

THE ROBO ADVISOR - EM EQUITIES

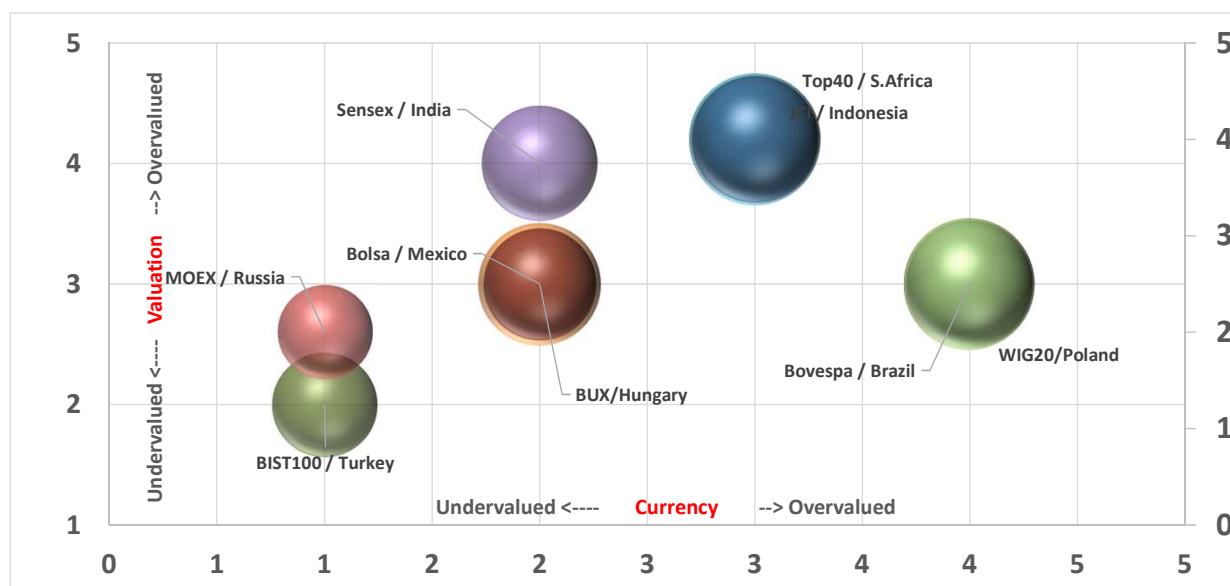
Robo-advisor final score is composed of valuation (%25), REER model (%30), risk profile (%20), leading indicators (%15), technical trend (%10). Past performance of trade calls are summarized in appendix.

EM equities show signs of recovery after the recent sell-off in global markets. They stay strong due to attractive valuations, cheap currencies in real terms and relatively low risk profile. Moreover our risk-appetite index indicates continuation of risk-on mode. However technical indicators still indicate weakness in EM equity indices.

We keep our "positive" signal Sensex/India and Moex/Russia. For WIG20/Poland, "negative" signal is kept due to overvalued PLN and expected slowdown (leading indicators) in the economy.

IDEAS	Score (At Initiation)	Trend	Signal (Score + Trend)	P&L (LOCAL CURRENCY)	CONDITION	STOPLOSS (TRAILING)
Sensex/India	M.Undervalued	Positive	30-Apr-18	-0,73%	OPEN	34000
Moex/Russia	M.Undervalued	Positive	14-May-18	-1,15%	OPEN	2212
WIG20/Poland	M.Overvalued	Negative	29-May-18	-2,23%	OPEN	2330

TRACK RECORD	TOTAL RETURN	HIT RATIO
	87,90%	63%
	HIGHEST RETURN	
	35,47%	
	LOWEST RETURN	
	-4,07%	



Note: Ideas do not stand as a substitute for equity strategy. They are generated as automated signals.

SCORECARD	Valuation (Long-Term) (%25)	REER (Long-Term) cycle (%30)	Risk Profile (%20)*	Leading indicators (%15)	Technical Trend (%10)	SCORE	SIGNAL
Sensex / India	4	2	2	2	NEUT	M.OVERVALUED	POSITIVE
Bovespa / Brazil	3	4	3	1	NEG	M.OVERVALUED	
JCI / Indonesia	4	3	2	4	NEUT	M.OVERVALUED	
BIST100 / Turkey	2	1	4	2	NEUT	M.UNDERVALUED	
MOEX / Russia	2	1	3	1	POS	UNDERVALUED	POSITIVE
Bolsa / Mexico	3	2	3	4	NEG	M.OVERVALUED	
Top40 / S.Africa	4	3	3	1	NEUT	M.OVERVALUED	
WIG20/Poland	3	4	2	4	NEG	M.OVERVALUED	NEGATIVE
BUX/Hungary	3	2	2	2	NEG	M.OVERVALUED	

Scoring as follows: 1 for UNDERVALUED, 2 for Moderately Undervalued, 3 for Moderately Overvalued, 4 for OVERVALUED

* Risk profile as follows: 1 for LOW RISK, 2 for LOW TO MODERATE RISK, 3 for MODERATE TO HIGH RISK, 4 for HIGH RISK

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Valuation and Equity Performance

We have compared key price multiples of the selected EM's from a perspective of historical discount/premiums. Consensus forecasts on EPS growth were also taken into account. Premium/Discount to 3Y, 10 Y averages and EPS growth expectations have equal weight for determining quantile scores.

5.06.2018	HISTORICAL				EM COMPARISON				FINAL SCORE
	Fwd P/E 12M	Premium/D iscount to 3Y Average	Premium/D iscount to 10Y average	Exp. EPS GROWTH (%)	Premium/D iscount to EM	Premium/Disc out to 3Y Average	Premium/Di scount to 10Y average	Exp. EV/S GROWTH (%)	
Sensex / India	17,89	3,3%	18,2%	21,8%	49,9%	41,2%	37,7%	-4,5%	OVERVALUED
Bovespa / Brazil	11,17	-10,2%	-1,0%	67,4%	-6,4%	1,6%	2,9%	-7,6%	MODERATELY OVERVALUED
JCI / Indonesia	14,99	-3,7%	8,9%	38,6%	25,6%	26,9%	25,8%	-11,5%	OVERVALUED
BIST100 / Turkey	6,53	-19,7%	-27,1%	12,7%	-45,3%	-33,7%	-18,2%	14,8%	MODERATELY UNDERVALUED
MOEX / Russia	6,08	-4,5%	-4,3%	20,1%	-49,0%	-48,0%	-41,9%	-10,3%	MODERATELY UNDERVALUED
Bolsa / Mexico	14,75	-14,2%	-7,9%	34,7%	23,6%	40,3%	45,6%	-13,0%	MODERATELY OVERVALUED
Top40 / S.Africa	15,23	-0,2%	17,6%	19,1%	27,6%	24,5%	16,1%	1,3%	OVERVALUED
WIG20/Poland	10,88	-8,1%	-6,3%	7,2%	-8,9%	-3,5%	5,5%	-47,4%	MODERATELY OVERVALUED
BUX/Hungary	10,15	-10,5%	1,8%	2,2%	-15,0%	-7,5%	-9,4%	-21,7%	MODERATELY OVERVALUED

5.06.2018	Fwd P/E 12M	P/B	P/EBITDA	P/SALES	Fwd ROE	Cur. ROE	CUR DIV.YIELD (NET)	EXP. DIV YIELD
Sensex / India	17,89	3,1	10,0	2,7	13,3	14,8	1,1	1,6
Bovespa / Brazil	11,17	1,8	6,6	1,4	13,8	9,1	2,7	4,4
JCI / Indonesia	14,99	2,4	8,9	2,0	17,8	11,1	2,2	2,4
BIST100 / Turkey	6,53	1,2	4,8	0,8	15,1	15,2	4,0	5,3
MOEX / Russia	6,08	0,8	3,5	0,8	11,0	10,9	4,9	8,1
Bolsa / Mexico	14,75	2,4	6,0	1,3	17,4	11,1	2,2	2,9
Top40 / S.Africa	15,23	2,4	10,2	2,3	15,6	14,2	3,0	3,3
WIG20/Poland	10,88	1,2	4,6	1,0	9,3	10,7	2,0	3,4
BUX/Hungary	10,15	1,3	4,1	1,0	11,9	12,7	3,0	3,1

Source: Ak Investment, Bloomberg

REER MODELS AND CURRENCY VALUATION

Currency valuation seem crucial for equity investment decisions. **Having the largest weight in Robo-Advisor methodology, valuation for real exchange rates are done using theoretical (ES approach),** and market expectations. Moreover net International Investment Position/GDP and deviation of REER from 12-month average are the other independent variables to come up with final score for each currency. **CA Gap (ES approach) has %35, CA Gap (Market) has %15, NIIP/GDP has %15 and REER Z-Score has %35 weight in final score.**

C/A GAP: Here the methodology for ES (External sustainability approach) uses a country's real gdp growth, inflation and net investment position/GDP as inputs to come up with a norm CA/GDP ratio. For more information (<http://www.imf.org/external/np/pp/eng/2006/110806.pdf>). For example Turkey and Russia both have positive C/A Gap, which means both economies are operating with lower current account deficit than their fundamentals show. Thus, this is an indication for the currency to be undervalued.

C/A GAP (Market): This is the expectation for the market regarding deterioration/improvement in C/A balance. Simply put, it is the difference between next year forecast and this year. Here Bloomberg consensus forecasts are taken for current account results.

NIIP/GDP: Net international investment position/GDP for each country is used. The more negative the number, the larger the external vulnerability of the country's economy.

	CA Gap*	CA Gap(Market)**	NIIP/GDP***	REER Z Score****	FINAL SCORE
India	-0,2%	-0,4%	-16,8%	1	MODERATELY UNDERVALUED
Brazil	0,8%	-0,7%	-34,0%	2	OVERVALUED
Indonesia	-2,1%	-0,1%	-33,3%	1	MODERATELY OVERVALUED
Turkey	1,1%	0,4%	-50,0%	1	UNDERVALUED
Russia	2,4%	-0,4%	16,0%	2	UNDERVALUED
Mexico	1,1%	0,0%	-45,6%	2	MODERATELY UNDERVALUED
S.Africa	-3,8%	-0,3%	12,2%	2	MODERATELY OVERVALUED
Poland	3,2%	-0,4%	-61,1%	4	OVERVALUED
Hungary	2,4%	0,1%	-54,3%	3	MODERATELY UNDERVALUED

*CA Gap: Current Account Gap calculated by External Sustainability (ES) Approach

**CA Gap (Market): Market expectation for deterioration/improvement in C/A.

***NIIP/GDP: Net International Investment Position/Annual GDP

**** 12 month Z-score, deviation from 12 month average

Source: Ak Investment Calculations, Bloomberg, EuroStat, IMF

Leading Indicators

To obtain early signals in business cycles, we have adopted OECD Composite leading indicators to our robo advisor metric. Our studies show that leading indicators momentum (as measured by 2-3 month change in slope) could be a successful predictor of equity index performance. CLIs for each country is customized according to each country's own economic characteristic.

OECD definition for the leading indicator is as follows: "The OECD system of Composite Leading Indicators (CLIs) is designed to provide early signals of turning points in business cycles - fluctuation in the output gap, i.e. fluctuation of the economic activity around its long term potential level. This approach, focusing on turning points (peaks and troughs), results in CLIs that provide qualitative rather than quantitative information on short-term economic movements.

The phases and patterns in CLIs are likely to be followed by the business cycle. The chart below presents the CLI and the estimated business cycle for the OECD area. The two series show strong co-movements, with the turning points of the CLI consistently preceding those of the business cycle; lead time varies, but 6 - 9 months is at what the OECD aims."

Below you can find latest projection for each economy according to our momentum CLI measure:

5.06.2018	QUANTILE SCORE
India	LATE EXPANSION
Brazil	EARLY EXPANSION
Indonesia	CONTRACTION
Turkey	LATE EXPANSION
Russia	EARLY EXPANSION
Mexico	CONTRACTION
S.Africa	EARLY EXPANSION
Poland	CONTRACTION
Hungary	LATE EXPANSION

Early expansion indicates that the economic activity may have the potential to expand further

Contraction indicates that the economic activity may have the potential to slow down

Risk Profile (Credit, Rates and FX)

Currency and credit risk profiles of emerging markets stay among the key inputs for robo-advisor scoring process. Here, country CDS spreads with 5 year maturity and 1-month implied FX volatilities are taken into consideration. Equally weighted average of both measures is used as the final score for risk profile.

5.06.2018	SWAP CHANGE (LAST 3 MONTHS BPS)	FX VOL (3M imp %)	FX VOL CHANGE (LAST 3 MONTHS BPS)	RISK REVERSAL (3M)*	RISK REVERSAL (CHANGE LAST 3 MONTHS)	CDS 5Y Premium (BPS)	FINAL SCORE
India	5,00	5,90	-6	0,8	-0,5	87,8	LOW/MODERATE RISK
Brazil	-17,51	14,75	367	2,4	0,3	231,4	MODERATE/HIGH RISK
Indonesia	139,00	7,38	72	2,0	0,2	122,0	LOW/MODERATE RISK
Turkey	439,60	19,63	852	3,7	0,8	281,3	HIGH RISK
Russia	14,00	12,99	248	3,2	0,4	133,9	MODERATE/HIGH RISK
Mexico	58,73	15,33	381	1,9	0,0	141,4	MODERATE/HIGH RISK
S.Africa	-15,10	14,58	30	2,8	0,2	173,9	MODERATE/HIGH RISK
Poland	44,31	10,04	97	1,5	1,2	66,7	LOW/MODERATE RISK
Hungary	37,88	9,24	62	1,4	0,7	99,5	LOW/MODERATE RISK

* Defined as 3M OTM Call Option Vol minus 3M OTM Put Option Vol

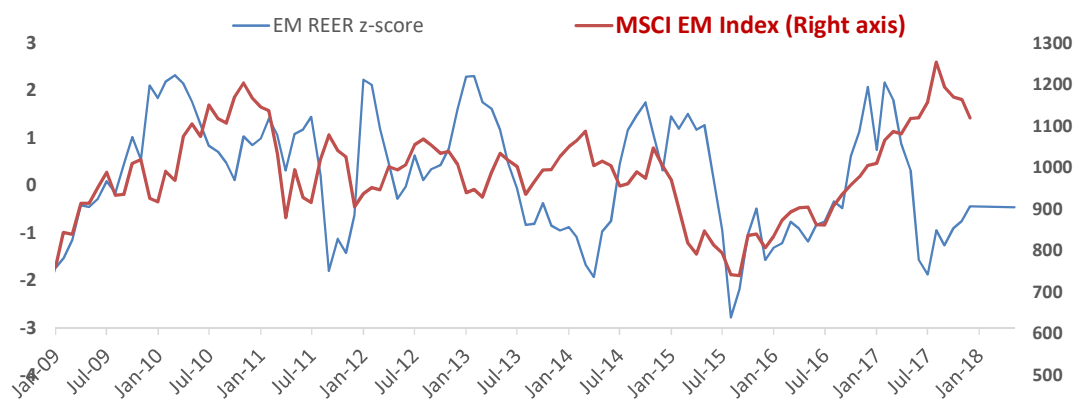
TECHNICAL INDICATORS

Robo advisor metrics include technical indicators to determine accurate timing for investment decisions. Here, 20,50,100 day simple moving averages for closing prices and averages for RSI indicator are used. Moreover to enhance predictability, moving averages for relative indices (for ex, Sensex/MSCI EM) are also taken into account. Put simply, short-term averages staying over long-terms is the rule for "buy" signal.

	FINAL	LAST PRICE	10D SMA	20D SMA	50D SMA	ABSOLUTE TREND*	RELATIVE TREND**	RSI (TREND)
Sensex / India	NEUT	34903	34917	35079	34477	NEUT	POS	NEG
Bovespa / Brazil	NEG	78596	78846	81654	83540	NEG	NEG	NEG
JCI / Indonesia	NEUT	6089	5906	5884	6080	NEUT	NEUT	POS
BIST100 / Turkey	NEUT	98732	102414	102106	107259	NEUT	NEUT	POS
MOEX / Russia	POS	2317	2305	2316	2274	NEUT	POS	NEUT
Bolsa / Mexico	NEG	45244	45104	45664	46935	NEUT	NEG	NEG
Top40 / S.Africa	NEUT	51235	50461	50996	50433	NEUT	NEUT	NEUT
WIG20/Poland	NEG	2243	2212	2242	2260	NEUT	NEG	NEG
BUX/Hungary	NEG	36830	35711	36547	37361	NEUT	NEG	NEG
MSCI EM (Local)	NEUT	61508	60809	61207	61195	NEUT		NEUT

Index Performance (Year-to-Date)

	LAST PRICE	CHANGE (LCL - YTD%)	CHANGE (USD- YTD%)
Sensex / India	34903	2,5	7,4
Bovespa / Brazil	78596	2,9	15,0
JCI / Indonesia	6089	-4,2	-2,0
BIST100 / Turkey	98732	-14,4	3,3
MICEX / Russia	2317	9,8	17,5
Bolsa / Mexico	45244	-8,3	-4,7
Top40 / S.Africa	51235	-2,5	0,1
WIG20/Poland	2243	-8,9	-3,6
BUX/Hungary	36830	-6,5	-1,3
MSCI EM (Local)	61508	1,0	6,2
MSCI EM (USD)	1147	-1,0	4,2



APPENDIX: PERFORMANCE

Since its launch, Robo-Advisor had 14 trade-calls with %5,25 average return. You can find the closed trade calls and performance below.

TRACK RECORD	AVERAGE RETURN	5,49%	TOTAL RETURN	87,90%
	HIGHEST RETURN	35,47%	LOWEST RETURN	-4,07%
	HIT RATIO	63%		

	Score	Trend	Duration	P&L	CONDITION
Bovespa/Brazil	M.Undervalued	Positive	12/27/2017 - 05/21	9,70%	Closed on 05/21/2018
BIST100/Turkey	M.Undervalued	Positive	12/11/2017-04/09/	3,91%	Closed on 04/20/2018
JCI/Indonesia	M.Undervalued	Positive	08/16/2017-03/20/	5,99%	Closed on 03/20/2018
WIG20/Poland	M.Undervalued	Positive	01/17/2018-02-09/	-3,83%	Closed on 02/09/2018
Sensex/India	M.Undervalued	Positive	01/17/2018-02-09/	-3,07%	Closed on 02/09/2018
Bolsa/Mexico	M.Undervalued	Positive	01/02/2018-02-09/	-4,07%	Closed on 02/09/2018
Micex/Russia	M.Undervalued	Positive	07/11/2017-02/09/	14,10%	Closed on 02/09/2018
Micex/Russia	M.Overvalued	Negative	02/14/2017 - 04/21	12,30%	Closed on 04/20/2017
Turkey/BIST100	M.Undervalued	Positive	12/15/2016 - 08/16	35,47%	Closed on 08/16/2017
Top40/S.Africa	M.Undervalued	Positive	05/11/2017 - 09/05	4,21%	Closed on 09/05/2017
Bovespa/Brazil	M.Undervalued	Positive	05/03/2017 - 11/10	10,20%	Closed on 11/10/2017
Bux/Hungary	M.Undervalued	Positive	09/14/2017 - 11/10	4,04%	Closed on 11/10/2017
WIG20/Poland	M.Undervalued	Positive	09/14/2017 - 11/16	-3,17%	Closed on 11/16/2017
BIST100/Turkey	M.Undervalued	Positive	10/26/2017 - 11/20	-1,84%	Closed on 11/20/2017
Bolsa / Mexico	Overvalued (Short)	Negative	09/14/2017-12/11/	5,30%	Closed on 12/11/2017
Top40/S.Africa	M.Undervalued	Positive	10/26/2017-12/11/	-1,35%	Closed on 12/11/2017

APPENDIX: RISK APPETITE INDEX

One of the crucial components of EM strategy is risk perception of investors. Categorized as a high return/high risk asset class, EM equities tend to underperform during risk off, overperform during risk on periods in global financial markets. Here we have collected data on 26 risk factors that play critical role on fx, equity, commodity and rates. By smoothing data with z-scores and taking 3M correlation of each risk factor with MSCI EM we come up with the significant factors on EM (Table). The risk appetite index is produced by weighing each factor by its significance and creating historical time series.

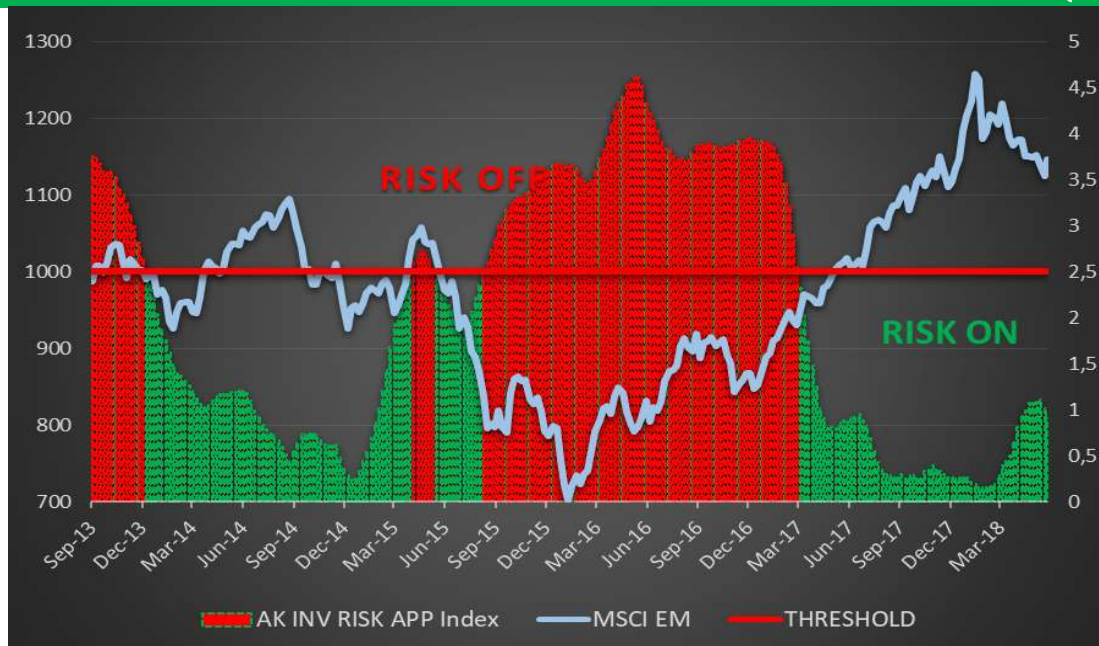
MSCI EM correlation with risk factors*

NIKKEI VOL	-0,74
BRENT VOL	-0,42
EM CDS	-0,22
US RATE VOL (MOVE)	-0,17
EM VOL	-0,12
USDJPY VOL	-0,10
FX VOL (CVIX)	-0,09
JPY-LIBOROIS	-0,07
EMBI SPREAD	-0,07
US HY-TY SPREAD	-0,05
GBPUSD VOL	-0,04
EURUSD VOL	-0,03
EM FX VOL	0,00
DAX VOL	0,01
FTSE VOL	0,01
US SWAP VOL	0,03
EURUSD SWAP BASIS	0,07
EUROSTOXX VOL	0,17
COMMODITY VOL	0,24
USD LIBOR-OIS	0,27
S&P500 VOL (VIX)	0,30
FX VOL (JPM)	0,35
HANG SENG VOL	0,42
EURO-LIBOROIS	0,45

*3M correlations of percent change in weekly z-scores of risk factors and MSCI EM. Highest and lowest correlations show the most significant factors that determine our risk appetite index.

** Risk appetite index is built by weighing each risk factor with its significance for EM equities. Decline in correlations with EM EQ show risk on mode whereas, increase in correlations would result in risk off mode.

OUR RISK APPETITE INDEX** INDICATES CONTINUATION OF RISK ON ENVIRONMENT FOR EM EQUITIES



APPENDIX: MACRO INDICATORS

Bond and FX Markets

5.06.2018	REAL RATE EXANTE% (BENCH RATE - NEXT 2 YR INF EXP)	REAL RATE EXPOST% (BENCH RATE - REALIZED INF)	REAL CARRY EXANTE (Vol Adj)	REAL CARRY EXANTE (Skew Adj)
Brazil	2,81	3,74	0,19	1,19
Indonesia	2,80	3,27	0,38	1,39
S.Africa	1,45	2,00	0,10	0,51
Mexico	3,51	2,95	0,23	1,85
Turkey	6,30	4,35	0,32	1,70
Russia	4,05	5,10	0,31	1,27
India	1,80	1,42	0,31	2,22
Poland	-0,75	-0,20	-0,07	-0,49
Hungary	-1,85	-1,40	-0,20	-1,34

Bond and FX Markets

5.06.2018	3 M CCS SWAP (%)	CDS (bps)	FX VOL (3M imp %)	YIELD CURVE SLOPE
Brazil	5,7	231	14,7	POSITIVE
Indonesia	6,8	122	7,4	POSITIVE
S.Africa	7,1	174	14,6	POSITIVE
Mexico	8,4	141	15,3	POSITIVE
Turkey	13,7	281	19,6	NEGATIVE
Russia	6,1	134	13,0	POSITIVE
India	6,9	88	5,9	POSITIVE
Poland	1,6	67	10,0	POSITIVE
Hungary	0,0	99	9,2	POSITIVE

* Carry (Vol Aj) : (Policy Rate - Average Exp Inflation) / 3M IMP FX VOL

** Carry (Skew Adj): (Policy Rate - Average Exp. Inflation) / 3M RISK REVERSAL

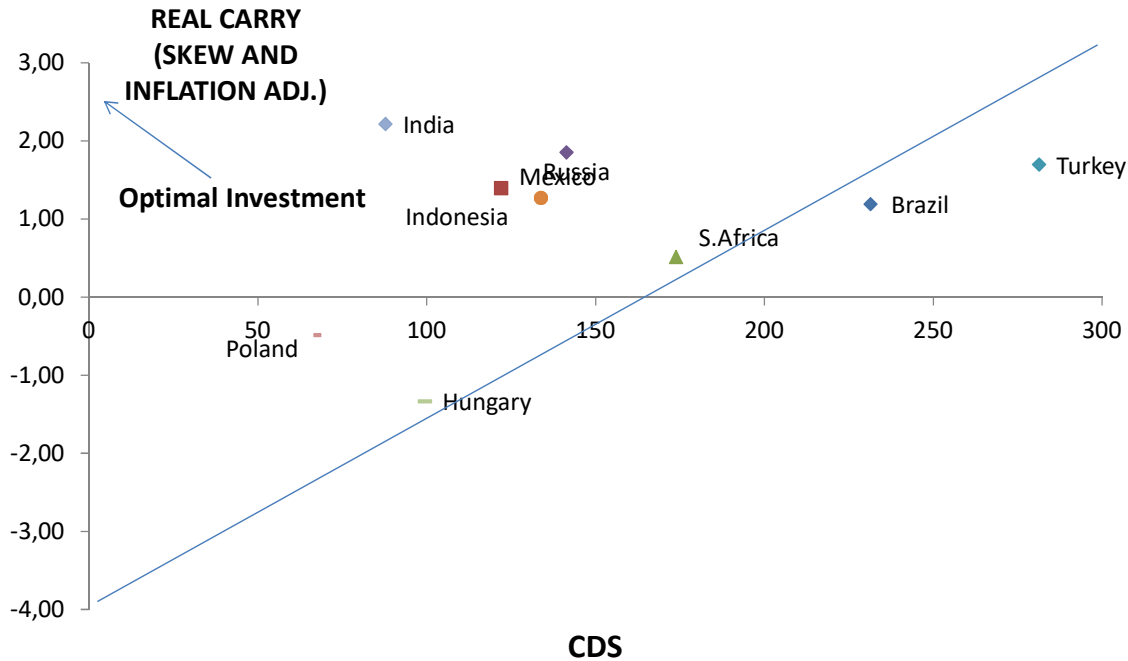
Bloomberg Consensus numbers are used for inflation expectations.

MACRO AND FINANCIAL VARIABLES

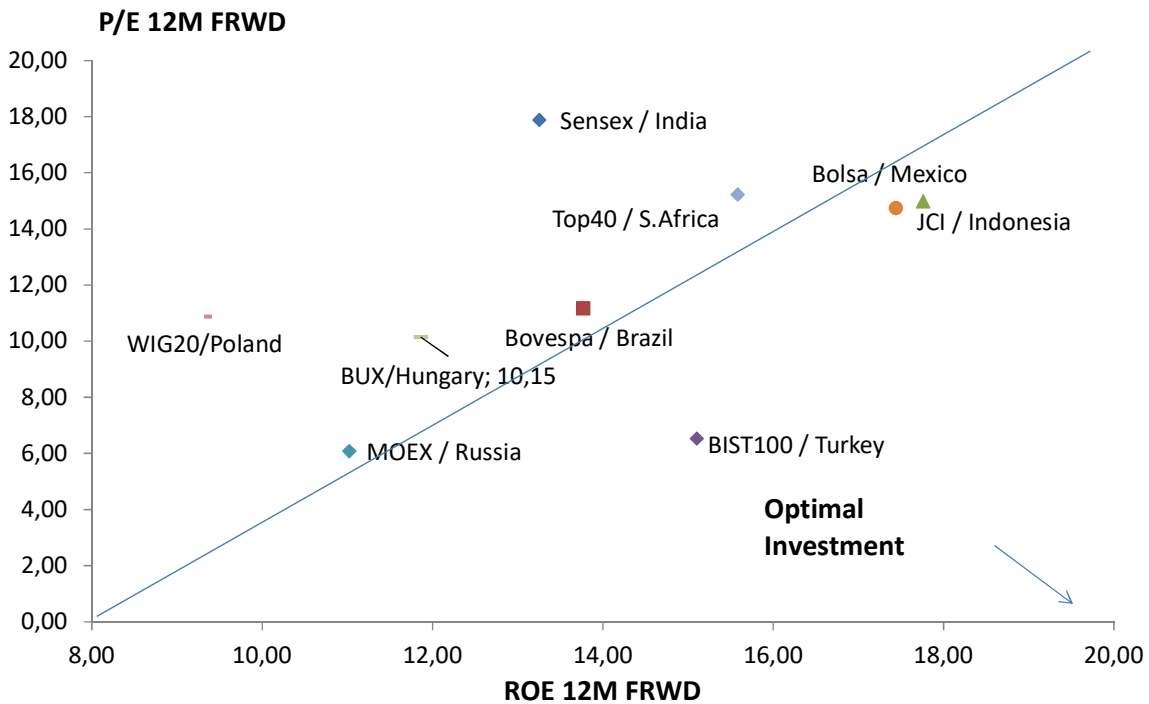
5.06.2018	GDP yoy (%)	CPI yoy(%)	Unemp (%)	CA/GDP (%)
India	5,30	3,60	8,80	-1,53
Brazil	1,21	2,76	8,20	-0,40
Indonesia	5,06	3,23	5,50	-2,04
Turkey	7,26	12,15	10,60	-5,56
Russia	1,30	2,40	4,90	2,11
Mexico	1,30	4,55	3,40	-1,66
S.Africa	-2,20	4,50	26,70	-2,45
Poland	5,20	1,70	6,30	0,02
Hungary	4,40	2,30	3,80	0,58

5.06.2018	Budget/GDP(%)	2 Year Gov Bond	10 Year Gov Bond	Real Rate 2 Year (%)
India	-3,53	7,66	7,84	3,56
Brazil	-7,40	7,93	11,65	4,57
Indonesia	-2,39	6,75	7,12	3,10
Turkey	-1,53	17,94	14,68	6,89
Russia	-2,14	7,36	7,36	4,06
Mexico	-2,89	7,66	7,85	2,47
S.Africa	-4,44	8,72	7,43	3,57
Poland	-1,70	1,58	3,22	-0,42
Hungary	-2,00	0,69	3,02	-1,79

APPENDIX: EM FX AND EQUITY MARKETS



* Carry (Vol Adj) : $(3M\ CCS\ Swap\ Rate - 2018\ Exp\ Inflation) / 3M\ IMP\ FX\ VOL$
 ** Carry (Skew Adj): $(3M\ CCS\ Swap\ Rate - 2018\ Exp.\ Inflation) / 3M\ RISK\ REVERSAL$
 Bloomberg Consensus numbers are used to determine inflation expectations.



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Ak Investment Research Stock Rating Methodology

Our rating system aims to indicate a relative value and is therefore based on a graduated scale (Outperform, Neutral and Underperform). While the BIST-100 (XU100) Index is treated as the point of reference when assigning our ratings, each analyst also takes into account views towards stocks in relation to the sectors under coverage and the sector call relative to the market. We also categorize the stocks in our coverage under two groups, principally in accordance with their liquidity (based on free-float market capitalization and historical average daily trading volume) as small-cap stocks exhibit different risk/return characteristics than more-liquid large-caps. In conjunction, the individual stock ratings reflect the expected return of the stock relative to the broader market over the next 6 to 12 months. The expected performance equals to the sum of forecasted share price appreciation and expected cash dividend income. It is a function of the near-term company fundamentals, the outlook for the sector, the confidence in earnings projections and the company valuation, along with other factors. In light of this expected return, the target price for a stock represents the value the analyst expects the stock to reach or sustain over a 12-month horizon. However, this should be interpreted as a notional reference price and must be discounted by the stock's cost of equity to calculate the current fair price estimate.

A key element of our rating system is the benchmarking of the 12-month expected return against the cost of equity. We apply a required rate of return for each stock, calculated on the basis of our assumed risk-free rate and equity risk premium. A stock is normally assigned an Outperform rating if the implied return over the next 12 months exceeds the required rate of return (cost of equity) by at least 10 percentage points for our larger-cap stock coverage, or by 15 percentage points for the small-cap group. As the average potential upside of the stocks in our coverage may be considerably higher or lower than the average cost of equity, we also filter stocks according to their potential upside with respect to other stocks under coverage, with the practical aim of attaching an Outperform rating to the top group (generally 30-50% of the companies under our coverage), a Neutral rating for the next 40-50% and an Underperform rating to the lowest group (no less than 10%, and typically between 10-20% of the coverage group). The expected returns on some stocks may fall outside the range of the applicable rating category, due to movements in market prices and other short-term volatility or trading patterns, or analyst discretion. While temporary deviations from the specified ranges are permitted, they would subsequently become subject to review. Note too that the analyst's short-term view may occasionally diverge from the stock's longer-term fundamental rating.

Outperform. An outperform rating conveys an expectation that the stock will outperform the BIST-100 Index (XU100) within the next 6 to 12 months.

Neutral. A neutral rating would convey an expectation that the stock will perform broadly in line with the BIST-100 (XU100) Total Return Index.

Underperform. An underperform rating conveys an expectation that the stock will yield a return below that of the BIST-100 (XU100) Total Return Index within the next 6- to 12-month period.

Not Rated (N/R). A not rated rating is assigned when the analyst does not have adequate conviction about the stock's total return relative to the BIST-100 (XU100) Total Return Index or to the average total return of the analyst's industry coverage universe, on a risk-adjusted basis, over the next 6 to 12 months.

Under Review (U/R). An under review rating is temporarily assigned when the analyst starts an appraisal process of the rating for a potential revision, or the issuer has a significant material event with further information pending or to be announced. This does not revise the previously published rating, but indicates that the analyst is actively reviewing the investment rating or waiting for sufficient information to re-evaluate the analyst's expectation of total return on equity.

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