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PANORAMA

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FIRST QUARTER, 2022

WELCOME......

..........to the first edition of Panorama in 2022, T. Rowe Price's quarterly investment magazine for Asian investors.

After strong returns from most equity markets last year, 2022 is off to a cautious start in the Year of the Tiger. This is understandable in view of the rise in inflation, a Federal Reserve preparing to raise interest rates, and post-pandemic fiscal stimulus that has peaked. Moreover, market valuations are far from appearing 'cheap' by historical standards. Yet 2022 still holds many attractions even as monetary policy turns less supportive. Household wealth is at new peaks, there is pent-up consumer demand, corporate earnings continue to trend higher, and the green energy transition could trigger a new cycle in business investment.

We lead with "The Great Inflation Debate" in which Justin Thomson, T. Rowe Price's Head of International Equity, tackles what is one of the key long-term challenges facing investors today. Inflation has clearly become elevated, but there is considerable disagreement on its likely path in 2022 and beyond. Some pundits argue that we have entered a new era that will be marked by greater inflation, higher interest rates and bond yields, and increased market volatility.

Global bond investors could face significant risks from rising market yields in 2022. In our second article, Helping Global Bond Investors When Duration Fails, global fixed income specialist Joran Laird considers strategies to reduce potential duration-led losses.

In our Global Multi-Asset feature, experts Thomas Poullaouec and Wenting Shen discuss six key factors that they believe investors and financial advisers should prioritize when evaluating multi-asset model portfolios. Model portfolio design is not always a one-size-fits-all approach, and T. Rowe Price recognizes that specific client-directed objectives and constraints may apply to the implementation of investment solutions.

Next, Ernest Yeung, the manager of T. Rowe Price's Emerging Markets Discovery Strategy, explains in a Q&A format how an active investor with a disciplined focus on valuation and fundamentals can still find attractive investment opportunities among emerging markets (EM) stocks in 2022.

T. Rowe Price believes that China remains a compelling long-term investment story, despite the regulatory upheavals that led to Chinese stocks underperforming in 2021. Justin Thompson and Chris Kushlis, Chief of China and Emerging Markets Strategy, believe that understanding the government's social agenda is key. The most effective way to invest in China is to keep sight of the government's social objectives and incorporate them into the investment process.

In the latest "Personal Profile" we interviewed Jackie Liu who manages T. Rowe Price's exciting new China Growth Opportunities Equity Strategy. Jackie talks about her experience as an investment analyst covering the internet and other key sectors such as transportation, infrastructure, consumer, and health care in depth. She believes this was a great way to prepare for her current role of portfolio manager of T. Rowe Price's second dedicated China equity strategy.

As always, we welcome your comments and feedback on this issue of Panorama (our contact details can be found on page 33).

Asian Intermediaries Team

THE GREAT INFLATION DEBATE

Have we entered a new era?

- Inflation is elevated, but there is disagreement on its likely path and how it will impact markets.
- Central banks face a difficult choice of when to hike—too early, and they risk strangling the recovery; too late, and inflation may get out of control.
- Investors face the possibility of an investment environment marked by greater inflation, higher yields, and more market volatility.

Justin Thomson
Head of International Equity

Inflation is surging across the world, but there is no agreement on how high it will go, how long it will last, and what—if anything—needs to be done about it. While some economists believe that a "new normal" of elevated prices has arrived, others argue that inflation will likely fall back to previous levels once COVID-era supply chain issues are resolved. Central banks have responded in different ways, with some signaling imminent interest rate rises and others likely to remain on hold for the foreseeable future. Meanwhile, investors face the daunting task of making sense of all this in order to position their portfolios for the period ahead.

In a recent call, I asked six T. Rowe Price senior investment professionals to share their views on the current bout of inflation and how it might impact markets over the next few years. Their answers point to an uncertain period ahead as the global economy recovers from the coronavirus pandemic while facing the possibility that the era of low inflation, declining yields, and rising stock markets that followed the global financial crisis (GFC) may finally be over.

FIGURE 1: Will Elevated Inflation Persist?

Six views from T. Rowe Price senior investment professionals

How Long Will Elevated Inflation Last?

The first question I asked our panel was: How long will the current high inflation last? Opinion was divided between those who believe it will be largely transitory and those who think it is more structural in nature and therefore likely to stick around. Dave Eiswert, portfolio manager in T. Rowe Price's U.S. Equity Division, was in the former camp. "There are still lots of distortions in the global economy post-COVID—there are shortages in goods and labor, interest rates are very low, and fiscal policies are loose," he said. "Those distortions are going to roll off over the next few years—supply shortages will be resolved, inflationary pressures will peak and begin coming down, and interest rates will rise as inflation falls. This is a key twist in this cycle—fading pandemic inflation may lead to a normalization of interest rates, albeit at low levels."

Rick de los Reyes, portfolio manager for T. Rowe Price's Macro and Absolute Return Strategies, agreed that inflation will probably fall in the medium term. He said that an unexpected outcome of the coronavirus crisis has been that the "riddle" of how to generate developed world inflation has finally been solved. "For a long time, quantitative easing was taking place all over the world, and it wasn't creating inflation," he said. "But now we've found that compensating people who are not working results in higher demand, and if supply is low, this creates inflation."

> *There are still lots of distortions in the global economy....*
>
> — Dave Eiswert
> *Portfolio Manager, U.S. Equity Division*

If this is true, the key question now is whether labor force participation will rise to pre-COVID levels, de los Reyes said. "I believe it will because people will have no choice but to return to work—indeed, there is anecdotal evidence that this is already happening. And when people return to work and those supply issues begin to ease, inflation will likely fall back by the middle of next year."

In addition to the return of labor supply, de los Reyes said he believed the absence of one-off COVID factors will also help to bring inflation down. "Will car prices jump 27% again? Will Amazon workers get another 25% pay rise?" he asked. "Mathematically, it's going to be very difficult for inflation not to come down next year."

A Historical Perspective

However, Arif Husain, head of International Fixed Income, took a different view. He argued that the basic ingredients for structural inflation are in evidence more now than at any point over the past few decades. "If there is ever going to be inflation, now is the time," he said. “Central banks are unlikely to hike aggressively because they don’t want to cause market disruption. Governments aren’t exercising fiscal discipline because there are no consequences for fiscal indiscipline. But most of all, there is simply a truckload of money held in financial assets—if there is a rotation and some of that money flows out of financial assets into the real economy in the form of capital expenditure and consumer spending, it will put significant upward pressure on prices.”

A key question is whether the post-COVID global economy will resemble the one that preceded the pandemic or be fundamentally different. Chris Faulkner-MacDonagh, a portfolio manager in the Multi-Asset Division, urged a historical perspective. He said that while transitory inflation shocks usually have a single cause, persistent inflation tends to arise from a confluence of factors. “People often think the great inflation of the 1970s was caused mainly by the 1973 oil crisis,” he said. “In reality, however, used car and food prices were already rising rapidly before that. In other words, inflation gathered steam because there were a series of supply shocks, not just one (Figure 1).

The current surge in inflation is similar to that of the 1970s because it has multiple causes, Faulkner-MacDonagh said. “Just like the 1970s, we’ve had a series of supply shocks, including used cars and energy,” he said. “By the time, these sequential supply shocks have worked their way through the system, we’ll have had 24 consecutive months of rapid price increases—and that doesn’t sound very transitory to me.”

Faulkner-MacDonagh argued that a “huge supply mismatch” between downstream consumer inventories and upstream producer inventories will result in retailers having to undergo major inventory restocking next year. “There is going to be the mother of all scrambles for resources in 2022 as retailers will be restocking, consumers will be borrowing, the federal government will be borrowing via the fiscal deficit, and firms will be investing again as these supply chain issues are resolved,” he said. “I do think inflation will come down from current levels, but only very modestly and not very rapidly.”

Chief International Economist Nikolaj Schmidt suggested that the true path of inflation in coming years may ultimately fall between the transitory and structural views. “It’s been pretty easy for central banks to just repeat the mantra that the inflation spike is transitory,” he said. “But once the service sector recovers and the global economy begins to heat up, that argument is going to become more difficult to sustain. We’re already seeing that policymakers are uncomfortable with having ultra-loose monetary policy while economies are recovering.”

> *There is going to be the mother of all scrambles for resources in 2022....*
>
> — Chris Faulkner-MacDonagh
> *Portfolio Manager, Multi-Asset Division*

Schmidt said he believes the world has likely entered a new era of greater inflationary pressures because the great period of deleveraging that followed the global financial crisis is over. However, he cautioned against assuming that stronger inflationary pressures would necessarily equate to structurally higher inflation. “Central banks can bring down inflation easily—they just need to hike rates and kill final demand,” he said. “To make the argument that we’re going to live with much higher structural inflation, you have to assume that the public’s tolerance for higher inflation has fundamentally changed—and I’m just not convinced that that’s the case.”

> *Central banks can bring down inflation easily....*
>
> — Nikolaj Schmidt
> *Chief International Economist*

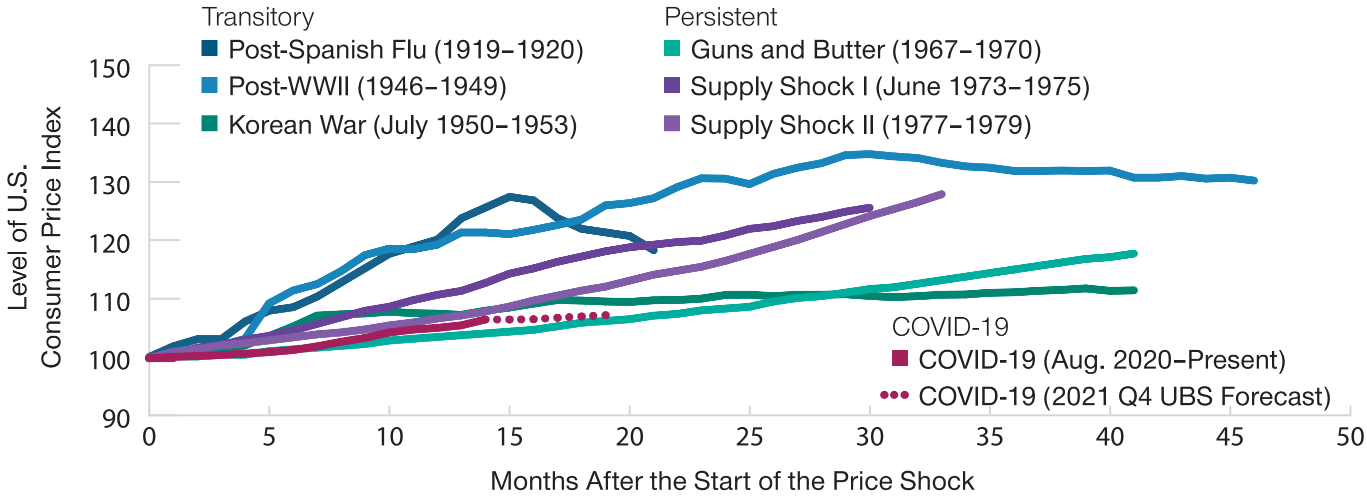
Changing the Narrative

However, even if society at large has not changed its views on inflation, central banks are well aware that they are now operating in a different environment. This, at least, was the view of Steve Bartolini, a portfolio manager in the Fixed Income Division. Bartolini said he believes that the U.S. Federal Reserve will try to “change the narrative” on inflation over the next six months. “In the post-GFC world, we had too much supply and a deficiency of demand,” he said. “Then COVID came along and flipped that—now we have lots of demand and a deficiency of supply. This has meant that the Fed achieved its average inflation targeting goal much sooner than it expected—so the Fed’s relationship with inflation has changed.”

Bartolini said that the fact that inflation is already at target means the Fed is free to concentrate on bringing unemployment down. “The stubbornly high inflation we’re seeing now is just a complicating factor for the Fed—what they really want to do is drive down the unemployment rate to where it was pre-COVID, and they’re going to remain dovish in order to achieve that,” he said.

FIGURE 2: Transitory Shocks Fade; Persistent Shocks Build

A brief history of U.S. inflation



As of September 1, 2021.
Actual future outcomes may differ materially from any estimates or forward-looking statements made.
Source: Haver Analytics.

"The Fed has started tapering, and that will take six to eight months. They won't raise rates until they've finished tapering, so we're probably not looking at a rate rise until the middle of next year at the earliest," Bartolini said. However, he warned that this may change if inflation remains at a stubbornly high level. "The markets will start to challenge the Fed if inflation remains elevated—and that will be particularly true if other central banks start to blink," he said.

The Risk of Policy Error

The delicate balance that central banks are trying to achieve has increased the risk of policy mistakes occurring. According to Arif Husain, there are two types of errors to which central banks are currently vulnerable. "Policy mistake number one would be to not raise rates and let the inflationary genie out of the bottle," said Husain. "If that happens, the yield curve will steepen, and the currency will weaken. Policy mistake two would be to hike too much too quickly, which would kill the post-COVID growth rebound."

Husain said that he believes that the fear of hiking too early currently outweighs the fear of leaving too late—and that policy mistake number one was more likely. He cited the example of the Bank of Canada (BoC), whose October statement on inflation unleashed a burst of volatility in the markets because of its perceived hawkishness. In the statement, the BoC acknowledged that inflation was above target and that growth was likely to remain strong over the next three years—and suggested that it might begin raising rates "in the middle quarters" of next year. "If that was considered a hawkish response to that kind of data, then I think we're firmly in policy mistake number one territory," Husain said.

Steve Bartolini agreed that central banks are more likely to err on the side of dovishness than hawkishness. He suggested that the Fed rarely makes the same mistake twice in a row—but will often make new mistakes. "Typically, the Fed will learn from the mistake it made in the previous cycle, but then the economy will change and it will make a new mistake," Bartolini said. "I think policy mistake number one is more likely because the Fed made policy mistake number two during the last cycle."

Will Yields Spike?

I concluded our discussion by asking the panel members what they thought the U.S. Treasury 10-year yield would be in one year's time. As with my first question about how long inflation would remain elevated, there was a difference of opinion. Chris Faulkner-MacDonagh, Arif Husain, and Steve Bartolini all agreed that a yield of 3% or more would be possible within a year. "There's a lot of upward pressure on yields," said Faulkner-MacDonagh. "People are sitting on a huge amount of accumulated fiscal stimulus savings. At some point, it will have to be consumed or invested in financial assets—and if it goes into consumption, inflation may stay higher for longer and long-term rates will go up. I think it can potentially get to 3% to 4% within a year."

Husain agreed. "My view is 3%, but the direction of travel suggests it could possibly go higher than that," he said.

"I think the conditions are in place for the 10-year yield to go higher," said Steve Bartolini. "If pressed, I'd say 2.5%, but if it gets to 3%, that won't be too surprising to me."

However, Dave Eiswert was more cautious, arguing that a yield of 2% was more likely. "Clearly, COVID has changed things, and life is likely to look very different in a year's time—from where people work to where they go on vacation," he said. "I think the markets have perhaps been too complacent about just how much things have changed, but I also sense that we might have reached an inflection point for that complacency. So I think a 2% yield in a year's time is not only feasible, but the most likely outcome. I think it would would have massive implications if it went as high as 4%."

Rick de los Reyes echoed Eiswert's view that the yield is unlikely to go as high as 4%. "I think there's a cap at the long end of the curve," he said. "Long-term rates just can't go higher, in my view. If we got to 4%, the implications for mortgages and the economy would be huge. I think we could go to 2.5%, but I don't think we can go much higher than that without causing some real damage and eventually inverting the curve.

Is there any chance the yield could fall? "Not in the short term because we have to go through this inflationary period," de los Reyes said. "But I think in the longer term, we may be back on the lower track, yes."

Nikolaj Schmidt also supported the idea that longer-dated yields will likely remain anchored. "I think 2.5% is about right," he said. "Much higher than that and it could be extremely disruptive and self-defeating—it would be bad news for everybody," he said. "Eventually, it may go higher, but I would say 2.5% is realistic for this time next year."

T. Rowe Price cautions that economic estimates and forward-looking statements are subject to numerous assumptions, risks, and uncertainties, which change over time. Actual outcomes could differ materially from those anticipated in estimates and forward-looking statements, and future results could differ materially from historical performance. Forward-looking statements speak only as of the date they are made, and T. Rowe Price assumes no duty to and does not undertake to update forward-looking statements.

HELPING GLOBAL BOND INVESTORS WHEN DURATION FAILS

Strategies to reduce potential duration-led losses

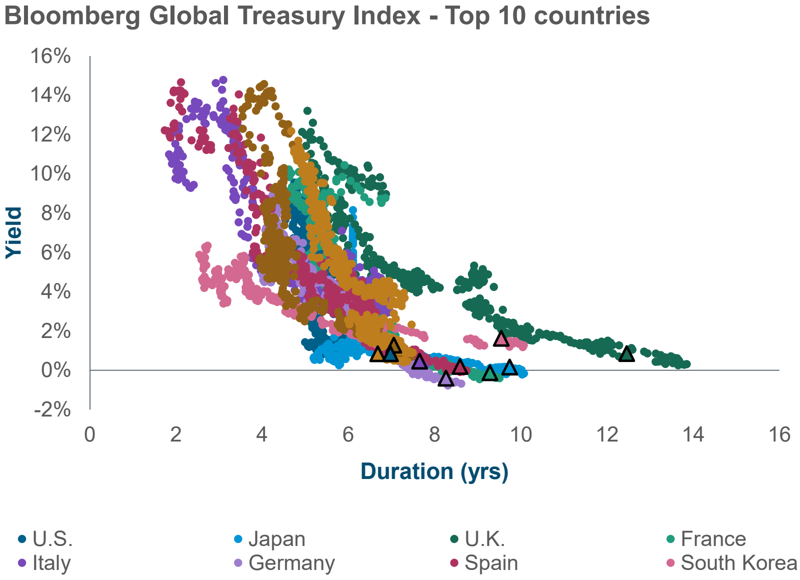
- Global bond investors could face significant risks from rising market yields in 2022 and long-duration portfolio holdings. Many seek ways to mitigate these risks.
- Our research suggests lowering the duration on government bond portfolios to around two years can significantly reduce or even avoid losses from rising yields.
- An alternative option would be to adopt an unconstrained global bond portfolio, giving the manager full discretion over both country and duration strategy.

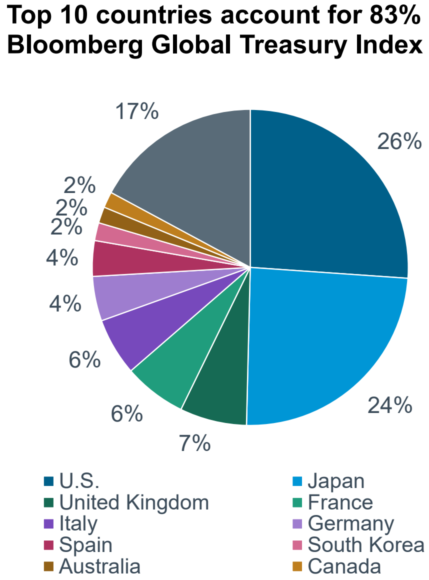
Joran Laird
Portfolio Specialist,
Global Fixed Income

Many fixed income investors have been asking about the implications of rising interest rates, especially now that markets are beginning to discount the first rate hikes by the U.S. Federal Reserve earlier than had seemed likely a few months ago. While the Fed initially saw the emergence of post-COVID inflation as transitory, the increase in prices has been far more persistent than they had earlier hoped for. This led Fed Chairman Powell recently to say it was time to retire the term 'transitory' as a description of current inflation. Even if inflation falls back to 3.0 to 4.0 percent, it may be a long time before it is back at the Fed's 2.0 percent target.

> *In this Insights note, we try to address .... what can be done to mitigate the risks from rising rates.*

FIGURE 1: Evolution of The Global Treasury Market Since 1987





Past performance is not a reliable indicator of future performance.

As of 26 February 2021

Source for Bloomberg index data: Bloomberg Index Services Limited. Analysis by T. Rowe Price. Indexes referred to: Bloomberg Global Treasury – US Treasury, Bloomberg Global Treasury – Japan, Bloomberg Global Treasury – United Kingdom, Bloomberg Global Treasury – France, Bloomberg Global Treasury – Italy, Bloomberg Global Treasury – Germany, Bloomberg Global Treasury – Spain, Bloomberg Global Treasury – South Korea, Bloomberg Global Treasury – Australia, Bloomberg Global Treasury – Canada. (All local returns.)

In the current environment, index-aware global bond investors face significant risks posed by a combination of rising market yields in 2022 and long-duration portfolio holdings. They have become increasingly concerned over their exposure to rising rates, how quickly they will rise, and just how large the potential drawdown on a portfolio of global government bonds might be. In this Insights note, we try to address some of these key concerns, in particular what can be done to mitigate the risks from rising rates.

> ....nominal yields are close to historic lows, and in some cases, yields are even negative.

We believe that one possible solution is for investors to take steps to mitigate potential duration-led losses ahead of any major upward move in yields. To succeed in this, decisive action will be required by asset owners to ensure that their fixed income managers have the flexibility they need to manage duration risk more aggressively in the elevated inflation, rising yield environment that beckons in 2022.

One way to acquire some insights into the potential risks is to look at scenario tests based on past periods of rising bond yields. For a scenario approach to be successful, a relatively reliable model of monthly bond returns appears essential. Fortunately, such a model is feasible, based on a three-factor approach to estimating total returns, namely the initial yield, duration, and roll-down return. Such a model is described later in the paper.

By way of historical background, Figure 1 charts yield versus duration for the top 10 government bond markets included in the Bloomberg Global Treasury Index from February 1987. In terms of market share, the U.S. and Japan each account for around 1/4 of the global total while the top 10 markets combined have a share of over 83%, and so will clearly be the major drivers of global government yields. Figure 1 shows that in every case the trend in government bond yields over the past thirty plus years has been lower, while the trend in duration has been higher. The triangular observations shown are for February 2021. We can see from Figure 1 that nominal yields are close to historic lows, and in some cases, yields are even negative.

This observation is very important for fixed income investors, since over medium to longer-term horizons, the total return from government bonds tends to be close to their initial yields. This suggests that in the current environment, global bond investors should be conservative in terms of their future return expectations. The nature and importance of the initial yield-total return relationship is worth elaborating further.

Over shorter holding periods there is only the loosest of relationships... (between initial yield and total return).

Initial Yield and Subsequent Total Bond Returns

That the initial or purchase yield can explain much of the subsequent long-term total bond return is well known. Taking the U.S. Treasury bond market as an example, the relationship is clearly visible in Figure 2. Here, the red dots represent rolling 60-month or 5-year returns, and there is quite a tight upward sloping relationship with the starting period yield measured on the horizontal axis. The goodness of fit (R^2) for our sample period is high at 0.906. On reducing the time horizon to 3-years (the yellow dots in Figure 2) there is still a clear relationship, with an R^2 of 0.8005. But if we reduce the time horizon further, to rolling 12-month periods (the blue dots), the relationship is greatly weakened as the goodness of fit, or R^2, falls to 0.316. In other words, only about 32% of the 12-month bond return can be explained by the yield at purchase.

So the key thing to understand from Figure 1 is that the yield you invest at will likely prove a very close proxy for the total return over 5-years. But over shorter holding periods of 12-months or less, there is only the loosest of relationships as observations in the scatterplot (the blue dots) are highly dispersed. The reason for this is that there are other important factors at work in the determination of short-term bond returns, notably duration return (related to the interest rate sensitivity of the portfolio) and roll-down return (a function of the shape of the yield curve slope).

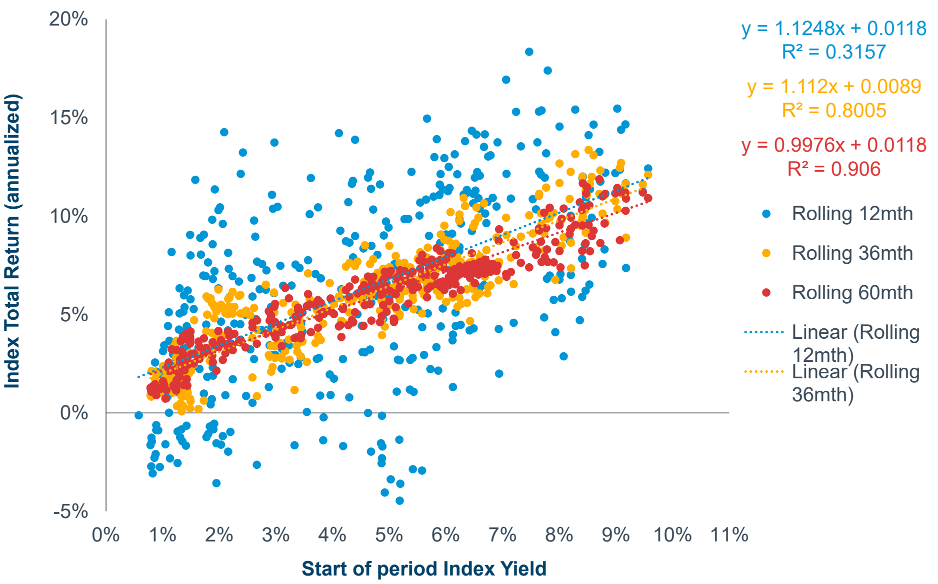
A Statistical Model of Monthly Bond Returns

We constructed a simple model of treasury bond returns by taking data based on standard formula for the three main sources of return – yield, duration and rolldown. Yield is the return that accrues from just holding the bond. Duration refers to the change in the bond price when market yields change. If the current market yield falls, the bond price will rise, providing the investor with a positive duration return. The reverse occurs – a negative duration return – when the market yield increases.

The third source of return – the roll-down return – is more of a technical factor and as such may be less familiar to investors. It is a function of the slope of the yield curve for government bonds. It arises because the yield on the bond will fall the closer it gets to maturity, generating a positive return if the yield curve is upward sloping. An inverted yield curve, in contrast, will generate a negative roll-down return. Clearly, the steeper is the yield curve, the more powerful will be the roll down effect. The three sources of total bond returns - yield return + duration return + roll-down return – are illustrated in Figure

FIGURE 2: 'Yield' as a Driver of U.S. Treasury Returns

US Treasury Index - total returns versus starting period yield.



- Beginning of period yield explains much of the subsequent total return.
- This relationship is stronger over longer time periods.
- Shorter term returns are more variable.
- The same relationship holds across the other countries in the corresponding index.
- Can we find a better explanatory model for short term returns?

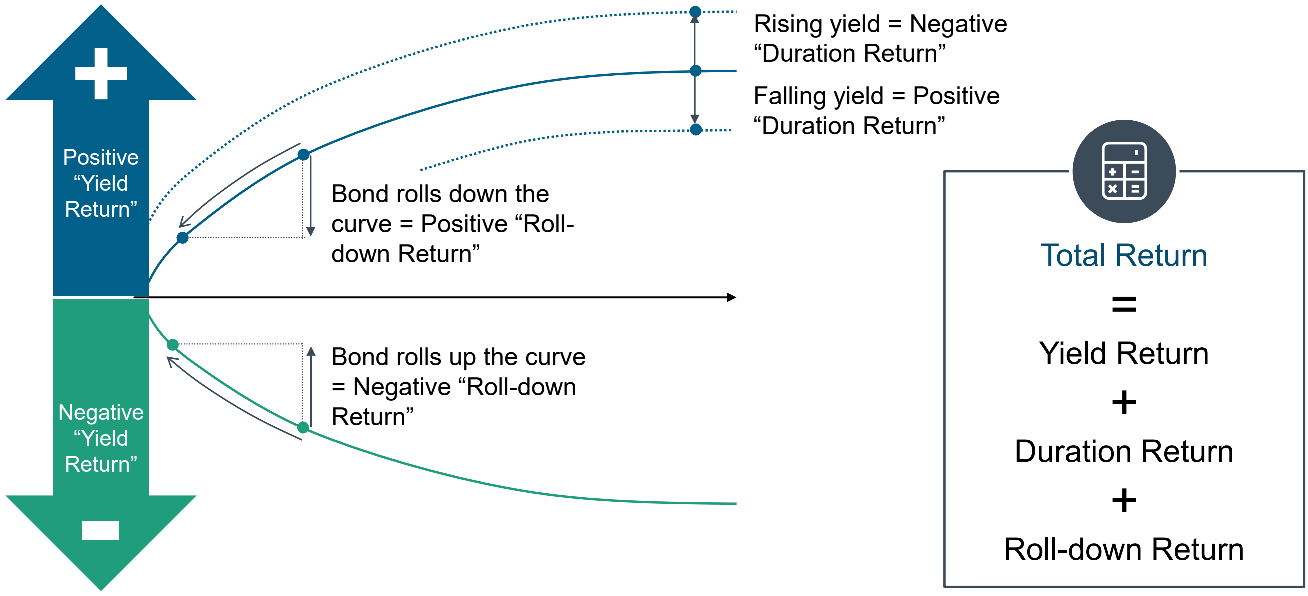
Data from 1 January 1987 to 26 February 2021.

Past performance is not a reliable indicator of future performance.

Source for Bloomberg index data: Bloomberg Index Services Limited. Analysis by T. Rowe Price. Index referred to: Bloomberg Global Treasury – US Treasury (local return)

FIGURE 3: A Simple Explanatory Model of Treasury Returns

Total return = Yield return + duration return + roll-down return



Source: T. Rowe Price. The diagram above is for informational purposes only and does not represent any investment recommendations

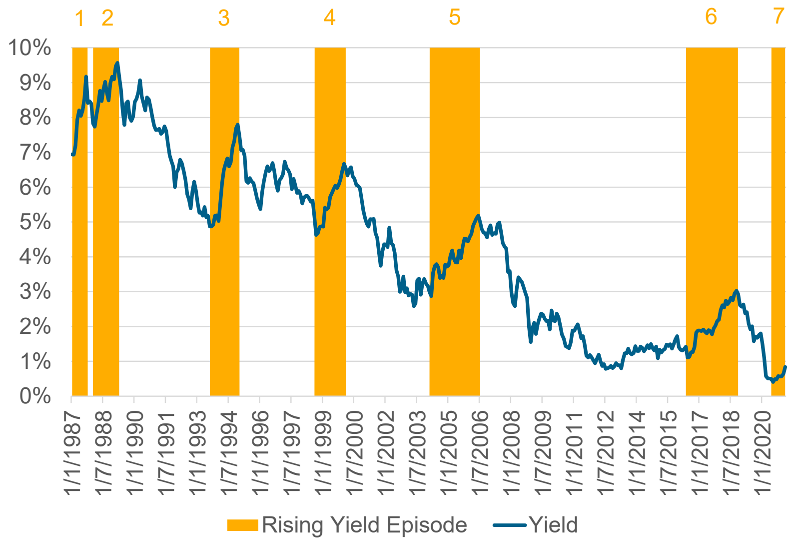
3 for both a positive and a negatively sloping yield curve.

We ran some simple linear regressions to see whether our three-factor model does a good job in explaining total monthly bond returns. As one example, Figure 4 considers periods of rising U.S. government bond yields since 1987, with seven major upcycles identified. Without going into the details, our empirical testing of the model found that it generally performed well in forecasting monthly total bond returns during these historical episodes of rising bond yields.

This is important, since it gives us some confidence when we come to use the model in the next section in a scenario analysis of potential future returns as rates rise in the current upcycle that is expected to begin in 2022. The main takeaway is that the regression results for this simple three-variable model of treasury bond returns produced a very good fit for each of the ten major government bond indices over their long past histories. Using past history as

FIGURE 4: Historical Example: US Episodes of Rising Yields

Bloomberg US Treasury Index: Periods of rising yields



	Start Date	End Date	Start Yield	End Yield	Yield Change
1	Feb-87	Sep-87	6.93%	9.18%	+2.25%
2	Feb-88	Mar-89	7.73%	9.57%	+1.83%
3	Sep-93	Dec-94	4.87%	7.79%	+2.92%
4	Sep-98	Jan-00	4.62%	6.67%	+2.04%
5	Mar-04	Jun-06	2.87%	5.18%	+2.30%
6	Jun-16	Oct-18	1.11%	3.03%	+1.92%
7	Jul-20	Feb-21	0.41%	0.84%	+0.43%

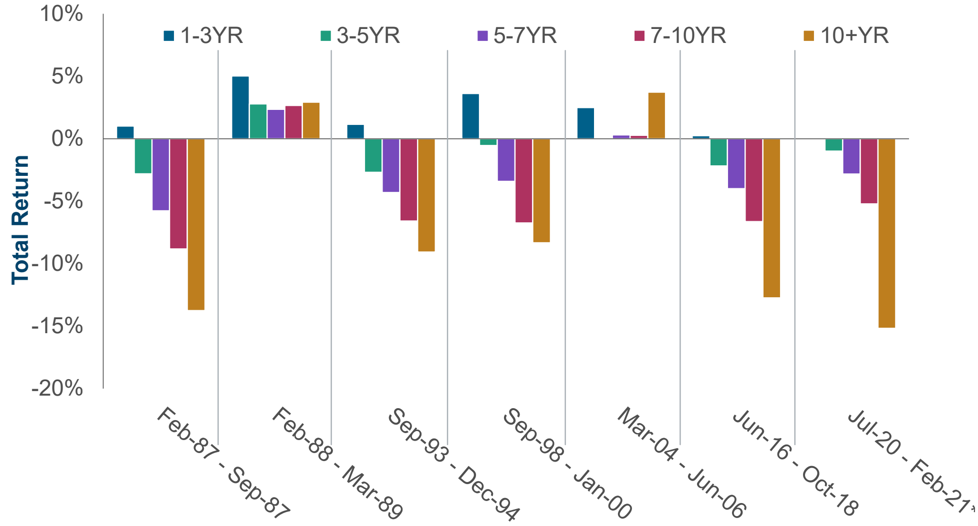
February 1987 to February 2021.

Past performance is not a reliable indicator of future performance.

Source for Bloomberg index data: Bloomberg Index Services Limited. Analysis by T. Rowe Price. Index referred to: Bloomberg Global Treasury – US Treasury (local return).

FIGURE 5: One Suggested Solution: Aggressively Reduce Duration (I)

Bloomberg US Treasury Index: Performance during rising yield episodes



- We analyse the index by maturity buckets during rising yields episodes.
- Whilst bonds >3yrs in maturity experienced significant losses …
- 1-3yr maturity bonds generated a positive return in each episode.
- Reducing portfolio duration to ~2yrs may help mitigate duration-led losses.
- However, additional guideline flexibility is needed …

Past performance is not a reliable indicator of future performance.

For illustrative, informational purposes only. This is not intended to be investment advice or a recommendation to take any particular investment action. Source for Bloomberg Index data: Bloomberg Index Services Limited. Analysis by T. Rowe Price.

Indexes referred to: Bloomberg Global Treasury – US Treasury 1-3yr, 3-5yr, 5-7yr, 7-10yr, 10+yr. (local return.) See Figure 4 for Rising Yield Episodes. *Return for 1-3yr index was 0.03%.– US Treasury (USD-hedged).

a guide, the current yield sell-off may be in its early stages and could have the potential to run a lot further. At the very least, it suggests that index-aware global fixed income investors could face a highly challenging environment in 2022.

U.S. Historical Scenarios Suggest Vulnerability to Rising Yields

We take the US Treasury index's historical record as a basis for our scenario testing. In the scenario simulations we took February 2021 as the initial or starting yield (1.44% for the 10-year Treasury bond, which is close to the current 10-year yield of 1.42% on 13 December, 2021). To this was added the rise in yields that occurred in each of the 7 yield upcycles shown in Figure 4, minus the 43 basis points rise in yield since the trough for this cycle in July 2020. The average yield increase over the previous yield rising episodes was 2.22%.

> ....the current yield sell-off may be in its early stages and could have the potential to run a lot further.

We then used our regression model to project total bond returns under each of these historical scenarios.[1] Serving as a strong warning to fixed income investors, the six scenarios generated potential losses for the Bloomberg U.S. Treasury index that varied between 4.3% and 12.6%, as shown in Table 1.

TABLE 1: Scenario Return Projections from 26 February 2021

Bloomberg Global U.S. Treasury Index – Top ten countries

Scenario	Months	End Date	Yield Change	Projected Return
1987	6	Aug-21	+1.81%	-10.27%
1988-89	12	Feb-22	+1.40%	-6.54%
1993-94	11	Jan-22	+2.49%	-12.63%
1998-00	12	Feb-22	+1.61%	-7.59%
2004-06	27	May-23	+1.87%	-6.42%
2016-18	24	Feb-23	+1.48%	-4.31%

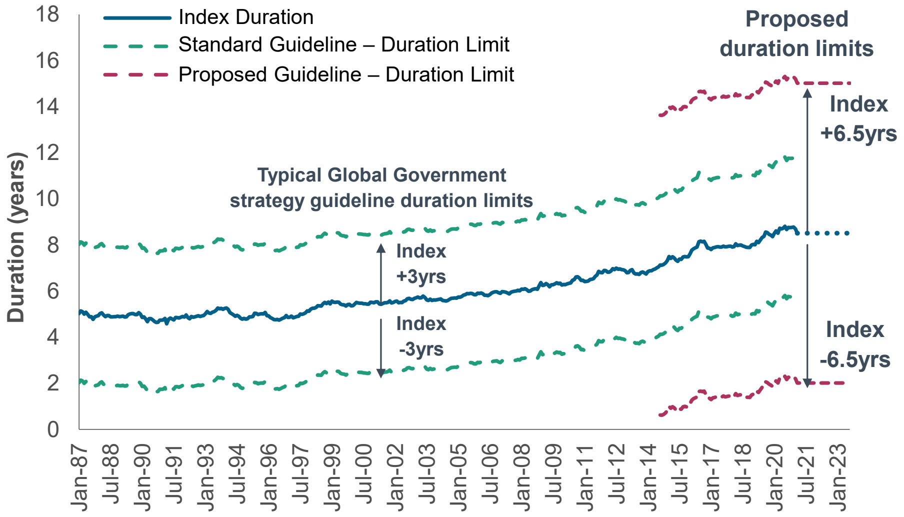
For illustrative, informational purposes only. The scenario return projections shown above are hypothetical and are based on index data which do not reflect actual investment results. Estimated returns can be conditional on economic scenarios; in the event that a particular scenario comes to pass, actual returns could be significantly higher or lower than forecast.

Source for Bloomberg index data: Bloomberg Index Services Limited. Analysis by T. Rowe Price. Index referred to: Bloomberg Global Treasury – US Treasury (local return). Base period 26 February 2021.

[1] In order to use the model, we also needed to make some assumptions about the slope of the yield curve in future periods. The yield curve slope was assumed to continue to steepen until December 2021 before flattening at the rate in each historical episode.

FIGURE 6: Our Suggested Solution: Aggressively Reduce Duration (II)

Bloomberg Global Treasury Index – wider duration limits required



- Typical guidelines permit a duration range of index -/+ 2-3yrs … sufficient when the index duration was ~5-5.5yrs.
- Post-GFC, index duration has lengthened substantially … currently ~8.5yrs.
- Reducing portfolio duration to ~2yrs requires the duration band to be widened to -/+6.5yrs.
- Additional Tracking Error will be required …

For illustrative, informational purposes only. This is not intended to be investment advice or a recommendation to take any particular investment action.
Source for Bloomberg index data: Bloomberg Index Services Limited. Analysis by T. Rowe Price. Index referred to: Bloomberg Global Treasury – US Treasury (USD-hedged).

One Suggested Solution to Rising Yield Risks

In order to avoid potential duration losses of 4 to 12 percent in the next bond yield upcycle that is expected to commence in 2022, one suggested solution would be for investors to aggressively reduce portfolio duration. Figure 5 shows clearly that in past periods of rising yields, the longer the maturity or duration, the larger the loss or drawdown. At the short end of the yield curve, in contrast, the returns on 1-3 year bonds were positive in all 7 episodes of rising yields. From 1987 onward, the rolling 12-month return from these short-dated government bonds was negative in less than 3% of periods.

Our research suggests that lowering the duration on a portfolio of government bonds to around two years can significantly reduce or even avoid losses from rising yields. But to take duration this low, greater flexibility will need to be built into bond mandate guidelines. These typically permit portfolio duration to deviate from benchmark by + or – 2 years (See the green dashed lines in Figure 6). While this might have once been adequate, since the global financial crisis and Lehman shock the duration of the Bloomberg Global Treasury Index has increased to about 8 1/2 years. So portfolio mandate duration guidelines of + or – 6 1/2 years become necessary to allow an active manager today to reach the 2-year duration comfort zone. This implies a significantly bigger tracking error budget of around 500 basis points.

Another option would be for the asset owner to adopt an unconstrained global bond portfolio, giving the manager full discretion over strategy. For example, successful country allocation away from benchmark can also help to generate positive returns during periods of rising yields. The dispersion of bond returns by country creates an opportunity for duration-neutral portfolio trades, such as long Japan and short the U.S., even when the trend in yields is upwards in every market. So even during periods of rising yields, the global treasury universe can provide opportunities to generate positive returns for the unconstrained manager who is able to take short positions.

> The removal of QE and central bank policy rate hikes are the likely catalyst for higher bond yields in 2022...

Concluding Thoughts

In this Insights we have shown that while 'yield' explains most of the return in global government bonds over longer-term horizons, in the shorter term this is not so. Over shorter horizons, it is 'duration' and yield changes that will likely dominate total returns for fixed income investors. While so far, the rise in yields during the post-pandemic recovery has been relatively modest relative to history, there is no guarantee that this will continue in 2022. The removal of QE and central bank policy rate hikes are the likely catalyst for higher bond yields in 2022 and potential losses for holders of global government bonds.

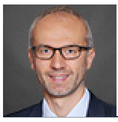
One pointer here is that today's U.S. nominal 10-year yield of 1.42% (as of December 13, 2021) implies a deeply negative real yield, as does the Fed's 'Dotplot' long-term Fed funds forecast of 2.5%. Even if inflation starts to fall back later in 2022, real rates would appear to be too low, judged by the old rule of thumb that the real interest rate should converge over time to the long-run potential growth rate of the economy.

For index-aware fixed income investors, aggressively reducing portfolio duration ahead of future yield increases may be the key to mitigating capital losses from rising yields. Decisive action is required in advance, with wealth owners taking care to expand investment guidelines in ways which give the asset manager greater flexibility to mitigate duration-led losses in government bond portfolios. For the more conservative type of 'buy and hold' fixed income investor this may be too big a change in the way their bond portfolio has been managed. For less restricted bond investors the attractions are clear. Now is the time for them to revisit their portfolio mandates before the next rising yield cycle exerts its icy grip.

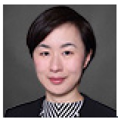
SIX PILLARS FOR AN EFFECTIVE MODEL PORTFOLIO

T. Rowe Price process has key design and management strengths.

- Investors and financial professionals seeking model portfolios face a crowded market of providers and solutions, requiring them to make critical choices.
- Our analysis has identified six key factors that we believe investors and financial professionals should prioritize when evaluating model portfolios.
- T. Rowe Price offers a range of services designed to support financial professionals no matter where they are in their models-based practice.



Thomas Poullaouec
Portfolio Manager,
Global Multi-Asset Team



Wenting Shen
Portfolio Manager,
Global Multi-Asset Team

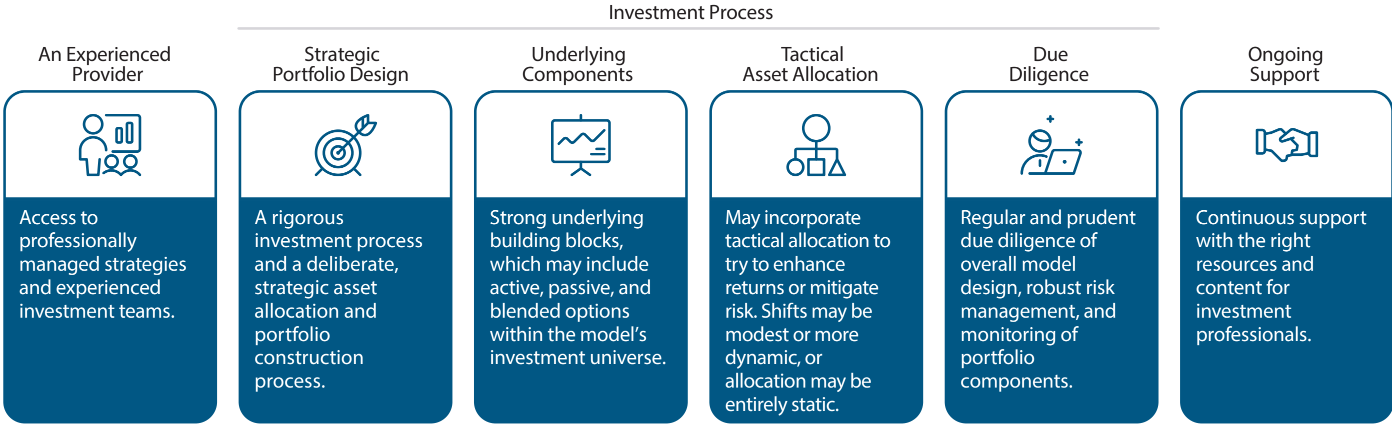
Model portfolios that provide diversified exposure to stocks, bonds, and/or other asset classes have rapidly emerged as a solution of choice for many investors and financial professionals.[1] However, while model portfolios can greatly simplify the asset allocation process, they still require investors and financial professionals to evaluate a host of critical factors when selecting a model appropriate for their investment objectives and risk preferences.

Not least of these decisions is the choice of providers—both of the model itself and of the underlying components used to assemble the desired portfolio allocations. Asset allocation and portfolio design are complex processes based on extensive research and proprietary methodologies.

[1] Model portfolios are professionally managed investment solutions provided by asset managers to financial professionals, reflecting a design for a group of underlying investments that together target a certain investment objective or a range of risk or return levels. Model portfolios are typically not directly investable, and financial professionals' actual implementation of provided design may vary from the asset manager's suggested design.

FIGURE 1: Pillars of Strength

T. Rowe Price model portfolios are backed by decades of asset allocation experience



Source: T. Rowe Price.

Ongoing portfolio management requires investors and financial professionals to consider a range of additional questions:

- What kind of support can the model provider offer to help keep financial professionals and their clients informed about their portfolios and overall market conditions?
- Does the manager seek to add value through tactical allocation— shorter-term portfolio shifts that seek to take advantage of, or guard against, temporary market conditions?
- Who will monitor potential risk exposures within the underlying components or ensure that they continue to provide the asset class and/or style exposures called for in the model?

In an increasingly crowded marketplace, investors and financial professionals will find many proposed answers to these questions and will be offered thousands of potential solutions by asset managers and other model portfolio providers.

In terms of the evaluation and selection process, we have defined six key factors that we believe are most important for investors and financial professionals to consider when choosing model portfolios (Figure 1). In this paper, we explain how T. Rowe Price addresses these key factors and describe the resources and investment expertise we seek to apply to them.

To a large extent, these six pillars represent the core institutional strengths — as multi-asset allocators and as investment managers — that we believe we bring to the model portfolio process.

An Experienced Provider

In our view, investment skills, resources, and experience are the foundational criteria needed in selecting a model portfolio provider. In that regard, we believe T. Rowe Price brings a compelling track record to the entire process—from strategic portfolio design to ongoing management.

The firm has more than 30 years of experience in constructing and managing multi-asset portfolios across a range of strategies for individual and institutional investors. We apply those same advanced investment techniques to designing, managing, and supporting model portfolios.

T. Rowe Price model portfolios are managed by a dedicated team that Morningstar has cited as one of the largest and best-resourced multi-asset organizations in the investment industry (Figure 2). Our team understands the complexities of managing multi-asset portfolios.

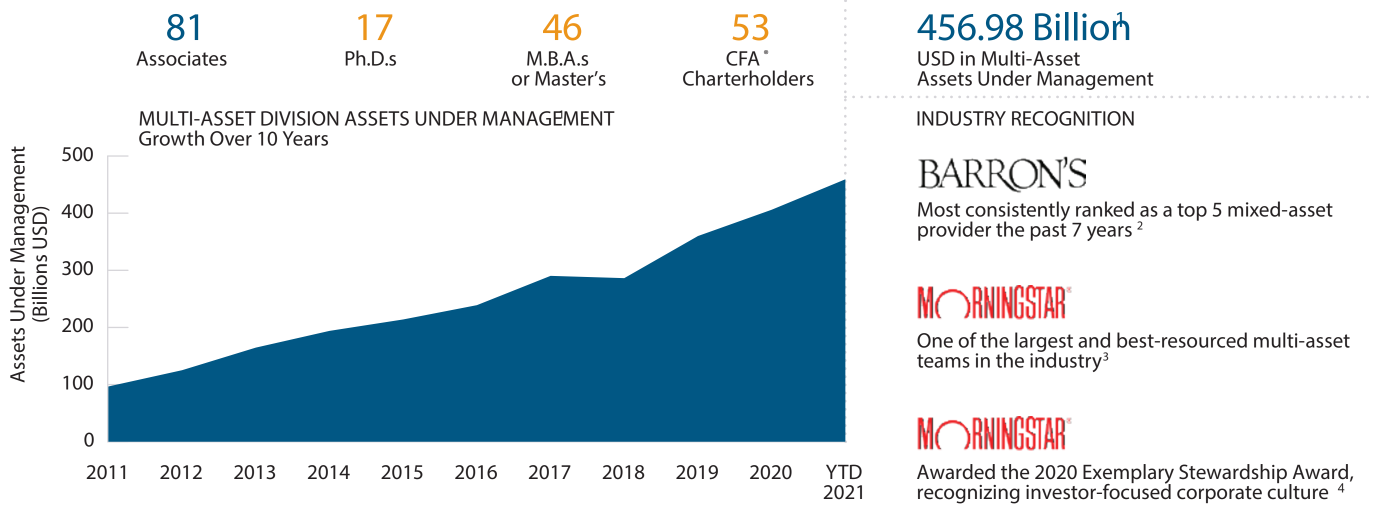
Responding to a dynamic market environment means that generating strong investment results requires thoughtful initial portfolio design and ongoing due diligence, monitoring, and revalidation of the portfolio through time. We are thorough in each step of the process—from strategic portfolio design, through the selection of the underlying components, to tactical asset allocation positioning—and we are aware of the risks and interactions across each step of the investment process.

Strategic Portfolio Design

Strategic portfolio design is the most critical part of the investment process and the principal driver of an investor's risk and return outcomes. The portfolio

FIGURE 2: T. Rowe Price Has Over 30 Years of Experience Managing Multi-Asset Portfolios

Experience and resources of our Multi-Asset Division



All awards are for reference only, with the sole purpose of providing information of T. Rowe Price corporate capabilities. Investment involves risk. Past performance is not a reliable indicator of future performance.

As of September 30, 2021.

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[1] The combined multi-asset portfolios managed by T. Rowe Price Associates, Inc., and its investment advisory affiliates. This figure includes assets that are held outside of T. Rowe Price, but where T. Rowe Price influences trade decisions.

[2] Barron's ranked T. Rowe Price in the top five mixed-asset providers 4 out of 7 years from 2014 to 2020. Last reviewed February 2021.

[3] Source: Morningstar Direct, Analyst Report, March 5, 2021 (see Additional Disclosures).

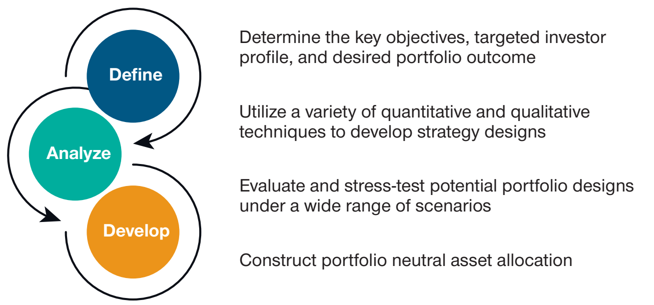
[4] Morningstar Awards 2020 © Morningstar, Inc. All Rights Reserved. For details, please visit https://www.morningstar.com/content/dam/marketing/emea/global/awards/2020/awards_methodology/US_Qualitative_Fund_Awards_Methodology_2020.pdf?elqTrackId=3698edd69c4a461e82102128aafdf768&elqaid=3003&elqat=2

design process establishes the long-term neutral portfolio allocations across asset classes.

T. Rowe Price model portfolios are built upon the same design principles and disciplined, repeatable investment process used in the T. Rowe Price target allocation and target date strategies (Figure 3). Each model is designed to align with an investor's specific investment goal, risk tolerance, and expected time horizon. Strategic asset class and sub-asset class

FIGURE 3: We Believe Strategic Portfolio Designs Are Critical to Helping Clients Achieve Their Goals

T. Rowe Price's strategic portfolio design process



We combine analytical frameworks with our investment expertise and insights across our portfolio design phases and ultimately to how we implement and manage each portfolio.

Source: T. Rowe Price.

neutral weights are informed by a range of analysis and inputs based on the model portfolio's unique risk/return objectives and desired outcomes.

T. Rowe Price target allocation model portfolios are broadly diversified across global equity and fixed income sectors and regions. Our goal is to build durable portfolios that can consistently perform across a range of market environments by incorporating diversified sources of potential added value and by not being overly reliant on any single environment to succeed. We routinely review these allocations to help assure their efficacy.

In our diversified portfolio designs, the equity allocation is generally intended to serve as the primary contributor to growth and capital appreciation. Within equity, our approach is generally both size and style neutral versus the market, and we advocate for global diversification while recognizing that some investors may wish to preserve a bias toward their home country. (Figure 4).

Our strategic fixed income allocations generally seek to take advantage of the global opportunity set and include a combination of core and diversifying strategies (Figure 5).

Past performance is not a reliable indicator of future performance.

For illustrative and informational purposes only. Our target date fund range is available for sale in the US only. This material does not provide investment advice or recommendations. Nothing in this material shall be considered an offer or solicitation for any of these products or services.

FIGURE 4: How We Construct Equity Model Portfolios

Illustrative equity allocation design

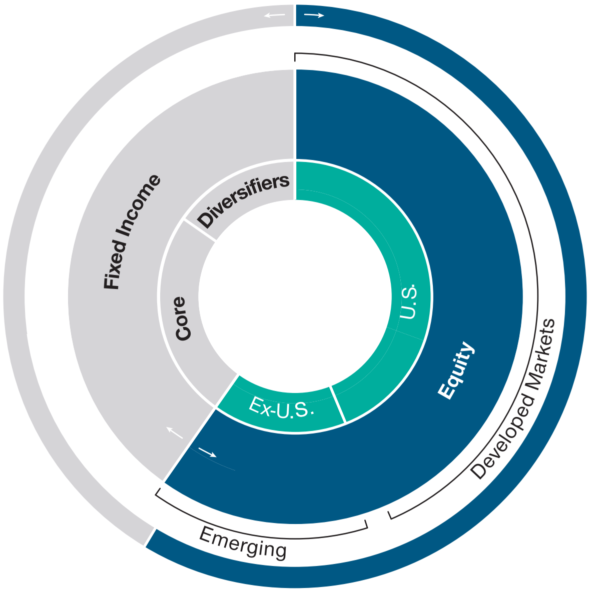
Equity Exposure

We believe the role of equity in a multi-asset portfolio is to drive long-term growth of capital.

- This role is consistent throughout target risk levels.
- The level, not the type, of equity is the primary driver of portfolio volatility.

Geography

Not necessarily neutral versus the benchmark, as, in some cases, a home country bias might make sense depending on client preference.



Source: T. Rowe Price.

- Core high-quality fixed income asset classes (e.g., short-term, intermediate, and long-term U.S. investment-grade bonds, and U.S. dollar-hedged global ex-U.S. bonds) can act as a ballast or counterweight to the models' equity exposure in order to diversify sources of portfolio risk and help contribute to lower portfolio return volatility.
- Diversifying sectors (also known as plus sectors), such as high yield bonds, floating rate loans, and emerging markets debt, can provide exposure to higher-yielding opportunities and help reduce interest rate sensitivity.

While the plus sectors complement the core bonds, we size plus sector allocations accordingly, recognizing their higher correlation with equities, particularly in periods of market stress.

Selection of the Underlying Components

In addition to considering the strategic portfolio design, financial professionals also need to evaluate a model's underlying components and their characteristics.

FIGURE 5: How We Construct Fixed Income Model Portfolios

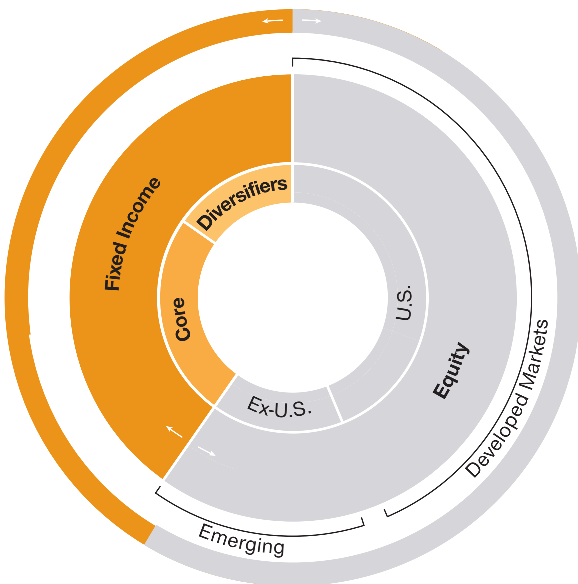
Illustrative fixed income allocation design

Fixed income components have markedly different relative dynamics compared with equities.

Bonds can be used as portfolio ballast to help potentially reduce portfolio volatility and seek higher risk-adjusted returns.

We believe a fixed income portfolio should maintain a sufficiently diversified exposure to the broad fixed income universe.

When used in a multi-asset portfolio, the fixed income allocation should be designed with the total portfolio in mind.



Source: T. Rowe Price.

We believe in the potential for skilled active management to add long-term value across multiple asset classes, and we would argue that T. Rowe Price has demonstrated that ability through the longer-term historical performance of our target date funds relative to both industry benchmarks and their major passive competitors.[2]

In our view, financial professionals evaluating actively managed underlying components in a model portfolio should look for experienced management teams with a demonstrated ability to deliver strong relative performance over full market cycles. We believe T. Rowe Price is well positioned to meet this need.

The underlying components in T. Rowe Price model portfolios are typically drawn from a wide range of actively managed strategies covering major asset, sector, and geographic region. This expansive opportunity set allows us to select from a wide range of sector-specific components and more broadly diversified components with greater sector representation.

Selection of the underlying components in our models is conducted in close collaboration between the model's portfolio managers and our multi-asset research team. We carefully consider how the underlying components could contribute to a model portfolio's potential active risk. We may combine components with lower and higher active risk budgets to target a specified level of overall tracking error in the portfolio. We also may combine core and style-specific components to diversify active risk and implement tactical asset allocation decisions.

Similar to T. Rowe Price's other multi-asset strategies, our model portfolios seek to provide diversification and multiple sources of excess return. We seek to balance diversification across the underlying components by incorporating sector-specific strategies and more diversified, flexible components. We believe that including a mix of sector-specific and broad components allows us to ensure adequate diversification while avoiding unnecessary portfolio complexity as we determine the breadth of the underlying attributes and number of holdings.

In our view, the benefits of using T. Rowe Price proprietary strategies in our model portfolios include:

- direct access to the expertise and capabilities of the underlying portfolio management teams;
- a focus on style consistency, making it more likely that strategies will remain consistent to their mandate;
- accurate, timely information on underlying holdings, which can facilitate risk management and tactical positioning;
- a consistent process for risk management oversight;
- shared corporate values among investment professionals, all of whom must meet T. Rowe Price's rigorous standards for integrity, ethical behavior, and putting client interests first.

Tactical Asset Allocation

T. Rowe Price believes that a risk-aware approach to tactical asset allocation can provide opportunities to add value by leaning in to areas where market conditions have resulted in asset mispricing or created potential opportunities to reduce exposure to perceived risks. Accordingly, T. Rowe Price's model portfolios incorporate tactical asset allocation decisions as an additional source of potential value added.

Our tactical asset allocation approach is driven by fundamentals and supported by a range of quantitative tools and inputs. Tactical decisions are made by the T. Rowe Price Asset Allocation Committee (AAC), which is composed of senior

ACTIVE MANAGEMENT BACKED BY GLOBAL RESOURCES

Active management and in-depth research are core capabilities for T. Rowe Price. Our global research platform is staffed by more than 380 research professionals worldwide, while our portfolio managers average 22 years of investment experience and 17 years of tenure with the firm.[3]

Our research teams include specialists across the capitalization and style spectrums who use fundamental, bottom-up analysis to evaluate companies and inform security selection.

Extensive interaction among analysts across asset classes, sectors, and industries promotes a broad perspective and timely decision-making, in our view.

[2] For more on the historical performance of T. Rowe Price's target date funds versus both industry benchmarks and their major passive competitors, see: T. Rowe Price's Strategic Investing Approach Has Benefited Our Target Date Funds, T. Rowe Price Insights, October 2021; and How Our Strategic Investing Approach Stacks Up Against Passive Portfolios, T. Rowe Price Insights, October 2021. **Past performance is not a reliable indicator of future performance.**

[3] As of September 30, 2021.

CASE STUDY: TACTICAL ASSET ALLOCATION DURING THE COVID-19 SELL-OFF

A recent example of value added[4] through T. Rowe Price's tactical asset allocation process occurred during the COVID-19 market sell-off in March 2020. The model portfolio management team responded to the downturn by overweighting stocks versus bonds, reflecting a view that equity valuations looked broadly attractive after the sell-off. Afterward, as equity markets recovered and the risk/reward profile for stocks began to look less compelling, the team moved back to a neutral stock/bond mix at the beginning of July 2020.

These moves added value for our Target Allocation Active Series Model Portfolios. Over the full calendar year 2020, for example, tactical adjustments to the stock/bond allocation added approximately 60 to 90 basis points, net of fees, to returns on the Target Allocation Active Series Model Portfolios, relative to each portfolio's combined benchmark.

investors across the firm's multi-asset, equity, and fixed income divisions.

The AAC meets monthly to decide which asset classes and sub-asset classes, if any, to overweight or underweight over a specific time horizon, typically six to 18 months. The committee seeks to harness the collective insights of the multi-asset team and the proprietary views of our global research platform to identify market themes and potential opportunities and to identify possible catalysts for profit realization.

Within the T. Rowe Price model portfolios, we take a measured approach to tactical decisions. Our typical practice is to build in and out of positions rather than taking outsized investment bets over short time periods. Our process also considers the potential transaction costs of incremental trades across portfolios and applicable tax considerations.

We typically implement tactical decisions on a quarterly basis and are cognizant of risk considerations, such as tracking error relative to strategic profile, particularly in cases where the model portfolios are positioned on a risk continuum to sit within a risk/volatility band.

Due Diligence

Once a model portfolio has been adopted, financial professionals need to be sure that the underlying components continue to be managed in a way that is consistent with their intended objectives and roles in the portfolio. At T. Rowe Price, providing this level of oversight is a central element in our approach. This requires ongoing monitoring of quantitative and qualitative factors, including risk/return, style, performance attribution, risk attribution and exposures, tracking error, positioning, and portfolio characteristics.

Members of the Multi-Asset Due Diligence Committee meet regularly with the managers of the underlying strategies to ensure their continued adherence to their stated objectives and investment process; to review key drivers of recent performance; and to understand the potential implications of any changes in process, philosophy, and/or people. The models and their underlying components are also routinely evaluated by T. Rowe Price's independent investment risk team. We believe that multiple layers of oversight may help provide a more durable investment experience for financial professionals.

Ongoing Support

Effective model portfolios require more than just strategic portfolio design and investment management expertise. T. Rowe Price recognizes how important it is for financial intermediaries to have access to marketing and distribution services to help serve their clients.

As one of the world's largest asset management firms and a leading provider of recordkeeping and investment services to defined contribution plan sponsors, T. Rowe Price has decades of experience in investor outreach and education. We seek to provide financial professionals with timely content that will help them effectively communicate with their clients and address questions and concerns about current market events, portfolio performance, and the reasoning behind our tactical allocation decisions.

More About Our Model Portfolio Services

No matter where financial professionals are in the evolution to a model-based practice, T. Rowe Price can help.

Past performance is not a reliable indicator of future performance.

[4] Six of the eight Target Allocation Active Series model portfolios experienced a positive impact from tactical adjustments during the period cited. Two portfolios—the 100% equity and 100% fixed income target allocations—were unaffected by tactical allocation changes. However, not all of the portfolios that had positive contributions to their returns from tactical allocation outperformed their benchmarks during the period.

We provide a range of services including fully outsourced model portfolios designed and managed by a dedicated team of professionals. These models seek to add value at each level of the portfolio management process:

- strategic portfolio design based on T. Rowe Price's proprietary asset allocation methodology, which combines in-depth capital markets research with advanced analysis of the qualitative and quantitative factors that can shape investor risk and return preferences;
- tactical asset allocation that incrementally seeks to add value through prudent, fundamentals-based evaluation of the current market environment;
- selection of underlying portfolio components from T. Rowe Price's extensive lineup of actively managed strategies;
- due diligence at the portfolio and component level, including ongoing risk assessment, performance attribution analysis, and monitoring of process or personnel changes in the underlying components.

Conclusions

Taken together, we believe our model portfolios and related services can serve as "force multipliers" that make it easier for financial professionals to offer well-resourced, institutional-quality investment solutions while leaving them more time to spend with their clients and to grow their practices.

CUSTOM MODELS

Model portfolio design is not always a one-size-fits-all approach, and T. Rowe Price recognizes that specific client-directed objectives and constraints may apply to the implementation of investment solutions.

We have the capabilities to collaborate with financial professionals to design models that reflect our mutual best thinking and client goals, including seeking to limit tracking error or reduce investment costs by incorporating enhanced or passive strategies, tailoring the specific line items, or incorporating a multi-manager approach based on client's preferences.

The principles expressed in this paper reflect our baseline philosophy, but we appreciate the value of customizing model designs to reflect specific views or objectives where appropriate.

T. Rowe Price also has the marketing and communications resources to help financial professionals keep their clients informed and aware of portfolio-positioning decisions, significant market developments, and their progress toward their long-term financial objectives.

Our financial intermediary specialists would be happy to provide additional information on T. Rowe Price model portfolio services upon request.

A Q&A SESSION WITH ERNEST YEUNG, MANAGER OF EMERGING MARKETS DISCOVERY EQUITY STRATEGY

Given the robust rally in equity and bond markets since the pandemic bottom, 2022 may test the nerves of investors amid expectations of uneven economic recovery, the threat from the new omicron variant of the coronavirus, tightening global monetary policy and rising inflation. Ernest Yeung, the manager of T. Rowe Price's Emerging Markets Discovery Equity Strategy, explains how an active investor with a disciplined focus on valuation and fundamentals can still find attractive investment opportunities among emerging markets (EM) stocks.

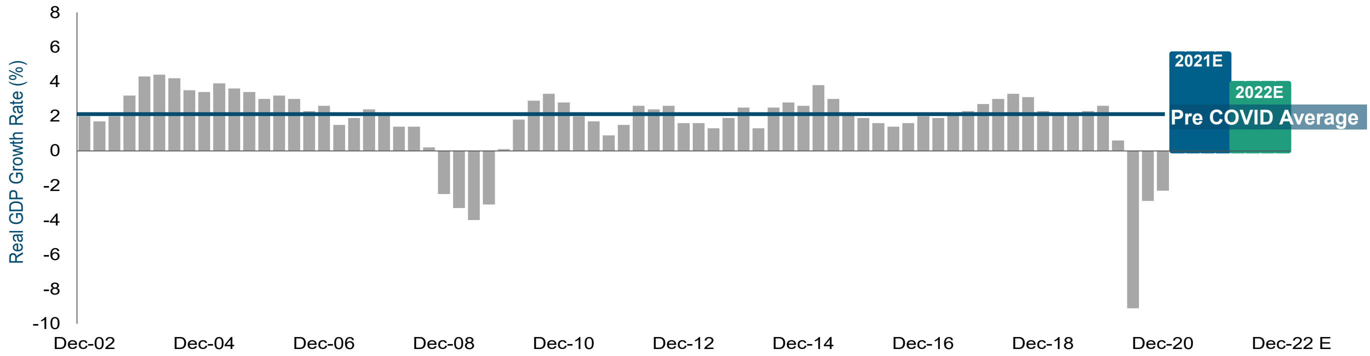
Ernest Yeung
Portfolio Manager,
Emerging Markets Discovery Equity Strategy

Q1: Emerging Markets (EM) value stocks performed well last year, as you expected. What makes you think that the rally can be sustained in 2022?

We believe the recovery of emerging markets (EM) is still in its mid-cycle with covid reopening and a key structural change in government stimulus that is targeting the consumer directly. This favorable economic backdrop should continue to support a style regime change in EM from Growth to Value in 2022. Although EM value stocks outperformed growth stocks by a significant margin in 2021, we think this trend can continue since the valuation gap between the two styles remains wide by historical standards. At the same time, EM's subdued stock market performance in 2021 increases the chances of both value and growth stocks doing better in 2022, both in absolute terms and relative to their developed market peers.

FIGURE 1: U.S. GDP Growth Expectation for 2022 is Above 20-year Average

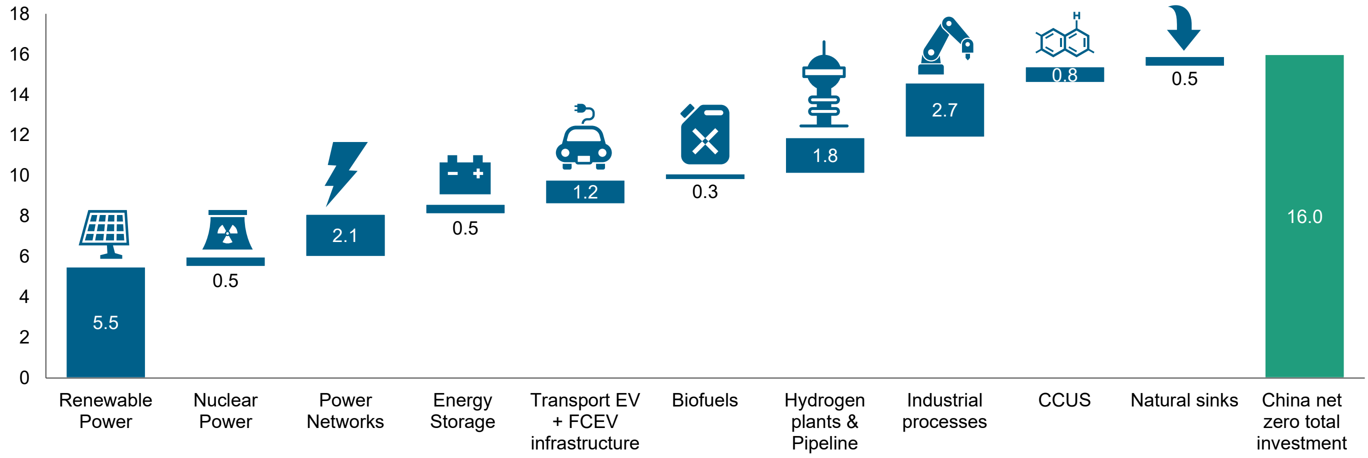
U.S. Real GDP growth rate (%) YoY



As of 31 December 2021
Source: Bloomberg Finance L.P.

FIGURE 2: Carbonomics Investment Opportunities in China

Cumulative investment by sector for net zero in China by 2060 (USD Trillion)



As of 31 December 2020
Source: Goldman Sachs Global Investment Research.
Numbers may not total due to rounding.
There is no guarantee that any forecasts made will come to pass.
Most recent data available.

We anticipate further gains in EM value stocks to be supported by a second recovery year of above trend global growth, where the World Bank forecasts 4.1% in 2022 which is above the 20-year average. We also expect to see an acceleration in green infrastructure spending, as more and more countries become serious about taking action to reverse climate change. A successful vaccine rollout and global economic recovery together provide strong underpinnings to EM value stocks. Economic growth in EM should continue to normalize as vaccination rates and business activity pick up.

EM investors in 2022 will need to navigate a gradual normalisation of policies from 2021 peak levels as major central banks remove some of the emergency support provided during and after the pandemic, which could trigger bouts of volatility. However, we believe that both economic growth and inflation in 2022 will re-set at higher levels than in the immediate pre-COVID era. The switch to a more reflationary regime for the global economy implies that the rotation to more cyclical markets should continue, favouring value stocks over growth stocks.

Q2: China is often regarded as the key to EM fortunes, as it is the largest trading partner for many larger EM economies and the major regional growth driver in Asia. After last year's regulatory shocks and turmoil in the property sector, what is your China view for 2022?

A severe China slowdown in 2022 would be a problem for all investors, but that is not what we expect. I think we are nearing the end of the latest regulatory cycle and so what was a big headwind for Chinese equities in 2021 will start to fade in 2022. In other words, in 2022, China will continue to absorb the policy shocks from 2021, but there will be no additional major shocks. Foreign investors are already warming towards China based on the recent fund flows, which were positive in 6 out of the final 8 weeks of 2021.

In the short term, the next couple of quarters or so, China's economic growth will slow further due to these lagged effects. But regulatory tightening in China is essentially cyclical in nature and we are approaching an inflexion point. We expect to see more incremental policy easing, in 2022, both monetary and fiscal. It will be more selective, however, than in previous cycles and only target certain areas. The PBoC cut its reserve requirement ratio for banks by 50 basis points effective December 15 and also made a small cut in the 1-year lending prime rate, signalling that liquidity will remain easy in 2022.

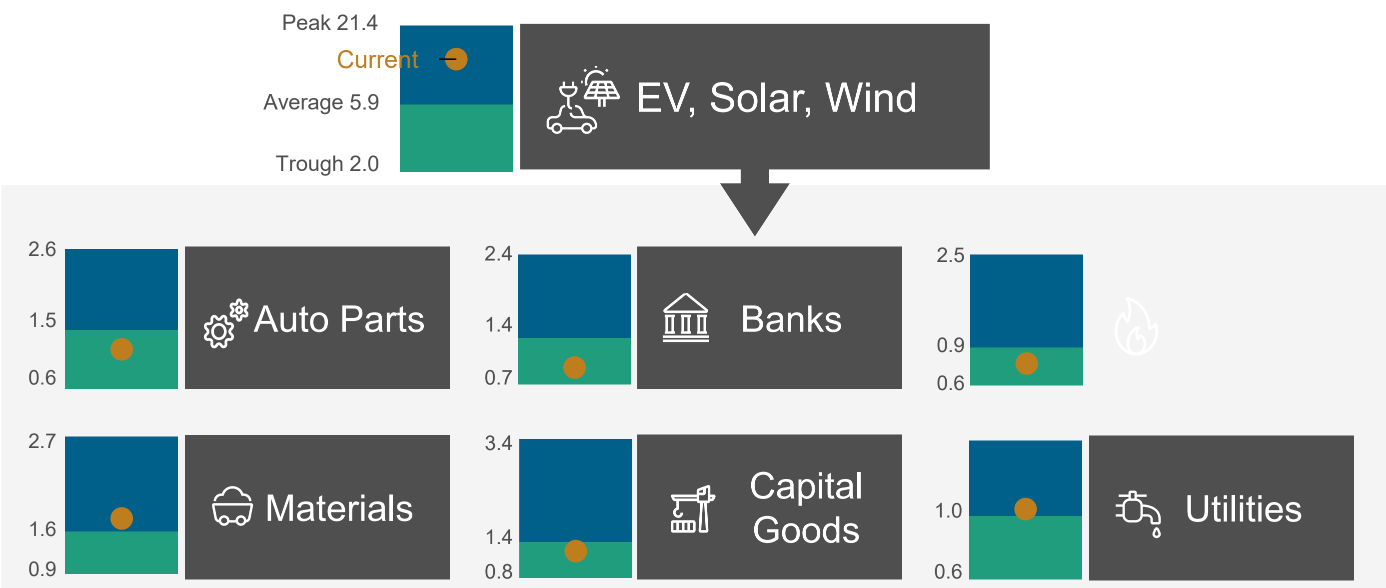
As ever, our investment focus will be on the abundant bottom-up investment opportunities in the exceptionally deep Chinese stock market of over 5,800 listed companies.[1] In our view, China remains a very fertile hunting ground for bottom-up investors. Markets in 2021 under-estimated the amount of short-term pain volatility Beijing is willing to incur in order to improve the quality of future economic growth. China can enjoy sustainable growth if the government can better balance equity with preserving entrepreneurship. The drive for common prosperity and fair competition could also serve as a tailwind for small and medium-sized businesses to thrive.

Q3: Where do you see the best investment opportunities for EM value stocks today?

The 2050 carbon-neutral goals will lead to increased infrastructure spending on a global scale to facilitate the transition. Such "green" infrastructure spending will accelerate economic activity, benefitting traditional industries. Government policies linked to renewable energy, electric vehicles and decarbonisation are widely seen as metals intensive. After nearly a decade of underinvestment in new

FIGURE 3: Polarization of Opportunity Sets within Green Transition

MSCI EM sectors: Trailing price to book value



As of 31 December 2021.
Source: Financial data and analytics provider. FactSet. Copyright 2022 FactSet. All Rights Reserved.
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T. Rowe Price uses the current MSCI/S&P Global Industry Classification Standard (GICS) for sector and industry reporting. T. Rowe Price will adhere to all updates to GICS for prospective reporting. Please see Additional Disclosures page for information on this Global Industry Classification Standard (GICS) information.

[1] The China market represents all listed stock, including onshore and offshore. Dual listed ADR/GDR excluded to avoid double counting. Sources: Bloomberg Finance L.P. FactSet. Financial data and analytics provider FactSet. Copyright 2022 FactSet. All Rights Reserved. As of 31 December 2021.

metals supply, this is an investment theme for the medium to longer term. It is a secular bull story for a number of commodities, including iron ore, copper (a universal beneficiary of electrification), and battery raw materials such as nickel and lithium. Natural gas will also play a key interim role for EM in their transition away from coal and oil toward cleaner fossil fuels. The large amount of financing required to support the green energy transition of EM is also likely to open up significant new business opportunities for the banking sector.

We believe there are ample opportunities in 2022 for us to identify pockets of "forgotten" EM stocks with potentially asymmetrical risk-return profiles, where fundamental changes or operational improvements may drive a re-rating, while at the same time there is potential downside support from strong balance sheets and healthy dividends. Our current bias in EM is to focus on corporate 'self-help' stories and re-opening opportunities, besides the role that traditional economy stocks can play in the transition to a greener world mapped out at the November COP26 climate summit in Glasgow. Under the self-help category, the pandemic has prompted the management teams of EM companies to become more proactive in their restructuring efforts – cutting costs, selling assets, shifting capacity, and changing product mix. T. Rowe Price's experienced global bottom-up research team can help me to identify good investment opportunities among these companies.

We are also taking advantage of recent market weakness that presented attractive valuation opportunities in China. For example we are finding pockets of forgotten stocks in China's internet sector following the regulatory cycle of 2021. The change in the policy landscape is also prompting these companies to make internal changes to survive under the new regime. Moreover, history tells us that the negative impact from previous bouts of regulation and reforms on Chinese equity performance has been short term in nature and not long lasting.

Q4: Finally, in your role as manager of the Emerging Market Discovery Equity Strategy, what are the key issues keeping you awake at night?

I am cognizant of the key risks for EM investors in 2022, which include policy changes that may lead to a sharper-than-expected slowdown in China, the emergence of new coronavirus variants like omicron that could trigger renewed levels of restrictions, dampening the recovery, and the heightened geopolitical tensions, particularly between the U.S. and China but also including the increasingly unpredictable policies of Russia under President Putin. A significant further rise in the crude oil price would hurt EM economies that are manufacturing oriented. But 2022 currently looks to be adequately supplied with crude oil at the current price. Thus a further spike higher in price would most likely be a consequence of supply disruption. That could happen if tensions in the middle east or eastern Europe get out of hand, but it is not something that investors can predict. Finally, a few EM countries lost their currency anchor in 2021, like Turkey or Argentina. While US interest rates are expected to rise this year, supporting general dollar strength versus EM currencies, much of the rise in rates by the Fed should have already been discounted.

BIOGRAPHY

Ernest Yeung is a portfolio manager for the Emerging Markets Discovery Equity Strategy at T. Rowe Price. He was the co-portfolio manager for the International Small-Cap Equity Strategies from 2009 to 2014. Mr. Yeung is a vice president of T. Rowe Price Group, Inc. and T. Rowe Price Hong Kong Limited.

Mr. Yeung has 20 years of investment experience, 18 of which have been with T. Rowe Price. Prior to joining the firm in 2003, he was an analyst with HSBC Asset Management in London. Mr. Yeung has an M.A. with honours in economics from Cambridge University. He has also earned the Chartered Financial Analyst designation and the Investment Management Certificate.

CHINA REMAINS COMPELLING DESPITE REGULATORY UPHEAVALS

Understanding the government's social agenda is key.

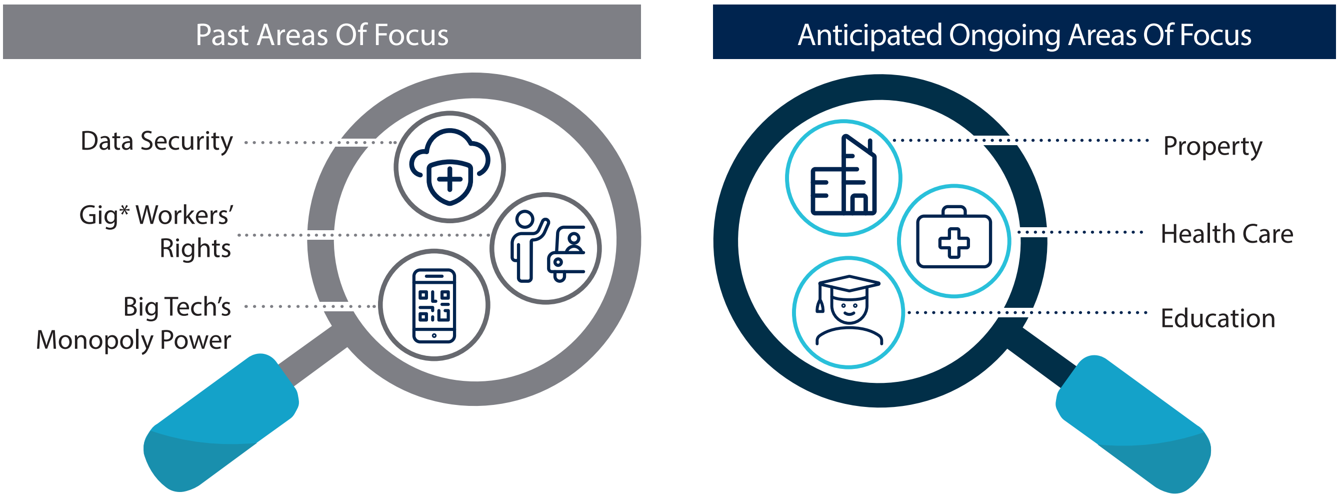
- China's recent regulatory crackdown on tech and private education companies surprised markets with its intensity and reach.
- However, we believe that China's stated commitment to "common prosperity" does not herald a return to communism and that its commitment to competition and innovation remains intact.
- In our view, the most effective way to invest in China is to keep sight of the government's social objectives and incorporate them into the investment process.

Chris Kushlis
Chief, China and Emerging Markets Strategy

Justin Thomson
Head of International Equity

China's latest regulatory crackdown, which wiped hundreds of billions of dollars from the value of some of its largest companies, showed that the authorities in Beijing remain capable of taking the markets by surprise. It also served as a useful reminder that anybody who wishes to remain invested in China—and we believe there are plenty of compelling reasons to do so—should probably try to become better at understanding and measuring Chinese regulatory risk.

FIGURE 1: Monitoring China's Drive for Common Prosperity
Shifting sectors under the policy microscope



*Workers with temporary jobs, typically in the service sector.

Even by its own standards, the Communist Party's recent crackdown on China's tech and private education industries has been far-reaching—according to Alibaba, there have been 28 different pieces of legislation so far this year. Previous actions, such as the 2018 clampdown on the gaming industry, were more narrowly focused and ended sooner. However, Chinese government clampdowns are in themselves nothing new—they have tended to occur in three-year cycles. The focus of the current round has been fairly well signposted over the past few years, although the bluntness of its implementation clearly caught the markets unawares.

> *...China's approach to regulation is to go in hard, observe how the market responds, and then pull back...*
>
> **— Chris Kushlis**
> *Chief, China and Emerging Markets Strategy*

Typically, China's approach to regulation is to go in hard, observe how the market responds, and then pull back a little if the reaction is particularly negative. This way, the authorities can test how far they can regulate without damaging sentiment so much that growth is threatened. Although China is probably more willing than most developed market countries to tolerate a negative market reaction to new policies, it has invariably stepped in to provide reassurance—and, if necessary, stimulus—if investors become too spooked.

Social Priorities Drive Regulatory Tightening

Beneath these policy oscillations, however, a direction of travel is discernible. Driving the recent regulatory reset was China's desire to move away from a "growth first" policy to strike more of a balance between growth and sustainability. President Xi Jinping confirmed this when he recently said that the Communist Party will work toward "common prosperity" in a bid to close China's stubborn wealth gap. A stated objective of common prosperity is to build a stronger middle class, so while there may be some tax increases (particularly for the wealthy), there is also a keen desire to avoid a heavy "tax and redistribute" model that leads to welfarism.

> *Rebalancing wealth distribution to support domestic consumption is a valid goal...*
>
> **— Justin Thomson**
> *Head of International Equity*

This is not surprising—nor is it particularly radical. Rebalancing wealth distribution to support domestic consumption is a valid goal, particularly for a rapidly developing economy such as China's. There is also nothing especially draconian in Beijing's desire to constrain the dominance of big tech firms—regulators in Washington are similarly seeking to tighten antitrust measures to restrict the power of Apple, Google, Facebook, and Amazon. Likewise, China's move against private tutoring can be seen as an attempt to create a fairer, more egalitarian society, which may be positive for the country's development.

The main difference between regulation in developed markets and in China is transparency: In the U.S., UK, and EU, policies are visible as they work their way through the legislative process, which typically allows for pushback from affected parties and can, therefore, take many years to become law; in China, new policies typically appear abruptly, with little consultation, and are accordingly implemented much more quickly.

Chinese Firms' Offshore Entities Come Under Scrutiny—Again

China's tendency to announce new policies without warning complicates matters for investors—it is difficult to invest with confidence if you do not know what the authorities will focus their attention on next. There have, for example, been long-standing concerns over Beijing's attitude to the variable interest entity (VIE) structure, through which foreign investors can invest in Chinese companies.

VIEs are offshore holding companies, usually based in the Cayman Islands, that some large Chinese firms set up for overseas listing purposes. They are designed to get around strict rules that prevent foreign investors from any ownership over key sectors of the Chinese economy. This is achieved by giving the foreign investor a claim on the cash flows of the company but no ownership control. VIEs are not technically legal under Chinese law, but—for the most part—the authorities have turned a blind eye to them.

However, China does occasionally decide to tighten regulations on companies using VIEs, as shown in its recent announcement of sweeping new rules governing private tutoring firms. When this happens, it inevitably raises fears that Beijing may launch a broader clampdown on VIEs in general—something that might concern investors in China. In July, the U.S. Securities and Exchange Commission said that it will also require additional disclosures from Chinese companies using VIEs.

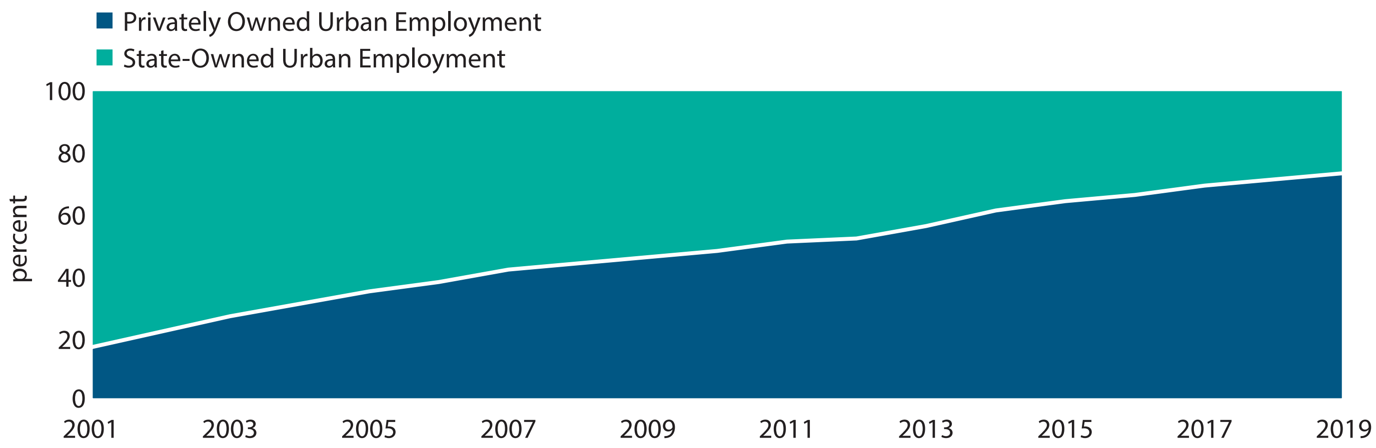
Common Prosperity Is Not Code for a Return to Communism

So is China about to turn its back on capitalism and outlaw VIEs? It is highly unlikely. Private companies in China employ far more people than state-owned enterprises (Figure 1). They play a crucial role in creating jobs, raising living standards, driving innovation, and maintaining social stability. By targeting huge companies that have grown to dominate their industries, it can be argued that Beijing is merely trying to help smaller firms, thereby creating a more competitive environment and encouraging innovation.

> *...we are likely to see a new approach that seeks to balance growth with equality and fairness.*
>
> **— Chris Kushlis**
> *Chief, China and Emerging Markets Strategy*

However, it is important to understand that the Chinese government's ideas of how the private sector should function does differ from that of most western governments. The phrase "common prosperity" implies that, having used market forces to

FIGURE 2: The Private Sector Is China's Biggest Urban Employer by Far
The composition of urban employment in China



As of December 31, 2019. Most recent data available.
Source: Haver Analytics/China National Bureau of Statistics.

power growth, the authorities are now keen to ensure that wealth is distributed more evenly, which could mean reining in firms that become too large. So while a revival of the Mao era is highly unlikely, we are likely to see a new approach that seeks to balance growth with equality and fairness.

The markets have yet to fully grasp the implications of this. The recent regulatory announcements clearly surprised investors, sparking tremendous volatility in stock prices. And while the events of the past few months have prompted intense discussion over the risks of investing in China, it is not yet clear how the regulatory risk premium that investors require for investing in the country will be affected by the latest developments.

Cool Heads and Local Knowledge Are Vital

Given the events of the past few months, some investors might be tempted to avoid China altogether. However, we do not believe this is necessary or advisable. Regulatory crackdowns in China are nothing new and should be expected. The latest one has gained more attention than previous ones because the hardest-hit stocks were those of the biggest firms—and hence those most held by investors. However, the reasons for investing in China—its rapid growth, surging middle class, and low correlation to other markets and the development of "made in China" technology—remain compelling. We believe President Xi's determination to address what he sees as the capitalist excesses in the current system—and the authorities' blunt policy and communications strategy—do not offset them.

In the meantime, we believe the most effective way to invest in China is to never lose sight of the government's social objectives, but rather to understand them as fully as possible and incorporate that understanding into the investment process. Which industries and companies are regulators likely to turn to next? Which sectors will the government want to promote?

> *...the government's social equality drive is likely to be felt most keenly in...property, health care, and education.*
>
> **— Justin Thomson**
> *Head of International Equity*

These are questions that can be best answered with in-depth local knowledge, which means that a deep understanding of the policies and behavior of the Chinese government will be essential to investing in China in the future. So far, the drive for common prosperity has manifested itself in policy thrusts in areas such as data security, gig workers' rights, and big tech's abuse of monopoly power. Going forward, the government's social equality drive is anticipated to be felt most keenly in three key sectors: property, health care, and education.

In the near term, as we pass the "peak regulation" of the current crackdown, the market will likely begin to distinguish between the likely winners and losers. Some companies and sectors will become permanently impaired, while others will adapt, survive, and even thrive. Most importantly, it may usher in a new set of opportunities in the next three to five years. This is where cool heads and local knowledge are vital.

MEET JACKIE LIU

An interview with Jackie Liu, Portfolio Manager, China Growth Opportunities Equity Strategy

Jackie Liu
Portfolio Manager
China Growth Opportunities Equity Strategy

BIOGRAPHY

Career

Jackie is a regional portfolio manager in the Equity Division of T. Rowe Price. She has over 14 years of investment experience, 7 of which have been with T. Rowe Price.

2003
Jackie's investment experience began in 2003, working in the equity research division of brokerage China International Capital Corporation in Beijing.

2009 – 2014
Jackie spent five years as an equity analyst with Fidelity International Hong Kong Limited, where she covered the internet, consumer staples, health care and transportation industries.

2014
Joined the investment department of T. Rowe Price in Hong Kong.

2020
Appointed portfolio manager for the T. Rowe Price China Growth Opportunities Equity Strategy. Jackie retained her responsibilities as a research analyst covering the Asian internet sector for both public and private market investments. As a highly experienced analyst, Jackie is also a great mentor for new hires in our expanding China investment team.

Professional & Education

Jackie earned an M.B.A. from the University of Pennsylvania, The Wharton School and a dual BA degree in international economics and English from Nankai University.

Jackie, can you start by telling us a bit about your background, including what made you first decide you wanted to pursue a career in asset management?

I was born and grew up in Tianjin, a city in northern China with a population of 13.8 million, the eleventh largest in China. After college, my first job was training as an auditor at PwC in Beijing. I think this was actually very good training for a career in asset management, as it gave me a good working knowledge of accountancy, how to analyse a firm's balance sheet and profit and loss account, and so on. But at the same time, I didn't find the work terribly exciting, as every quarter, you have to go to visit the company and repeat the same questions. I soon knew it wasn't the right career choice for me.

I soon moved to equity research at brokerage China International Capital Corporation(CICC) in Beijing, which was a joint venture between Morgan Stanley and China Construction Bank. At CICC I immediately found that my new job was very interesting, researching different industries and companies. I really enjoyed the work and knew that I had found the right career path. Many of my mentors among the senior analysts at CICC had studied for an MBA in America and encouraged me to follow that route. I took their advice and studied for an MBA at the Wharton School, part of the University of Pennsylvania.

While my degree at Wharton was primarily finance, there were classes in many different areas, such as consumer behavior, geopolitics etc. that I found very interesting, helping to broaden my knowledge. After Wharton, my first job in asset management was with Fidelity International in Hong Kong in 2008, just after the collapse of Lehman Brothers. At Fidelity there was a rotation program so that analysts would be looking at different sectors every two to three years. This was very good experience for me. I found myself analyzing shipping and transportation at a time when world trade was literally collapsing in the Great Recession. That taught me how powerful the business cycle can be, something we saw again in 2020 with the coronavirus pandemic.

How did you determine your area of specialization within asset management? Also, what makes your experience well-suited to deliver on the core objectives of the China Growth Opportunities Equity Strategy??

My final sector coverage at Fidelity was the internet. In 2014 I heard T. Rowe Price had an opening for an internet analyst with their Asia technology team. I thought this was the right opportunity for me as I knew T. Rowe Price had an outstanding global technology team and it was a sector that I found particularly interesting. It is a sector that I have been studying for the past ten years. What makes the internet so

appealing is that it has links with the entire economy. When you research the internet, you need to first understand the technology infrastructure, or the hardware side of the industry. And when you look at fintech you need to understand how it relates to the traditional banks and insurance companies. For online food delivery companies, you really need to understand the dynamics for the restaurant and catering industry. And for ecommerce companies, you are looking closely at logistics, supply chain, and retail in general. Internet coverage has also taught me a strong management team is vital. I believe that my long time spent analyzing the internet sector has actually given me a very good exposure to the general equity market, which I really enjoy because it's so very dynamic. Generally, I feel that my years as an analyst covering so different sectors, such as transportation, infrastructure, consumer, health care and the internet, has prepared me to take on a more generalist portfolio manager role with the China Growth Opportunities Equity Strategy.

Can you please discuss your approach to investing in China and how you expect to generate value on behalf of clients? How do you tap into T. Rowe Price's global research platform and other resources to deliver results.

In terms of investment style, I always see myself as a growth investor. Growing up in China, I witnessed firsthand tremendous changes in people's lifestyle, wealth and living standards. That experience impressed upon me the importance of growth. Economic growth in China has outpaced global growth for many years. The long-term growth case for China remains compelling and even if the future trend is lower than in the past, the quality of China's growth is set to improve.

We seek to identify durable growers and disruptors in the Chinese market, companies with a large and growing addressable market, high quality management, durable competitive advantage, and a good financial model that can potentially generate strong cash flows. Part of our focus is on potential disruptors that have the chance to take a large market share. At the same time, such companies may also be higher risk, with some still in the investment phase early in their life cycle, with current profitability much lower than their expected sustainable profitability. Because we're long-term investors at T. Rowe Price, we have the patience to invest in these companies early on.

From my experience covering the internet sector, I learnt that in many new areas, the early winners often succeed in taking most of the market. So, it is important to determine the potential growth leaders for each of the verticals in the internet space. Because the internet is likely to continue disrupting so many traditional business and consumer areas, the quality of the management team is crucial in determining which of companies will emerge on the right side of change. I think there are a lot of good investment opportunities in China if you can identify the right disruptive technology, business model and the right management team.

Covering the high-profile Chinese internet sector, I recognized the importance of close communications with T. Rowe Price's global technology team. But it's not just the global technology team that I interact closely with - it's much broader than that. There are frequent meetings covering many different sectors on a global basis because key investment themes today such as new energy, electric vehicles, climate change and automation are increasingly global in nature. It is very important for all of us to understand the global supply chain and the impact of new disruptive technologies.

Can you describe your investment outlook for China in 2022?

With the benefit of hindsight, last year was clearly a difficult one for Chinese equities. Often, Chinese regulators use counter cyclical measures to make important policy adjustments that aim to foster longer-term, more durable growth. So going into 2021, the strong economic rebound following the pandemic gave Chinese regulators a window in which to address some longer-term structural concerns. So that's why we saw a raft of regulations covering the internet sector, fintech, health care, property, and education. Changes were needed to address issues such as anti-competitive practices, the treatment of workers in the gig economy, standards in online gaming and video streaming etc.

As a result of all these policy changes, we probably had a lower economic activity base in 2021 than we otherwise would have. So going into 2022, I would expect the government to show more flexibility and strive to maintain a healthy economic growth rate. Because of the unpredictable nature of the coronavirus, domestically it may continue to impact some economic activities, such as retail sales and consumer services, for a bit longer. Nevertheless, I think that after a challenging 2021, the stock market setup for China in 2022 is actually quite favorable. There will be a natural tendency for the government to focus more on stability ahead of the politically important party congress in October. So we can expect fewer major policy initiatives in 2022, as we are probably in the final stages of this regulatory cycle. For China analysts, the key focus in 2022 will be the implementation phase – what will be the likely impact on the growth and earnings of Chinese companies from last year's policy changes.

In 2022 our key focus as ever will be bottom up, looking for companies with an improving outlook and strong earnings prospects that create value. There may be some tactical opportunities in stocks whose valuation has come down due to the new regulations, but whose underlying business is actually not as negatively impacted as the market perceives. In the consumer space, a key theme is that domestic premium brands are continuing to gain market share, as the younger generation are more open to local brands designed for the China market. On the new energy side, the entire global supply and demand system for electricity is expected to change dramatically over time. Specifically in China, we're looking at some equipment companies for the national power grid that have the right products to meet the challenge of a smarter, more flexible power distribution and storage system.

Finally, one last question. Jackie, can you please share with us some of your personal interests and how they intersect with your professional work?

Well, spending time with my family, with my children is very important for me to strike the right balance between work and leisure. For myself, I normally like to spend some time exercising. Of course, the weekends are usually hectic, as my eight year old daughter and six year old son have lots of activities, such as ballet and mini rugby. In Hong Kong we've been under such a strict coronavirus quarantine code that for the past two years I have basically stayed put and travelled much less. I saw this as a good opportunity for myself and my family to spend the time to discover and really get to know Hong Kong better. While I have lived in Hong Kong for 13 years, only in the past two years have I learnt to really enjoy Hong Kong through more hiking and biking trips and also the water sports in the summertime. In just thirty minutes, you can get to a beautiful place in Hong Kong and do all these activities, it's right on our doorstep, so we in this respect we are really quite lucky.

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We established our Tokyo office and Hong Kong office in 1982 and 1987 respectively, and since then we have expanded our business by operating in Australia and Singapore. Today we have more than 200 associates based locally.

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Founded in
Baltimore, USA in 1937

USD1.69
trillion in assets under management[1, 2]

806
investment professionals worldwide[3]

Local presence in
16
countries[3]

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[1] Firmwide AUM includes assets managed by T. Rowe Price Associates, Inc. and its investment advisory affiliates.
[2] As at 31 December 2021. Preliminary data. Subject to adjustment.
[3] As at 31 December 2021.

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