

MV Index Solutions (MVIS)

Corporate Presentation

December 2018



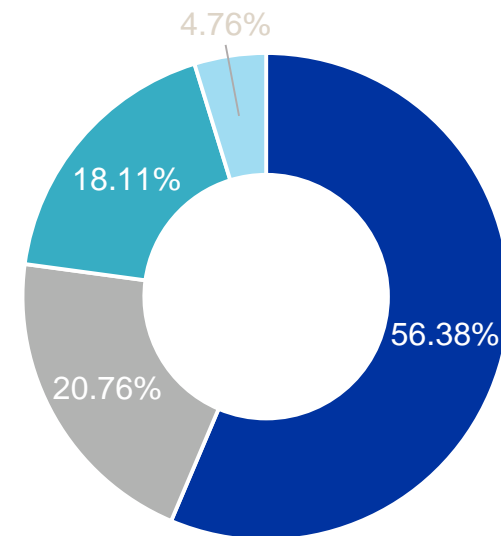
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MVIS – Specialist for High Quality Indices

- MVIS has innovated the index market in many ways since its launch in 2011.
- Moving beyond common index categories, we have introduced blue chip indices with benchmark characteristics that are specifically designed to underlie exchange-traded products (ETPs).
- The indices are built on three key factors: pure-play exposure, component liquidity, and index diversification. In combination, those factors ensure an intelligent index design, tailor-made for ETPs.
- MVIS only develops indices that capture potential investment themes. Our index selection provides exposure to hard assets, international equity with a strong focus on emerging markets, and fixed income.

AUM in % by Index Category



- Hard Asset Indices
- Sector Indices
- Country Indices
- Bond Indices

AUM in USD by Index Category

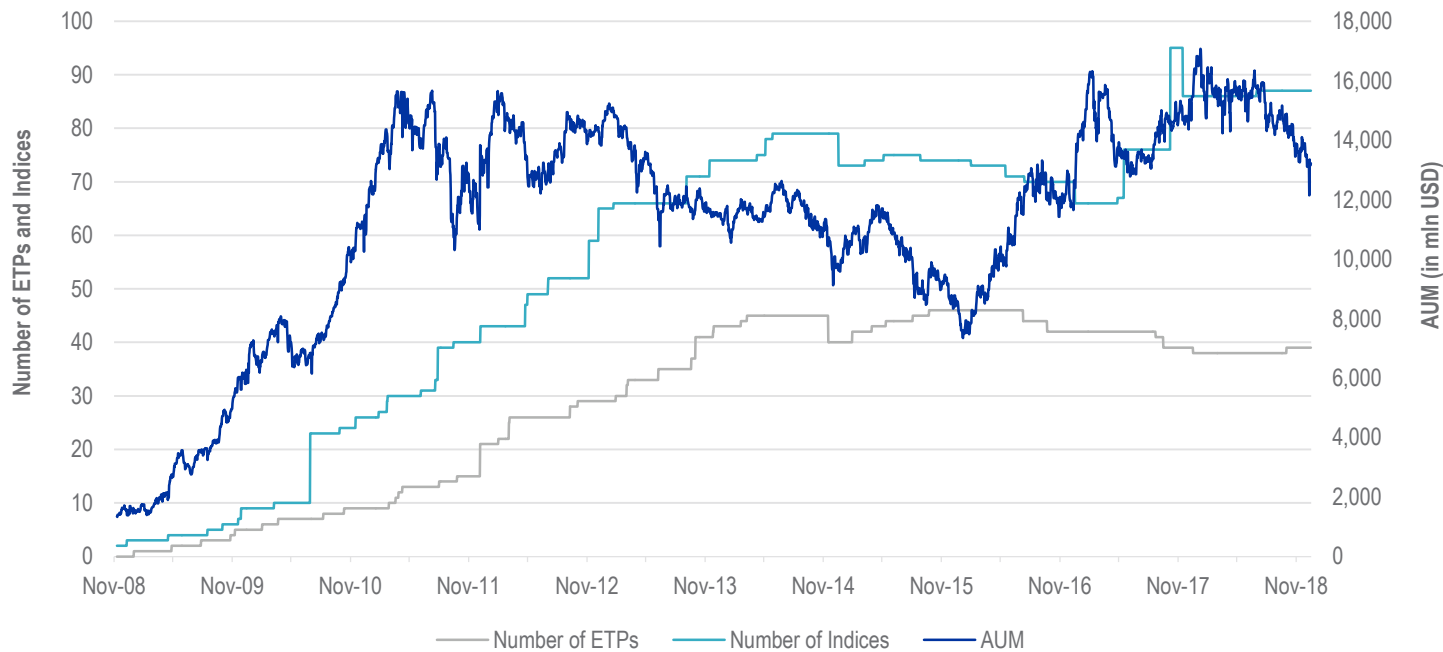
Index Category	AUM (USD bn)
Hard Asset Indices	7.63
Sector Indices	2.81
Country Indices	2.45
Bond Indices	0.64

Data as of 31.12.2018.

MVIS – Investable Index Design

- Close to 50% of MVIS Indices are licensed to underlying exchange-traded products (ETFs) with currently USD 13.5 billion invested.
- Many of the ETFs based on our indices are the largest in their competitive environment.

Development of Indices, Exchange-Traded Products (ETPs) and AUM



Data as of 31.12.2018.

Index Concept – Pure-Play

Following the Cash Flow

- Globalisation has changed industries and economies and created more complex markets. The MVIS index methodology approaches this complexity with a pure-play concept applied to countries and sectors.
- MVIS indices provide a more accurate reflection of an economy than traditional indices and the pure-play concept supports the opening of markets that have historically been difficult to access.
- Country Level: Index exposure includes local companies as well as non-local companies incorporated outside the target country that generate at least 50% of their revenues in the target country.
- Sector Level: Index exposure includes companies that generate at least 50% of their revenues in the target sector.

Pure-Play Selection Examples

Country Level - MVIS Mexico Index

Company	Fresnillo plc
Incorporated	United Kingdom
Total Revenues in 2017	\$2,093,308,000
Revenues in Mexico	\$2,093,308,000
% of Total Revenues	100%

Sector Level - MVIS Global Coal Index

Company	Aurizon Holdings Ltd.
Incorporated	Australia
Total Revenues in 2018	\$2,413,100,000
Revenues in global coal segment	\$1,400,600,000
% of Total Revenues	58%

Index Concept – Pure-Play

- Traditional index concepts that exclude non-local companies generating the majority of their revenues in the target country of an index might miss key elements of the local economy.
- The sector representation of an index can change significantly based on inclusion or exclusion of non-local companies that meet the above mentioned revenue criteria.

MVIS Russia Index

Sector	With Non-Local Companies		Without Non-Local Companies		Difference	
	Weight	Count	Weight	Count	Weight	Count
Consumer Discretionary	0.00%	0	0.00%	0	0.00%	0
Consumer Staples	8.67%	3	5.44%	1	3.23%	2
Energy	40.80%	7	50.20%	7	-9.41%	0
Financials	11.77%	3	14.48%	3	-2.71%	0
Health Care	0.00%	0	0.00%	0	0.00%	0
Industrials	0.00%	0	0.00%	0	0.00%	0
Information Technology	0.00%	0	0.00%	0	0.00%	0
Materials	22.62%	7	20.68%	5	1.94%	2
Telecommunication Services	13.78%	5	6.27%	2	7.51%	3
Utilities	2.38%	1	2.93%	1	-0.55%	0
Real Estate	0.00%	0	0.00%	0	0.00%	0
Total	100%	26	100%	19	-	7

Data as of 31.12.2018.

Discrepancies are caused by rounding.

Index Concept – Liquidity

Setting the Stage for Investability

- MVIS applies strict and demanding liquidity screenings to companies:
 - Free float of at least 10%
 - Full market capitalisation of at least USD 150 million
 - Three months average daily trading volumes of at least USD 1 million at review date and at the time of the previous two reviews
 - At least 250,000 shares traded per month over the last six months at a review date and at the previous two reviews
- MVIS selection criteria and capping method typically result in a more liquid index.

Component Selection Criteria for MVIS Russia Index

Criteria	Required	Gazprom	Sberbank
Full Market Capitalisation	\$150,000,000	\$58,378,880,000	\$66,271,930,000
Average daily trading volume (1)	\$1,000,000	\$45,214,240	\$71,367,704
Average daily trading volume (2)	\$1,000,000	\$31,948,716	\$70,900,280
Average daily trading volume (3)	\$1,000,000	\$47,148,248	\$117,743,416
Traded shares / per month (1)	250,000	175,665,126	121,337,265
Traded shares / per month (2)	250,000	180,209,799	134,552,807
Traded shares / per month (3)	250,000	220,454,787	134,098,692
Free-Float	10%	51%	48%

Review Q4 2018.

Index Concept – Diversification

Mitigating Concentration Issues

- MVIS elaborated capping scheme:
 - Country and regional indices: Maximum of 8% cap for local and 4.5% for non-local companies
 - Commodity and sector indices: Maximum of 8% cap (or 20% for selected indices)
 - Special capping schemes for MVIS Australia Banks and MVIS Australia A-REITs

Component Weightings MVIS Russia Index

Company	Country	Free Mcap	Weight	Capped Float Mcap	Capped Weight	Capping Factor
Sberbank	RU	29,660,466,684	15.66%	7,115,395,710	8.00%	0.24
Gazprom	RU	28,197,638,435	14.89%	7,115,395,710	8.00%	0.25
Lukoil	RU	28,187,250,000	14.88%	6,225,971,246	7.00%	0.22
Tatneft	RU	17,506,214,902	9.24%	5,781,259,014	6.50%	0.33
Novatek	RU	14,792,882,442	7.81%	5,336,546,782	6.00%	0.36
...
Lenta	VG	859,246,707	0.45%	859,246,707	0.97%	1.00

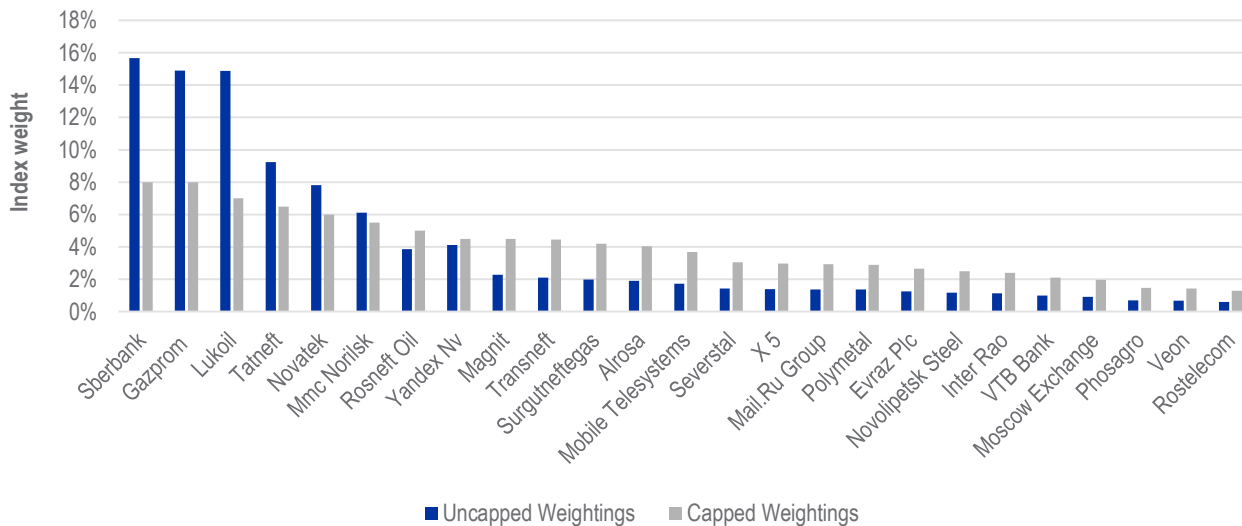
* in USD.

Review Q4 2018.

Index Concept – Diversification

- Cap factors guarantee well-balanced, diversified index exposure especially in markets dominated by few large companies, thus large companies will not dominate an index.
- Example MVIS Russia Index: Top 6 companies are capped, all other company weights increase; the excess weight generated by capping is distributed across smaller companies, leading to „underweighted“ large- and „overweighted“ mid- and small cap companies.

Weightings of MVIS Russia Index – Top 25 Components



Index Concept – Transparency

Home » Indices » Index Types » **Hard Asset Indices** » MVIS Global Junior Gold Miners Index

MVIS Global Junior Gold Miners Index

The modified market cap-weighted index tracks the performance of the most liquid junior companies in the global gold and silver mining industry. The pure-play index contains only companies that invest primarily in gold or silver, or generate at least 50% of their revenues from gold or silver mining or own properties that have the potential to generate at least 50% of their revenues from gold or silver mining when developed. The MVIS Global Junior Gold Miners Index (MVGDXJ) has been licensed to underlie financial products with currently USD 5176.87 million in assets under management.

OVERVIEW | WEIGHTINGS | FUNDAMENTALS | STATISTICS | COMPONENTS | SPECIFICATIONS | PRODUCTS

Key Features

Size and Liquidity Requirements	Full MCap of at least 150 mln USD. Three month average-daily-trading volume of at least 1 mln USD at a review and also at the previous two reviews. At least 250,000 shares traded per month over the last six months at a review and also at the previous two reviews.
Pure-Play	Companies have to generate at least 50% revenues from gold or silver mining.
Diversification	Company weightings are capped at 8%.
Review	Quarterly.

INDEX	LAST CLOSE	OPEN	LAST	CHANGE	CHANGE (1Y)	RANGE (1Y)
<input checked="" type="checkbox"/> MVGDJ	646.20	646.20	642.66	-0.55%	-19.47%	618.63 - 839.70
<input checked="" type="checkbox"/> MVGDJTR	676.50	676.50	672.92	-0.53%	-18.77%	647.06 - 872.03

1D 1W 1M 6M 1Y 3Y 5Y YTD Inception Normalise

— MVIS GIB. Junior Gold Miners Price Index (%) -18.94
 — MVIS GIB. Junior Gold Miners Total Return Net Index (%) -18.21
 ⓘ 09/27/2017 - 09/27/2018 (1 year, 1 day)

Real-time Transparency

- Real-time index data and more at www.mvis-indices.com
 - Index compositions and weightings
 - Performance and charting tools
 - Index history and statistics
 - Factsheets
 - Video research
 - MVIS OneHundred expert commentaries
 - News email service to receive index information, review results, and the latest research
 - Corporate action service/RSS Feed
 - Licensing information

Index Statistics

MVIS Global Junior Gold Miners Index (MVGDXJ)

- Most liquid junior companies in the global gold and silver mining industry.
- Contains 69 components.
- Full Market Cap: USD 80.7 billion.
- Index history back to 31.12.2003.
- Licensed to underlie ETFs. AUM: USD 5.368 billion.



Data as of 31.12.2018.

Country and Size Breakdown

Top 5 Countries	Count	Weight	Size	Count	Weight
Canada	41	49.42%	Large-Cap	-	-
Australia	10	20.24%	Mid-Cap	18	63.33%
South Africa	5	13.85%	Small-Cap	45	35.54%
Peru	1	5.50%	Micro-Cap	6	1.13%
United States	4	3.51%	Total	69	100.00%

Liquidity

Average Daily Trading Volume	Period	Volume (USD)
Average	01.10.2018-31.12.2018	7,948,116
Average	01.07.2018-30.09.2018	7,526,438
Average	01.04.2018-30.06.2018	8,437,835
Weighted Average	01.10.2018-31.12.2018	16,737,859
Weighted Average	01.07.2018-30.09.2018	14,447,835
Weighted Average	01.04.2018-30.06.2018	15,397,642

Fundamental Data

Ratios (December 2018)	Value
Price/Earnings (incl. Negative) Trailing	-42.07
Price/Earnings (incl. Negative) Projected	25.02
Price/Book	0.99
Dividend Yield	1.04
Price/Sales	1.69

Index Statistics

MVIS Russia Index (MVRSX)

- Largest and most liquid companies in Russia.
- Contains 26 components.
- Full Market Cap: USD 493.94 billion.
- History back to 28.09.2007.
- Licensed to underlie ETFs. AUM: USD 1.567 billion.



Data as of 31.12.2018.

Country and Size Breakdown

Top 5 Countries	Count	Weight	Size	Count	Weight
Russia	19	81.26%	Large-Cap	17	80.18%
Netherlands	2	7.66%	Mid-Cap	9	19.82%
British Virgin Islands	2	3.88%	Small-Cap	-	-
Jersey	1	3.03%	Micro-Cap	-	-
United Kingdom	1	2.78%	Total	26	100.00%

Liquidity

Average Daily Trading Volume	Period	Volume (USD)
Average	01.10.2018-31.12.2018	20,430,897
Average	01.07.2018-30.09.2018	18,892,227
Average	01.04.2018-30.06.2018	26,150,778
Weighted Average	01.10.2018-31.12.2018	28,556,273
Weighted Average	01.07.2018-30.09.2018	25,762,481
Weighted Average	01.04.2018-30.06.2018	35,641,279

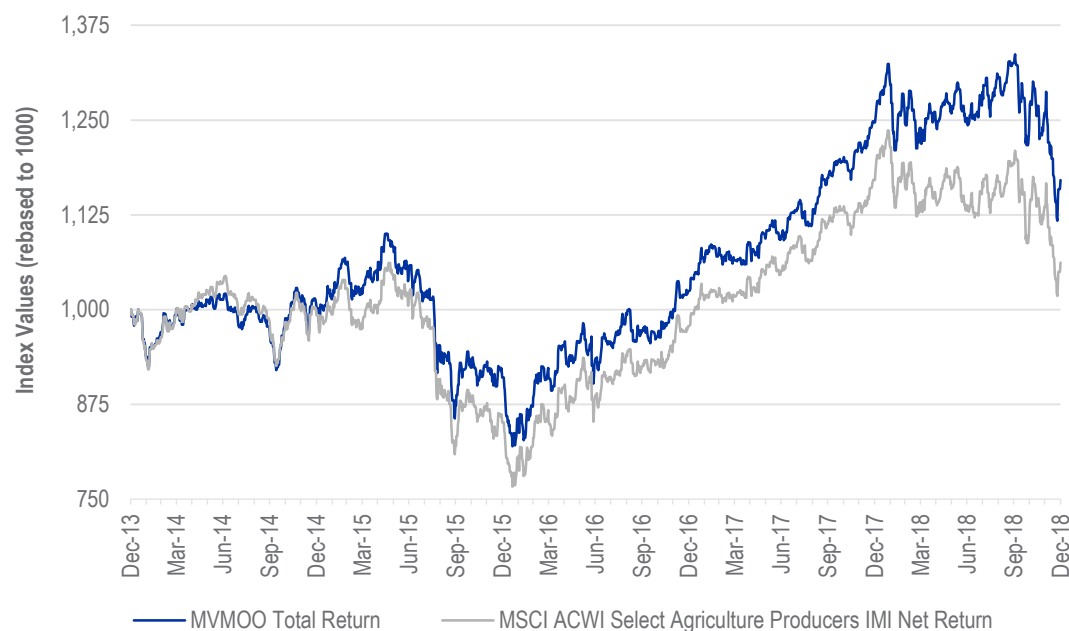
Fundamental Data

Ratios (December 2018)	Value
Price/Earnings (incl. Negative) Trailing	6.66
Price/Earnings (incl. Negative) Projected	6.00
Price/Book	0.95
Dividend Yield	5.49
Price/Sales	0.85

Index Statistics

MVIS Global Agribusiness Index (MVMOO)

- Largest and most liquid companies in the global agribusiness segment.
- Contains 57 components.
- Full Market Cap: USD 460.9 billion.
- History back to 29.12.2006.
- Licensed to underlie ETFs. AUM: 769.7 million.



Data as of 31.12.2018.

Country and Size Breakdown

Top 5 Countries	Count	Weight	Size	Count	Weight
United States	18	48.32%	Large-Cap	27	81.39%
Canada	1	7.20%	Mid-Cap	25	17.33%
Norway	4	6.97%	Small-Cap	5	1.28%
Japan	4	6.79%	Micro-Cap	-	-
Australia	4	3.84%	Total	57	100.00%

Liquidity

Average Daily Trading Volume	Period	Volume (USD)
Average	01.10.2018-31.12.2018	44,108,586
Average	01.07.2018-30.09.2018	40,528,648
Average	01.04.2018-30.06.2018	43,759,384
Weighted Average	01.10.2018-31.12.2018	105,377,117
Weighted Average	01.07.2018-30.09.2018	95,729,622
Weighted Average	01.04.2018-30.06.2018	105,615,461

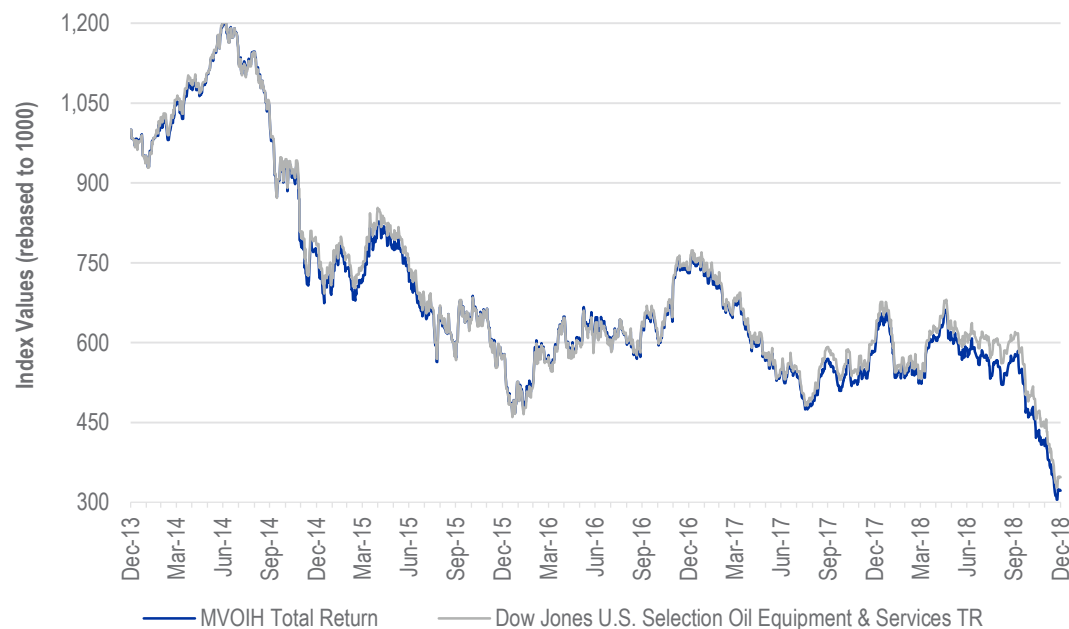
Fundamental Data

Ratios (December 2018)	Value
Price/Earnings (incl. Negative) Trailing	22.16
Price/Earnings (incl. Negative) Projected	18.12
Price/Book	2.18
Dividend Yield	1.61
Price/Sales	0.98

Index Statistics

MVIS US Listed Oil Services 25 Index (MVOIH)

- Largest and most liquid US-listed companies in the oil services sector.
- Contains 25 components.
- Full Market Cap: USD 146.52 billion.
- History back to 29.09.2000.
- Licensed to underlie ETFs. AUM: USD 1.20 billion.



Data as of 31.12.2018.

Country and Size Breakdown

Top 5 Countries	Count	Weight	Size	Count	Weight
United States	14	50.04%	Large-Cap	6	56.98%
Curacao	1	20.18%	Mid-Cap	7	25.80%
United Kingdom	4	11.39%	Small-Cap	12	17.23%
Luxembourg	1	4.83%	Micro-Cap	-	-
Switzerland	1	4.44%	Total	25	100.00%

Liquidity

Average Daily Trading Volume	Period	Volume (USD)
Average	01.10.2018-31.12.2018	94,796,349
Average	01.07.2018-30.09.2018	83,638,790
Average	01.04.2018-30.06.2018	101,617,417
Weighted Average	01.10.2018-31.12.2018	234,534,966
Weighted Average	01.07.2018-30.09.2018	192,061,532
Weighted Average	01.04.2018-30.06.2018	222,515,248

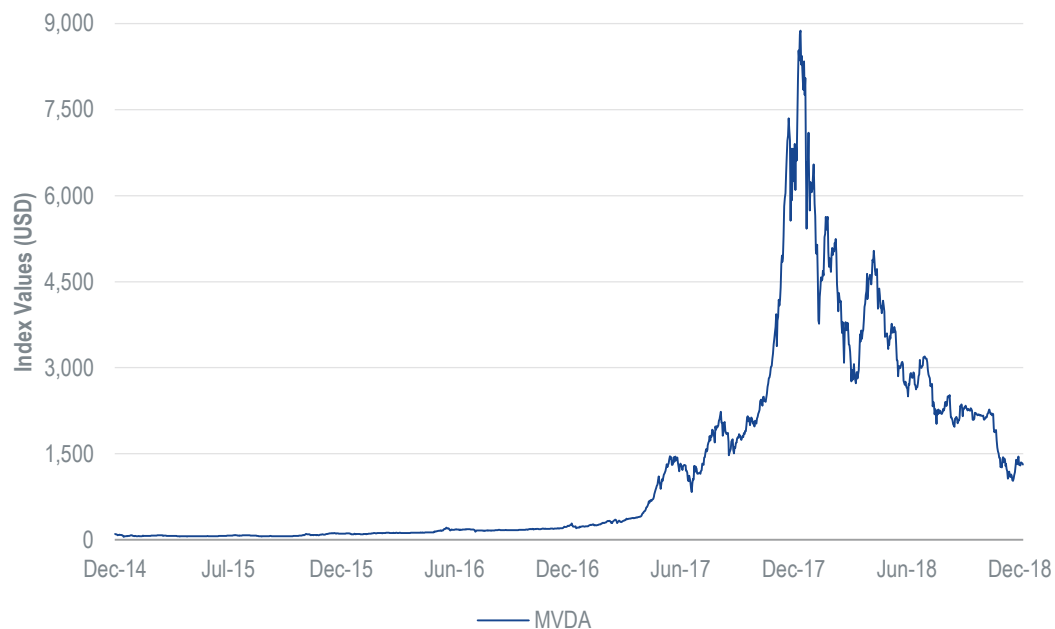
Fundamental Data

Ratios (December 2018)	Value
Price/Earnings (incl. Negative) Trailing	-15.98
Price/Earnings (incl. Negative) Projected	-259.39
Price/Book	0.99
Dividend Yield	2.33
Price/Sales	1.11

Index Statistics

MVIS CryptoCompare Digital Assets 100 Index (MVDA)

- A market cap-weighted index
- Tracks the performance of the 100 largest digital assets
- Benchmark/universe for the MVIS CryptoCompare Digital Assets Indices
- Contains three sub-indices (large, mid and small capitalization)
- Full Market Cap: USD 123.35 billion
- Index history back to 31 December 2014
- No liquidity screen



Components

Top 5 Components

Bitcoin	54.04%
XRP	11.94%
Ethereum	11.33%
Bitcoin Cash	2.27%
EOS	1.87%
Other	18.54%

Liquidity

Average Daily Trading Volume	Period	Volume (USD)
Average	1 Month December Review	84,409,161
Weighted Average	1 Month December Review	1,716,276,795

Fundamental Data

Index Performance	Value	Index Records	Value
Year-to-Date Performance	-80.94%	All Time High/Low	8,877 / 50
1-Year Performance	-80.94%	52-Weeks High/Low	8,877 / 1,030
Since Inception	90.25%	Quarter High/Low	8,877 / 1,030
		Month High/Low	1,450 / 1,030

Data as of 31.12.2018.

Index Statistics

Performance of Selected MVIS Indices versus Peer Indices

Performance	MVIS Russia	Peer Index	MVIS Global Junior Gold Miners	Peer Index	MVIS Global Agribusiness	Peer Index	MVIS US Listed Oil Services 25	Peer Index
YTD	23%	27%	26%	25%	15%	14%	34%	34%
2017	5%	5%	6%	12%	22%	20%	-20%	-18%
2016	47%	55%	75%	55%	13%	15%	28%	29%
2015	1%	4%	-19%	-25%	-9%	-14%	-25%	-27%
2014	-44%	-46%	-21%	-12%	0%	-1%	-24%	-22%
2013	-1%	1%	-61%	-54%	7%	5%	26%	29%
2012	13%	14%	-15%	-8%	18%	18%	2%	-1%
Since 2012	-19%	-9%	-59%	-51%	26%	11%	-59%	-55%

Risk Statistics of Selected MVIS Indices versus Peer Indices

	MVIS Russia	Peer Index	MVIS Global Junior Gold Miners	Peer Index	MVIS Global Agribusiness	Peer Index	MVIS US Listed Oil Services 25	Peer Index
Volatility	21%	25%	23%	22%	14%	13%	30%	30%
Correlation		93%		95%		96%		100%
Alpha		-6%		-5%		4%		-5%
Beta		0.80		0.98		0.99		0.99

Alpha - here defined as the excess rate of return of MVIS Indices relative to peer indices.

Beta - here defined as the measure of the volatility, or systematic risk of MVIS Indices in comparison to peer indices.

Data as of 31.12.2018. Risk data based on 250 days.

MVIS Indices Underlying Exchange Traded Products

Type	Underlying Index	Index Ticker	AUM*	Type	Underlying Index	Index Ticker	AUM*
Hard Assets / Sector	MVIS Global Junior Gold Miners	MVGDXJTR	5368.53	Country (continued)	MVIS Brazil Small-Cap	MVBRFTR	94.72
	MVIS US Listed Oil Services 25	MVOIHTR	1200.99		MVIS GDP Africa	MVAFKTR	54.99
	MVIS US Listed Semiconductor 25	MVSMHTR	784.21		MVIS Indonesia	MVIDXTR	46.39
	MVIS Global Agribusiness	MVMOOTR	769.70		MVIS Egypt	MVEGPTTR	33.90
	MVIS Global Mortgage REITs	MVMORTTR, MVMORT	610.89		MVIS Russia Small-Cap	MVRSXJTR	33.50
	MVIS US Listed Biotech 25	MVBBHTR	387.34		MVIS Poland	MVPLNDTR	13.14
	MVIS US Listed Pharmaceutical 25	MVPPHTR	229.12	Bonds	MVIS US Investment Grade Floating Rate	MVFLTR	618.10
	MVIS US Business Development Companies	MVBIZDTG	181.77		MVIS EM Aggregate Bond	MVEMAG	25.55
	MVIS US Listed Retail 25	MVRTHTR	107.33	Australia	MVIS Australia Equal Weight (AUD)	MVMVWTRG	421.53
	MVIS Global Rare Earth/Strategic Metals	MVREMSTR	97.51		MVIS Australia A-REITs (AUD)	MVMVATRG	96.28
	MVIS Global Coal	MVKOLTR	54.76		MVIS Australia Small-Cap Dividend Payers (AUD)	MVMVSTRG	37.70
	MVIS Global Oil Refiners	MVCRAKTR	44.28		MVIS Australia Energy & Mining (AUD)	MVMVRTRG	34.28
	MVIS Global Unconventional Oil & Gas	MVFRAKTR	32.29		MVIS Australia Banks (AUD)	MVMVBTRG	27.38
	MVIS Global Uranium & Nuclear Energy	MVNLRTR	26.00				
	MVIS Global Gaming	MVBJKTR	25.59				
	MVIS eSports & Video Gaming	MVESPTR	5.38				
	Country	MVIS Russia	MVRSXTR, MVRSX	1567.07			
		MVIS Vietnam	MVVMNTR	318.49			
		MVIS India Small-Cap	MVSCIFTR	187.94			

* in mln USD.

Data as of 31.12.2018.

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Important Disclosure

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