-1.96	-2.88	3.81	-0.85	-9.06	3.97
D(CDS(-1))	0.0065	0.0169	-0.0267	-0.6315	0.0149	0.0102	-0.0283	-0.5796	0.1707	-0.0444	0.0163	-0.6249
<i>t-Stat</i>	0.76	5.54	-8.32	-27.81	1.36	2.81	-7.64	-18.08	8.11	-4.65	1.57	-16.25
D(CDS(-2))	-0.0052	0.0066	-0.0144	-0.3069	0.0046	0.0028	-0.0157	-0.2857	0.0458	-0.0188	0.0067	-0.2917
<i>t-Stat</i>	-0.65	2.29	-4.78	-14.38	0.46	0.85	-4.61	-9.67	2.64	-2.39	0.78	-9.22
Constant	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>t-Stat</i>	0.04	0.02	0.02	-0.01	0.04	-0.08	0.00	0.01	0.07	0.13	0.05	0.04
R-squared	0.3235	0.3576	0.4623	0.3793	0.3024	0.3033	0.4786	0.3745	0.4525	0.3825	0.4066	0.4989
Adj. R-squared	0.3204	0.3546	0.4599	0.3764	0.2963	0.2972	0.4741	0.3690	0.4472	0.3764	0.4008	0.4940
F-statistic	104.52	121.65	187.92	133.54	49.76	49.96	105.35	68.71	84.85	63.58	70.33	102.21
Akaike AIC	-10.32	-12.38	-12.28	-8.37	-10.04	-12.24	-12.20	-7.88	-10.90	-12.48	-12.31	-9.69
Schwarz SC	-10.30	-12.35	-12.26	-8.34	-9.99	-12.19	-12.15	-7.84	-10.84	-12.42	-12.26	-9.64
Akaike info crit.	-43.41				-42.37				-45.57			
Schwarz criterion	-43.29				-42.16				-45.35			

RESULTS

Co-integration Results:

- Any long-term relationship between the yields is tenuous; the relationship may hold for sub-periods,
- The instability of a long-run co-integrating relationship is also revealed by the shifting signs and magnitudes on the coefficient values for different periods.
- Much of the explanatory power of the model seems to lie in the lagged values of the Pakistan yields.
- However, the international market variables, Asian, US yields and the CDS spreads, do seem to play a substantive role in all sub-periods excluding the GFC.

Most Recent Period, 2013-17

- The models have relatively higher explanatory power; the coefficients on all explanatory variables are significant.
- It seems that the yields on the Pakistani bonds fell in the most recent period in response to domestic economic environment, despite a slight increase in the international interest rates.
- Notwithstanding the apparent improvement in the country's financial conditions, there still seems to be a substantial residual or model risk stemming from exogenous risk factors.

	Full Sample			11/1/2004 to 1/27/2017			Pre-GFC Period			11/1/2004 to 4/2/2007			GFC Period			7/2/2007 to 6/30/2009		
Dependent Variable: PAK_EMBI	Sample: 1001 4194						Sample: 1001 1630						Sample: 1631 2217					
	Included observations			3194			Included observation			630			Included observa			587		
Variable	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.
ASIA_EMBI	0.4078	24.3938	0.0000	0.4062	24.2999	0.0000	0.1474	3.7509	0.0002	0.1577	4.1832	0.0000	0.4745	4.1638	0.0000	0.4556	3.7139	0.0002
T5_CMY	-0.0660	-2.9537	0.0031	-0.0661	-2.6247	0.0087	-0.1025	-1.8312	0.0671	-0.1014	-1.7841	0.0744	0.0973	1.1544	0.2483	0.0959	1.0233	0.3062
PAK_CDS5				0.0051	0.7357	0.4619				-0.0486	-1.4782	0.1394				0.0110	0.5760	0.5646
C	0.0000	-1.1203	0.2626	0.0000	-1.0735	0.2830	0.0000	1.4875	0.1369	0.0000	1.3186	0.1873	0.0000	-0.1675	0.8670	0.0000	-0.1624	0.8710
	<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>		
C	0.0000	29.9428	0.0000	0.0000	29.7829	0.0000	0.0000	24.7411	0.0000	0.0000	24.4124	0.0000	0.0000	4.6409	0.0000	0.0000	4.7921	0.0000
RESID(-1)^2	0.0635	45.6913	0.0000	0.0633	41.4495	0.0000	0.6189	6.1650	0.0000	0.6330	6.3351	0.0000	0.0741	9.6176	0.0000	0.0712	8.9043	0.0000
GARCH(-1)	0.9406	788.6067	0.0000	0.9408	761.0499	0.0000	0.1070	3.5682	0.0004	0.1049	3.5500	0.0004	0.9514	259.0801	0.0000	0.9529	243.7180	0.0000
Adjusted R-squared	0.0196	Akaike	-10.60	0.0190	Akaike	-10.60	-0.0001	Akaike	-11.74	-0.0013	Akaike	-11.74	0.0006	Akaike	-9.03	-0.0026	Akaike	-9.03
Durbin-Watson stat	2.0250	Schwarz	-10.58	2.0277	Schwarz	-10.58	2.1426	Schwarz	-11.69	2.1358	Schwarz	-11.69	2.0786	Schwarz	-8.98	2.0862	Schwarz	-8.97

Method: ML - ARCH (Marquardt) - Normal distribution

$$GARCH = C(4) + C(5)*RESID(-1)^2 + C(6)*GARCH(-1)$$

Dependent Variable: PAK_EMBI	Post GFC Full sample: 7/1/2009 to 1/27/2017						Post GFC-sub sample I 7/1/2009 to 6/30/2013						Post GFC-sub sample II 7/1/2013 to 1/27/2017					
	Sample: 2218 4194						Sample: 2218 3260						Sample: 3261 4194					
	Included observations: 1977						Included observations: 1043						Included observations: 934					
Variable	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.	Coeff.	z-Stat	Prob.
ASIA_EMBI	0.5948	23.7562	0.0000	0.5936	23.7405	0.0000	0.3237	3.3054	0.0009	0.3224	3.2923	0.0010	0.7251	49.0058	0.0000	0.7252	47.0019	0.0000
T5_CMY	-0.1502	-3.5412	0.0004	-0.1500	-3.5284	0.0004	-0.1111	-1.1898	0.2341	-0.1099	-1.1717	0.2413	-0.0008	-0.0305	0.9756	-0.0172	-0.6724	0.5014
PAK_CDS5				0.0077	0.8350	0.4037				0.0070	0.4361	0.6628				0.0259	6.9292	0.0000
C	0.0000	-1.2792	0.2008	0.0000	-1.2512	0.2109	-0.0001	-1.1817	0.2373	-0.0001	-1.1623	0.2451	0.0000	-4.5490	0.0000	0.0000	-3.1732	0.0015
	<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>			<i>Variance Equation</i>		
C	0.0000	20.3869	0.0000	0.0000	20.3519	0.0000	0.0000	3.9519	0.0001	0.0000	3.9218	0.0001	0.0000	15.7768	0.0000	0.0000	15.9683	0.0000
RESID(-1)^2	0.0585	33.3578	0.0000	0.0585	33.2511	0.0000	0.0198	2.7703	0.0056	0.0197	2.7638	0.0057	0.7708	13.7371	0.0000	0.8177	13.2893	0.0000
GARCH(-1)	0.9334	502.2472	0.0000	0.9334	500.5207	0.0000	0.3554	2.2080	0.0272	0.3575	2.2107	0.0271	0.4358	19.7301	0.0000	0.4082	17.8715	0.0000
Adjusted R-squared	0.0321	Akaike	-10.82	0.0316	Akaike	-10.82	0.0138	Akaike	-10.31	0.0133	Akaike	-10.3068	0.0834	Akaike	-11.67	0.0784	Akaike	-11.68
Durbin-Watson stat	1.9182	Schwarz	-10.80	1.9194	Schwarz	-10.80	1.8091	Schwarz	-10.28	1.8102	Schwarz	-10.2735	2.1675	Schwarz	-11.64	2.1716	Schwarz	-11.64

Method: ML - ARCH (Marquardt) - Normal distribution

$$GARCH = C(4) + C(5)*RESID(-1)^2 + C(6)*GARCH(-1)$$

Multivariate GARCH Model Results

- For the most of the periods the results reflect the linkage of the Pakistani bond yields to the international interest rates.
- In the most recent period, we find that the coefficient on the CDS spreads and the constant term are also highly significant.
- There is a definite downward trend in the yields over the post-GFC period. The rate of decrease was faster over the first period (2009-13) than over the second period (2013-17); decrease of -1.27% and -1.10% per year for the two periods respectively.
- Explanatory power of the models is rather weak; it is a little better for the most recent period (2013-17), reflecting a lessening of influences of the country specific risk factors

Challenges Ahead

The paper discusses various challenges to the sustainability of country's external debt

- performance of the export sector has been lackluster.
- Saving and tax rates have not improved appreciably.
- Persistent current account deficits rooted in structural imbalances.
- implementation of the CPEC projects
- Increased reliance on the private capital flows
- The international liquidity will tighten; capital flows reversals.
- The increased pressure for the capital to flow out of the country exacerbates the current account deficits.

Conclusions and Implications

- This paper has examined Pakistan's external debt position using the marginal costs of external debt as indicated by the yields on the country's Eurobonds and the spreads on Credit Default Swaps (CDS) being traded in the international markets.
- The market pricing of the Eurobonds and related derivative securities (CDS) can provide valuable market signals as to the marginal cost and the future sustainability of the external debt.
- We have conducted an econometric analysis of the linkages of the Pakistani yields with the international yields.

Conclusions and Implications-Contd..

- From our analysis of the yields on the Pakistani Eurobonds, we note that there has been a sharp decline in the yields from their peak reached during the GFC period. Since then this declining trend has continued.
- It seems that in the initial post-GFC period, the decline was largely driven by quantitative easing and the resultant low interest rates in the international debt markets. However, we have noted a continued decline in the yields in the more recent period, 2013-2017, which seems to indicate that the country's borrowing capacity strengthened over the period.
- Though the Pakistani yields seem to be converging to yields for other Asian countries, we note that the yield-spreads between Pakistan and others countries are still substantial.

Conclusions and Implications-Contd..

- This may have two risk factors: **first**, we have seen the yields spike up disproportionately in response to increases in the international interest rates during the period of turmoil. Thus, the country seems to be vulnerable to adverse shocks to the financial markets. **Second**, we note that the country's Eurobond yields are not well explained by the financial fundamentals of the international debt markets, e.g., the Asian bond index yields. This low degree of correlation with international bond yields may be desirable from the international investors' perspective as it represents portfolio diversification opportunities for them.
- However, on the other side of the coin, the low explanatory power of the model based on international market yields, indicates that a large part of the total risk is country specific which is not diversifiable by the country. It is, therefore, important that the risk exposure of external debt must be monitored and managed.

Conclusions and Implications-Contd..

- From the MACROECONOMIC THEORY context there is a strong link between a country's current account balance and its government budget balance. In the context of Pakistan, in the recent years we have seen some of the parameters of the economy improving but further progress must be forthcoming in order to assure the sustainability of its external debt. In particular, substantial growth is needed in the country's export sector.
- The country must ensure that the borrowed foreign capital is employed on projects with economic value, particularly in building up export potential, and is able to generate sufficient surpluses in the future to repay its debts.
- There is a need to institutionalize economic decision making by enshrining checks on corruption and adventurism, through transparency, public disclosure, debate and expert analysis.

Conclusions and Implications-Contd..

- Pakistan is embarking on a set of projects under the **CPEC** umbrella with investments of historic magnitudes. It may also be a critical test of the country's capabilities in economic management, especially, in ensuring the country's external debt sustainability.
- However there is a need to make the process more transparent to the public and including economic experts from the private sector in the assessments of alternatives.

Conclusions and Implications-Contd..

- The shift for Pakistan's external borrowings towards market based funding sources and away from multilateral and international agencies, carries significant implications for the external debt management. **First**, there is the risk of reversal of capital flows as the economic conditions change across the globe. **Second**, it adversely affects bond pricing and gives rise to speculative trading and herd behavior which could be quite disruptive and may expose the country to additional financial instability risk. **Third**, a diverse body of creditors also makes it difficult to negotiate restructuring of debt in case it is needed. It, thus, increases cost of restructuring and increases cost of borrowing.
- Economic liberalization and deregulation coupled with ease with which money can move through cyberspace, have rendered the traditional tools of controlling capital flows ineffective. Domestic wealth holders have now a global investment opportunity set accessible through a variety of financial products and new channels which facilitate cross-border capital flows.

Conclusions and Implications-Contd..

- The powerful incentives to hold wealth in a diversified global portfolio increase pressure for the capital to flow out of the country and exacerbate the current account deficits.
- Direct controls on capital outflow are also counterproductive since these discourage capital inflows as well, due to liquidity preferences on the part of foreign investors.
- The implications are that the government needs to build capacity to manage capital flows not only in terms of human resources capable of understanding such financial flows, but also developing cooperative arrangement internationally to regulate them, particularly, those stemming from money laundering and tax evasions. Ultimately, the state has to offer an inviting and conducive climate such that provides competitive risk adjusted returns to retain and attract capital resources.

Thank you!

- Questions and Comments?
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