



cutting through complexity

Valuation aspects of debt securities

XII CIS and Baltic Region
Bond Congress
21-22 May 2015



Valuation aspects

Typical debt securities in CIS and pricing peculiarities

Sovereign issuers							
Country	Coupon		Principal		Currency		Embedded options
	Fixed	Floating	Bullet	Amortized	FCU	LCU	
Russia	✓	✓	✓		✓	✓	✓
Kazakhstan	✓	✓	✓		✓	✓	
Ukraine	✓	✓	✓	✓	✓	✓	✓
Azerbaijan	✓		✓		✓	✓	

Corporate issuers							
Country	Coupon		Principal		Currency		Embedded options
	Fixed	Floating	Bullet	Amortized	USD	LCU	
Russia	✓	✓	✓		✓	✓	✓
Kazakhstan	✓	✓	✓		✓	✓	✓
Ukraine	✓		✓		✓	✓	✓
Azerbaijan	✓		✓		✓	✓	



Key challenges in CIS debt market



Absence of public quotes



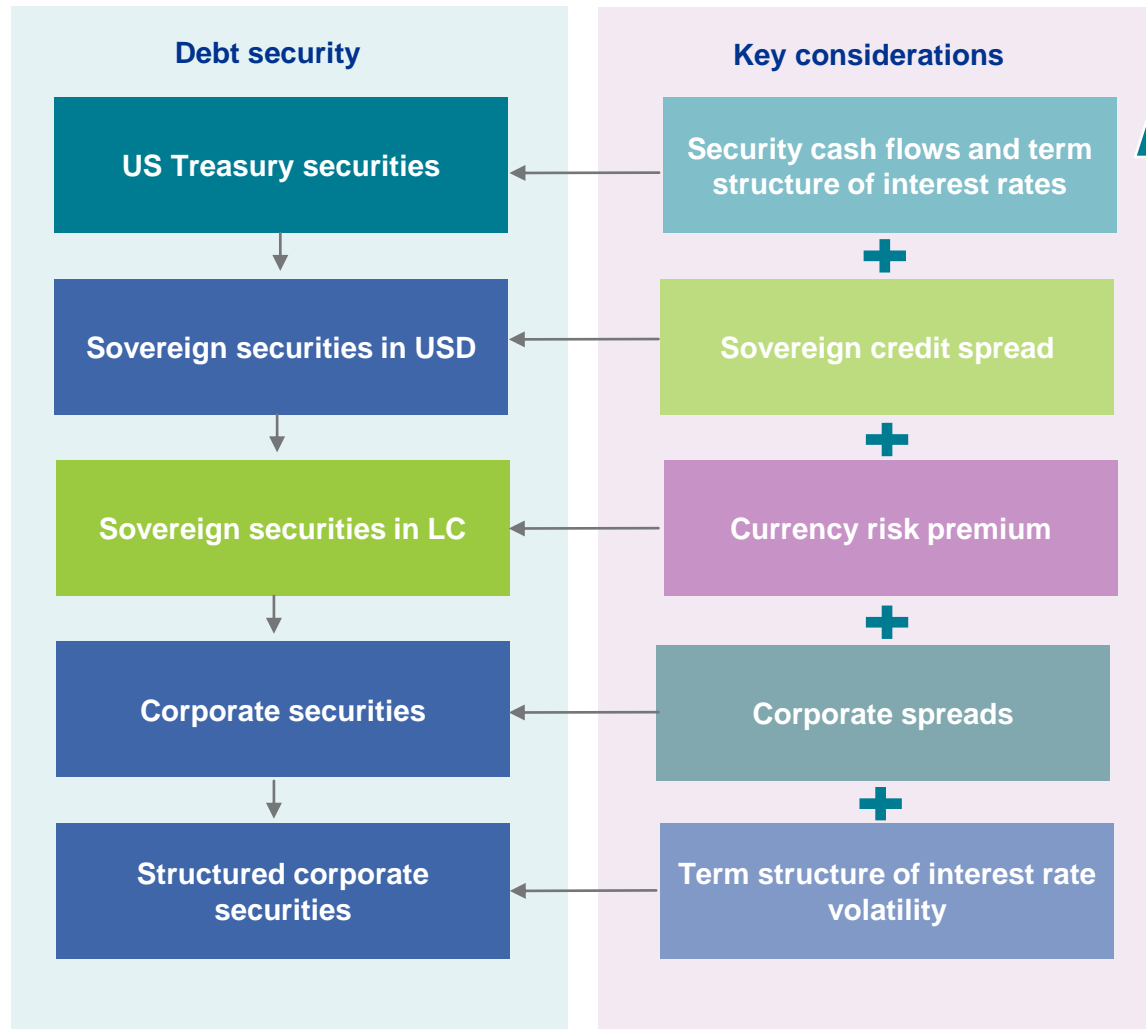
Stale data (out dated quotes, or the same quote for a very long period of time)



Presence of quote, but no trades in security



Absence of volume information

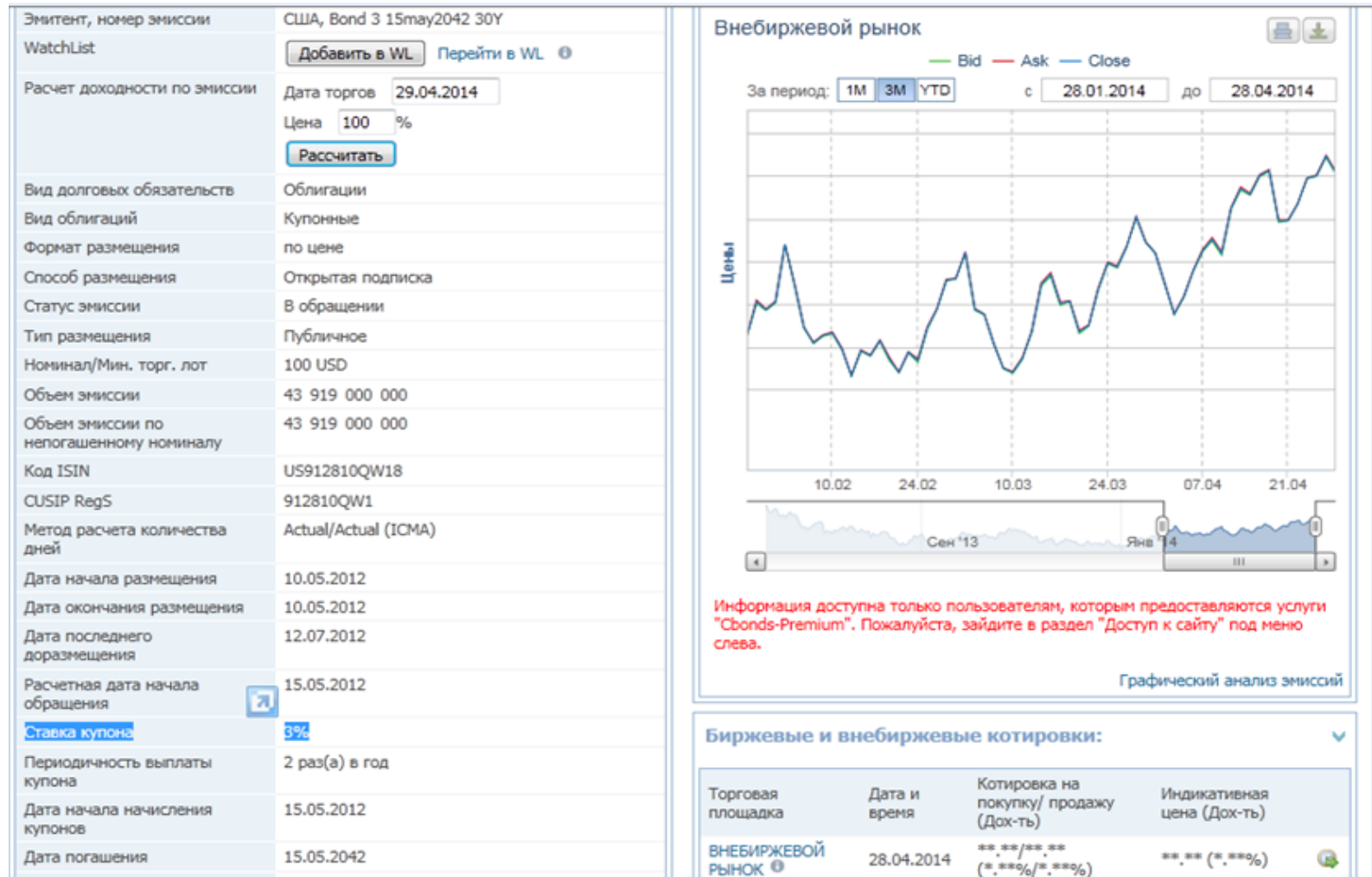


Income approach in case of absence of observable market data

- Analysis of cash flow (promised payments of coupon and principal, maturity)
- Application of arbitrage free pricing concept (term structure of interest rates)
- Incorporating credit risk and currency risk
- Taking into account volatility of interest rates for structured securities

Case study 1

Application of the concept in practice



Source: www.cbonds.ru

Case study 1

Term structure of interest rates (z-curve) for US as at 01/03/2014



Source: Bloomberg, Capital IQ, FRS USA, KPMG analysis

Case study 1

Example valuation of plain vanilla US Tbond

Valuation date		01.mar.14											
U.S. Treasury bond	US912810QW18												
Number of coupon payments per year	times	2											
Calculation basis 1	days in month	30											
Calculation basis 2	days in year	360											
Date of last coupon payment	date	15 may 42											
Date of first coupon payment	date	15 may 12											
Annual coupon rate	%, year	3.0%											
Nominal value of bond	USD	100.00											
Beginning of period	date		15.may.14	15.nov.14	15.may.15	15.nov.15	15.may.16	...	15.may.40	15.nov.40	15.may.41	15.nov.41	15.may.42
Year	year		2014	2014	2015	2015	2016	...	2040	2040	2041	2041	2042
Number of days in the period	days		181	184	181	184	182	...	182	184	181	184	181
Coupon rate	%		1.5%	1.5%	1.5%	1.5%	1.5%	...	1.5%	1.5%	1.5%	1.5%	1.5%
Payments													
Nominal	USD	100.00	-	-	-	-	-	...	-	-	-	-	100.00
Compensation	USD		0.62	1.50	1.50	1.50	1.50	...	1.50	1.50	1.50	1.50	1.50
Total cash flow	USD		0.62	1.50	1.50	1.50	1.50	...	1.50	1.50	1.50	1.50	101.50
Bond Yield													
U.S. Risk-Free Rate in USD in nominal / real terms	%		0.1%	0.1%	0.2%	0.3%	0.5%	...	3.8%	3.8%	3.8%	3.8%	3.8%
Discount period			0.2	0.7	1.2	1.7	2.2	...	26.2	26.7	27.2	27.7	28.2
Discount factor			1.000	0.999	0.998	0.994	0.989	...	0.379	0.371	0.362	0.354	0.346
Discounted cash flow	USD		0.62	1.50	1.50	1.49	1.48	...	0.57	0.56	0.54	0.53	35.13
Estimated value of the bond	USD		89.86										
Bloomberg quota	USD		89.75										

the example of application of DCF model for a U.S. Treasury bond

Source: Bloomberg, Capital IQ, KPMG analysis

Case study 1

Cross check of the results – difference is 0.12% with traded data

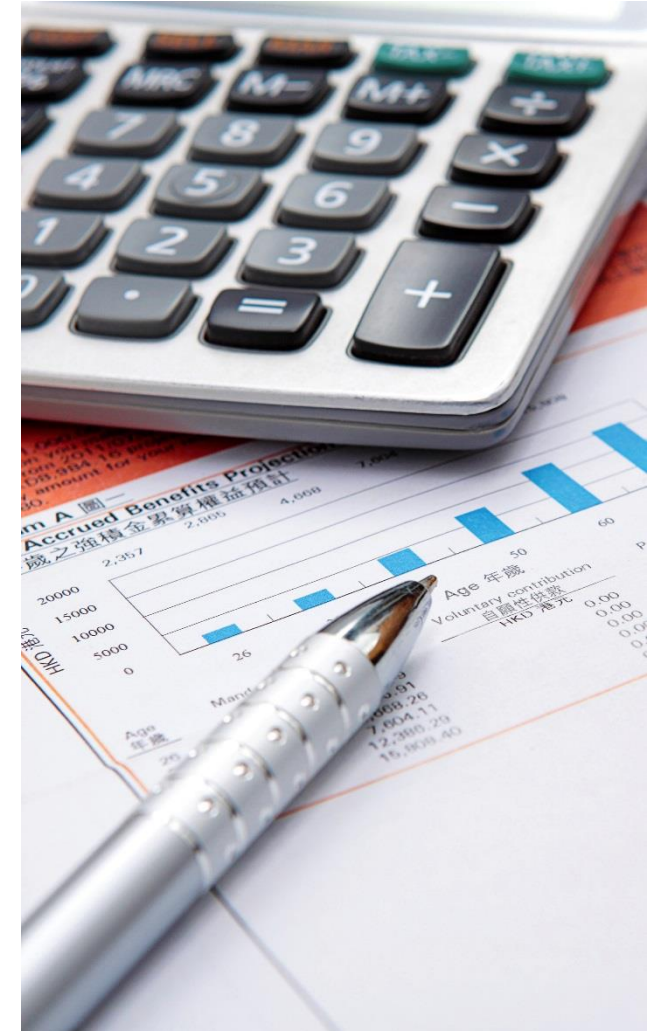


Source: Bloomberg

Case study 2

Corporate fixed coupon bullet callable bond – no closed end solution

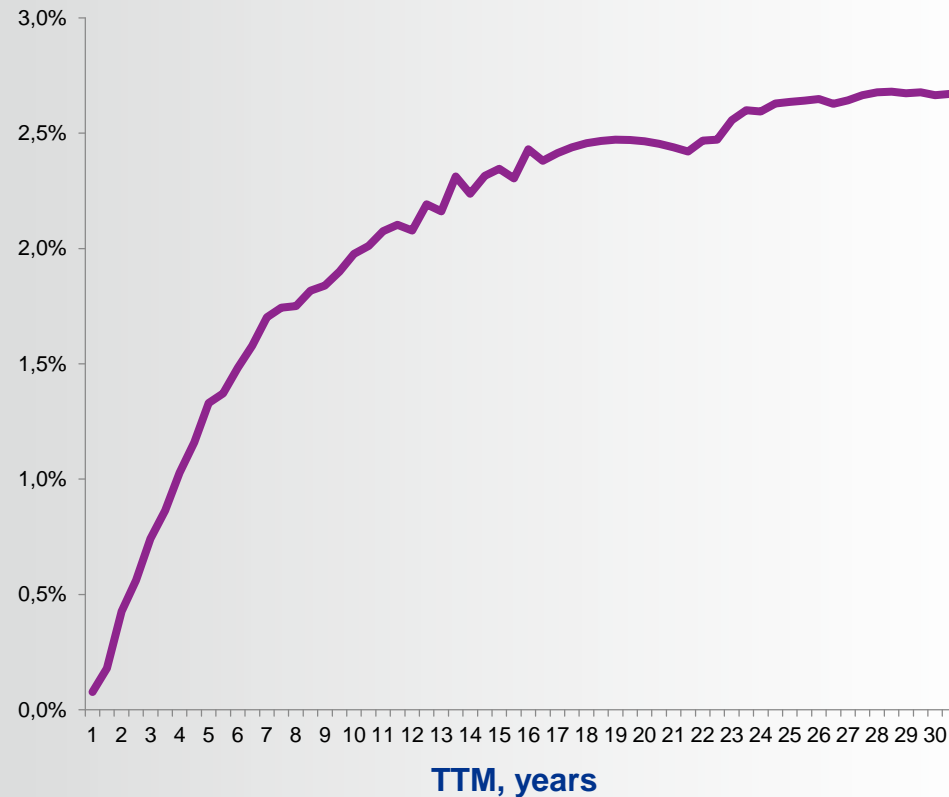
Description of a corporate bond	
Issuer	Construction Materials Producer
Country	Kazakhstan
Currency	KZT
Nominal Value (KZT)	100
Rating	B
Industry	Industrials
Coupon rate	10.0%
TTM, years	5.342
Interest payment	Quarterly
Principal payment	At maturity
Valuation date	15-Apr-15
Maturity date	16-Aug-20
Exercise of call option	16-Apr-07
Date of issuance	16-Apr-07



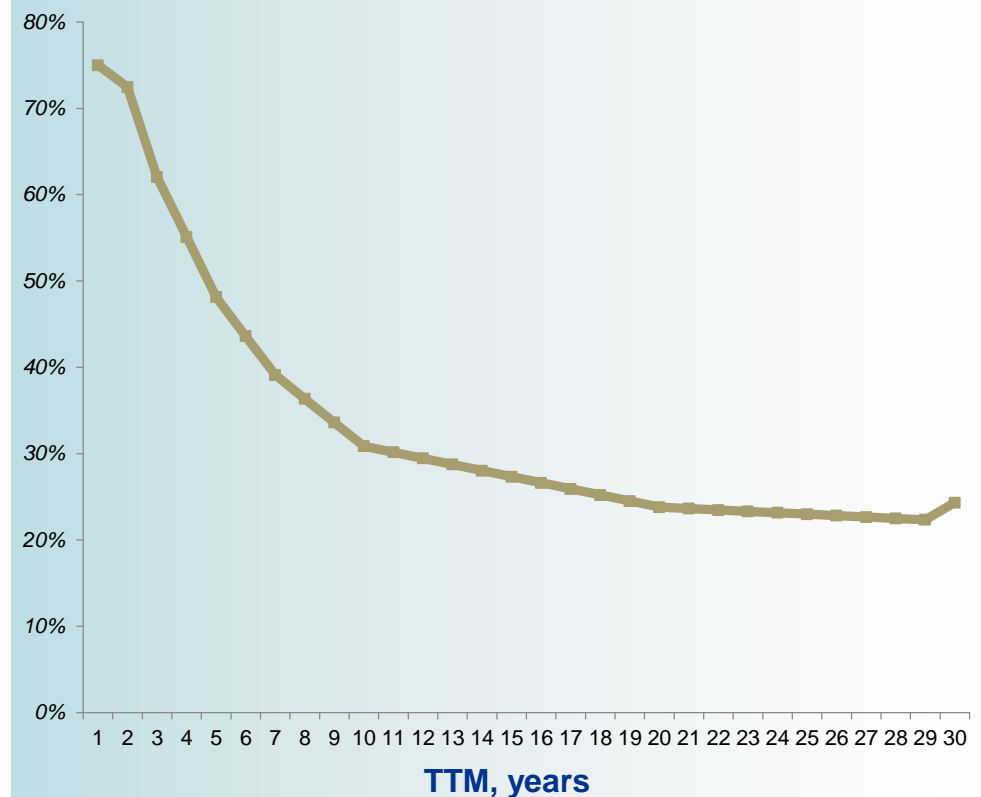
Case study 2

Term structure of interest rate and volatility for US as at 15/04/2015

Term structure of interest rate



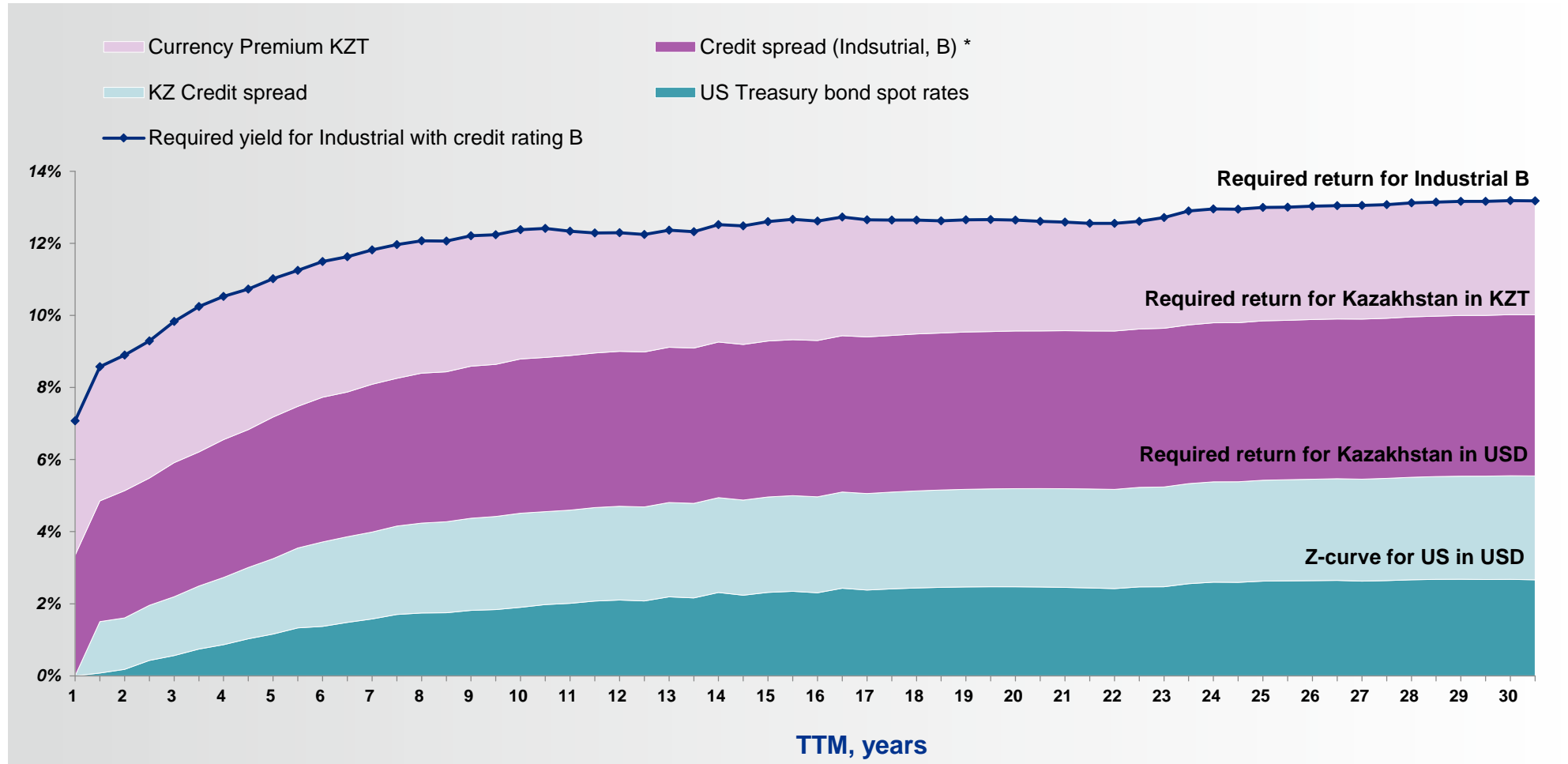
Term structure of interests rate volatilities



Source: Bloomberg, Capital IQ, FRS USA, KPMG analysis

Case study 2

Decomposition of required return for the Issuer



Source: Bloomberg, Capital IQ, EIU, анализ КПМГ

Case study 2

Incorporation of interest rate volatility

Interest rate lattice for Issuer as at 15/04/2015

15-Apr-15	15-Jul-15	15-Oct-15	15-Jan-16	.....	15-Jul-17	15-Oct-17	15-Jan-18	15-Apr-18	.....	15-Apr-20	15-Jul-20
											164.5%
										162.9%	109.9%
										108.9%	74.6%
										73.9%	51.8%
										51.4%	37.1%
									.....	36.8%	27.6%
									.....	27.3%	21.4%
									.....	21.2%	17.4%
									.....	17.3%	14.9%
								45.6%	.....	14.7%	13.2%
							45.2%	30.4%	.....	13.1%	12.1%
						32.0%	28.8%	21.6%	.....	12.0%	11.4%
					24.7%	21.6%	19.9%	16.5%	.....	11.3%	11.0%
					17.6%	16.0%	15.2%	13.6%	.....	10.9%	10.7%
					13.8%	13.0%	12.6%	11.9%	.....	10.6%	10.5%
				.....	11.8%	11.4%	11.2%	11.0%	.....	10.4%	10.4%
				.....	10.7%	10.5%	10.5%	10.4%	.....	10.3%	10.3%
				.....	10.1%	10.1%	10.1%	10.1%	.....	10.2%	10.2%
			10.6%	.....	9.8%	9.8%	9.9%	9.9%	.....	10.2%	10.2%
		9.0%	9.5%	.....	9.6%	9.7%	9.8%	9.8%	.....	10.1%	10.2%
	8.5%	8.8%	9.0%	.....	9.5%	9.6%	9.7%	9.7%	.....	10.1%	10.2%
8.5%	8.5%	8.6%	8.7%	.....	9.4%	9.6%	9.7%	9.7%	.....	10.1%	10.2%

Source: Bloomberg, Capital IQ, KPMG analysis

Case study 2

Elegant way to incorporate callable feature

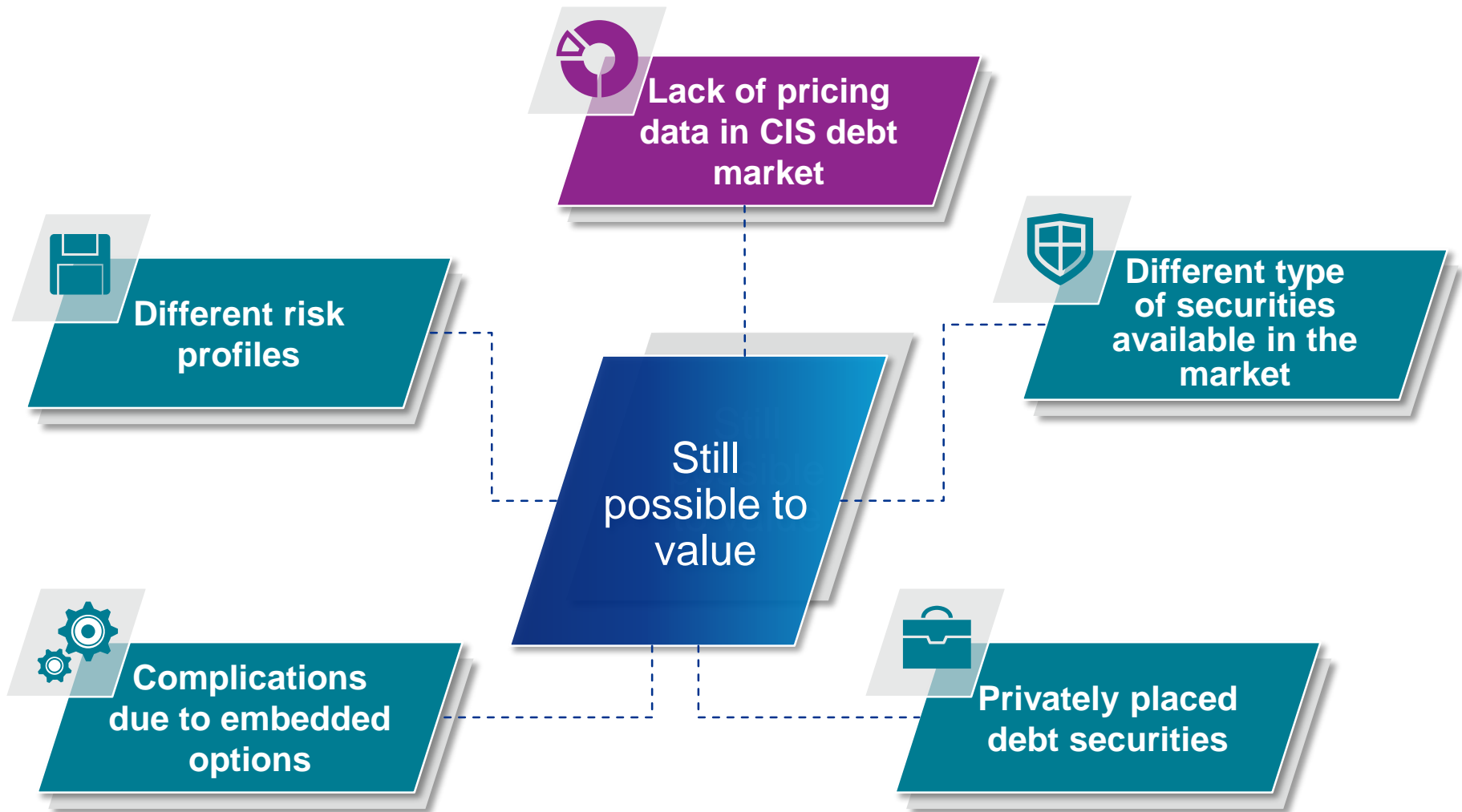
Binomial tree for Issuer as at 15/04/2015

15-Apr-15	15-Jul-15	15-Oct-15	15-Jan-16	.....	15-Oct-17	15-Jan-18	15-Apr-18	15-Jul-18	.....	15-Jul-20	15-Oct-20
100.91	100.00	100.00	100.00	.....	100.00	100.00	100.00	100.00	.....	100.00	100.00
											73.04
											80.85
											86.86
											91.24
											94.32
											96.42
											97.83
											98.76
								55.01			99.38
							58.85	69.98			99.78
						62.10	73.26	81.52			100.00
					66.90	76.26	84.10	89.63			100.00
					80.17	86.60	91.58	94.96			100.00
					89.54	93.51	96.39	98.24			100.00
					95.60	97.77	99.17	99.87			100.00
				.....	99.06	99.85	100.00	100.00			100.00
				.....	100.00	100.00	100.00	100.00			100.00
				.....	100.00	100.00	100.00	100.00			100.00
			97.36	.....	100.00	100.00	100.00	100.00			100.00
		99.50	100.00	.....	100.00	100.00	100.00	100.00			100.00
	100.00	100.00	100.00	.....	100.00	100.00	100.00	100.00			100.00
100.91	100.00	100.00	100.00	.....	100.00	100.00	100.00	100.00			100.00

Source: KPMG analysis

Valuation aspects

Takeaways



Valuation aspects

Contacts

We would like to thank you for the opportunity to present KPMG services. We are sure that our teams of experts having extensive knowledge in the area of valuation and wide experience in providing advisory services will assist you to cope with the challenges that you may face.

If any questions arise with regard to the content of this document, please, do not hesitate to contact us.



Timur Ganiev
Associate Director,
Corporate Finance, KPMG
TGaniev@kpmg.az



Tel: +994 12 404 8910
Mobile +994 50 271 4252



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KPMG

Port Baku, 153 Neftchilar ave.,
Baku, AZ1010, Azerbaijan

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