



# CROCI®

## CROCI INTELLECTUAL CAPITAL STRATEGY

January 2021

Marketing Material.

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# 1. WHAT IS INTELLECTUAL CAPITAL?

# INTELLECTUAL CAPITAL: INVESTING IN KNOWLEDGE



An innovative Darwinian survival-of-the-fittest approach to investing, in a world of economic stagnation and low yields.

The advance of human endeavor has always relied on the accumulation of knowledge. As Benjamin Franklin said in 1758, “an investment in knowledge pays the best interest.”

It's no different today. To thrive—even just to survive—companies have to **innovate**.

Whether it's **research & development** or **brand creation**, more than ever companies need **intellectual capital** to prosper.



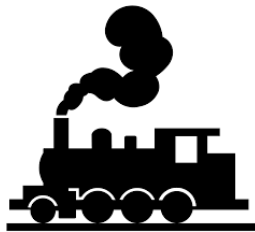
**CROCI Intellectual Capital** takes advantage of CROCI's unique and consistent understanding of knowledge capital to create a diversified and differentiated strategy which invests in global high quality innovators.

# KNOWLEDGE HAS DRIVEN ECONOMIC REVOLUTIONS

“**Knowledge is power**” – so said Francis Bacon, the English polymath and father of empiricism. He described the so-called **four great inventions**, the knowledge he thought responsible for bringing Europe out of the Middle Ages – **paper, printmaking, gunpowder and the compass**. Since then, of course, other knowledge-driven revolutions have followed:

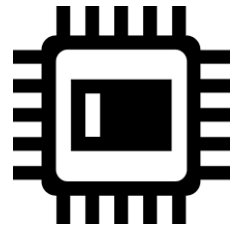
## Industrial Revolution – 1760s+

- Mechanisation
- Steam power
- Metal manipulation
- Railways



## Scientific Revolution – 1940-70s

- Electronics
- Computing and automation
- Telecommunications



## Technical Revolution – 1870s+

- Electricity, gas & oil
- Combustion engine
- Chemical synthesis



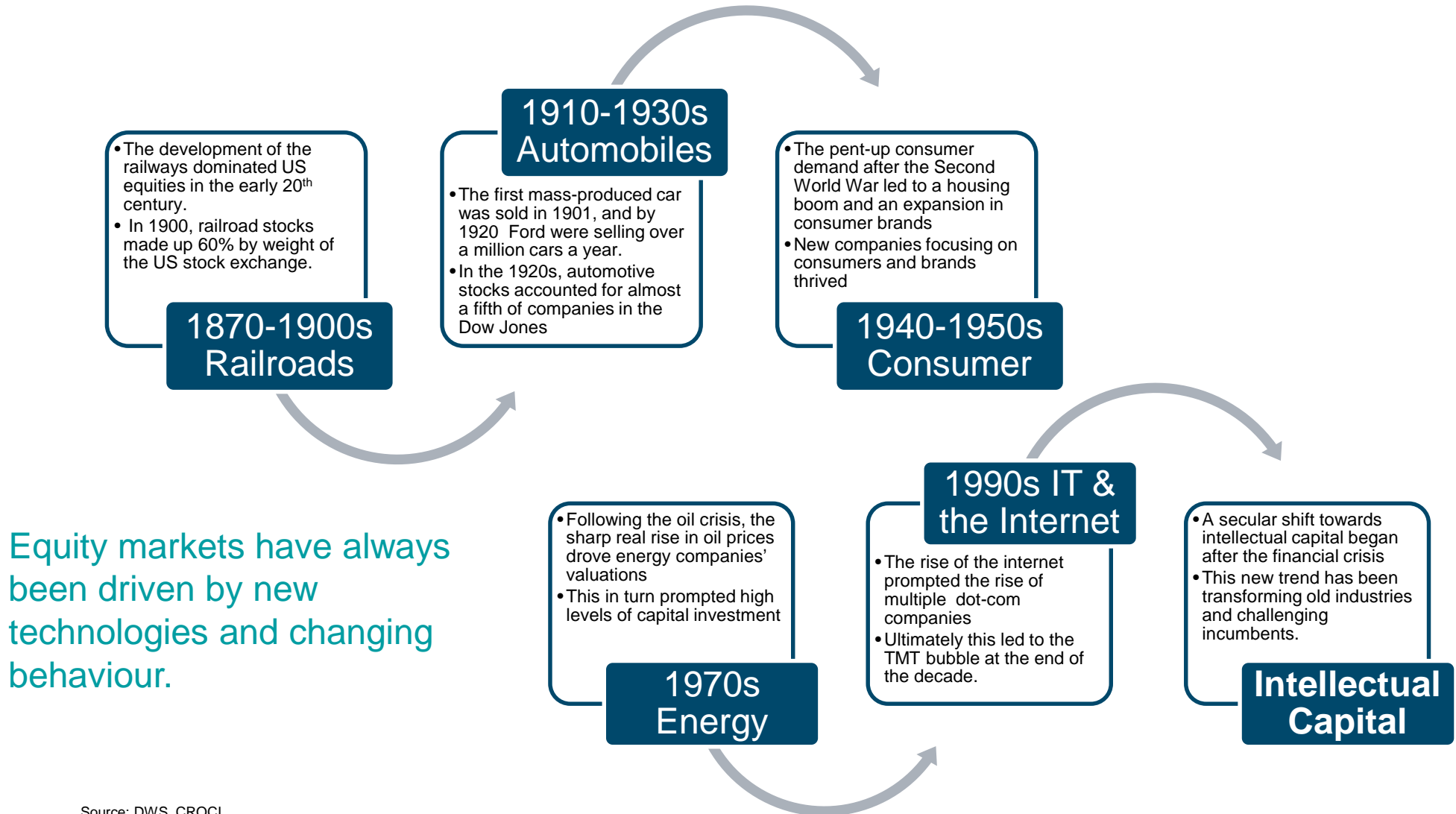
## Digital/Information Revolution - now

- Requiring the least physical capital
- Reliant on intellectual capital
- Crosses multiple disciplines:  
e.g. genetics, AI, robotics, brands



Source: DWS

# MARKETS DRIVEN BY INNOVATION



Source: DWS, CROCI

## 2. CROCI & INTELLECTUAL CAPITAL

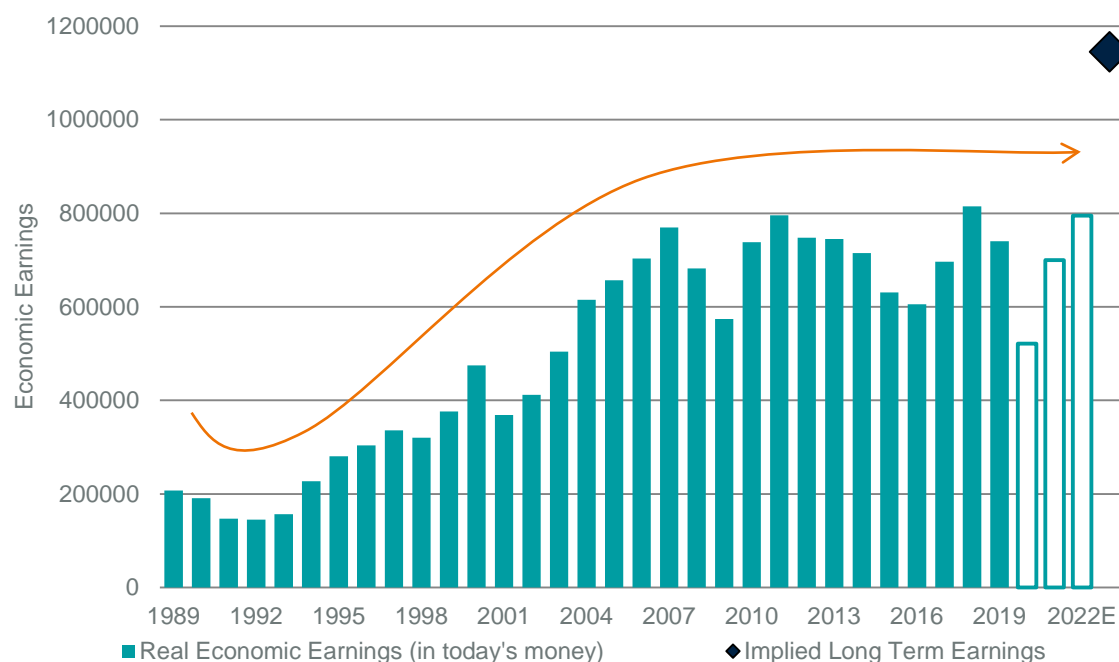
# EARNINGS GROWTH HAS BEEN VERY WEAK

Earnings growth has been very weak ever since the 2008 financial crisis. This presents a challenge for equity investors, as earnings ultimately drive share prices.

This group only contains companies with 30 years of comparable data.

Whilst these companies can obviously be classified as mature, the picture does not change that much if all the companies in our coverage universe were included in the analysis.

Real Economic Earnings (USD mn) of 1989 Comparable Companies



Source: DWS, CROCI. The chart shows inflation-adjusted Economic Earnings of companies (excluding Financials and Real Estate) for which CROCI has comparable data going back to 1989. Data in USD mn as available on 20 Jan. 2021. Past performance is not indicative of future returns.

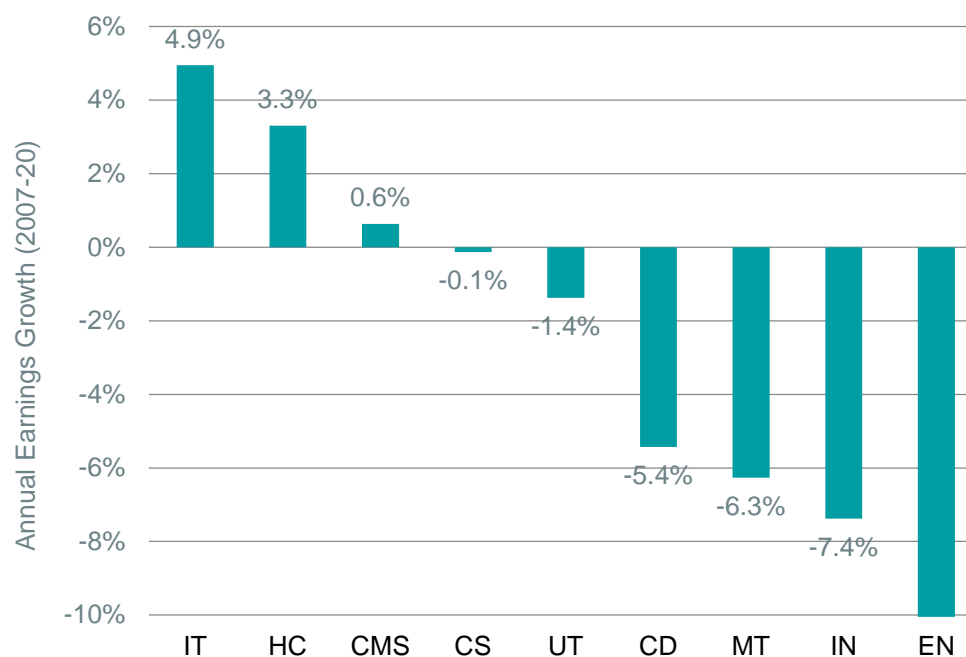
# INTELLECTUAL CAPITAL: A PRIME GROWTH ENGINE



Growth has come from companies with Intellectual Capital – whether in the form of R&D or strong brands. Such assets have become the strongest engine of growth<sup>1</sup> in modern economies.

By 2020, Information Technology and Health Care have taken leading roles, thanks to steady growth over the past decade.

Annualised Economic Earnings Growth: 2007-2020



In 2008, Energy accounted for the largest portion of economic profits.

**Key**  
CMS Communication Services  
CD Consumer Discretionary  
CS Consumer Staples  
EN Energy  
HC Health Care  
IND Industrials  
IT Information Technology  
MT Materials  
UT Utilities

For illustrative purposes only. <sup>1</sup>Source: Company reports, DWS and CROCI. The chart shows annualised Economic Earnings growth of non-financial sectors between 2007 and 2019 based on the current sector classification. Data as on 20 Jan. 2021. Past performance is not indicative of future returns.

# INTELLECTUAL CAPITAL HAS BEEN A PRIME ENGINE OF GROWTH



	# of companies	Economic Earnings Median growth (annualised '07-'20)
Companies with brands	78	1.38%
Companies with R&D	296	0.95%
Companies without IC	394	-3.80%
Total	768	-1.32%

Source: DWS and CROCI. The table shows median annualised inflation-adjusted Economic Earnings growth of companies in CROCI Coverage (excluding Financials and Real Estate) with and without brands and R&D. This table excludes certain companies with negative earnings whose growth could not be calculated. Data as available on 20 Jan. 2021

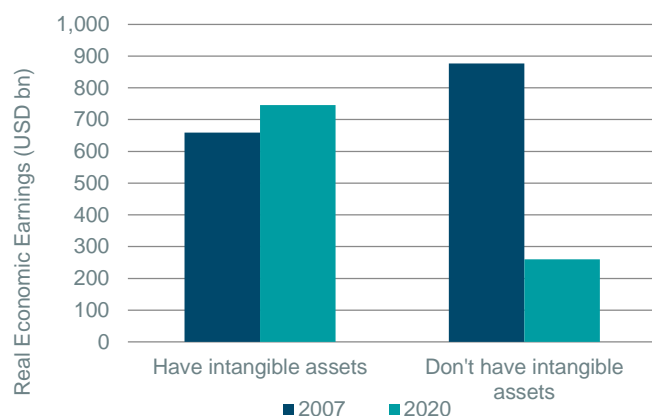
# EARNINGS GROWTH HAS COME FROM COMPANIES WITH INTELLECTUAL CAPITAL



Analysing CROCI's intellectual capital universe confirms that:

- Intellectual capital had much stronger earnings growth
- Prices reflected this, with substantial outperformance

Total Economic Earnings (USD bn.)



Total Market Cap (USD tn.)



For illustrative purposes only. Source: DWS CROCI, Aggregate data of companies in CROCI coverage (excluding Financials and Real Estate) with comparable data going back to 2007. Data as available on 20<sup>th</sup> Jan 2021.

However, existing solutions make it difficult to invest in this broad secular shift without

- speculating on narrow thematic bets (like robotics, genetics, social media etc.)
- or trying to target this trend with single sectors trackers – tends to miss the mark.

Past performance is not indicative of future returns.

# CAPTURING ECONOMIC STRUCTURAL CHANGE

## CROCI treats intellectual capital as a genuine asset

- Intangible expenses, such as Research & Development expenses (creating R&D) and Advertising expenses (creating Brands) can continue to generate revenues in the years after they are spent, so CROCI systematically:
  - Treats intangible expenses as capex NOT opex
  - Puts R&D and Brands onto the balance sheet
- Investment managers tend to think of R&D and brands separately rather than recognizing them as two sides of a coin: they are both intellectual capital.

### Estimated Economic Life of Intangible Assets

Pharmaceuticals (R&D)	10 to 15 years
Chemicals (R&D)	4 to 7 years
Automotive (R&D)	5 to 7 years
Engineering (R&D)	4 to 7 years
Technology (R&D)	3 to 4 years
Consumer Goods (Brands)	4 to 15 years

Source: DWS, CROCI. Data as of 31<sup>st</sup> Dec. 2020 No assurance can be given that any forecast, target or opinion will materialize.

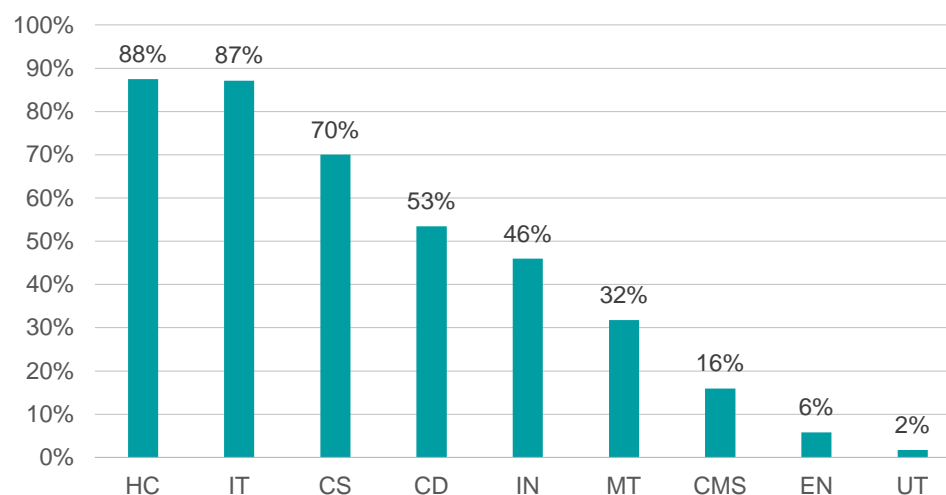
# COMPANIES WITH INTELLECTUAL CAPITAL ARE UBIQUITOUS

- Over 40% of the companies in CROCI's 900-stock coverage universe have intellectual capital, we estimate.
- IC may be more concentrated in obvious sectors like HC, IT and CS, but is also spread across most areas of the market. This allows the CROCI IC approach to be differentiated from specific “sector” approaches, permitting diversification.

*NB There have also been increasing shifts in sector boundaries, as tech companies take market share from the “old economy”, such as in Retail, Media and Banking.*

Companies in each sector with intellectual capital

High concentrations in Health Care, IT and Consumer Staples



Innovative stocks can also selectively be found in Materials (Specialty Chemicals) and Energy (Drillers).

Key

CMS Communication Services  
CD Consumer Discretionary  
CS Consumer Staples  
EN Energy  
HC Health Care  
IN Industrials  
IT Information Technology  
MT Materials  
UT Utilities

For illustrative purposes only. Source: DWS and CROCI. Data as of 31<sup>st</sup> Dec. 2020.

# COMPANIES WITH INTELLECTUAL CAPITAL ARE CHEAPER AND MORE PROFITABLE



## Operational and Valuation Characteristics of Companies With and Without IC

FY1 data as of 20 Jan. 2021	With IC	Without IC (ex Fin.)	Financials
<b>Assets</b>			
Accounting P/E	25.3x	20.0x	14.6x
Economic P/E	36.5x	37.8x	21.8x
Adj. CROCI P/B	3.68x	1.96x	1.09x
<b>Annualised Growth</b>			
Sales Growth (1Y)	7.5%	7.4%	-
Real Economic Earnings Growth (1Y)	12.8%	7.9%	-
<b>Profitability and Cash Flow</b>			
CROCI (RoC for Financials)	12.5%	4.1%	7.7%
FCF / Sales (Post-Tax)	12.2%	6.7%	-
<b>Leverage</b>			
Net Financial Liabs / M. Cap	10.4%	43.9%	-

Source: DWS and CROCI. The table shows selected median operational and valuation characteristics of companies with and without Intellectual Capital. Aggregate data of companies in CROCI's coverage of Developed and Emerging markets. Data as of 20 Jan. 2021

### 3. THE SOLUTION: CROCI INTELLECTUAL CAPITAL

# THE SOLUTION: CROCI INTELLECTUAL CAPITAL

## Objectives & Features



### **An investment strategy for the ‘knowledge economy’:**

- This strategy’s unique proposition is to invest in firms that have strong intellectual capital, in any region or industry.
- Invests in the broad secular shift towards intellectual capital without speculating on narrow thematic bets (like robots, genetics, social media etc.) or on single sectors.
- CROCI data provides direct comparability of R&D/brand investment, profitability, financial leverage

### **The approach uses economic earnings to determine stock weights:**

- Weighting intellectual capital owners by their earnings ensures an exposure to real value.
- Equal weighting is not as effective without a preceding value filter

# THE SOLUTION: CROCI INTELLECTUAL CAPITAL

## Objectives & Features



### What the CROCI Intellectual Capital Strategy seeks to avoid:

- NOT attempting to be a style investment: **it does not chase growth or momentum, and not limited to value**
- Seeks to avoid those firms that don't make the most of their intellectual capital, removing:
  - Companies with the lowest risk-adjusted CROCI (having poor potential growth and/or reduced investment in continued innovation).
  - Companies with the highest financial leverage (a proxy for maturity).
- The **final portfolio does not discriminate against firms perceived as “expensive” (which may include some of the most innovative companies)** – instead it is anchored in the company's level of profitability.

# SELECTION METHODOLOGY

## CROCI Intellectual Capital Strategy

### Strategy Description

- **Investment Objective:** to invest in firms that have strong intellectual capital, in any region or industry – but without limiting to exposure to only fashionable short-term trends
- Strategy is weighted by CROCI economic earnings in order to avoid discrimination against innovative but “expensive” companies
- Remove companies which are on the ‘banned list’ under the Minimum ESG Standards framework<sup>3</sup>
- Benchmark: MSCI World NR
- Performance drivers: exposure to intellectual capital and CROCI real earnings weightings
- Investment style: thematic with a modest value/quality tilt
- Holdings: 100
- Market capitalization: focus on large and mid caps
- Derivatives: no tactical use of derivatives

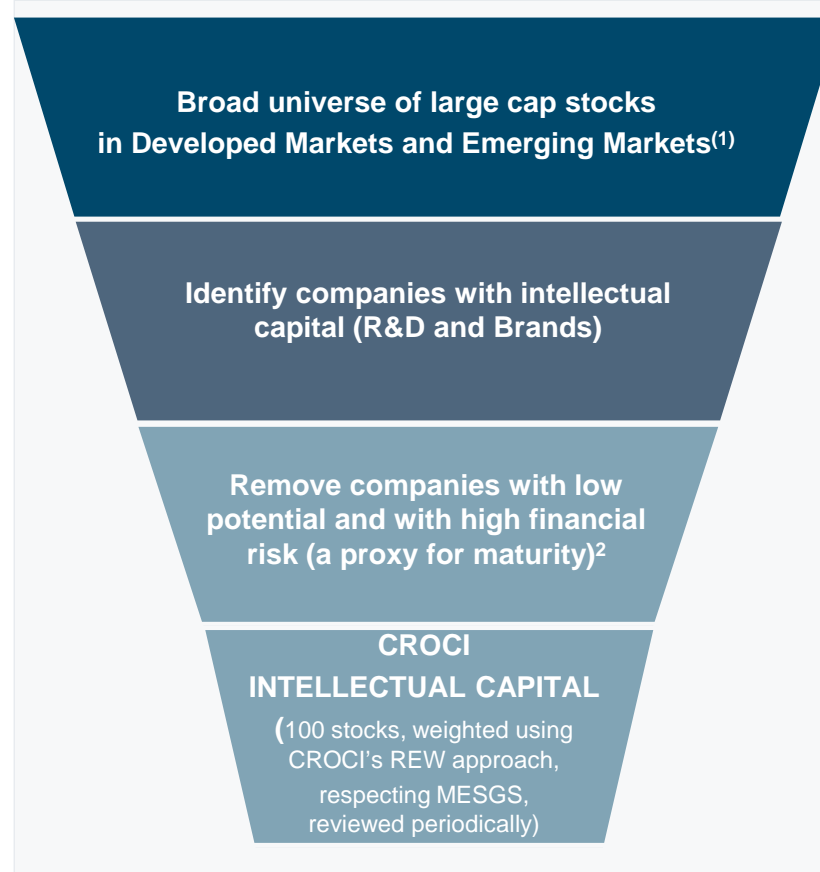
(1) That are included in the CROCI database

(2) Lowest risk-adjusted profitability by region and highest financial leverage by region

(3) Minimum ESG (MESGS) rating for the companies is provided by DWS ESG Engine & Solutions

Source: DWS

### Portfolio Construction



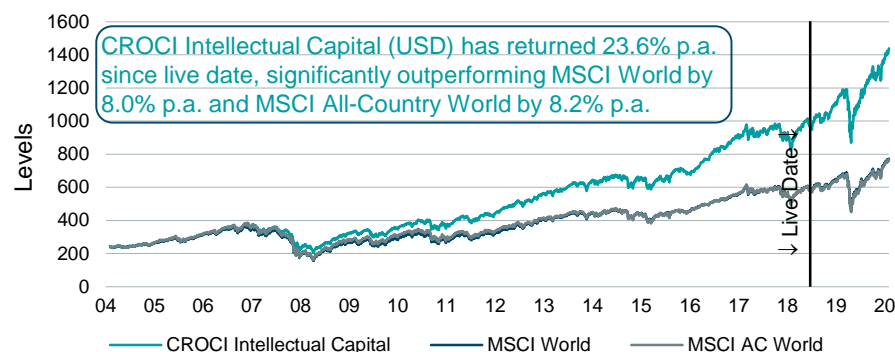
# CROCI INTELLECTUAL CAPITAL STRATEGY

Simulated data prior to 15 Apr. 2019

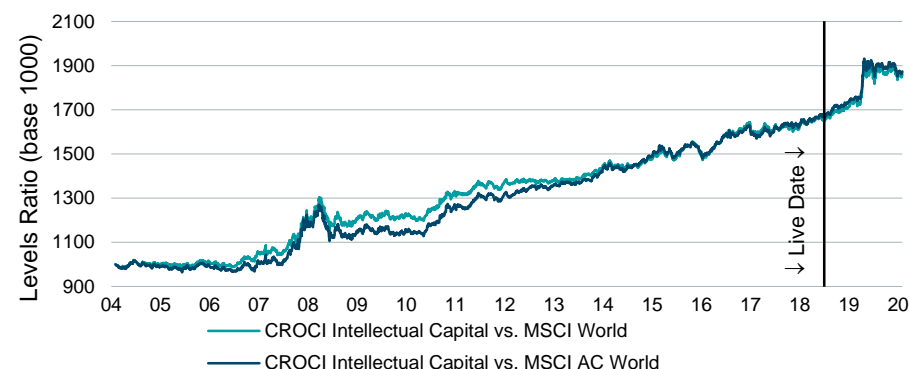


## HISTORICAL PERFORMANCE IN USD, 31 DEC. 2004 – 31 DEC. 2020\*

### STRATEGY PERFORMANCE



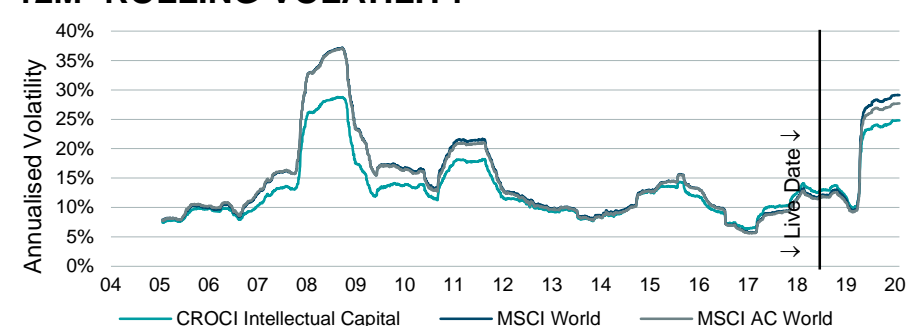
### RELATIVE PERFORMANCE VS. BENCHMARKS



### PERFORMANCE ANALYSIS IN USD

31 Dec. 2004 – 31 Dec. 2020	CROCI Intellectual Capital	MSCI World	MSCI All-Country World
Compounded Annual Growth	11.7%	7.5%	7.4%
Annualised Monthly Volatility	13.6%	15.6%	15.9%
Sharpe Ratio (1.39%)	0.76	0.39	0.38
Worst drawdown	-46.3%	-57.8%	-58.4%
Time to Recovery (months)	23	51	51
Calmar Ratio (1.39%)	0.22	0.10	0.10
Median monthly return	1.4%	1.3%	1.2%
Best monthly return	10.5%	12.8%	12.3%
Worst monthly return	-14.9%	-19.0%	-19.8%
% of months with gains	65.1%	63.0%	62.0%
Correlation		0.96	0.96
Tracking Error		4.8%	4.7%
Information Ratio		0.89	0.91

### 12M- ROLLING VOLATILITY



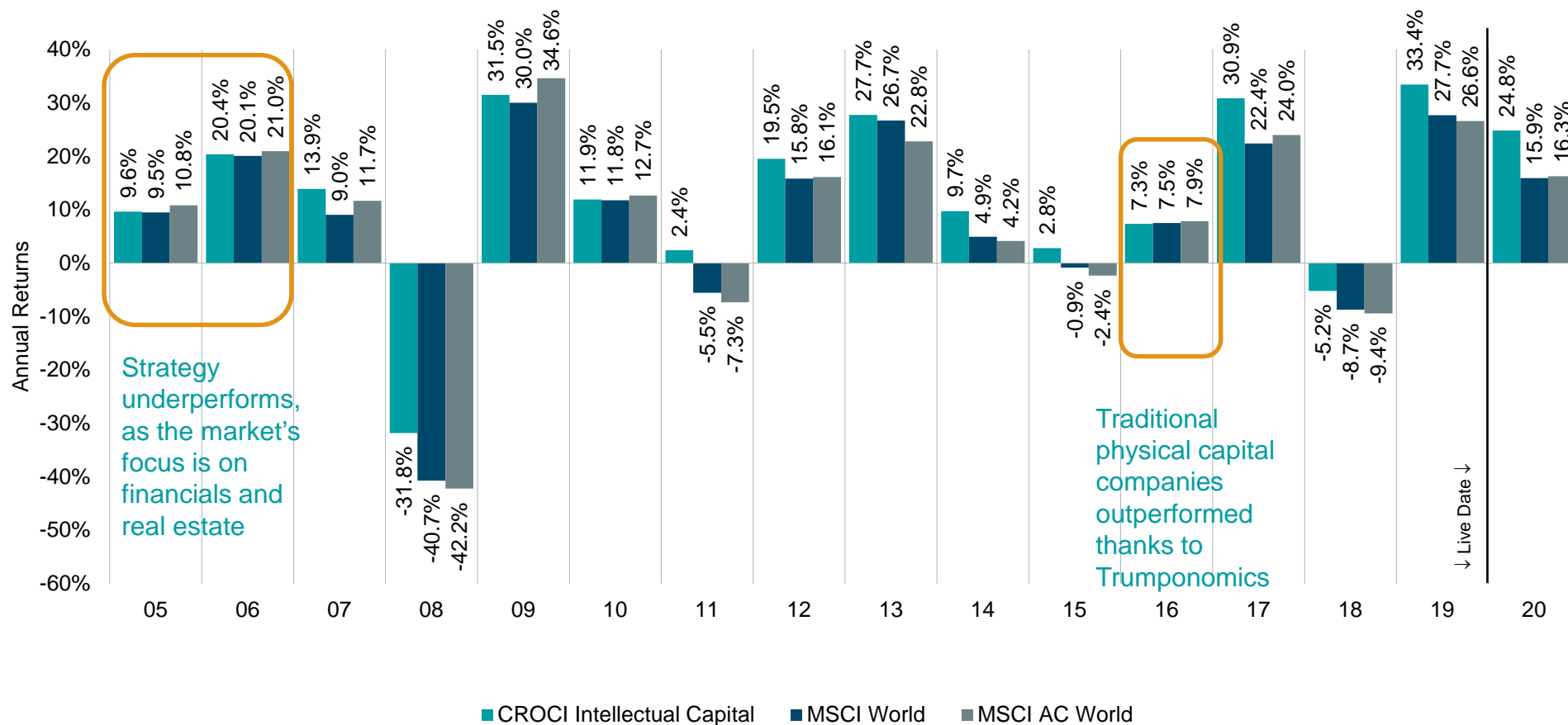
(\*) The CROCI Intellectual Capital Strategy has been run on a live basis since 15<sup>th</sup> Apr. 2019. Past performance, whether live or simulated, is not a reliable indicator of future results. All returns include reinvested dividends (gross of withholding tax) but do not include fees that might be charged on an investment product. It is not possible to invest directly in a strategy. The performance shown here is for model portfolios. The performance of any actual investment products may differ significantly. The CROCI team does not provide investment advice, stock recommendations or act in any other fiduciary capacity. Source: DWS, Bloomberg, 20 Jan. 2021

# CROCI INTELLECTUAL CAPITAL STRATEGY

Simulated data prior to 15 Apr. 2019



## ANNUAL NET TOTAL RETURNS IN USD, 31 DEC. 2004 – 31 DEC. 2020\*



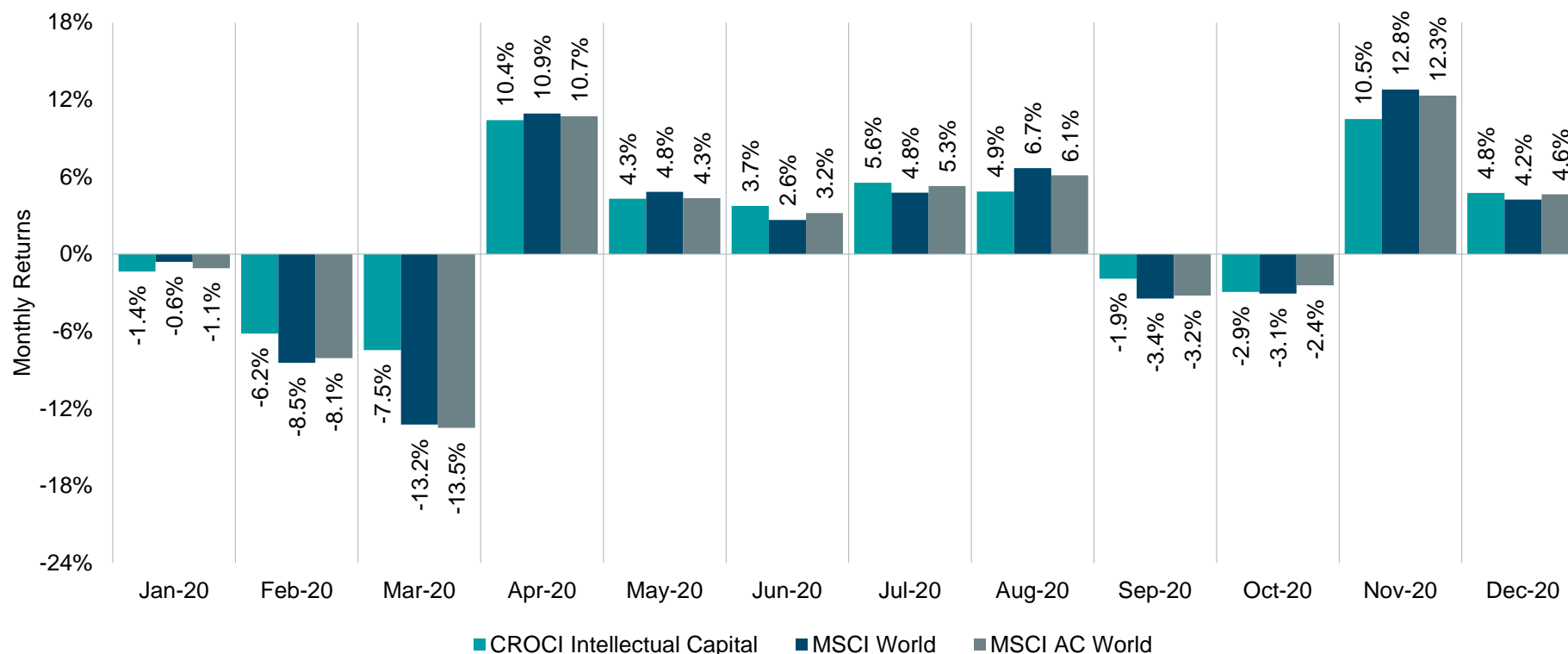
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# CROCI INTELLECTUAL CAPITAL STRATEGY

Simulated data prior to 15 Apr. 2019



## MONTHLY NET TOTAL RETURNS IN USD, 31 DEC. 2019– 31 DEC. 2020\*



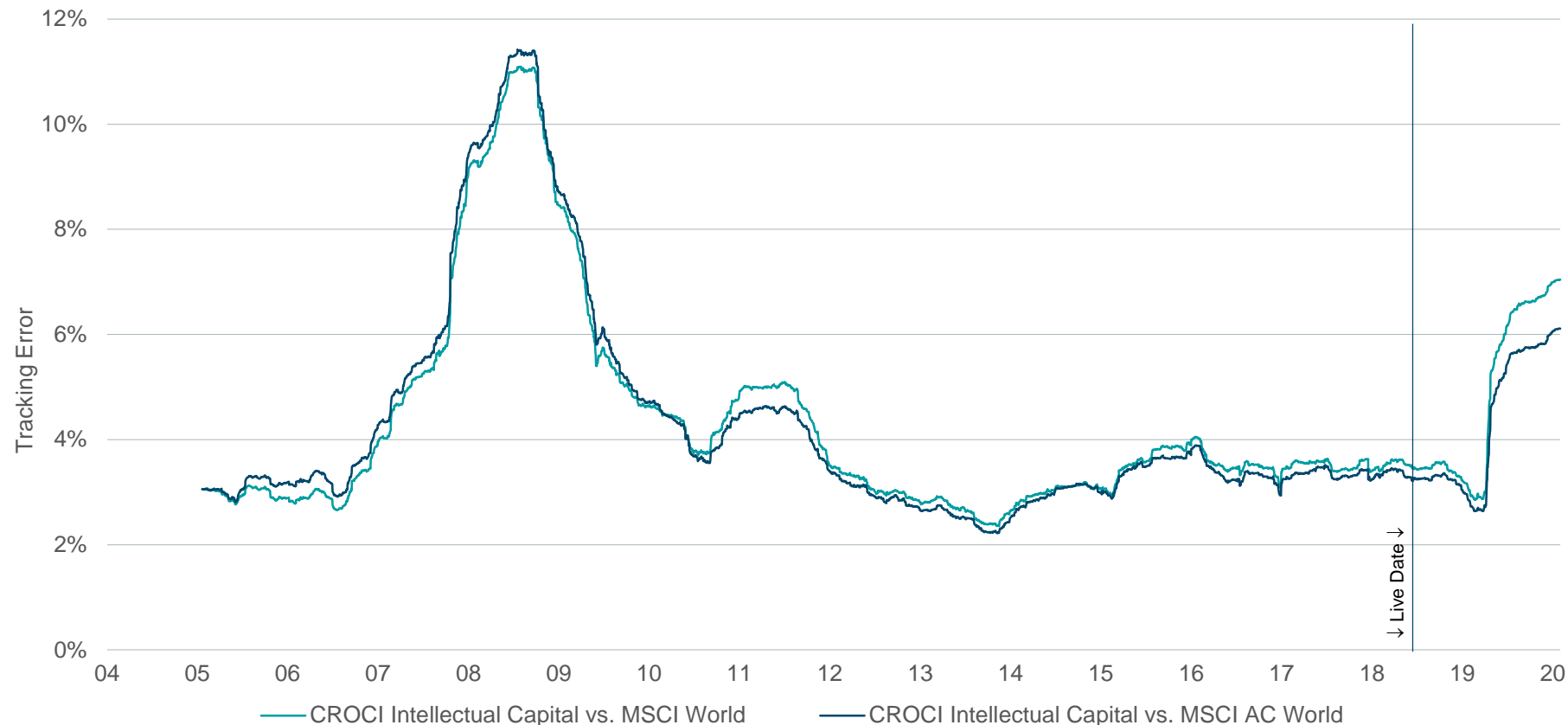
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# CROCI INTELLECTUAL CAPITAL STRATEGY

Simulated data prior to 15 Apr. 2019



## TRAILING 12M TRACKING ERROR, 31 DEC. 2004 – 31 DEC. 2020\*



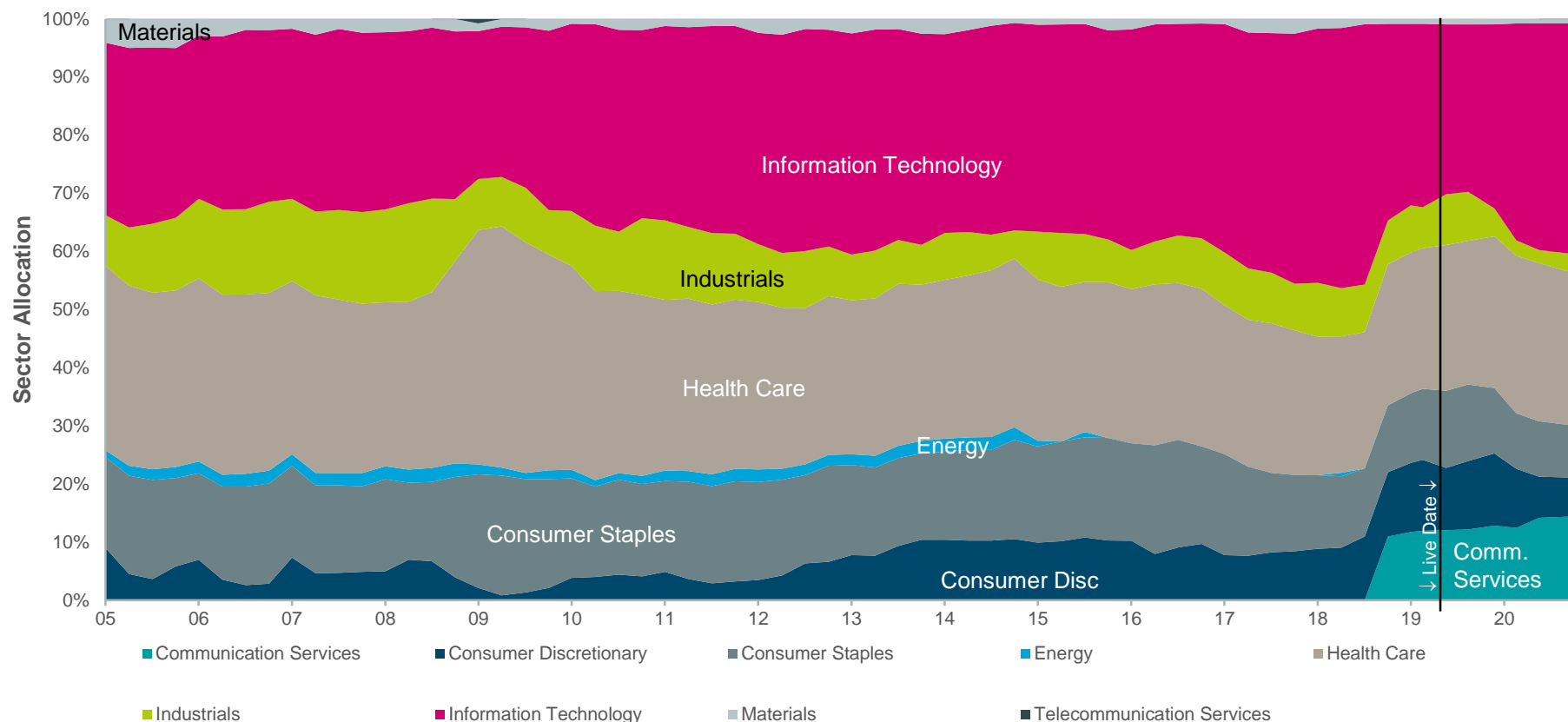
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# CROCI INTELLECTUAL CAPITAL STRATEGY

Simulated data prior to 15 Apr. 2019



## SECTOR ALLOCATIONS, 31 DEC. 2004 – 31 DEC. 2020\*



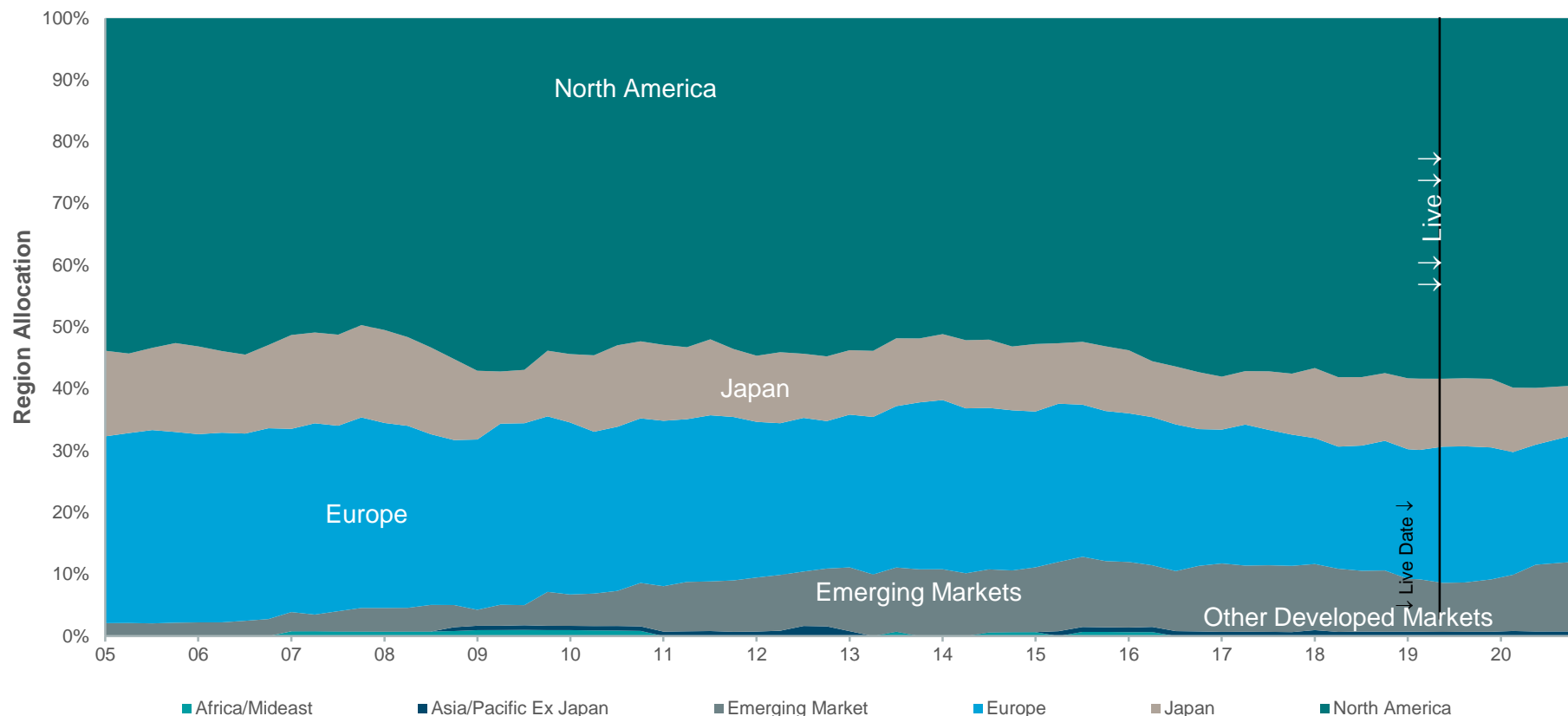
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# CROCI INTELLECTUAL CAPITAL STRATEGY

Simulated data prior to 15 Apr. 2019



## REGION ALLOCATIONS, 31 DEC. 2004 – 31 DEC. 2020\*



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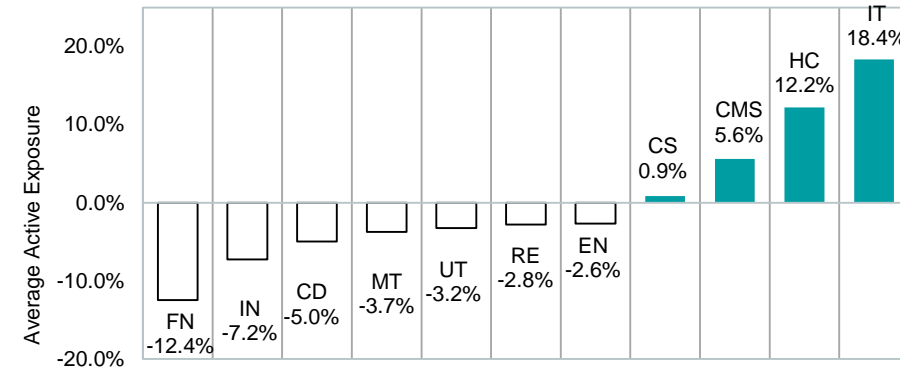
# 4Q 2020: CROCI INTELLECTUAL CAP VS. MSCI WORLD TR/DWS

## Total Return Attribution in USD, 30 Sep. 2020 – 31 Dec. 2020

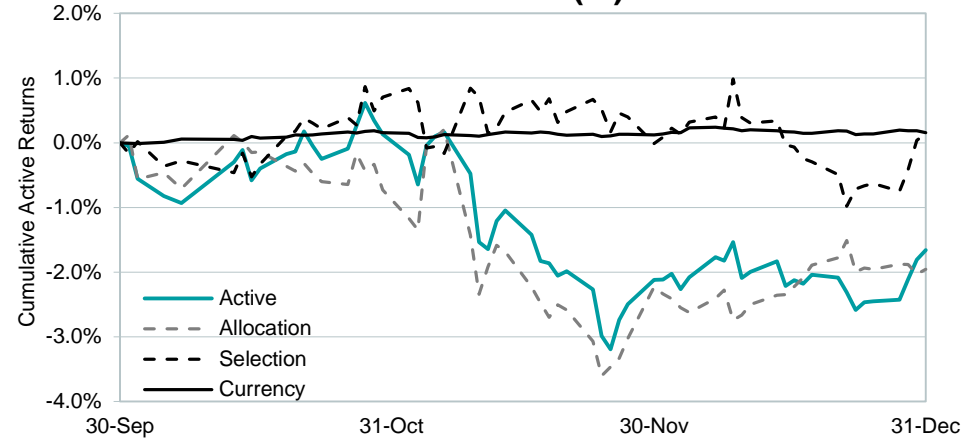
### RETURN ATTRIBUTION

Source of Return	Sector Allocation	Stock Selection	Total
Communication Services	0.1%	-0.4%	-0.3%
Consumer Discretionary	-0.1%	0.0%	-0.1%
Consumer Staples	-0.1%	0.0%	0.0%
Energy	-0.3%	0.0%	-0.3%
Financials	-1.1%	0.0%	-1.1%
Health Care	-0.9%	-0.6%	-1.5%
Industrials	-0.1%	-0.2%	-0.3%
Information Technology	0.1%	1.4%	1.5%
Materials	0.0%	0.0%	0.0%
Real Estate	0.1%	0.0%	0.1%
Utilities	0.2%	0.0%	0.2%
<b>Total Active (Local Currency)</b>	<b>-2.0%</b>	<b>0.1%</b>	<b>-1.8%</b>
Currency			0.2%
<b>Total Active</b>			<b>-1.7%</b>

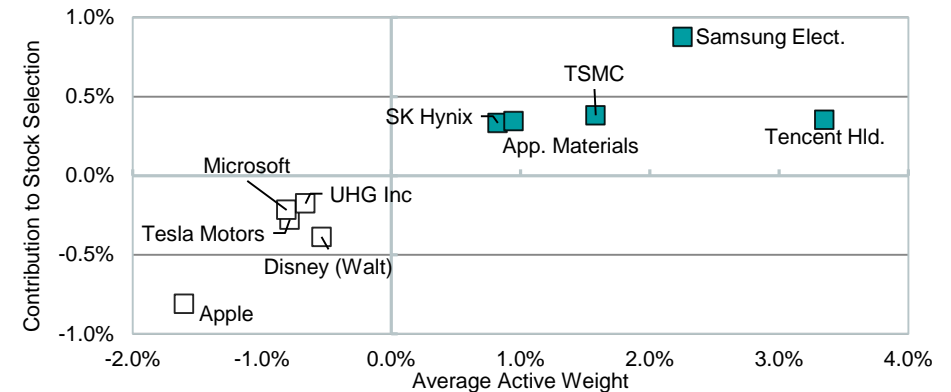
### AVERAGE ACTIVE EXPOSURE



### CUMULATIVE ACTIVE RETURNS (%)



### TOP VS. BOTTOM NAMES BY SELECTION EFFECT



The calculations presented herewith have been performed using MSCI Barra and may vary from the actual returns of the strategy due to different computational assumptions. **The CROCI Intellectual Capital Strategy did not exist prior to 15 Apr. 2019.** Past performance, whether live or simulated, is not a reliable indicator of future results. All returns include reinvested dividends and do not include fees that might be charged on an investment product. All pro-forma performance data before respective live dates is simulated and was calculated by means of retroactive application of the Strategy models. It is not possible to invest directly in a strategy or index. The performance shown here is for model portfolios. The performance of any actual investment products may differ significantly. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation. Source: DWS, MSCI Barra, 20 Jan. 2021

# 2020: CROCI INTELLECTUAL CAP VS. MSCI WORLD TR



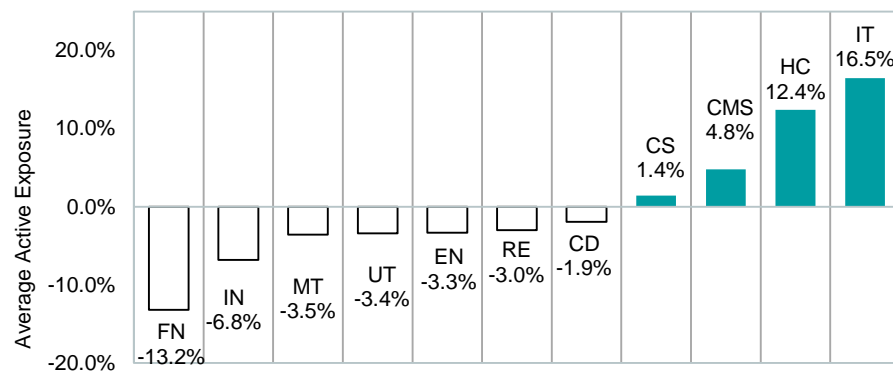
## Total Return Attribution in USD, 31 Dec. 2019 – 31 Dec. 2020

Simulated data prior to 15 Apr. 2019

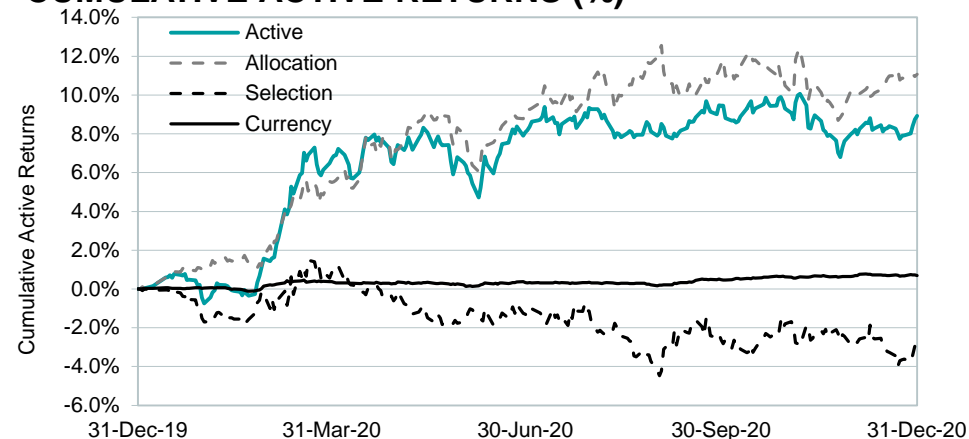
### RETURN ATTRIBUTION

Source of Return	Sector Allocation	Stock Selection	Total
Communication Services	0.4%	2.1%	2.4%
Consumer Discretionary	-0.4%	-2.1%	-2.5%
Consumer Staples	0.2%	-0.5%	-0.3%
Energy	2.3%	0.0%	2.3%
Financials	3.1%	0.0%	3.1%
Health Care	0.0%	-0.1%	-0.1%
Industrials	0.1%	0.5%	0.7%
Information Technology	4.3%	-2.6%	1.7%
Materials	-0.1%	-0.1%	-0.2%
Real Estate	0.7%	0.0%	0.7%
Utilities	0.4%	0.0%	0.4%
<b>Total Active (Local Currency)</b>	<b>11.1%</b>	<b>-2.8%</b>	<b>8.2%</b>
Currency			0.7%
<b>Total Active</b>			<b>8.9%</b>

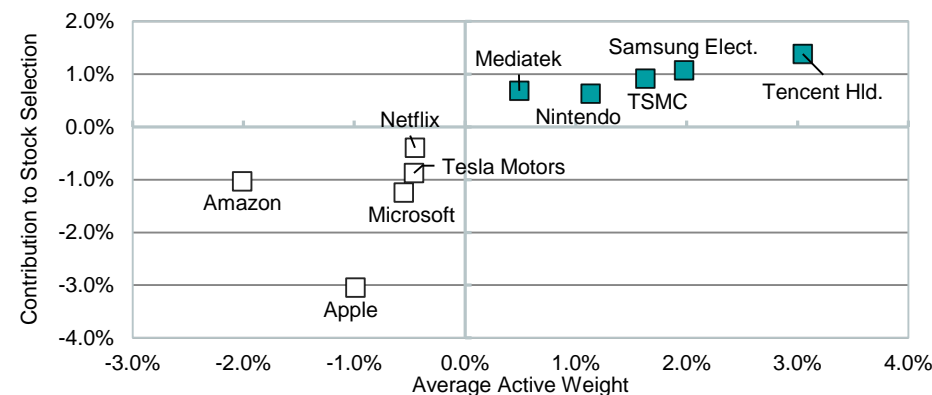
### AVERAGE ACTIVE EXPOSURE



### CUMULATIVE ACTIVE RETURNS (%)



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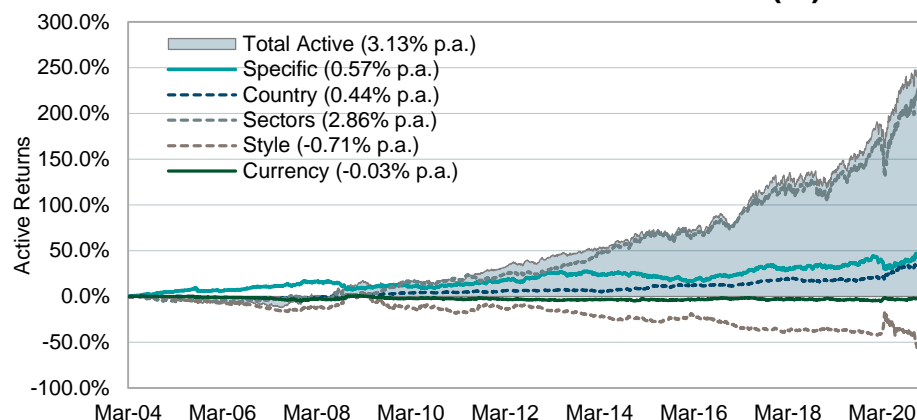
# CROCI INTELLECTUAL CAPITAL VS. MSCI WORLD TR



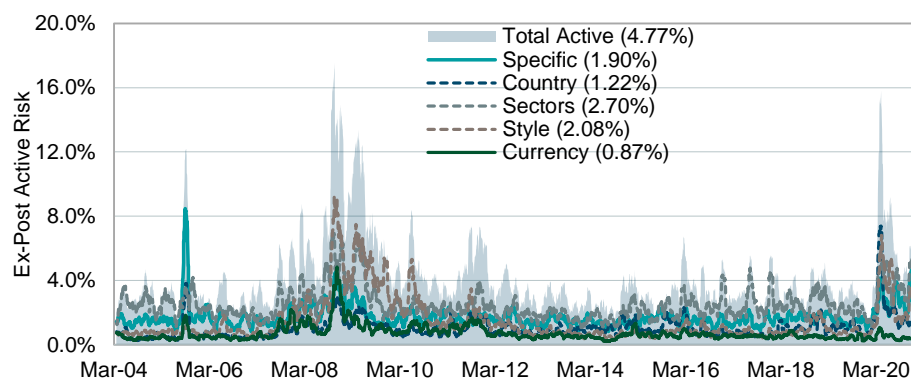
## Multifactor Performance Attribution in USD, 1 Mar. 2004 - 31 Dec. 2020

Simulated data prior to: 15 Apr. 2019

### CUMULATIVE ACTIVE RETURN ATTRIBUTION (%)



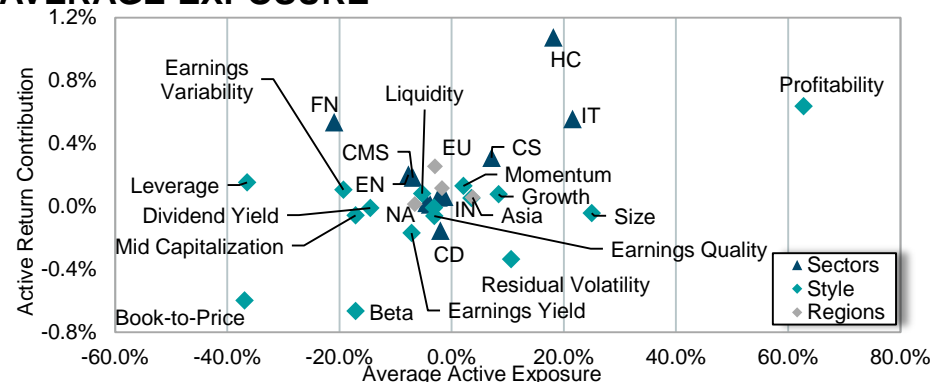
### ROLLING PERIOD EX-POST ACTIVE RISK (%)



Source: DWS, MSCI Barra, 18 Jan. 2021

The calculations presented herewith have been performed using MSCI Barra and may vary from the actual returns of the strategy due to different computational assumptions. **The CROCI Intellectual Capital Strategy is live from 15 Apr. 2019.** Past performance, whether live or simulated, is not a reliable indicator of future results. All returns include reinvested dividends and do not include fees that might be charged on an investment product. All pro-forma performance data before respective live dates is simulated and was calculated by means of retroactive application of the Strategy models. It is not possible to invest directly in a strategy or index. The performance shown here is for model portfolios. The performance of any actual investment products may differ significantly. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation

### FACTOR ACTIVE RETURN CONTRIBUTION VS. AVERAGE EXPOSURE



### BEST-WORST POLICIES BY INFORMATION RATIO

Top Five (Ann. Contrib.)	Bottom Five (Ann. Contrib.)
Growth(0.08%)	Book-to-Price(-0.60%)
Profitability(0.64%)	Residual Volatility(-0.34%)
Consumer Staples(0.31%)	Earnings Yield(-0.17%)
Health Care(1.07%)	Earnings Quality(-0.06%)
Investment Quality(0.05%)	Consumer Discretionary(-0.16%)

\*Average Active Exposure to Risk Factor is represented as negative (Red) or positive (Green)

# CROCI INTELLECTUAL CAPITAL STRATEGY



## OPERATIONAL CHARACTERISTICS\*

	CROCI Intellectual Capital ( <u>weighted average</u> with respect to Oct. 2020 portfolio; weights as of 31 Dec. 2020)	Selection Pool (CROCI coverage of DM + EM, ex Financials/RE ~826 stocks), <u>cap weighted</u>	The CROCI Intellectual Capital strategy exhibits
All characteristics based on underlying FY1 company data as of 1 Jan. 2021			
<b><u>Growth</u></b>			
Sales Growth	13.2%	11.7%	<ul style="list-style-type: none"><li>- good Real Economic Earnings growth;</li><li>- high profitability (primarily due to high margins);</li><li>- very high cash conversion of sales, and competitive dividend payouts;</li><li>- low financial leverage</li><li>- an Economic P/E still several points below the market (in part because of the earnings element of weighting) and FCF Yield above the market.</li></ul>
Real Economic Earnings Growth	13.3%	14.1%	
<b><u>Profitability and FCF conversion</u></b>			
CROCI	20.0%	14.1%	
EBITDA Margin	33.4%	24.8%	
FCF / Sales	21.1%	14.6%	
<b><u>Financial Leverage</u></b>			
Financial Liabilities / Mcap	-1.1%	2.9%	
<b><u>Valuation</u></b>			
Economic P/E	32.9x	43.5x	
Accounting P/E	27.4x	33.3x	
EV / NCI (Economic P/B)	6.6x	6.1x	
Accounting P/B	5.9x	7.5x	
FCF Yield	3.8%	3.1%	
Div Yield	1.0%	0.9%	

(\*) The CROCI Intellectual Capital Strategy has been run on a live basis since 15<sup>th</sup> Apr. 2019. Past performance, whether live or simulated, is not a reliable indicator of future results. Performance includes reinvested dividends (net of withholding tax) but does not include any product fees. It is not possible to invest directly in a strategy. The performance shown here is for model portfolios; performance of any actual investment products may differ significantly. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation. Please refer to slide 'Key Risks'. Source: DWS, 20 Jan. 2021

# CROCI INTELLECTUAL CAPITAL STRATEGY

## PORTFOLIO AS OF 13 OCT. 2020

### TOP 25 HOLDINGS AND SUMMARY STATISTICS\*



Company Name	Weight
Alphabet	4.34%
Facebook	3.66%
Tencent Holdings Ltd.	3.33%
Apple	2.71%
Microsoft Corporation	2.51%
Samsung Electronics Co.Ltd.	2.03%
Johnson & Johnson	1.58%
Roche Holding AG	1.50%
Taiwan Semiconductor Manufacturing Co.Ltd.	1.49%
Intel Corporation	1.46%
Nintendo Co.Ltd.	1.36%
Visa	1.33%
Bristol-Myers Squibb Company	1.31%
Merck & Co.	1.31%
Bridgestone Corporation	1.28%
Oracle Corporation	1.26%
Pfizer	1.24%
Procter & Gamble Company	1.23%
Broadcom	1.20%
Cisco Systems	1.17%
PepsiCo	1.15%
Sanofi	1.10%
Mastercard Incorporated	1.09%
Novo Nordisk	1.07%
SAP SE	1.06%

Overall number of stocks	100 stocks
% of portfolio in top 25 holdings	42.77%
Largest single stock weight	4.34%
Median single stock weight	0.83%
Smallest single stock weight	0.43%

(\*) The CROCI Intellectual Capital Strategy has been run on a live basis since 15<sup>th</sup> Apr. 2019. Past performance, whether live or simulated, is not a reliable indicator of future results. All returns include reinvested dividends (net of withholding tax) but do not include fees that might be charged on an investment product. It is not possible to invest directly in a strategy. The performance shown here is for model portfolios. The performance of any actual investment products may differ significantly. The CROCI team does not provide investment advice, stock recommendations or act in any other fiduciary capacity. Source: DWS, 20 Jan. 2021

## 4. APPENDIX

# PUTTING IC ONTO THE BALANCE SHEET:

## CASE STUDIES



This unique economic treatment can substantially impact a company's 'real' profitability, helping to normalize comparisons with companies whose cash flows are more predominantly generated by physical capital.

*(NB Intangible intensity below is the ratio of net capitalized intangible assets to total net assets).*

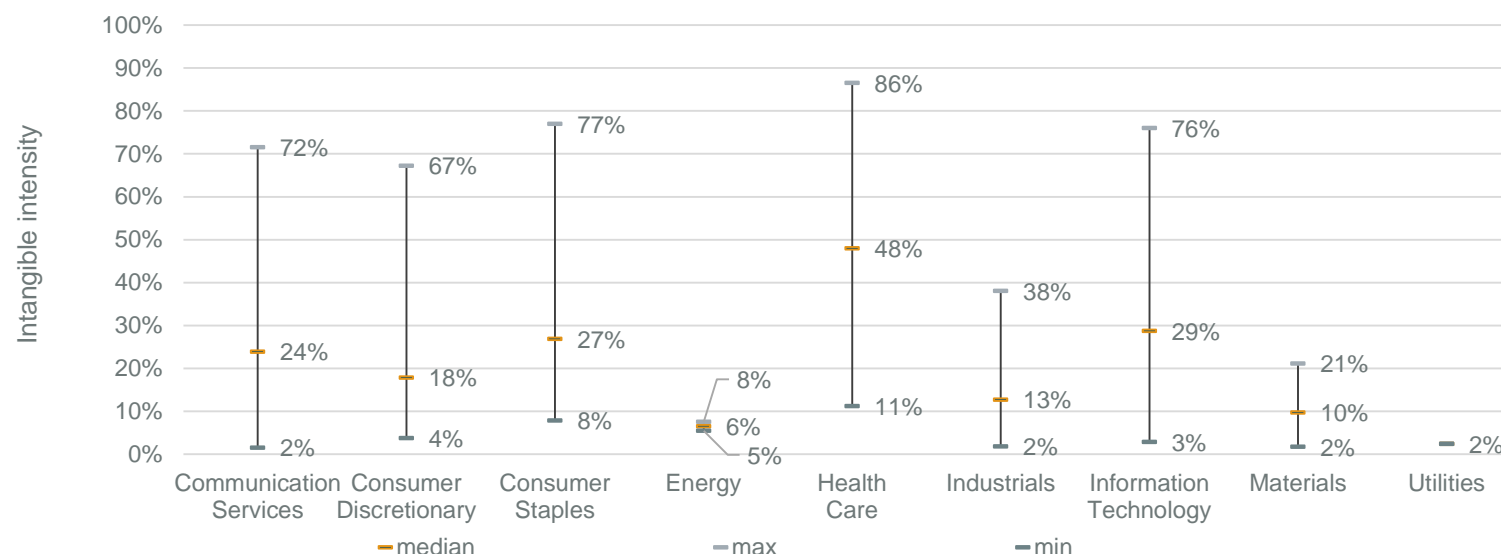
Company (2016 data)	Microsoft (USD mn)	Sanofi (EUR mn)	Coca-Cola (USD mn)	
Intangible Type	Software R&D	Pharma R&D	Brands	
Avg Life of Intangibles	4y	12y	15y	
%age sales capitalised	12%	15%	14%	Ascending life of intangibles
<hr/>				
Assets				
Shareholder's Equity ex GW	42,908	57,576	1247	
CROCI Net Capitalised Intangibles	23,123	28,720	38,371	Majority of Coke's and Sanofi's assets are made up of intellectual capital
CROCI Net Capital Invested ex GW	71,568	49,057	52,679	
<i>Intangible Intensity</i>	32%	59%	73%	
<hr/>				
Profitability (ex GW)				
ROE	48.1%	81.1%	832%	
CROCI	25.1%	Profitability falls after R&D is added 11.2%	12.5%	Profitability falls after brands are added

Source: DWS, CROCI, Company reports. Data is all for 2016 and is as of 12th February 2018. CROCI represents one of many possible ways to analyse and value stocks. Potential investors must form their own view of the CROCI methodology and evaluate whether CROCI and investments associated with CROCI are appropriate for them. Historical data and past performance are not reliable indicators of future performance. The CROCI Team does not provide investment advice, stock recommendations or act in any other fiduciary capacity. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation.

# INNOVATION CAN BE MORE IMPORTANT THAN INTANGIBLE INTENSITY

- Intangible intensity has not been a strong or consistent alpha generator.
- A key consideration is that the company be an innovator.

There are companies which are strong innovators, but also have large amounts of physical capital in order to construct the end product. Take speciality chemicals or the aerospace & defence business, for example.

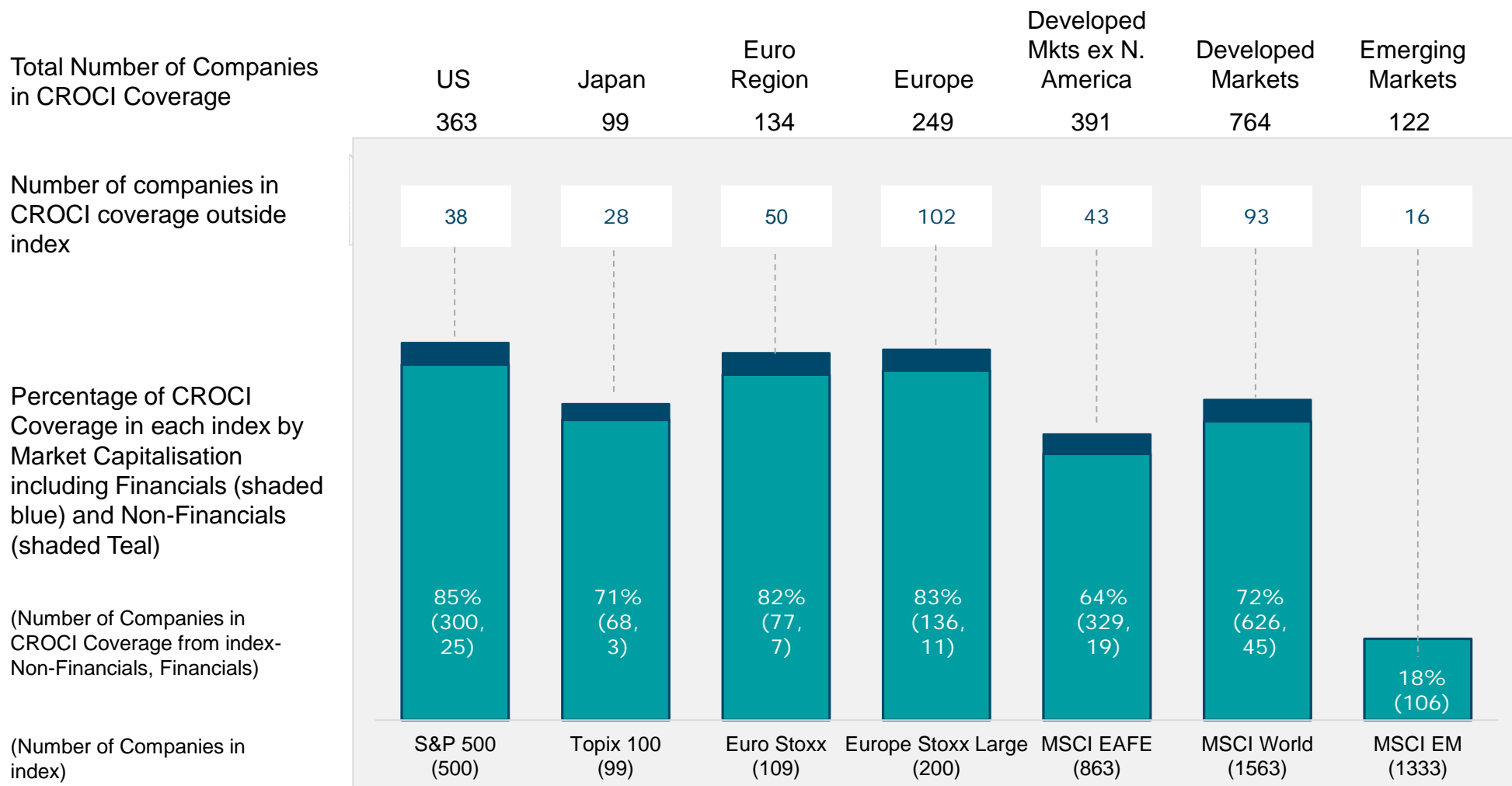


Specialty chemicals have intangible intensity of around 3%, as innovation tends to focus on processes instead of products.

Source: DWS and CROCI. The chart shows the median intangible intensity of the global GICS economic sectors and the maximum and minimum within the sectors. The medians are calculated using companies in CROCI's coverage. Data as of 29 November 2018. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation.

# THE CROCI COMPANY DATABASE

## Comprehensive Coverage Across Major Markets



Source: DWS, Bloomberg

Data as of 31 Dec. 2020

# THE DWS ESG-ENGINE

## FROM RAW DATA TO ESG INSIGHTS



5 leading data providers give us access to 2,500 years of ESG experience

ISS-ESG (ex. Oekom & Ethix)

Morningstar Sustainalytics

Arabesque S-Ray

MSCI ESG

S&P TruCost

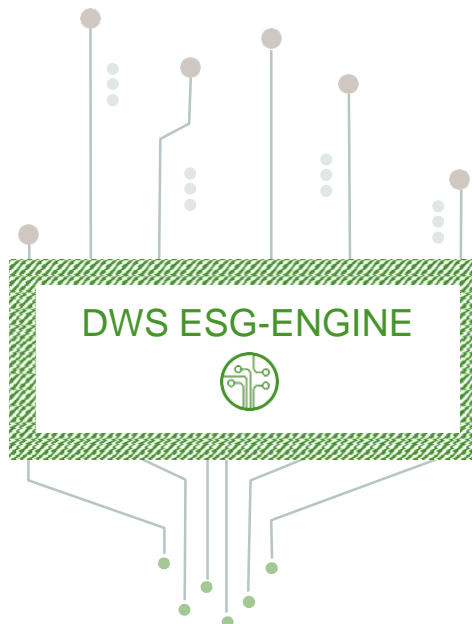
+ publicly available information

### ESG SIGNALS

- \_ Proprietary signal design & enhancements
- \_ Meaningful signal weighting and combination
- \_ Standardize ESG data from different providers
- \_ Analyze and assess ESG data
- \_ ESG Methodology Panel

### ADDED VALUE

- \_ Robust and unique ESG signals
- \_ Data quality ensured
- \_ Full coverage of liquid instruments
- \_ All facets: no blind spots
- \_ Flexibility



ESG SOLUTIONS

PORTFOLIO MANAGEMENT

MONITORING

REPORTING

For illustrative purposes only.  
Source: DWS International GmbH. As of end of November 2020

# DWS MINIMUM ESG STANDARD

## A standardised approach for equity and corporate bond portfolios



### 1 AVOIDING REVENUES FROM “CONTROVERSIAL” SECTORS

Tobacco (≥5% revenues (D))	Gambling (≥5% revenues (D))
Adult entertainment (≥5% revenues (D))	Defense (≥5% revenues (D))
Coal (≥15% revenues (E))	Nuclear power (≥5% revenues (D))

Shown is the %-revenue threshold which, when exceeded, triggers an exclusion. The letter codes D and F in parentheses show the corresponding sector involvement rating, which triggers the exclusion.

### 3 AVOIDING CONTROVERSIAL BUSINESS PRACTICES

Human/workers rights	Child/forced labor
Environmental damage	Business ethics
Violations of highest severity (F)	
Limit violations of lesser severity (<5% E)	

Shown in parentheses: the corresponding DWS norm controversy ratings E/F.

### 2 AVOIDING CONTROVERSIAL WEAPONS

Nuclear weapons	No weapon producer (F)
Cluster bombs	No component producer (E)
Anti personnel mines	No equity (D)
Depleted uranium	

Shown in parentheses, the critical DWS controversial weapons letter ratings D/E/F.

### 4 AVOIDING LOW ESG & CLIMATE PERFORMERS

DWS ESG Rating	no E/F	<15% D	<5% M
Climate Transition Risk	no F	<5% E	<5% M

The E/F DWS ESG ratings mark ESG-laggards and D lower ESG midfield. The DWS climate transition risk ratings identify increasing levels of risk in the D/E/F band whereby E indicates high and F excessive risk. M always indicates missing rating coverage. A percentage number defines maximum accumulated portfolio exposure in that rating.

.For illustrative purposes only. No assurance can be made that investment objectives will be achieved.  
As of end of August 2020; Source: DWS International GmbH.

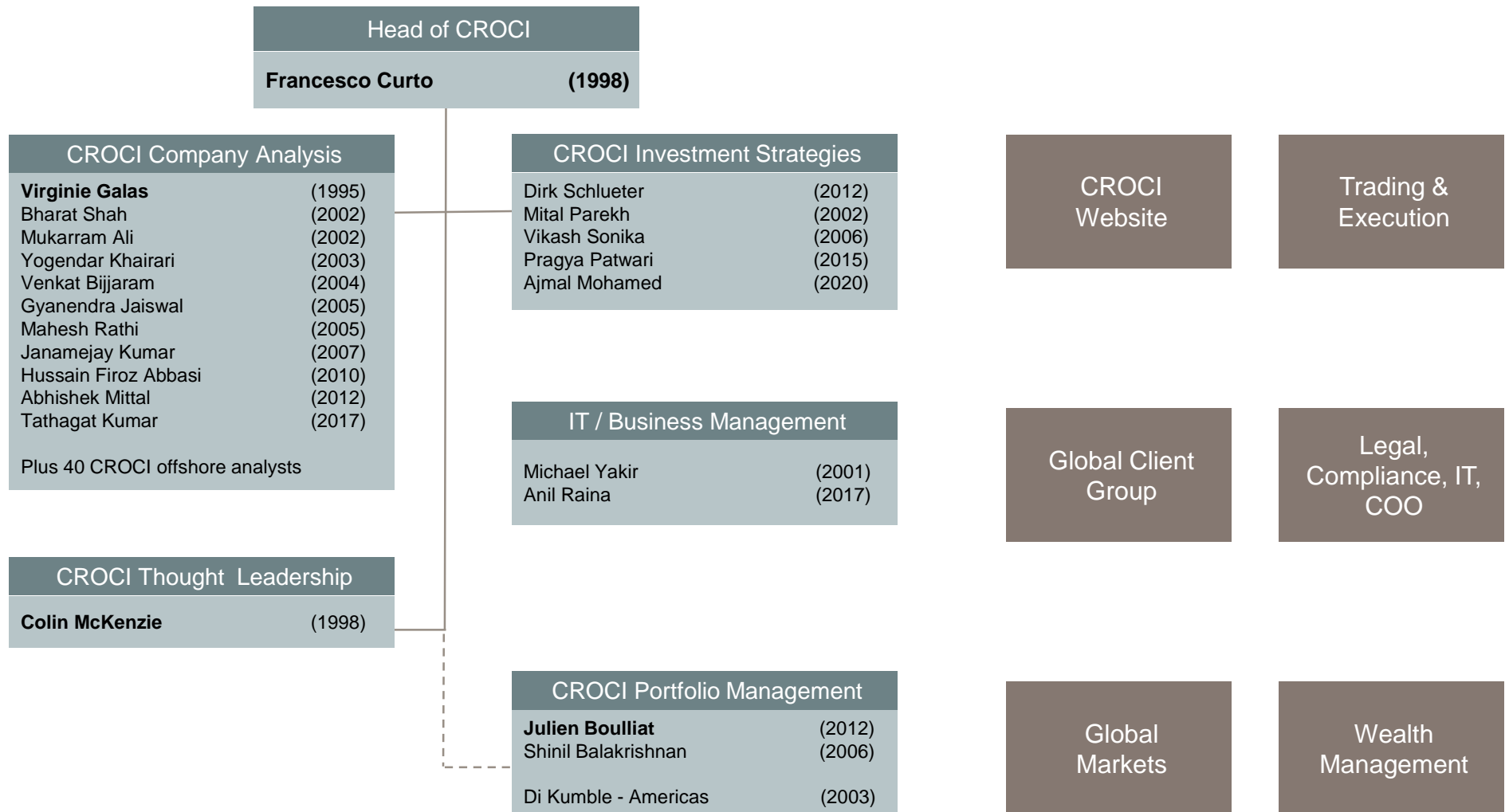
# PERFORMANCE OVER THE PAST 5 YEARS (12-MONTH PERIODS)

## 31 Dec. 2015 – 31 Dec. 2020

CROCI Strategy	Live Date	Currency	12/19 – 12/20	12/18 – 12/19	12/17 – 12/18	12/16 – 12/17	12/15 – 12/16
CROCI Intellectual Capital	15 Apr. 2019	USD	24.8%	33.4%	-5.2%	30.9%	7.3%

Source: DWS, Bloomberg, 20 Jan. 2021 Past performance, whether live or simulated, is not a reliable indicator of future results. All returns include reinvested dividends and do not include fees that might be charged on an investment product. All pro-forma performance data before respective live dates is simulated and was calculated by means of retroactive application of the Strategy models. It is not possible to invest directly in a strategy or index. The performance shown here is for model portfolios. The performance of any actual investment products may differ significantly

# CROCI – FROM CONCEPT TO INVESTMENT SOLUTION



# CROCI SENIOR TEAM MEMBERS



## Francesco Curto, PhD, Head of CROCI

- Managing Director, is Head of the CROCI® Investment Strategy and Valuation Group at DB. He joined Deutsche Bank in September 1998. In his time at DB, he has been Senior European Strategist, Senior Global Strategist and has been involved in all the major developments of CROCI® (database, bottom-up research, indices)
- He joined from Warwick Business School, where he was a Research Fellow. He holds a degree in Business Economics (Economia Aziendale) from "Universita' di Venezia" and a PhD in Strategic Management from Warwick University
- His interests are fundamental valuation, value strategies and the dynamics of industrial and corporate change



## Virginie Galas, Head of CROCI Company Analysis

- Managing Director, is in charge of the management of the CROCI® database and team, i.e., over 850 stocks worldwide covered by a team of around 40 people. Turning accounting data into economic data to calculate a meaningful and comparable return and P/E for each stock individually is at the heart of the 'CROCI® process'
- Virginie has a 19 years experience in financial analysis. She joined Deutsche Bank in 1995 after two years at SG Warburg. From 1997 to 2002, she was head analyst on European luxury and cosmetic stocks for which she was ranked second in Institutional Investor Surveys for several years in a row. She has a Master Degree of Economics - option Finance - from University of Paris Dauphine where she now teaches a post graduate Finance course; she has a post graduate of "Banque et Finance" from University Paris I Sorbonne where she also had License courses in Philosophy



## Colin McKenzie, Head of CROCI Intelligence

- Responsible for all intellectual content (including Market Analysis and Thought Leadership) that the CROCI Team publishes; responsible for client development in Europe, Middle East and Japan
- Joined the CROCI Team in 2000; over his time with CROCI, he has been a European and Global Strategist, as well as playing a key role in the development of the CROCI model and company analysis. Before joining the CROCI Team, he worked in Emerging Markets Equity Sales
- Specialising in company & sector valuation, he publishes regular reports on market and sector trends.
- MA in Mathematics & Philosophy from Oxford University

## CROCI Economic P/E

Calculated as  $(EV/NCI) / CROCI$ , Economic P/E is a measure of valuation, calculated according to the CROCI methodology, that seeks to allow a fair comparison of the market valuation of companies regardless of industry or sector

## CROCI EV/ NCI

Used as the economic version of an asset multiple, e.g. Price-to-Book Value. Over time, this ratio should converge to 1x, according to economic theory (Tobin)

- **CROCI Enterprise Value (EV)**  
A measure of the market value of the firm, which includes not only financial liabilities (eg debt) but also operational liabilities (e.g. warranties, pension funding, specific provisions, etc.)
- **CROCI Net Capital Invested (NCI)**  
An approximation of the replacement value (at current costs) of net assets

## CROCI

**Cash Return On Capital Invested**, the economic version of Return on Equity. A measure of cash earnings yield, standardised for all companies, regardless of their business or location. Also described as the Cash IRR

# CROCI INTELLECTUAL CAPITAL



## Key Risks

Any products linked to a CROCI Strategy may not be capital protected and investor capital may be at risk up to a total loss. Prospective investors should be aware investments linked to the Strategy may go up or down in value.

Past performance is not a reliable indicator of future performance.

**The CROCI Intellectual Capital Strategy has been built on the premises that**

- 1) Both R&D and Brands are forms of intellectual capital and these are captured as capitalised intangibles in the CROCI model;**
- 2) Companies with intellectual capital may outperform companies without intellectual capital;**
- 3) Financial Leverage and Risk-Adjusted CROCI can impact the ability for companies to maintain or grow their intellectual capital as well as provide performance;**
- 4) CROCI equity earnings are a suitable basis for the construction of portfolio weightings.**

**These premises may not be correct and prospective investors should evaluate these assumptions prior to investing in the Strategy.**

- The Strategy shown in this deck only selects from companies under CROCI coverage including Financials. However, this Strategy excludes any companies without capitalised intangibles in the CROCI model (either in form of R&D or Brands), and therefore excludes large parts of entire sectors that have low exposure to intangible assets such as Financials and Utilities.
- The CROCI coverage universe does not aim to provide waterfront coverage of entire benchmarks. Some sectors may have a larger proportion of CROCI coverage than others.
- The performance of the CROCI Intellectual Capital Strategy is subject to fluctuations between the USD and other currencies (performance displayed here is unhedged).

**CROCI represents one of many possible ways to analyse and value stocks. Potential investors must form their own view of the CROCI methodology and evaluate whether CROCI and investments associated with CROCI are appropriate for them. The CROCI Team does not provide investment advice.**

### ESG Process:

The ESG process is based on a systematic review of available ESG data obtained from leading ESG rating agencies in the market. It is possible that the information or data on which an exclusion is based is wrong, not available or not available in time. In the event of delayed information, the exclusion is not performed, but will be once the information is confirmed.

The ESG process is based on a predefined systematic rule framework as put forward by DWS. Potential investors should confirm that the ESG rule framework that DWS applies is consistent with their expectations and views concerning ESG.

# CROCI STRATEGIES & INDICES



## Key Risks

- Any products linked to a CROCI Strategy or Index may not be capital protected and investor capital may be at risk up to a total loss. Prospective investors should be aware investments linked to the Strategies or Indices may go up or down in value.
- Past performance, whether live or simulated, is not an indicator of future performance and any forecast or projection may not be realised.
- The CROCI Strategies have been built on the premise that stocks with lower CROCI Economic P/E ratios may outperform stocks with higher CROCI Economic P/E ratios over time. Moreover, the CROCI Global Dividends Strategy and CROCI US Dividends Strategy make the assumption that Dividend Yield, Cash Returns, Financial Leverage and Price Volatility can impact the ability for companies to maintain their dividend payments as well as provide performance. These premises may not be correct and prospective investors should evaluate these assumptions prior to investing in the CROCI Strategies.
- There is no implied assurance that a stock selected for the CROCI Global Dividend Strategy or CROCI US Dividends Strategy will not cut its dividend while it is in the portfolio.
- The CROCI REW Indices have been built on the premise that portfolio weightings should be determined by the CROCI Equity Earnings of each company and that this will provide a value-added to the portfolio construction process. This premise may not be correct and prospective investors should evaluate this assumption prior to investing in any of the Indices.
- CROCI's coverage universe does not aim to provide waterfront coverage of entire benchmarks. Some sectors may have a larger proportion of CROCI coverage than others.
- CROCI represents one of many possible ways to analyse and value stocks. Potential investors must form their own view of the CROCI methodology and evaluate whether CROCI and investments associated with CROCI are appropriate for them. The CROCI Team does not provide investment advice.

# ESG IMPLEMENTATION IN CROCI STRATEGY



## Additional Key Risks

- The ESG process seeks to eliminate securities from the investment universe if the issuer of the security of concern is considered non-ESG compliant. Hence the investor is not exposed to the financial return of the excluded securities. The impact of the exclusion on the investor's portfolio return cannot be guaranteed. Financial return considerations do, under no circumstance, influence the ESG exclusion process.
- The ESG process is based on a systematic review of available ESG data obtained from leading ESG rating agencies in the market. It is possible that the information or data on which an exclusion is based is wrong, not available or not available in time. In the event of delayed information, the exclusion is not performed, but will be once the information is confirmed.
- The ESG process is based on a predefined systematic rule framework as put forward by DWS. Potential investors should confirm that the ESG rule framework that DWS applies is consistent with their expectations and views concerning ESG.

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CRC: 080915 (Jan 2021)