

Panorama

Investing in 2022 | Aura Asset Management

AURA SOLUTION COMPANY LIMITED
ASSET & WEALTH MANAGEMENT COMPANY



Acting on new realities



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This cycle is different and better

Investing in 2022 will require a different playbook than investors have used to navigate the past decade. So, is this expansion shaping up to be different than the one before? We outline our six key considerations

The strong starting points for balance sheets of households and businesses alike are novel to this expansion. While the fiscal impulse is fading, governments aren't decisively pivoting towards the type of austerity that would jeopardize the recovery.

And the quick rebound in consumption means that the outlook for residential and business investment is robust. However, the prospect of higher volatility, inflation and supply chain stresses have a more nuanced effect on the economic outlook while other aspects still, most notably the structural decline in Chinese growth prospects, are clear negatives.

We believe this expansion is poised to deliver stronger nominal growth than investors have become accustomed to. However, in the near term, the new Omicron variant is causing mobility restrictions that may weigh on activity, particularly in Europe. Though there is much uncertainty, we do not anticipate that this variant will cause a deeper or more prolonged drag on growth compared to previous waves of the virus. Prior to this negative development, growth was in the midst of reaccelerating from the third quarter to the fourth quarter. Ultimately, much of this economic momentum will be retained, in our view, with strength in developed markets

more than offsetting a more modest growth outlook in China going forward.

Mounting evidence of the robust growth backdrop should prove particularly beneficial to procyclical regions and sectors across risk assets, while leading to higher bond yields as well.

1. Better starting points

Many obstacles faced by households and businesses in the early stages of the last cycle are not present this time around.

At this point following the financial crisis, US labor income was still more than 3% below its August 2008 peak. In the aftermath of the pandemic-induced recession, the nation's aggregate paycheck is already 6.7% above where it stood in February 2020.

A slow healing of the job market post the global financial crisis and deleveraging in the wake of the collapse of the housing market was a prolonged drag on consumption growth. By contrast, current labor income growth of above 9% year-on-year should be more than sufficient to support solid increases in real consumption, even amid the stiffest price pressures in three decades.

Unprecedented fiscal and monetary accommodation also limited insolvencies and promoted a faster rebound in earnings. The result is that ratios of debt to enterprise value for global equities recovered quickly, and all-in borrowing costs for US investment grade companies are near record lows. That is a much better set of initial conditions for hiring and investment than prevailed in the opening phase of the long-lived, pre-pandemic expansion.

Generating growth last cycle was a difficult task because of the lingering headwinds to activity that remained even after the contraction was complete. The magnitude of the fiscal thrust this cycle is shielding businesses and households from the same outcome and allowing for initial economic

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momentum to be sustained. In our view, that has laid the foundation for a period of above trend activity led by the private sector.

2. A higher fiscal floor

We believe most of the heavy lifting by governments to support this expansion is well in the rear-view mirror. But an important difference in this cycle compared to the last one is that fiscal policymakers are taking more of a prolonged "do no harm" approach, and we don't see a quick pivot to severe austerity in the cards. Measures of the fiscal stance that adjust for economic slack imply that the developed-market fiscal policy will likely stay easier through 2023 than at any time since 2010.

3. Supply chain induced inflation

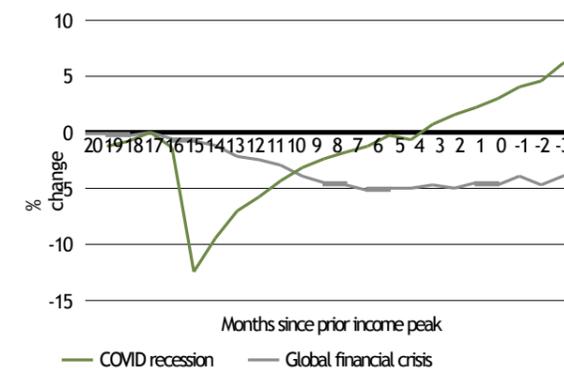
The abrupt shutdown in 2020 and process of economic reopening, with false dawns along the way, has left global supply chains rather discombobulated. In some cases, companies have been unable to secure essential inputs to

the production process, like semiconductors; for others, outbreaks of the virus caused activity to be temporarily halted. Cross-border shipping delays and logistical difficulties in land transportation to end users have also been pervasive.

These challenges have inhibited consumption as well as investment and along with the spread of the Delta variant are the key reasons US economic growth from July through September was less than half of what economists had envisaged at the start of the quarter. We believe these obstacles are poised to continue but lessen in severity.

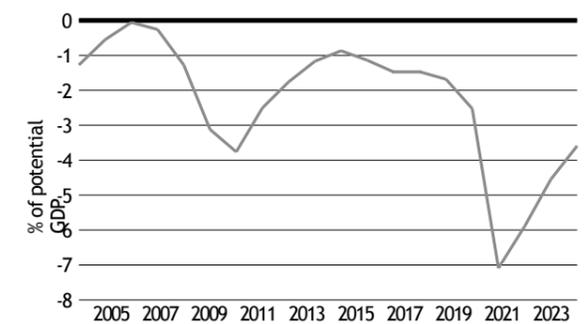
The shortages connected to supply chain snarls have been material contributors to above-trend inflation around the world. These elevated price pressures, which stand in stark contrast to the largely disinflationary past decade, have some negative implications for economic activity. Inflation reduces consumers' purchasing power in real terms and can prompt central banks to tighten policy to curb excess demand.

Exhibit 1: Robust income growth underpinning consumption



Source: Aura-AM, Bloomberg. As at October 2021

Exhibit 2: Fiscal policy staying loose for longer



Source: Aura-AM, IMF Bloomberg. As at 2020, forecasts through 2023

Ultimately, we believe the combination of increased capacity to alleviate bottlenecks and strong growth in labor income will outweigh the effects of higher prices, resulting in demand delayed, not demand destroyed in 2022.

However, there are some silver linings, too: broad-based inflation is also a symptom of an economy that is maximizing its productive capacity. It is only once those limits are hit, on an industry-by-industry basis, that there is a real incentive to boost supply so long as the demand backdrop remains firm. Ultimately, we believe the combination of increased capacity to alleviate bottlenecks and strong growth in labor income will outweigh the effects of higher prices, resulting in demand delayed, not demand destroyed in 2022.

4. Stronger investment expectations

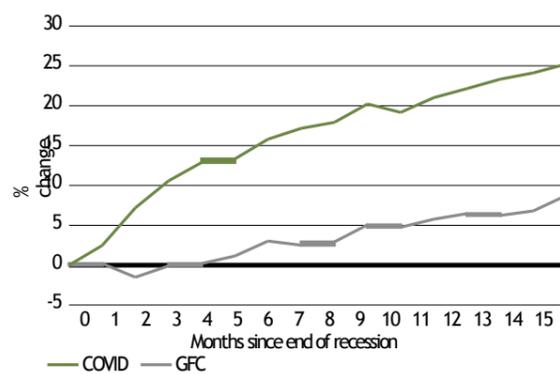
The aforementioned supply constraints are, in some instances, consumers' way of telling corporations to increase capital expenditures.

The response from corporations: we are, and there's more to come. The recovery in capital goods shipments, a proxy for business investment, has been much stronger in the 15 months since April 2020 than the same period following June 2009.

Banks are easing access to credit for corporations who want to borrow, and the demand for commercial and industrial loans is picking up. Surveys from regional US central banks also point to strong capex intentions. Since capex is currently impeded by supply chain snarls, there is little reason to think momentum does not continue.

The sluggish growth, below trend economic environment of the past decade kept the range of realized macroeconomic outcomes fairly narrow. One consequence of operating in a higher-pressure economy is that the volatility of macroeconomic outcomes is also likely to increase - and this should feed into higher market volatility.

Exhibit 3: Capital goods shipments imply far superior outlook for business investment



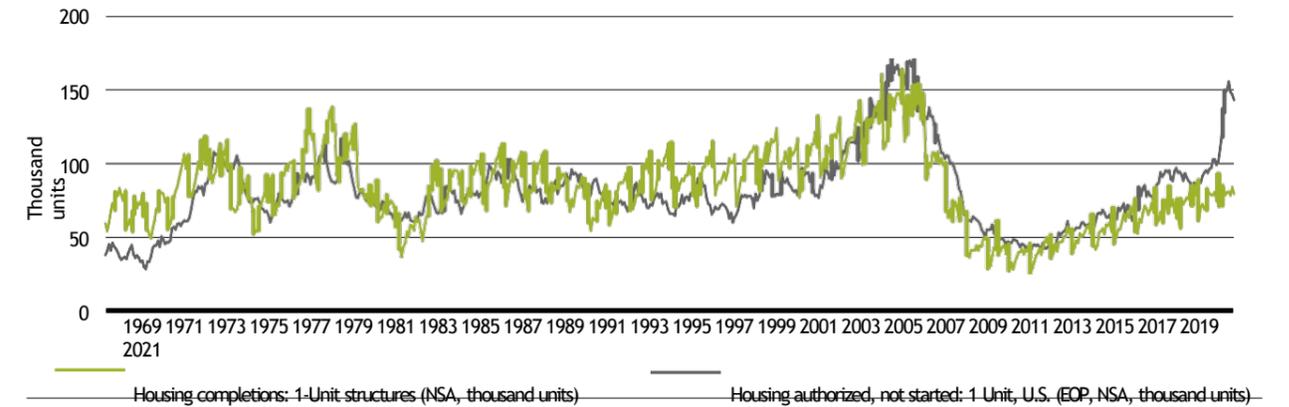
Source: Aura-AM, Bloomberg. As at September 2021

A higher floor for rates and equity market volatility would be a welcome development for active managers. Greater dispersion provides greater potential to generate alpha through stock selection, as well as more opportunities for multi-asset portfolios to adjust positioning seeking to take advantage when markets overreact to economic surprises.

5. Less monetary support

The surge in short-term rates since mid-September, which has since partially retraced, suggests that rate hikes across many advanced economies are likely to begin in 2022. For the Federal Reserve, this would mean a much quicker pivot to tightening policy compared to the more than six-year lag between the end of the 2009 recession and ensuing lift off.

Exhibit 4: High visibility into improving residential investment



Source: Aura-AM, Renaissance Macro Research. As at September 2021

In addition, we believe market participants are currently underestimating how much central banks will raise rates over the course of this cycle. The removal of central bank stimulus is, on the surface, a seeming negative for risk assets. However, investors must bear in mind that this withdrawal of support is linked to positive economic outcomes. In 2022, we believe it will be clear that the removal of monetary accommodation is a function of not just the stickiness of price pressures, but also the strength of growth and progress towards full employment.

6. China

The outlook for Chinese activity is far and away the biggest potential cloud on the economic horizon. We believe that a destabilizing downturn in real estate, which has captured investors' attention due to the travails of several highly-indebted developers, will be avoided. However, we must acknowledge that the risks of this have risen, and, perhaps more importantly, that trend growth in China has diminished.

Reorienting the country's growth model towards increasing consumption and enhancing technological capabilities to reduce dependence on foreign markets is unlikely to be a smooth process. It is doubtful that the opportunities for productive investment will be as vast or realized as quickly as credit-intensive growth driven by real estate and infrastructure have been.

Our view is that above-trend growth in major developed markets will be more than enough to offset a moderation in China's growth. The eurozone, for instance, will likely have only a small degree of fiscal drag in 2022 in light of the EU

recovery fund. It is also one of the rare regions in which the growth in consumer spending is projected to accelerate in the year ahead.

Notwithstanding the structural trend, there are a series of catalysts over the short term that point to the stabilization and perhaps modest pickup in Chinese activity. Robust demand from the US and European Union are driving the Chinese trade surplus to a record, underpinning domestic production. A turn in the credit impulse before the year is out should put another floor under activity. And we also believe that a more comprehensive recovery in Chinese mobility will be in the offing following the Winter Olympics, supporting efforts to rebalance growth towards consumption.

Asset allocation

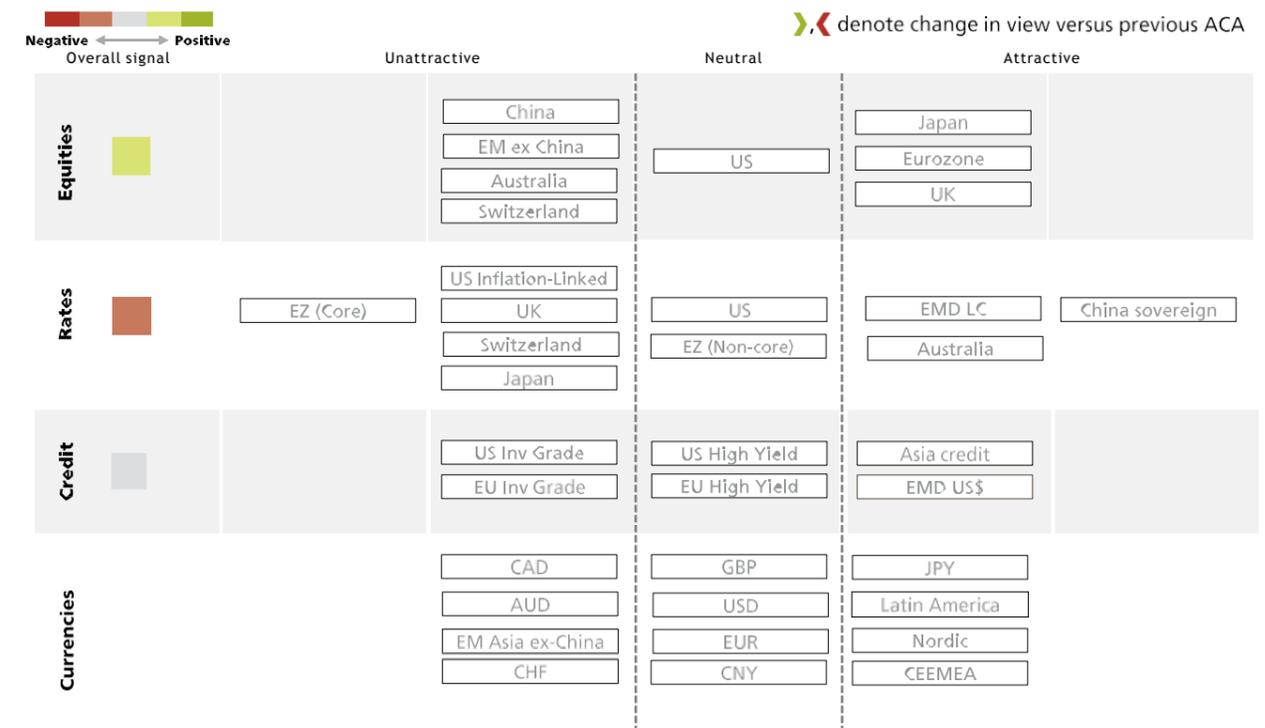
Our core conviction is that equity market indicators and sovereign bond yields suggest that investors are underestimating the runway for above-trend economic growth. We are cognizant that such periods have been fleeting in recent history, which helps explain the market skepticism. Market pricing suggests a return to mediocre growth is consensus, and there is a higher burden of proof for this view to be realized. If economic activity unfolds as we expect, we are confident this high bar will be surpassed.

Risk assets most levered to cyclical strength - such as Japan, Europe, and sectors like US small caps, as well as financials and energy - should be well positioned to outperform in a world of upside growth surprises that propel bond yields higher. Exposure to commodities, both directly and through energy equities, is also useful from a portfolio construction standpoint in the event that inflation proves to be disruptive to both stocks and bonds.

We have high confidence in our call for above-trend growth in 2022, but are not wedded to it. Should downside risks to activity mount - a hard landing in China, fiscal drag proving more material than we anticipate or demand hitting an air pocket after inventories rebuild and supply chain stresses subside - we are prepared to be nimble in adapting to such changes. And we will not hesitate to pivot to more attractive risk-reward opportunities if our optimistic macroeconomic outlook is reflected excessively in asset prices.

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Exhibit 5: Traditional asset classes and currencies



Source: Aura Asset Management Investment Solutions Macro Asset Allocation Strategy team. As at November 15, 2021. Views are provided on the basis of a 3-12 month investment horizon, are not necessarily reflective of actual portfolio positioning and are subject to change.

The shape of China's ESG agenda

The forces of investor demand and stricter regulation, monitoring and disclosure are driving an acceleration of ESG awareness in China. But just how sustainable are companies in China?



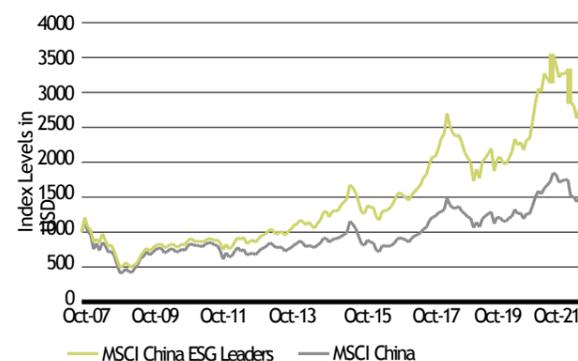
Sustainability considerations are growing in importance for both companies and investors in China with performance being derived from a company's environmental, social and governance (ESG) metrics. A core aspect of sustainability also involves assessing the quality of a company's management and its ability to orient the business away from material risks, toward opportunities. These issues continue to form an important part of our strategy when investing in China.

This approach matters because we believe that industry leaders with a good ESG profile will eventually deliver in terms of long-term performance and good ESG practices. Looking at historical data shows that, in China at least, a portfolio based on the MSCI, but weighted toward ESG can deliver stronger performance than the standard MSCI China benchmark respectively.

Chinese companies are sometimes considered laggards in sustainability, but from our experience these lower scores are often less due to actual performance differences and more a reflection of lower levels of disclosure of traditional

sustainability metrics. This is where our 'boots on the ground' research process and quality assessment can help us to go beyond what an ESG database may provide.

Exhibit 6: MSCI China ESG Leaders vs MSCI China



Source: MSCI, Factset, As at October 2021. Past performance is no guarantee of future returns.

Is healthcare ripe for expansion?

When thinking about healthcare in China, we believe there are compelling opportunities as Chinese healthcare expenditure has continued to grow and is expected to expand by double digits amid an aging population. China is already the second-largest healthcare market globally.

While we see investment opportunities, we believe there is still a lot of room for improvement in ESG disclosure. Among the top 60 companies in the A-share market and the Hong Kong stock market, only 74% of healthcare stocks by market cap published ESG reports in 2020 (vs. 94% and 93% for the financial and property sectors). However, we think inadequate disclosure indicates unfamiliarity towards ESG criteria rather than low awareness.

Emphasizing ESG

Companies are increasingly recognizing the need for improved disclosure regarding ESG and during our engagement with one major pharmaceutical company, the company revealed plans to

publish an ESG report within the company's annual report next year. A chief compliance officer was hired in early 2020, and, supported by a compliance team of more than 20 members, is said to be in the midst of institutionalizing various policies including whistle blowing, anti-corruption and bribery.

In our engagements with Chinese companies, we have found that they are increasingly open to taking steps to improve their ESG profiles.

Another example includes a food manufacturer in China where our ESG risk dashboard flagged certain risks around disclosure. The SI research team identified food quality and safety, energy and water intensity topics as financially material risks to the business, requiring further information from the company on how they manage these risks, considering the lack of detailed disclosure.

Additionally, health and nutrition were areas identified where the company could excel. The investment team participated in three engagements with the company aiming to evaluate the



strength of ESG risk management practices and to encourage greater transparency. The investment team, in collaboration with other investors, through the Access to Nutrition Index, led an engagement with the company to discuss health and nutrition opportunities. As of early 2021, the company no longer flags on our ESG risk dashboard and we continue to engage with the company.

Green bonds growth

Within China fixed income, sustainable investing is increasingly a major factor. Under the banner of “common prosperity,” the central government has outlined a commitment to aligning aspects of ESG to drive China’s long-term growth model.

While aspects of this transition have presented short-term volatility in Chinese credit markets relative to the overall Asia market (see chart) for example tightening in property markets to reign in price, policy changes in education and labor reforms around low-income workers, we believe these changes will be healthy for the further development of the economy and fixed income markets.

In terms of environmental policy, China’s commitment to become carbon neutral by 2060 is a potential driver of expansionary capex spending; the expected implementation of the People’s Bank of China’s (PBOC) “green lending facility” and standardization in the banking sector around green lending should improve the efficiency of capital deployment in the economy.

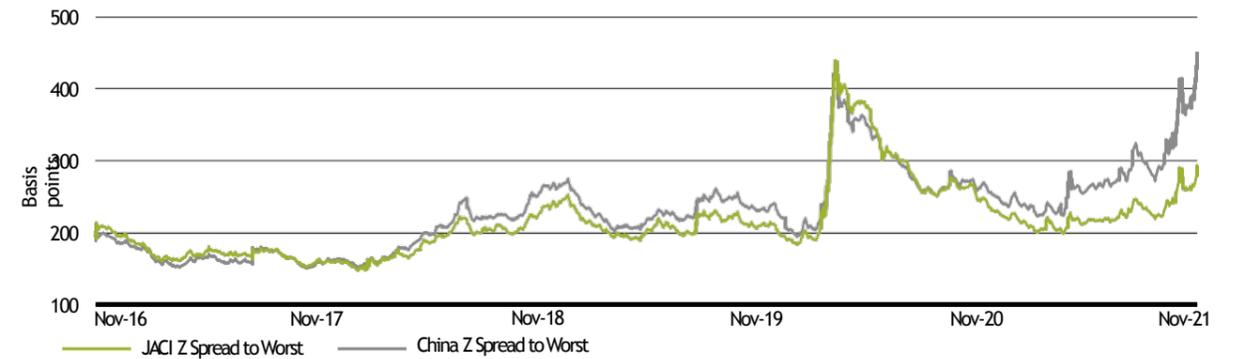
Looking at social policies, the focus on home affordability, educational accessibility and healthcare are paramount in avoiding the potential demographic crisis emerging from the one-child policy. Despite Chinese issuers’ relatively lower-rated ESG profiles (driven by the sovereign risk rating, weaker disclosures and entrenched boards) we expect top-down policy to be an incremental driver for improvements.

Further, we expect both USD and CNY fixed income markets to continue to grow given the April 2021 update to the China Green Bond Endorsed Projects Catalogue and the work being undertaken by China and the EU to assess Common Ground Taxonomy.



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Exhibit 7: J.P. Morgan Asia Credit Index ('JACI') vs JACI China Z Spread to Worst



Source: J.P. Morgan, Bloomberg, As at November 2021

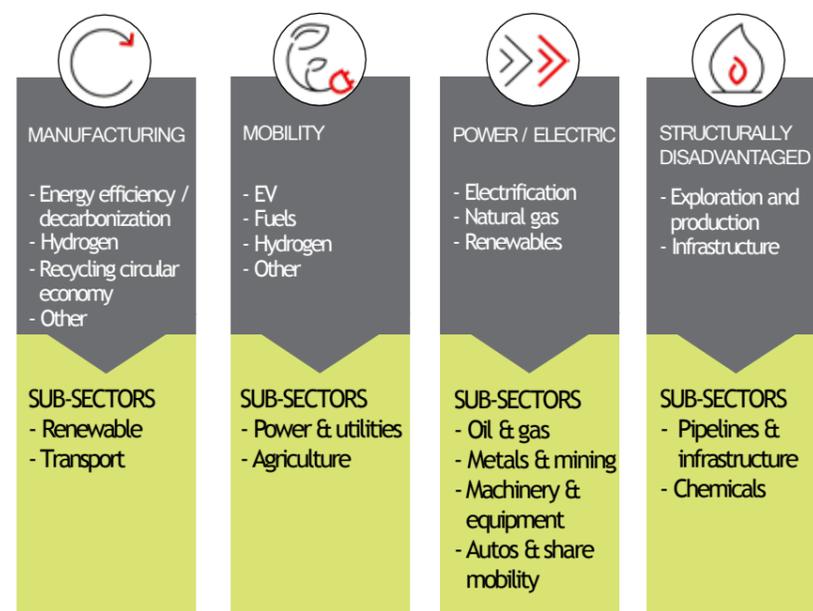
Energy transition gathers pace

With major economies embarking on a pathway to increased use of renewable energy, how can we identify the winners and losers that will emerge as the world shifts toward a more sustainable, low carbon economy?

As the energy transition continues to unfold, the challenges of evolving away from traditional fossil fuel energy sources are becoming increasingly apparent, and it is clear that the transition to a lower carbon future will not be a smooth glide path, but one with uncertainty and unintended consequences.

A coordinated effective global policy solution facilitating this herculean effort must satisfy a range of constituents with varying levels of commitment and abilities to contribute. We continue to expect that ongoing dislocations in capital flows, investment cycles and commodity prices will provide a steady stream of alpha opportunities going forward across sectors, themes and geographies with many structural winners and losers.

Exhibit 8: Energy themes and sub-themes span sectors



Source: As at November 2021



The challenge ahead

Over the next several decades, historic levels of capex will be required to transform the energy supply mix from fossil fuels to renewable power to support the goals set forth in the Paris Agreement.

This monumental challenge will require many trillions of dollars of investment and call on many traditional and new supply chains that will also need substantial investments to keep up with renewable energy growth. We believe the supply chains into renewable energy provide a robust opportunity set for investment.

The global capital markets will play an instrumental role in determining the direction and pace of the energy transition. We believe this process already has begun, with many solution providers and facilitators commanding higher valuations and lower costs of capital.

In contrast, structurally disadvantaged industries are facing a shrinking investor base and more limited access to capital markets. Capital flows, oftentimes influenced by policy

directives, will serve as a self-reinforcing mechanism that will drive the pace of the transition.

Decarbonization drive

The market will likely reward the providers of new technologies that advance decarbonization and those who are executing on well-positioned business models, and on the flipside, punish those that are not able to pivot or have constraints around access to capital.

Sectors that had been sleepy now have dynamic growth profiles, and some historically cyclical sectors likely have multi-decade secular tailwinds.

The utility sector is a prime example. Utilities contribute over 40% of energy-related CO₂ emissions globally, while at the same time holding the key to decarbonizing other sectors of the economy through electrification.

The precipitous decline in the cost of renewable generation has opened the door to large scale, commercial decarbonization more quickly than many anticipated. Despite continued

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improvement in energy efficiency, we expect the demand for electricity to increase materially as large swaths of the economy transition from conventional fuel sources to electricity.

Due to their low cost of capital and considerable ability to control their own destinies by decarbonizing their production portfolios to drive “green” electrification, we believe that policymakers will be motivated to continue to provide support to utilities to achieve stated decarbonization goals.

The decarbonization of the power generation sector is an indispensable component of the energy transition. With utilities entering into a long-term growth phase, as they transition their generation fleets away from fossil fuels and towards renewables, an argument can be made that traditional valuation metrics may no longer apply and utilities should be valued through more of a “growth” lens.

As policy makers continue to provide these benefits with increasing clarity on the longevity of renewable generation

assets, the market is likely to discount projections further out, pulling that value forward for investors.

Many disrupted companies and industries that are not well positioned to adapt could face increasing earnings pressure and multiple compression. As corporations look to reposition to better align with decarbonization, excess invested capital may pressure returns and create mini-cycles. We believe companies with largely protected business models or markets can thrive, while those looking to compete only with low-cost capital will struggle.

We see strong tailwinds behind the energy transition themes that drive investment opportunities. Climate friendly government policies and rapidly improving technologies should continue to push the world’s major economies toward decarbonization. We continue to believe the energy transition will present unprecedented investment opportunities, both long and short, with a decade or more of visibility on key structural themes.

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Exhibit 9: EU - EUR 7tn investment required by 2050

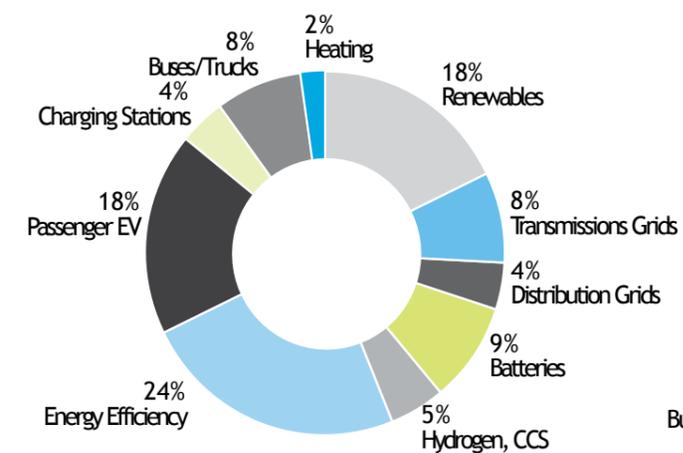
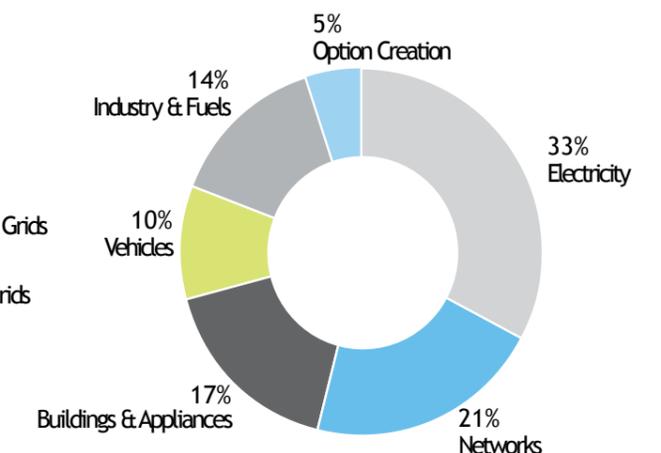


Exhibit 10: USA - USD 2.5tn investment required 2021-2030



Source: Goldman Sachs Global Investment Research, Princeton University, European Commission. As at October 11, 2021

Asset allocation for an ESG world

Asset allocators are increasingly facing a novel challenge when constructing portfolios: striking a balance between environmental, social, and governance (ESG) factors and traditional performance objectives to achieve a positive outcome on both fronts.



Preference

The preference element refers to the weight an investor places on prioritizing sustainability in an investment portfolio, either due to regulatory requirements or the objectives of the investor or organization and its board. For these investors, the issue is how to optimize portfolios to address risk and return in concert with ESG. The impact depends heavily on the magnitude of ESG constraints. Historical data show that there has been no trade-off between sustainability and investment performance for conventional ESG benchmarks. For example, comparing the MSCI World Index with the MSCI World ESG Focus index for the 2011-2020 period, the difference in compound annual total return was 0.2% (in favor of the ESG index) and the annual standard deviation difference was 0.1% (16.7% for the MSCI World Index vs. 16.8% for the MSCI World ESG Index).

While it is possible that in the future higher-level and more standardized disclosure will help investors select ESG leaders more robustly, we find that the current data already helps produce sustainable portfolios where risk and return are not significantly different, statistically speaking, from those of traditional portfolios. Therefore, we suggest that there is no need for separate risk and return expectations for sustainable investments over very long horizons (in equilibrium).

The adoption of modern ESG approaches, which are less restrictive in terms of exclusion and minimize tracking error from the original indexes, historically has not impaired performance as shown by the performance of the MSCI World Index vs. the World ESG Index mentioned above and may have the positive externalities of contributing to stronger and more sustainable economic and social growth. Therefore, our asset allocation framework seeks to optimize a portfolio's expected risk and expected return while also integrating ESG.

Benefits are visible with investors in general being more ESG motivated and more informed about what kind of companies they are investing in, and what future risks and returns could look like. Over the short term, we believe investors and institutional investment boards may have opportunities to capture excess returns as ESG assets may become more popular and potentially valued higher in the market.



Investors are accustomed to considering risk and return as the two dimensions that guide asset allocation. We find that two additional elements, time and preference, are needed to augment this process in an ESG world.

We believe these fresh considerations are poised to have a transformative impact on the traditional pillars of asset allocation.

Time

The time element refers to the duration of the ESG transition underway as governments and companies introduce regulations, new technologies and investments to reduce pollution in line with the principles of the Paris Agreement, adopted by 196 parties at COP21 in 2015, and fulfill the Sustainable Development Goals relating to social responsibility and governance.¹ During this transition period, we believe ESG-oriented strategies are well-positioned to capture potential gains from new technologies compared to traditional benchmarks. Active investors that incorporate ESG analysis into their approach may disproportionately benefit.

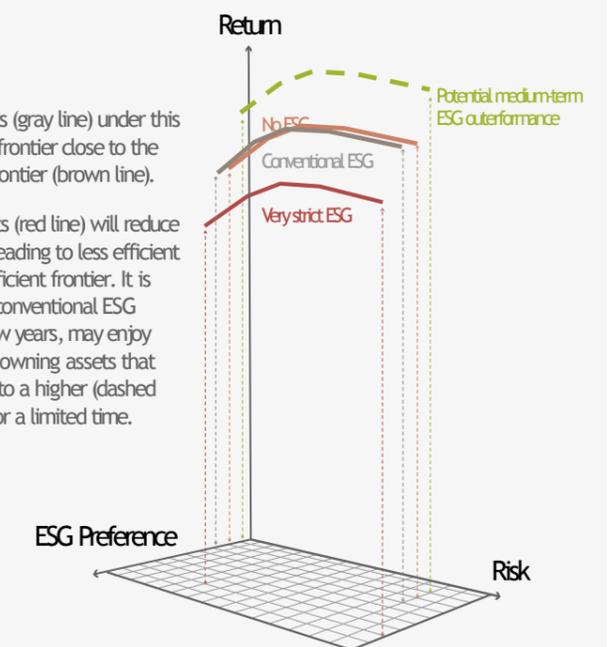
Our 4-Dimensional approach

When optimizing an asset allocation, one can take ESG scores from a vendor to each asset class and then optimize in three dimensions: return, risk and ESG score. The weight in the optimization given to ESG proxies for the preference: if an investor is not interested in ESG, the weight will be zero and the optimization will be the traditional mean-variance; if the investor has great interest in ESG, the weight parameter in the objective function will be large and skew the allocation towards highly-rated assets.

The use of ESG scores to redefine the investment universe results in a four-dimensional surface with return, risk, time and ESG score on the axes, rather than the classic two-dimensional risk/return frontier.

Relatively light constraints (gray line) under this approach leave this new frontier close to the unconstrained efficient frontier (brown line).

Very strict ESG constraints (red line) will reduce the investable universe, leading to less efficient portfolios and a lower efficient frontier. It is however possible that a conventional ESG investor, over the next few years, may enjoy early-adopter gains from owning assets that everyone wants, leading to a higher (dashed green) efficient frontier for a limited time.



¹ The UN Sustainable Development Goals (SDGs) consist of 17 sustainable development goals that are part of its 2030 Agenda for Sustainable Development. <https://sdgs.un.org/goals>

ESG value in real assets

Some real assets are already playing a big role in addressing investors' ESG concerns, so will key ESG initiatives currently underway be an important value driver when thinking about the valuation and performance of real asset portfolios?

And in the area of food & agriculture, for example, consumers are not just concerned with the environmental sustainability of their food products, they are also interested in the social implications of product origins, such as the well-being of the farmer who grew their food.

Third-party certifications such as the Leading Harvest Farmland Management Standard can address economic, environmental, social and governance issues in agriculture. Consumer pressure adds weight to this element too and can be seen in the growing demand for fresh food and online deliveries, which is increasing the need for cold storage, to ultimately reduce food waste.

ESG issues are being driven by recent legislative and reporting developments, such as the EU Sustainable Finance Disclosure Regulation (SFDR), Task Force on Climate-Related Financial Disclosures (TCFD), 2015 Paris Agreement on climate change and third-party industry benchmarks such as UN PRI and GRESB.

These developments reflect the urgency to measure, mitigate and report environmental risks related to climate change. ESG is no longer born from a sense of doing good but is becoming a key part of a business's strategy.

Does sustainable, socially responsible investing mean giving up on opportunities for portfolio performance?

There is a monumental shift in expectations and how private and public companies conduct themselves.

This behavioral shift is creating investment growth opportunities as businesses adapt. For example, investing in a new office building means thinking about creating an environmentally sound building. This potentially attracts higher paying tenants and ultimately creates higher economic value for the building.

Encouraging economic investment in historically underinvested areas promotes long-term growth while at the same time has a positive impact on the community. And finally, better governance will encourage firms to incorporate environmental

What factors have driven the positive shift to ESG in real assets in the past few years?

The increased emphasis on topics related to climate change and the factors which can impact an asset's operations and affect the environment, whether this be in its direct operations or across its supply chains, are just some of the key drivers.

Firms are being faced with these realities and the importance and need to implement strategies to identify and mitigate risks associated with climate change into their asset and fund policies and practices.

Data and performance measurement also has an important role to play. For example, we recently signed an agreement with Four Twenty Seven, a provider of data and market intelligence, to provide forward-looking climate risk measurement data (floods, sea level rise, wind, heat) for all our real estate strategies globally.

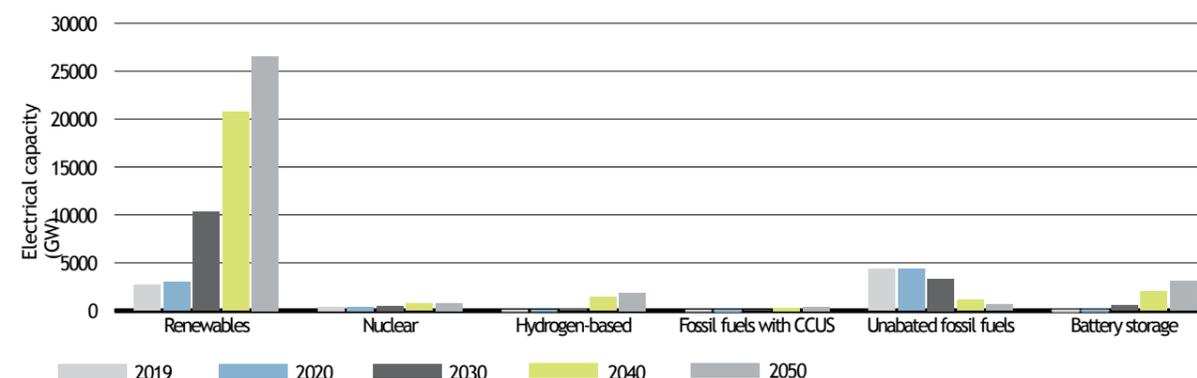
From a social perspective, the impacts to health and well-being for building occupants, employees, or indoor environmental quality are also factors now higher on investors' minds.

Increasing tenant engagement is providing more transparent reports on an asset's progress as a whole.



Recent IEA data summarizes how global capacity needs to change: more renewables and storage, less coal and gas, unless more carbon capture and storage technology is used.

Exhibit 11: Energy scenario projections



Source: EIA, Net Zero by 2050 - A Roadmap for the Global Energy Sector. As of October 2021

and social consequences into their business objectives, which ultimately can have a positive impact on their valuations.

Industry benchmarks such as GRESB and UN PRI are examples which can allow investors to examine their performance and gain valuable insight into how to better integrate ESG into investments, strategy, and overall performance.

What areas are we expecting investors to focus on in the next 5-10 years when it comes to the climate transition?

The options for investors to gain exposure to ESG have never been greater.

This has risen in parallel with the tremendous growth in the amount of investment capital moving into climate change, environmental issues and sustainable investing.

This trend is expected to show exceptional growth into the future. According to data from Bloomberg, global ESG assets are on track to exceed USD 53 trillion by 2025.

This represents more than a third of the USD 140.5 trillion in projected total assets under management.

The International Energy Agency (IEA), the UK's prime minister and leading economists are among those calling for a green recovery that aims to 'build back better'¹ by reducing emissions and putting people and the planet first.

This means implementing strategies (energy efficiency, increased production of clean energy such as solar, and directly purchasing clean energy) to reduce the carbon footprint of our assets and portfolios.

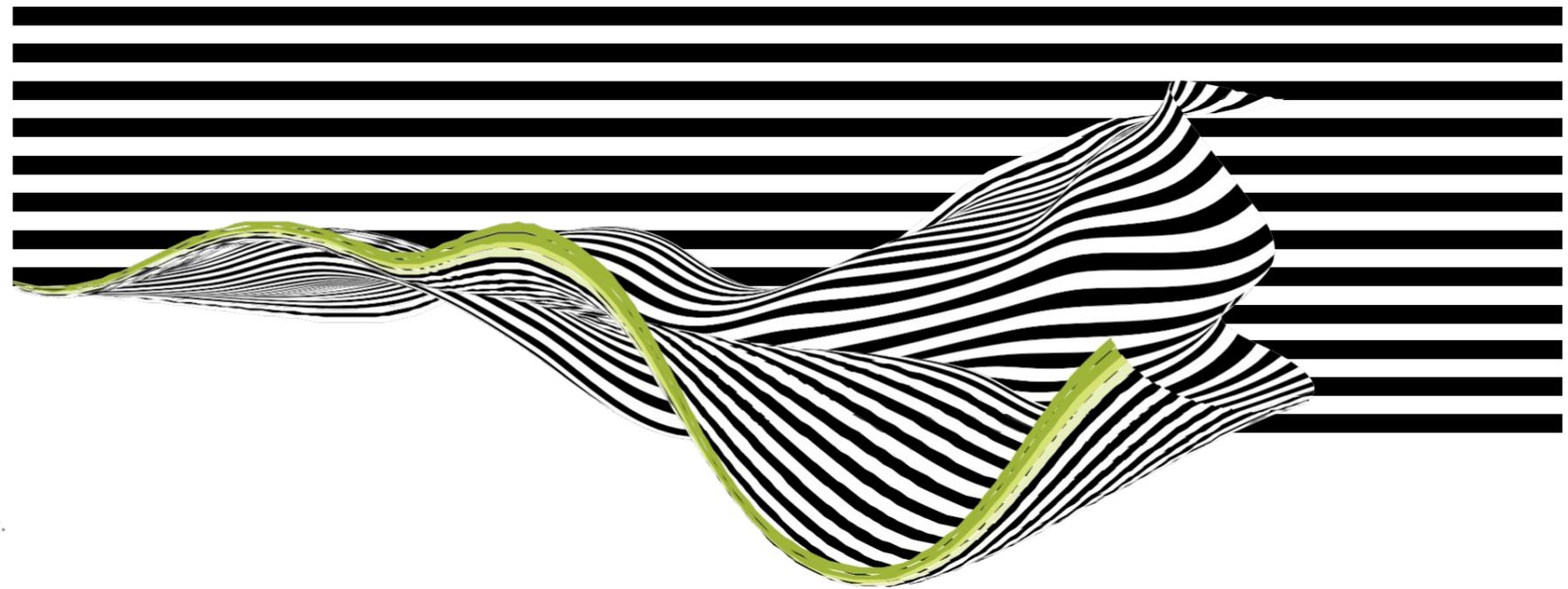
Recent IEA data, which shows the current pathway to net zero, summarizes how global capacity needs to change: more renewables and storage, less coal and gas, unless more carbon capture storage (CCS) technology is used.

Finally, firms and individual investors are likely to face risk in the form of more regulation and changes in investor behaviour as a result of changing strategies, policies or investments as society and industry work to reduce its reliance on carbon and impact on the climate. Costs are likely to rise as climate risk is priced into clean energy, supply chains and sustainable goods, but innovations in technology will likely increase in importance as part of this transition.

¹ Note: the Build Back Better bill is currently being legislated in the US Congress

Bridging the ESG data gap

As sustainable investment strategies gain momentum among asset owners and managers, the calls for more reliable environmental, social and governance (ESG) research and ratings at scale gather pace. But how can we address this imperfect data challenge?



the publication and monitoring of financial reports 87 years ago. Bloomberg was started as Innovative Market Systems to distribute market and financial data in 1981 - 40 years ago. The traditional financial data ecosystem may have had many challenges, but it has had many decades to work out the kinks.

Sustainable Finance Disclosure Regulation (SFDR) is the first SIdata regulation that has the heft of - and is potentially as consequential as- the Securities Exchange Act of 1934. In comparison, the sustainable investing (SI) data and regulatory ecosystem is still in its infancy - or gestation, depending on where in the world you look - and waiting for another 87 years for it to mature to a point of ubiquity is not an option.

Missing ESG data

The infancy of ESGdata combined with inconsistent global reporting standards create a 'missing' data problem when you look across the asset class universe. This becomes especially pronounced when you move outside of developed markets. For example, many Chinese companies lag their regional peers in terms of disclosure on company policies to tackle emissions. But amid growing market pressure, we are already seeing sustainability disclosure requirements improve reporting standards and ESGpractices across Chinese companies.

In developed markets, however, the lack of ESG data in even some investment grade corporate bonds, as well as across both private and public companies is under extreme scrutiny and is driving pressure from all corners to report accurate ESGdata.

So, given the gaps in data, how can we build an ESG data model for so-called 'poor reporters' based on other best-practice companies? This challenge is not unusual as investment decisions are actually typically made using imperfect data that requires making both inferences and assessing probabilities of certain outcomes.

With the growing global shift towards sustainable investment strategies, ESG data has improved in recent years, allowing investors greater visibility into how companies are performing from a non-financial perspective.

However, challenges around inconsistent data across companies, sectors and markets, which are often not standardized and sometimes backward looking, mean investors are increasingly looking at how they can assess whether a business or strategy is truly sustainable. Different frameworks in different countries, and with only some companies not reporting, continue to make it difficult to accurately assess the climate risks faced by each firm.

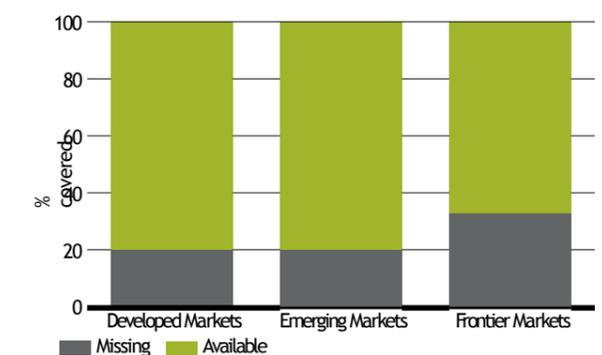
And as sustainability issues can have a major influence on the risk and return potential of an investment, investors simply can't afford to shy away from addressing this complex data challenge.

This is compounded by the relative youth of the problem set. In the US, the Securities Exchange Act of 1934 first required

Exhibit 12: 3rd Party ESG Coverage by Credit Grade



Exhibit 13: 3rd Party ESG Coverage by Market type



Source: Aura AM, MSCI, Sustainalytics. As at October 2021

ESG data continues to evolve

To make more progress in the sustainability journey of investors it is clear that companies will need to take steps to increase the robustness of data. So until better measurement is available, finding innovative solutions that use the power of statistics to infer how to fill in those gaps is vitally important.

In our view, one way to do this is similar to the fundamental investment process. We believe our statistical model can help fill those gaps to enable portfolio managers to make choices and, by doing so, maximize impact for investors thinking about investing sustainably.

Can human intelligence add data depth?

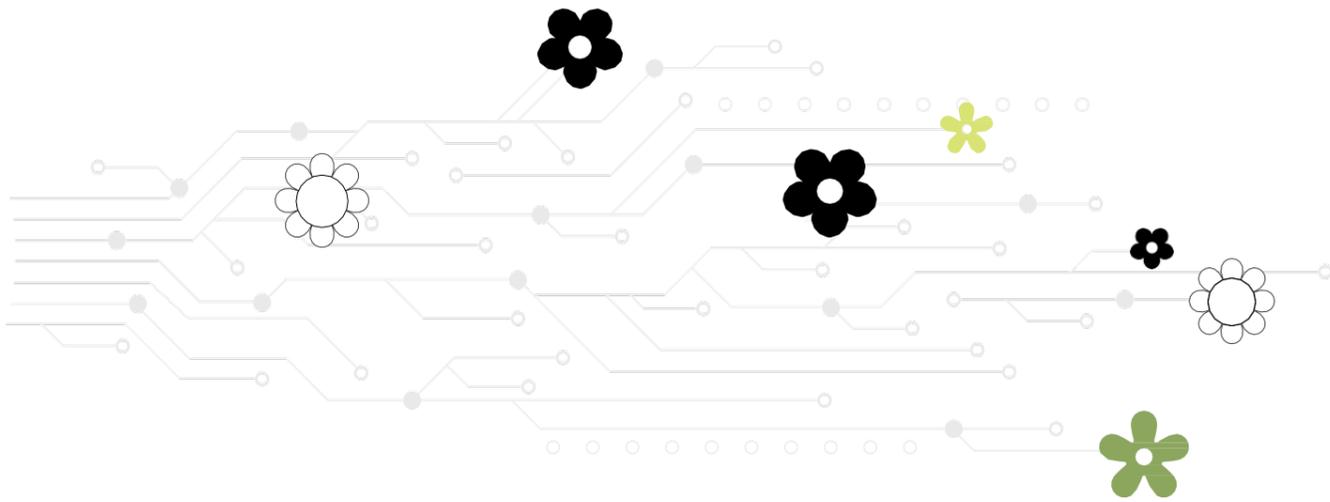
Using 'base rates' as a mental model which relies on specific information rather than exact calculations when

making a future probability judgement can help to ground financial forecasts and prevent some of the biases that might exist. These base rates can be used alongside a market hierarchy.

For example by taking different data points being reported across companies in the same sector, hierarchical mental models can then be used as a starting point to fill the data gaps for a more effective forecast.

Hierarchical modelling - identifying patterns from data

We believe a hierarchical modeling approach can be applied to statistically fill the ESG data gaps with a reasonable degree of certainty and when applying this model to, for example, fixed income corporate bonds, we can correlate credit ratings with ESGscores to fill those gaps.



This allows us to broaden the investment opportunity universe, particularly when thinking about sustainable investing strategies.

For example, similar to how a fundamental analyst fills in gaps using base rates, our intuition tells us that companies within the same credit rating bands and in the same sector and country should have similar ESGscores. We believe sustainability performance is sector relevant as it ranks companies within a sector by weighting factors (or the absence of factors) based on emissions data reporting.

Meanwhile, with different regulations across countries, regional biases also exist. One example is USoil companies, which may actually have similar ESGratings to technology companies in China, and any differences should be reflected in their credit rating and market pricing.

By identifying this varying distribution of ESGscores, we can build statistical models which take into account this intuition in a similar manner to how a fundamental analyst would approach it.

Can data influence decision making?

There is also strong behavioral and physiological evidence that the human brain both presents probability distributions and performs probabilistic inference (Fiser J, 2001) (Alexandre Pouget 1, 2013)¹. However, it wasn't until the 17th century that games of chance started to entice the minds of mathematicians like B.Pascal and P.Fermat to create a theory that predicts the odds of a player's win.

Although the result of a game could not be guaranteed, the mathematics suggesting a certain move might give a player an 80% chance of winning was greatly welcomed in the gaming circles. This illustrates that providing an answer but with a level of uncertainty can become more acceptable.

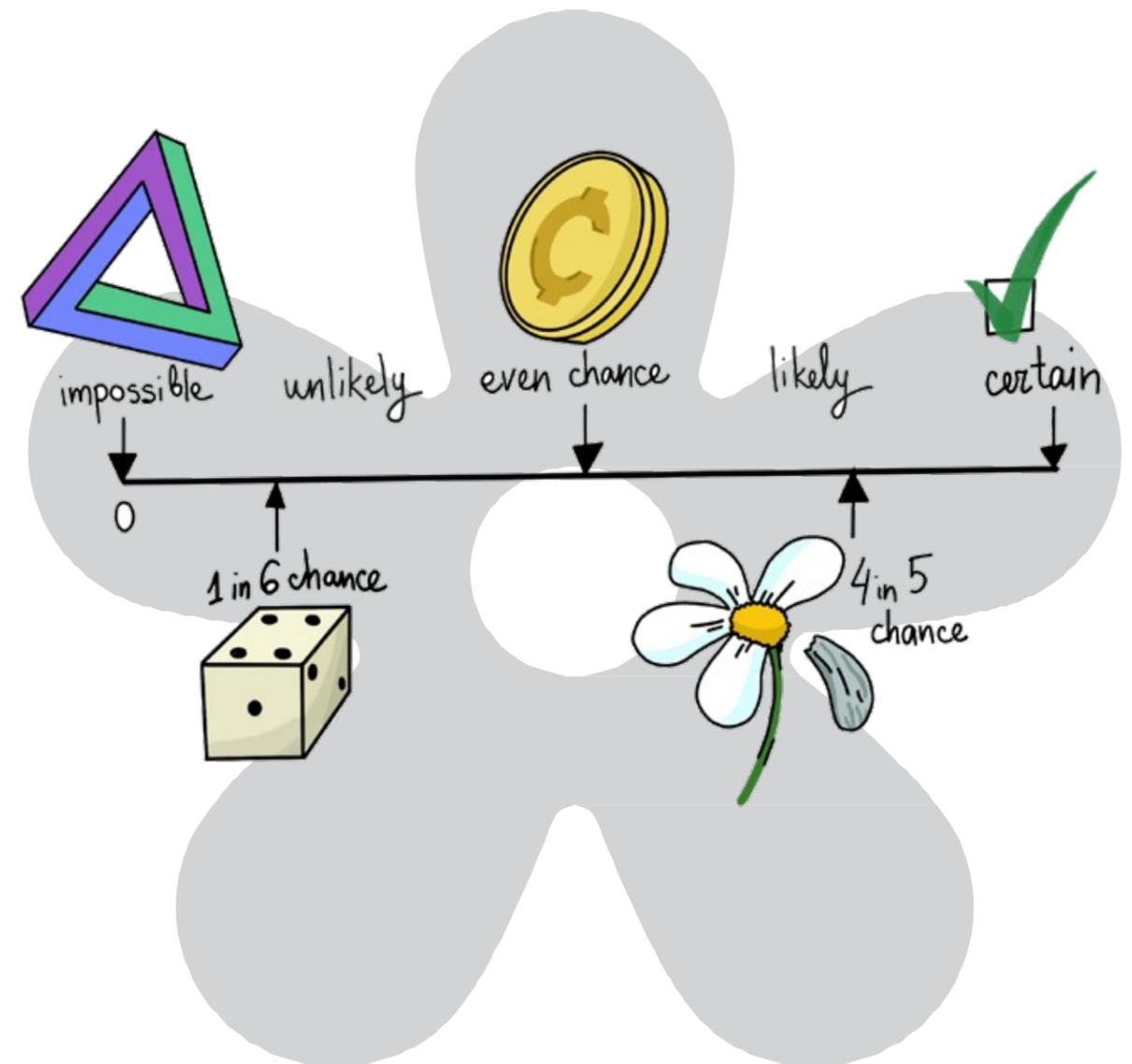
When considering probabilities and likelihoods, what role does Bayesian inference play in ESG ratings?

The Bayesian method of statistical inference is also something investors can use today. ESG ratings can be good or bad, with issuers either from green industries (low-carbon emitting) or brown industries (high-carbon emitting). If investors are provided with an unrated bond in the brown industry and have been asked to rate it good or bad, as information on the rated issuer is known, they are able to calculate how the rating is distributed among the two industries, also referred to as joint probability.

ESG data continues to mature - but until then, statistical theory can help close the data gap

To make more progress in the sustainability journey of investors it is clear that companies will need to take steps to increase the robustness of their ESGdata. However, until better measurement is available, finding innovative solutions that use the power of statistics to infer how to fill in those gaps will be vitally important for portfolio managers to make sustainable choices and, by doing so, seek to maximize the positive impact of investors' portfolios.

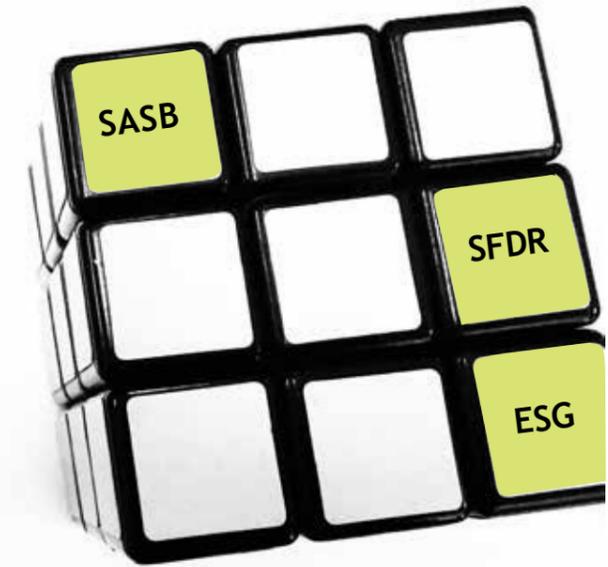
Exhibit 14: Probabilities and outcomes



¹ Alexandre Pouget 1, J.M. (2013). Probabilistic brains: knowns and unknowns. Nat Neurosci, 1170-8. Fiser J, A. R. (2001). Unsupervised statistical learning of higher-order spatial structures from visual scenes. Psychol. Sci, 499-504

Reshaping regulation

SI regulation encourages investment in sustainable activities and the disclosure regime is intended to increase transparency but how can the SFDR regulation drive better outcomes?



The EU's Sustainable Finance Disclosure Regulation (SFDR) is a set of rules focused on sustainability oriented categorization and disclosure of financial products. Its principal aims are 1) to disclose to market participants the details of potential sustainable investments, enhancing good decision-making, and 2) to direct capital toward sustainable investments that help mitigate and solve important climate and social problems.

The disclosure dimension of the SFDR (amongst others) is not new, financial product disclosure has been an important focus of financial regulators for a long time. What is new is the concept that the regulator implies that social problems can be addressed with financial products¹, a view that grew directly out of recent developments in impact investing.

The evolution of impact investing
Impact investments date back very far in the field of philanthropy and private equity. But impact investing in public securities is relatively new. Aura has been a pioneer in this space, managing one of the world's largest public equity impact mandates for a Dutch pension fund as well as building science-based metrics for measuring the external impact of public companies².

Not all investments in the SFDR scheme have a direct impact component, but by mandating disclosure of metrics such as carbon intensity,³ investors are likely to push their capital in a greener direction and engage with companies to lower carbon footprints. It is said that one "manages what one measures," and this is no exception.

Europe pushes for solutions

The EU is answering a call for solving large-scale issues such as climate change and other social issues by pushing investors of all stripes to direct their investments toward possible solutions. In addition, by requiring that investors are made aware of the negative externalities of their investments, the EU is surmising that investments that have significant externalities will be shunned.

To sum it up, the EU is extending the scope of the social purpose of investing. Up until the last 10 or 15 years, the purpose of professional investing was to generate a positive risk-adjusted return that enabled pensioners to retire, pay their medical bills, educate their children and meet other goals. How the portfolio generated that return or the externalities of the investments in the portfolio was not an issue, in line with the Milton Friedman concept that the purpose of a public company was to make money and nothing else. But all this has changed.

ESG investors focus on positive change

Investing in companies with significant negative effects on the environment, the work force or the supply chain has become anathema. And investing in companies that have significant positive externalities has become the focus of environmental, social and governance (ESG) investing. This trend has been bolstered by many studies that show ESG factors are material and can be integrated in investment decision-making to improve risk/return outcomes.⁴

Another way to look at the SFDR is to put it in a broader context of evolution in the sustainable investment space. This evolution is rapidly taking place across the globe in parallel to the SFDR.

Sustainability data is improving

First, the field of sustainability data itself is evolving very quickly. The Sustainability Accounting Standards Board, a leader in developing the accounting rules for material sustainability factors has merged with the International Integrated Reporting Council, forming a unitary global approach to reporting. And at the same time, the resulting entity, the Value Reporting Foundation is working closely with the International Financial Reporting Standards Foundation to "accelerate convergence in global reporting standards focused on enterprise value."

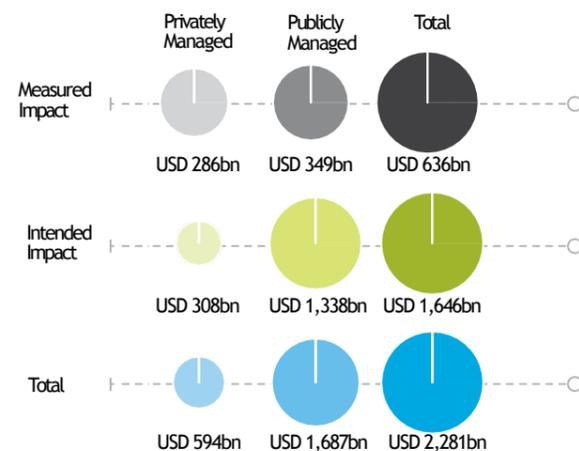
We saw the same process play out with financial reporting culminating in global accounting rule convergence with the 2002 Norwalk agreement that aligned US and non-US accounting rules.

We can expect that a similar convergence of material sustainability factors will emerge soon, especially since it is strongly backed by regulators around the world.⁵

Disclosure is becoming the norm

Second, the Task Force for Climate-Related Financial Disclosure has been extremely active in publishing disclosure and methodology recommendations for issuers, managers and asset owners. These have been recently updated and expanded⁶ with a Status Report, Guidance on Metrics, Targets and Transitions Plans, an Annex on Implementation and an upcoming Portfolio Alignment Report. Taken together, this body of work, which is also being endorsed and mandated by regulators, encompasses a broad set of metrics, methodologies and disclosures that greatly inform the analysis of climate risk.

Exhibit 15: Impact investing: Publicly managed impact strategies are growing



Investing for Impact: The Global Impact Investing Market 2020, International Finance Corp. July 2021. https://www.ifc.org/wps/wcm/connect/publications_ext_content/ifc_external_publication_site/publications_listing_page/impact-investing-market-2020

¹ This is especially relevant for products defined under SFDR Art. 8 "promoting E/S characteristics" and Art. 9 "sustainable objectives"

² The Transformative Power of Capital, B. Gill and B. Bertocci

³ As esp. outlined in the SFDR disclosure requirement to disclose "Principle Adverse Sustainability Impact" (PAS) of investments on company level.

⁴ A few studies include Khan M., Serafeim, G., and Youn, A. (2016). Corporate Sustainability: First evidence on Materiality. The Accounting Review, Vol 91, No. 6, Madison, Nicolas and Schiehl, Eduardo (2021). The Effect of Financial Materiality on ESG Performance Assessment. Sustainability 2021, 13, 3652, and Steinbarth, E.; Bennett, S. Materiality Matters: Targeting the ESG Issues that Impact Performance. Harvard Law School Forum on Corporate Governance. 2018.

⁵ International Organization of Security Commission statement on February 24, 2021 "sees an urgent need for globally consistent, comparable, and reliable sustainability disclosure standards and announces its priorities and vision for a Sustainability Standards Board under the IFRS Foundation"

⁶ Publications can be found at tcfid.org