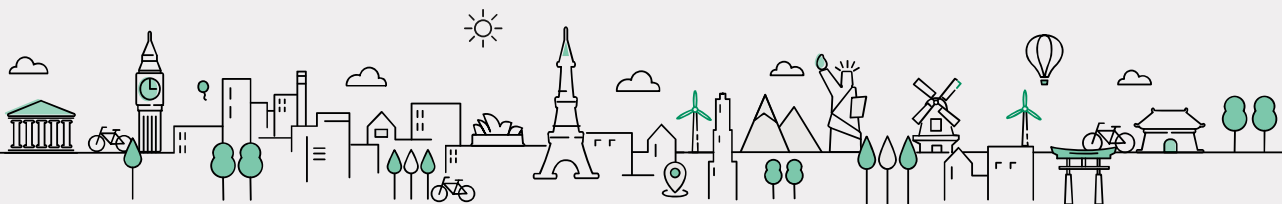


MEASURE FOR MEASURE

ASSESSING EQUITY VALUATIONS IN AN ERA OF UNCONVENTIONAL MONETARY POLICY

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The equity risk premium as an alternative valuation metric

Many investors use price-earnings (P/E) ratios, based on either trailing or estimated earnings, to determine whether equity markets are cheap or expensive. This methodology has the advantage of being simple to understand, easy to calculate, and for the US market at least, there is significant history available. Most famously, the cyclically-adjusted P/E ratio created by Yale University Professor Robert Shiller begins in 1871.

An alternative measure is the equity risk premium (ERP), defined as the difference between expected stock returns and the risk-free rate. The idea is simply that equities are a riskier investment than (risk-free) government bonds and investors expect to be compensated for that additional risk. How much compensation they expect is the premium.

$$ERP = \text{Expected equity return} - R^f$$

As that premium changes over time, one can evaluate whether investors have higher or lower expectations than they have had on average in the past. If the ERP is high, one can infer that equities are an attractive investment, whereas a low ERP suggests investors are not being sufficiently demanding of equities relative to the risk inherent in the asset class.

The ERP can be elevated for two reasons: either because expected stock returns are high or because risk-free rates are low. The latter is more likely the case today thanks to a decade of quantitative easing and ongoing extremely accommodative monetary policy from major developed market central banks. In a world where the ERP is being driven by changes in bond yields, traditional measures of valuation, like the price-earnings ratio, may not be as good a guide to future excess returns as they have been in the past.

Equity risk premium models

Conceptually, the ERP is straightforward, but measuring it is rather more complicated. Several methods have been developed over the years, each with its own advantages and disadvantages.

One approach is to simply take the actual historical excess return of equities over government bonds as the measure of the expected excess return in the future. The advantage of this method is that it is easy to calculate. The disadvantages are that it is backward-looking and assumes that the future will behave like the past – in other words, that the expected excess return is either constant or changes only very slowly. As with all mean calculations, the time period one chooses over which to calculate the mean – for example, all available historical data, or the last five or 10 years – is also critical.

Another method is to infer the ERP by taking advantage of the variation in returns and exposures of various asset classes to the S&P 500. Intuitively, the question is what level of the ERP makes the expected returns on a variety of assets consistent with their exposure to the S&P 500? The advantage of this approach is that it uses information from more asset classes than other models. The disadvantages are that the results are dependent on the portfolios chosen, on the state of the economy at the time, and on the co-variation in returns across all stocks or portfolios. Moreover, the model is not easy to implement.

One alternative is to use time-series regressions, which consider the relationship between economic variables and stock returns to estimate the ERP. To calculate the ERP in this way, a linear regression of realised excess returns is run on lagged 'fundamentals'.

$$R - R_f = a + b * \text{Fundamental}$$

The advantage of this model is that it is simple to implement (it is an ordinary least-square regression). The disadvantage is that one has to select the right fundamental variables. Factors that researchers have used include the closed-end fund discount, NYSE share turnover, number of IPOs, average first-day returns on IPOs, equity share of new issues, and the dividend premium.

One can also simply ask investors about their expectations for equity market returns in the future. The key disadvantage here is that investor expectations of future stock market returns are positively correlated with past stock returns and with the current level of the stock market, but negatively correlated with model-based expected returns and future realised stock market returns.

The last method we consider is the one we have used for the results in this paper, a dividend discount model (DDM). This model assumes the value of a stock is determined by no more and no less than the cash flows it produces for shareholders. The price of a stock today, then, equals the sum of all expected future cash flows, discounted at an appropriate rate to take into account their riskiness and the time value of money.

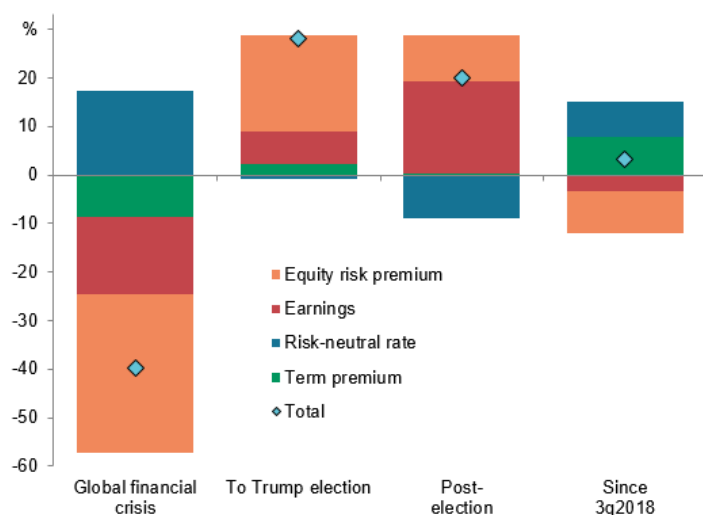
Besides dividends, cash flows can also come from spin-offs, buyouts, mergers and buybacks, but dividends are typically used to calculate the ERP because the data is readily available and they account for the vast majority of cash flows. Given the importance of buybacks for the US, however, we have included them in our US model.

The advantages of a DDM to calculate the ERP is that it is forward-looking, easy to implement, and allows for the decomposition of past moves in equity prices into the contribution of changes in growth expectations, risk-free interest rates and the ERP. The key disadvantage is that the results are sensitive to estimates of future dividends and not all markets have the same depth of coverage as the US. We have based our model on one developed by the Bank of England, but enhanced it by also incorporating the US Treasury term premium.

Decomposing equity returns

Using this model, we can identify what was behind some of the major moves in the markets beginning with the Global Financial Crisis (GFC). In Exhibit 1 below, we illustrate four periods: 1) the initial fall in the S&P 500 from October 2007 through the low on 9 March 2009; 2) the recovery in the market through to Trump's election; 3) the rally post-election to last autumn's high on 20 September 2018; and 4) the returns since then.

Exhibit 1: Breakdown of annualised S&P 500 change (%)



Data as at 31 October 2019. Source: IMF, Standard and Poor's, FactSet, Federal Reserve Bank of New York, BNP Paribas Asset Management

The nearly 60% fall in the market (the annualised return of 40% is shown in the chart) from peak to trough during the Global Financial Crisis was driven principally by an increase in the equity risk premium (or for those who are used to thinking in terms of P/Es, a fall in valuations). The ERP rose by over 850bp, mirroring the forward P/E's decline from over 15 times earnings to 10 times. On top of that came the drop in expected shareholder payouts as analysts slashed their forecasts for future earnings; long-term EPS growth estimates fell by over 200bp. The collapse in the market was cushioned, however, by the decline in interest rates, both cuts in the fed funds target rate and the impact of quantitative easing (QE) on longer-term bond yields.

This move in the ERP was reversed as the market rebounded through to Trump's surprise election in November 2016. The recovery in earnings expectations, now from much lower levels, further supported the market, as did declines in interest rates with the European Central Bank (ECB) and Bank of Japan launching their own QE efforts.

The election of Donald Trump gave a significant boost to earnings growth expectations, aided greatly by corporate tax cuts. Rising interest rates increased the discount rate on those earnings, but this was offset by a fall in the ERP. This pattern changed sharply last autumn with the biggest correction in the S&P 500 since the GFC in the last part of the year.

The sell-off was triggered by a combination of renewed trade tensions between the US and China, profit warnings (particularly from companies in the tech sector), and concerns about rising interest rates. When in October, however, Fed Chair Jerome Powell said that rates were still "a long way" from neutral, it seemed more than the market could bear. Individually, none of these factors would likely have been enough to prompt more than a modest decline in equities, but in combination they were powerful enough to lead to a 20% correction.

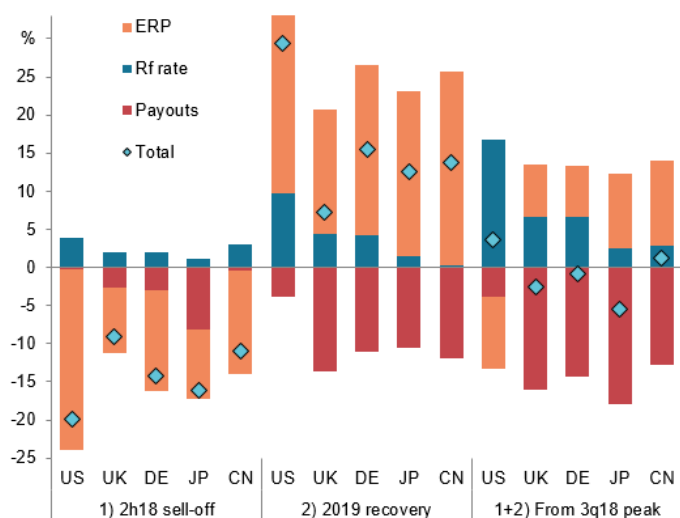
As the market sold off, the equity risk premium increased and earnings expectations fell. But instead of the rise in interest rates that investors feared, in the end, the market was boosted by falling interest rates. Yields declined initially as investors sought out safe-haven assets, then the Fed's own policies changed as the central bank moved from forecasting hikes to counselling patience, to finally cutting rates. The net effect of all these moves is that the equity risk premium is higher today than it was last autumn, but the discount rate has fallen sharply. These two factors have largely offset each other, leaving the market itself only modestly higher.

Cross-country comparisons

The US has once again been one of the best-performing large markets since the bottom reached on 24 December 2018, returning nearly 30% by the end of the third quarter, twice the gain of many other markets. Exhibit 2 below helps explain the difference in performance by attributing the returns for several markets: US, UK, Germany, Japan and China. As the US saw the biggest increase in the ERP last autumn, it has also seen one of the biggest falls so far this year, though other markets have seen similar moves (middle section of Exhibit 2 below). Earnings expectations have declined far less in the US than in the other countries. All markets have been helped by the unexpected fall in interest rates this year, though Japan to a lesser degree due to the Bank of Japan's yield curve control policy which limits how far yields can fall.

Over a year after the start of the sell-off, however, the S&P 500 has gained less than 5%, while the other developed markets are down (right-hand section of Exhibit 2). The trade war accounts for much of the fall in Germany and Japan and poor returns in China, while Brexit continues to dominate UK equities. For all markets, were it not for the decline in interest rates, returns would likely be yet lower.

Exhibit 2: Cross-country returns

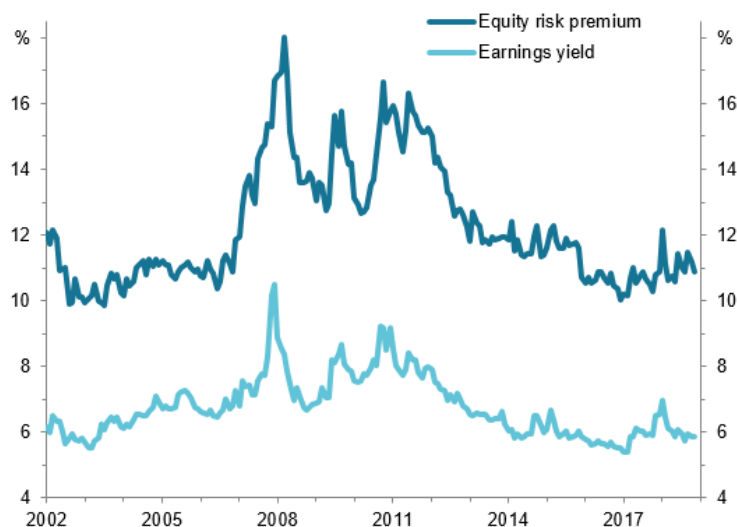


Data as at 31 October 2019. 1) 2h18 sell-off from 20 September-24 December 2018. 2) 2019 recovery from 24 December 2018 to 30 August 2019. 1+2) From 3q18 peak is from 20 September 2018 to 30 August 2019. Returns in local currency. Source: IMF, Standard and Poor's, FactSet, Bloomberg, Thomson Reuters, BNP Paribas Asset Management

Current valuations

Ultimately, the reason to measure valuations is to determine whether an equity investment is likely to be more or less profitable than it has been historically. Alongside the P/E ratio, how does the ERP compare? If we chart the ERP and the earnings yield (the inverse of the P/E), we can identify whether the metrics gave clear signals of market tops and bottoms. Both metrics were at elevated levels (suggesting equity valuations were low) at the beginning of March 2009, June 2010 and September 2011, and similarly low in January 2018. So each appears to be useful as an indicator of more extreme market valuations (see Exhibit 3).

Exhibit 3: S&P 500 valuations



Data as at 31 October 2019. Source: IMF, Standard and Poor's, FactSet, Thomson Reuters, Federal Reserve Bank of New York, BNP Paribas Asset Management

Our estimate of the current level of the ERP for the S&P 500 is 11%, 135bp lower than the average we have seen since 2002. Similarly, the forward earnings yield (inverse of the price-earnings ratio) is 90bp below average (equivalent to a P/E of 17x vs. an average since 2002 of 15x), meaning both indicators suggest equity markets are somewhat expensive. The elevated levels can be partly explained by low interest rates, low inflation, and the length of the current economic cycle.

The high P/E ratio for the overall index, however, masks a wide divergence at a sector level. Taking the z-score of the forward P/E (a z-score of zero indicates the P/E is at an average level, +/-1 means it is one standard deviation above/below average), the index P/E ratio is currently 0.7 standard deviations above average. But many of the sectors have more reasonable P/E ratios, notably cyclical sectors like technology.

Exhibit 4: Sector z-scores

Based on forward P/E ratios from 1984

S&P 500	0.7	Health Care	-0.4
Energy	0.3	Financials	0.3
Materials	0.3	Information Technology	0.2
Industrials	0.4	Communication Services	0.7
Consumer Discretionary	0.2	Utilities	2.5
Consumer Staples	1.0	Real Estate	1.7

Data as at 31 October 2019. Source: Thomson Reuters, FactSet, BNP Paribas Asset Management

The very high valuations are concentrated in the high-dividend yielding sectors such as utilities (3.0% dividend yield), real estate (2.9%), and consumer staples (2.7%), as investors again seek income when government bond yields are low. An alternative view of the high valuations is that these are simply defensive sectors that are in demand as a hedge against more significant falls in the market. If the first explanation is correct, future total returns are likely to be below those of the other sectors as P/E ratios normalise. If the latter is correct, these sectors are likely to outperform as defensive sectors normally do.

Conclusions

The equity risk premium is a useful metric to use, alongside P/E ratios, to measure equity market valuations. Given the dramatic changes in monetary policy since the Global Financial Crisis, the extra insight into the impact of interest rates on market prices is particularly valuable. As with any metric, however, one must be aware of its limitations, but any tool an investor can use to help build robust portfolios must be welcome.

The dividend discount model and the era of unconventional monetary policy

Once upon a time, central banks were on the periphery of a conversation about valuations in the equity market. Changes in official interest rates still had an impact on the equity market. Indeed, central bankers considered the response of risk assets, including equities, to changes in rates as a natural link in the monetary transmission mechanism that explains how changes in monetary policy ultimately influence.

In part, that link reflects an adjustment of equity valuations to lower interest rates and in part, it reflects an indirect revaluation as lower interest rates are expected to boost activity and ultimately earnings.

However, it is unreasonable to expect a change in the short-term risk-free rate to have a meaningful direct impact on valuations unless investors expect that change in the policy rate to persist indefinitely in which case long-term interest rates will move too which could, as we have explained, then unlock a non-trivial adjustment in equity prices via the discount rate term in the dividend discount model.

Central bank policy now plays a more prominent role in the conversation about valuations. Once official interest rates approached the lower bound, central banks turned to unconventional policy interventions to support the economy, and in particular, large-scale asset purchase (LSAP) programmes. Those LSAP programmes were likely to have a more powerful effect on valuations than a conventional monetary intervention, via a number of channels:

- Portfolio rebalancing channel: by conducting asset purchases, central bankers disturb the balance between supply and demand in asset markets which under certain circumstances will inflate prices in that particular market (for example, if there are investors with price-inelastic demand for specific assets).
- Signalling channel: by conducting asset purchases, central bankers “put their money where their mouth was” providing credibility to guidance that short-term interest rates were likely to remain low for an extended period, which helped to guide long-term interest rates lower.
- Risk appetite / central bank put channel: by conducting asset purchases, central bankers gave investors greater confidence that bad macroeconomic outcomes would be avoided, or perhaps gave rise to an expectation that the central bank will intervene and prop up asset markets in the event of further bad news. Either way, investors would then be more willing to deploy capital in risk markets. This is an obvious ERP channel.

It is the first channel – the portfolio rebalancing channel – that has dominated the discussion about the impact of LSAPs on asset prices.

The precise nature of the asset price response will depend on where purchases take place. If the LSAP programme occurs in the government bond market, then the direct effect will be felt in lower bond yields, which can then indirectly inflate equity prices.

However, investors will ultimately be displaced out of this market by the reduction in net supply of bonds to the private sector and that in turn might lead to further increases in the price of risk as new money flows into other markets. That second leg-up in equity prices would look like a reduction in the equity risk premium. However, if the LSAP programme extends to the markets for risk assets themselves – if the central bank is purchasing equities, as for example the Bank of Japan has done – then there could be a more direct effect on valuations.

As far as the US Federal Reserve (the Fed) is concerned, the LSAP era is disappearing fast in the rear view mirror. Indeed, the Fed has been gradually unwinding the portfolio of assets it acquired (Chair Powell has stressed that any growth in the Federal Reserve’s balance sheet for reserve management purposes should not be confused with large-scale asset purchase programmes).

Meanwhile, the European Central Bank has announced a resumption of open-ended asset purchases. The divergent LSAP policy cycles on either side of the Atlantic raise two important questions for equity investors:

- Does the impact of local asset purchases leak abroad and support equity valuations in global markets?
- Does the positive support to valuations from LSAP programmes fade once asset purchases have come to an end?

Common sense and empirical evidence suggest that the answer to the first question is: yes. That is, the impact of LSAP programmes that take place in what are highly interconnected markets will inevitably leak abroad.

If, for example, the ECB materially reduces the net supply of high quality euro denominated government bonds available to private sector investors, then it seems likely that some of those investors will be displaced into the markets for close substitutes, like US Treasuries and Gilts. As a result, we should therefore think of the impact of global LSAPs on global markets and in particular the support to equity valuations around the globe.

The answer to the second question is more controversial, but nonetheless pivotal to investors. One school of thought – known as the stock theory of LSAP – claims that the support to valuations remains long after purchases stop, perhaps because the disturbance to net supply

remains until the portfolio of asset purchases is wound down, or perhaps because the shift in risk appetite (and the belief in a central bank put) endures until the central bank does something to make investors think otherwise.

The alternative school of thought – known as the flow theory of LSAP – claims that the support to valuations fades fast once purchases cease, perhaps because the signalling effect only lasts as long as central banks are putting more money where their mouths are.

We lean towards some variant of the stock theory: we do not believe that almost all of the positive impact of the completed LSAP programmes has now faded away. That would imply that the huge portfolios of assets currently sitting on central bank balance sheets are having little to no effect on the prevailing elevated price of government bonds. That argument seems hard to sustain.

Recent experience with the gradual unwind of the Federal Reserve's purchases during a period when the ECB was only reinvesting to hold the size of its purchase portfolio stable is perhaps helpful here too.

The flow theory implies that one central bank was indirectly undermining valuations (increasing the net supply of assets to the private sector) whilst the other was doing nothing much to help. As we will go on to discuss, it is not clear that one could reasonably describe this period as one in which bond yields have been on an upward trend and equity prices on a downward trajectory.

In contrast, the stock theory emphasises the still sizeable portfolios of assets that continue to suppress bond yields and support valuations through various channels – and that seems a more reasonable description of events.

The dividend discount model and the source of the shocks

The dividend discount model is a nice story-telling device that can help explain the behaviour of equity prices in response to particular shocks by disentangling the movement of bond yields and the equity risk premium that is otherwise subsumed within the conventional P/E ratio.

That in turn helps us to reach a more considered verdict on whether current valuations are cheap or expensive relative to fundamentals.

The decomposition has become particularly useful in the era of unconventional monetary policy where, as described above, stimulus that would once indirectly support the price of risk assets can now have a more direct and powerful effect on valuations.

To fix ideas, we consider four stylised shocks that have been of particular interest over the past decade in which we might expect to see very different asset price responses.

- First, consider a major recession scenario. We should expect a deteriorating macro-economic backdrop to have a detrimental impact on earnings and earnings expectations and that will have a material impact on valuations.

Meanwhile, we should also expect a monetary policy response, which in the world of the unconventional would translate into lower long-term bond yields and potentially a support to equity valuations via the equity risk premium.

However, although an effective policy response might provide some support to risk appetite, it seems likely that this would be overwhelmed by the negative impact of the significant deterioration in the macroeconomic environment.

Finally, it is possible that investors might revise up the probability of a catastrophe in these circumstances (perhaps it is only when the situation gets bad that people are willing to contemplate the truly terrible) which would lead to a further reallocation out of risk assets into safe assets, causing the term premium to fall (technically become more negative) and the equity risk premium to rise.

- Second, consider a reflation scenario – that is, one in which actual inflation and expected inflation both rise. Long-term interest rates would almost certainly rise – in part on the back of a higher expected rate path and in part due to a re-pricing of the term premium, given what would likely be a fundamental shift in the perceived risks of much higher rates and inflation.

The impact on earnings is unclear: if the recovery in inflation is driven by increased pricing power and rising profit margins, then earnings expectations should also be revised higher; if instead, the recovery in inflation is driven by higher wages, given a tight labour market, then earnings could easily be squeezed.

Of course, if there is stronger growth alongside the higher inflation, then that would likely support earnings.

The implications for the equity risk premium are less clear: investors might question whether the central bank put underneath risk assets would be withdrawn (with higher inflation there is little justification for further unconventional monetary easing); on the other hand, the risks of a slide into a destructive deflationary scenario would be seen to recede.

- Third, consider what has frequently been referred to as the Secular Stagnation scenario – that is, according to Larry Summers, “a prolonged period in which satisfactory growth can only be achieved by unsustainable financial conditions”.

Clearly, this scenario is consistent with low risk-free yields that are naturally supportive of valuations within the dividend discount model framework. However, a secular stagnation might also be consistent with much lower expected earnings growth which obviously weighs on valuations.

Indeed, if the revisions to the growth rate of earnings and the risk-free rate are similar, then the two effects will roughly cancel each other out.

However, there is nothing which guarantees this. Equally, one might also argue that the risk of catastrophe is also higher in a Secular Stagnation hypothesis as policymakers increasingly struggle to support spending, leaving the economy (and the future flow of earnings) increasingly vulnerable to another slowdown. That would imply a higher equity risk premium.

- Fourth, consider what we call a creative disruption scenario – that is, one in which disruptive changes within society lead to an increase in the profit share in general that is driven predominantly by an increase in the pricing power of the super-star companies. Real earnings will be strong in this scenario.

The net effect of these disruptive forces might manifest itself in weak inflation and even weaker unit wage cost inflation against the backdrop of a declining labour share. That in turn would lead to an easy monetary policy stance and hence lower long-term interest rates.

So earnings growth may be healthy with the added support of low bond yields – a set of circumstances referred to by many analysts as Goldilocks, being just right for risk assets.

BIOGRAPHIES



Richard Barwell is the Head of Macro-Economic Research at BNP Paribas Asset Management. In this role, he has responsibility for coordinating the work of the team in formulating alpha-generating investment views across all asset classes, promoting collaboration between investment teams, the BNP Paribas Asset Management brand and supporting the firm's client base. He retains responsibility for coverage of macro and market developments in Europe. Prior to joining us, Richard was Senior European Economist at the Royal Bank of Scotland, Markets & International Banking, Senior UK Economist at the Royal Bank of Scotland, Global Banking & Markets, and a Senior Economist at the Bank of England. Richard has 16 years of investment experience. He holds a BSc in Economics and Econometrics from the University of Nottingham, and an MSc in Mathematical Economics and Econometrics and PhD in Labour Economics, both from the London School of Economics and Political Science.



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