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Swiss Finance Institute Roundups

Risk, Uncertainty, and the Limits of Market Pricing

Editorial

Modern finance rests on a simple premise: risk can be measured, priced, and transferred. Yet the boundary between risk and pure uncertainty is not fixed. What markets price as risk today may reveal itself as uncertainty tomorrow, when regimes shift, correlations break, or structural change outpaces historical data. In this SFI Roundup, five experts from academia and practice examine that moving boundary. They discuss why risk premia exist, how delegated investment shapes risk-taking, why diversification is both indispensable and imperfect, and how vulnerabilities migrate toward the least transparent corners of the system. Their exchange points to a system that prices and manages familiar risks with growing sophistication, yet continues to grapple with those that resist measurement.

We wish you an informative and thought-provoking read.

Prof. François Degeorge
Managing Director

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The contributions in this Roundup are based on individual interviews and have been edited for clarity and style. The text does not represent verbatim transcripts.

May 2026 (interviews as of April 2026 and data as of May 2026)

1. Accepting Risk

Why are investors willing to accept risk?

Amit Goyal: In economic life, risk comes with a price. Investors demand compensation for bearing risk; that compensation takes the form of a higher expected return. If risk did not command a premium, there would be little reason for anyone to accept it. Some economic agents seek to shed risk, while others are willing to bear more of it in return for greater compensation. Car insurance markets provide a simple illustration: Drivers transfer the financial risk of their cars being in an accident to insurers, who pool exposures across millions of contracts and rely on diversification and capital buffers to manage their aggregate losses. Financial markets operate on a similar principle. Risk is not eliminated; it is transferred, priced, and redistributed. Financial markets exist largely to facilitate this exchange.

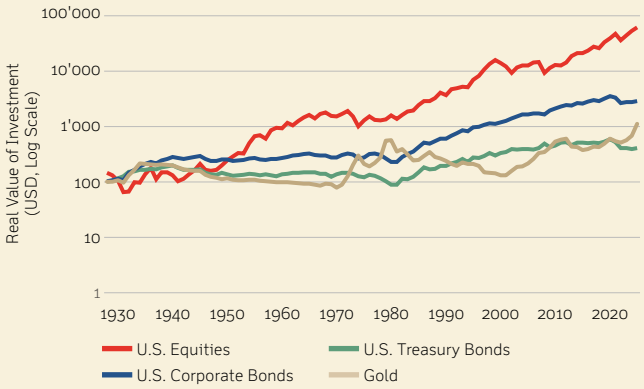
Renato Flückiger: Risk does not mean the same thing to every investor; much depends on the investment horizon. Over short periods, market fluctuations appear large and unpredictable, leading investors to focus on volatility. Over longer horizons, the picture changes. The safest asset over the next few months may be cash, yet over long horizons—20 years or more—equities are far more effective at preserving and growing wealth. For long-term investors, the objective is not simply to achieve nominal gains, but to preserve purchasing power over time. What ultimately matters is the rate of return achieved after inflation. Investors therefore accept risk when they believe they will be adequately compensated, whether through equity premia, credit spreads, or liquidity premia. Risk-taking is inseparable from portfolio construction and from the need to protect real wealth over time.

When rewards accrue to some actors, while risks are borne by others, what problems arise?

Pascal Froidevaux: This question is often raised in the context of incentives. Some compensation structures reward short-term performance more than long-term risk management. Such managers may be tempted to take risks whose consequences become visible only later. Their clients, however, ultimately bear those risks. For this reason, investors are increasingly demanding transparency about how their portfolios are constructed and how risks are managed. This is why the alignment of client and manager incentives is so important. Without it, the system can gradually accumulate exposures that appear profitable in the short term, but prove costly over time.

Yves Bonzon: The nature of the client also shapes how risk is allocated. Managing one's own wealth is very different from managing capital on behalf of others; likewise, there is an important distinction between wealth management and institutional asset management. Private clients typically focus on preserving and growing their personal wealth over long horizons, which allows for flexible investment decisions. Institutional investors, by contrast, operate under formal mandates, regulatory constraints, or reputational considerations that influence their portfolio choices. These differences can create a gap between what might appear optimal, from a purely financial perspective, and what is implemented. When investment decisions reflect institutional constraints or the expectations of stakeholders, rather than purely long-term risk-return considerations, the allocation of risk across investors may diverge from what the theoretical models predict.

Real Growth of USD 100 Invested in Major U.S. Asset Classes in 1928



Notes: The figure shows the inflation-adjusted growth of a hypothetical USD 100 investment made in 1928 in major asset classes through 2025, assuming reinvestment of cash distributions and capital gains. Equity returns are based on the S&P 500 Index from 1957 onward and are backfilled prior to 1957 using historical indices of large-cap U.S. companies. Treasury bond returns are estimated using constant-maturity 10-year U.S. Treasury yields. Corporate bond returns are based on long-term U.S. corporate bonds. Gold returns are based on the U.S. dollar gold price and reflect only price changes, as gold does not generate income and was subject to price controls prior to the early 1970s. Annual returns include both price appreciation and cash distributions. All series are adjusted for U.S. consumer price inflation. The vertical axis is shown on a logarithmic scale.

Sources: Aswath Damodaran database

Pierre Collin-Dufresne: Financial markets are largely built on delegation. Capital owners entrust their funds to professional managers, who gather information, process it, and act upon it. If markets were perfectly efficient, there would be little reason to delegate investment decisions; holding a broad index would suffice. But markets are continuously affected by shocks and new information, creating a role for specialized expertise. The resulting delegation gives rise to a principal–agent relationship. The principals supply financial capital, while the agents supply human capital, in the form of information gathering, analysis, and decision making. An agent's managerial skill can generate excess returns, yet success creates its own constraints. A manager's strong performance will attract new capital inflows, increasing the fund's assets under management. As funds grow larger, opportunities become harder to exploit and the very success that attracted capital can dilute future returns. Over time, competition and capital flows make persistent outperformance difficult to sustain.

Renato Flückiger: When the allocation of rewards and risks becomes disconnected, the consequences extend beyond individual portfolios. Risk rarely disappears. Instead, it accumulates in parts of the financial system that are not always best positioned to manage it. During benign periods, these hidden concentrations of risk remain largely invisible. In stressful periods, however, they amplify market instability. For portfolio managers, maintaining alignment between those who take risks and those who ultimately bear them is an important task.

How should investors think about the relationship between risk and return?

Amit Goyal: In theory, the relationship between risk and return should be straightforward. This idea lies at the core of modern asset pricing. If risk is properly measured and priced, higher risk should be associated with higher expected returns. Competitive markets should eliminate systematic opportunities for abnormal returns, meaning that persistent risk-adjusted performance should not exist. The empirical evidence, however, is far less clear-cut. Markets are arenas in which competing views about risks and returns are constantly tested. Periods of apparent outperformance repeatedly fuel the debate about whether markets are fully efficient and whether investors should pay for active management or simply hold diversified index portfolios. Some investors believe they can identify mispricing by better assessing risk. Others assume the markets already incorporate all the available information. Over time, competition between these two views means that persistent outperformance remains rare.

Pascal Froidevaux: The idea of risk-adjusted performance is sometimes misleading. Investors hope to obtain high returns with little risk, yet in reality the risk-reward trade-off cannot be avoided. A strategy that reduces risk inevitably narrows the distribution of outcomes, while higher expected returns require accepting greater uncertainty. In discussions with clients, the starting point is the return target they have in mind. Portfolio managers then try to identify an investment approach that has the potential to reach that return target, while exposing the portfolio to the lowest possible level of risk. The investment horizon also plays an important role: Outcomes over short periods of time can rarely be assessed accurately. A horizon of several years, capturing a full market cycle of risk and return, is needed.

Pierre Collin-Dufresne: A major difficulty lies in the measurement of risk itself. Financial returns are easy to observe and compute. Risk is much harder to quantify. Investors generally agree on how to calculate realized returns, but there is far less consensus on how to measure risk—and even less agreement on how to incorporate rare or unexpected events into a risk assessment. Volatility is used as a convenient proxy, because it is relatively easy to compute. Yet volatility captures the variation in returns, rather than the probability of a severe loss. Alternative measures, such as Value-at-Risk, expected shortfall, or stress tests, attempt to address this limitation, but they remain dependent on modeling assumptions about distributions, correlations, and the stability of historical relationships. Even if investors could agree on a comprehensive ex-post measure of risk, new risks will emerge that are not visible in historical data. As a result, evaluating risk-adjusted performance is inevitably sensitive to how risk itself is defined and modeled.

Yves Bonzon: The challenge is not only measuring risk, but also capturing the risk premia that markets offer over long horizons. Many investors fail to do so. Behavioral biases, overconfidence, performance chasing, and insufficient diversification lead to suboptimal outcomes. Investors abandon risky assets after periods of poor performance or, when markets appear favorable, concentrate their portfolios in a small number of positions. Standard metrics provide useful statistical descriptions of past fluctuations, but they offer limited guidance on when the market conditions themselves change. The real test of an investment strategy is not whether it optimized risk-adjusted performance over the last cycle, but whether it can survive the next one. Avoiding permanent capital destruction is ultimately more important than maximizing short-term risk-adjusted returns.

2. The Origins of the Risk–Uncertainty Distinction

Why have economists historically distinguished between risk and uncertainty?

Pierre Collin-Dufresne: The distinction, famously articulated by Frank Knight in 1921, separates cases in which probabilities can be assigned to outcomes—risk—from cases in which they cannot, because the underlying probability distribution itself is unknown—uncertainty. Knight's distinction highlights an important limit to economic modeling: When probabilities are measurable, risk can be priced and managed. When they are not, decisions must rely on judgment, rather than calculation. Later experimental work reinforced Knight's insight. The Ellsberg paradox, introduced in 1961, showed that individuals systematically prefer known probabilities to those that are ambiguous. This behavior suggests that people are not only risk-averse, but also ambiguity-averse. In financial markets, this translates into model uncertainty. Even when the risk appears to be measurable, investors may disagree about the correct distributions, correlations, or structural assumptions. The implication is not that models are useless, but that no single model can be treated as definitive.

Amit Goyal: The boundary between risk and uncertainty is rarely fixed. As information accumulates, events that initially appeared impossible to quantify gradually become measurable. Financial markets continuously transform unknowns into risks that can be modeled and priced. Even assets commonly labeled "risk-free," such as government bonds, embed various forms of uncertainty, including inflation risk and political risk related to fiscal policy. This dynamic illustrates the role of financial markets as learning systems. As investors observe new data and adapt their models, some sources of uncertainty gradually become incorporated into their pricing frameworks. At the same time, new sources of uncertainty inevitably emerge.

Yves Bonzon: From an investor's perspective, the distinction may be conceptually clear, but it becomes blurred in practice. Markets frequently behave as if risk can be measured with precision, even though the underlying conditions may be changing. Probability distributions that appear to be stable for long periods can shift abruptly when regimes change. Political decisions, technological disruptions, or changes in the global economic order can alter the payoff structure of investments in ways that historical data does not capture. When this happens, what was previously treated as measurable risk suddenly becomes genuine uncertainty.

Pascal Froidevaux: For practitioners, the distinction between risk and uncertainty is less central than it appears to be in academic discussions. Clients expect a recommendation from their financial advisors, regardless of whether the probabilities can be precisely quantified. Many of the questions investors face today do not lend themselves to clear probabilities. One example is the long-term impact of technological developments such as artificial intelligence on corporate earnings. In such cases, judgment and experience play a larger role than formal models. Forecasting remains inherently uncertain, and investors usually rely on experience and comparable past episodes to form their view about what might lie ahead.

What are the most influential models used today to identify and price risk in financial markets?

Amit Goyal: The answer to this question depends partly on the level of analysis. At a broad theoretical level, consumption-based asset pricing models are the conceptual benchmark. These models link expected returns to the risks investors face in their consumption over time. Although elegant, these models are difficult to apply. At the level of individual securities, the Capital Asset Pricing Model (CAPM) established the modern foundation of asset pricing. The CAPM links expected returns to the investor's exposure to systematic market risk, captured by beta. However, empirical evidence has shown that a single factor is insufficient to explain the cross section of returns. Multifactor models, most prominently the Fama–French framework, introduce additional sources of systematic variation, such as size, value, and momentum. These models remain central tools for understanding how risk is reflected in expected returns.

Pierre Collin-Dufresne: The challenge now is not only to identify additional sources of systematic risk, but also to understand how these insights translate into investment performance. When we move from asset pricing theory to asset management, the picture becomes more nuanced. As mentioned above, persistent outperformance is extremely difficult to document, yet capital consistently flows toward funds that have recently performed well. To help reconcile this apparent contradiction, some models now incorporate learning and decreasing returns to scale. In such frameworks, managerial skill may exist, but it is limited in capacity. When a manager generates strong performance, capital flows into the strategy. As assets under management increase, the opportunities that originally produced the excess

returns become harder to exploit. The very inflows that were triggered by good performance dilute future abnormal returns. In equilibrium, managerial skill may exist, but detecting it statistically becomes increasingly difficult over the long run. Markets may not be perfectly efficient, but sufficient competition ensures that inefficiencies are neither large nor persistent. In that sense, financial markets can be described as being "efficiently inefficient."

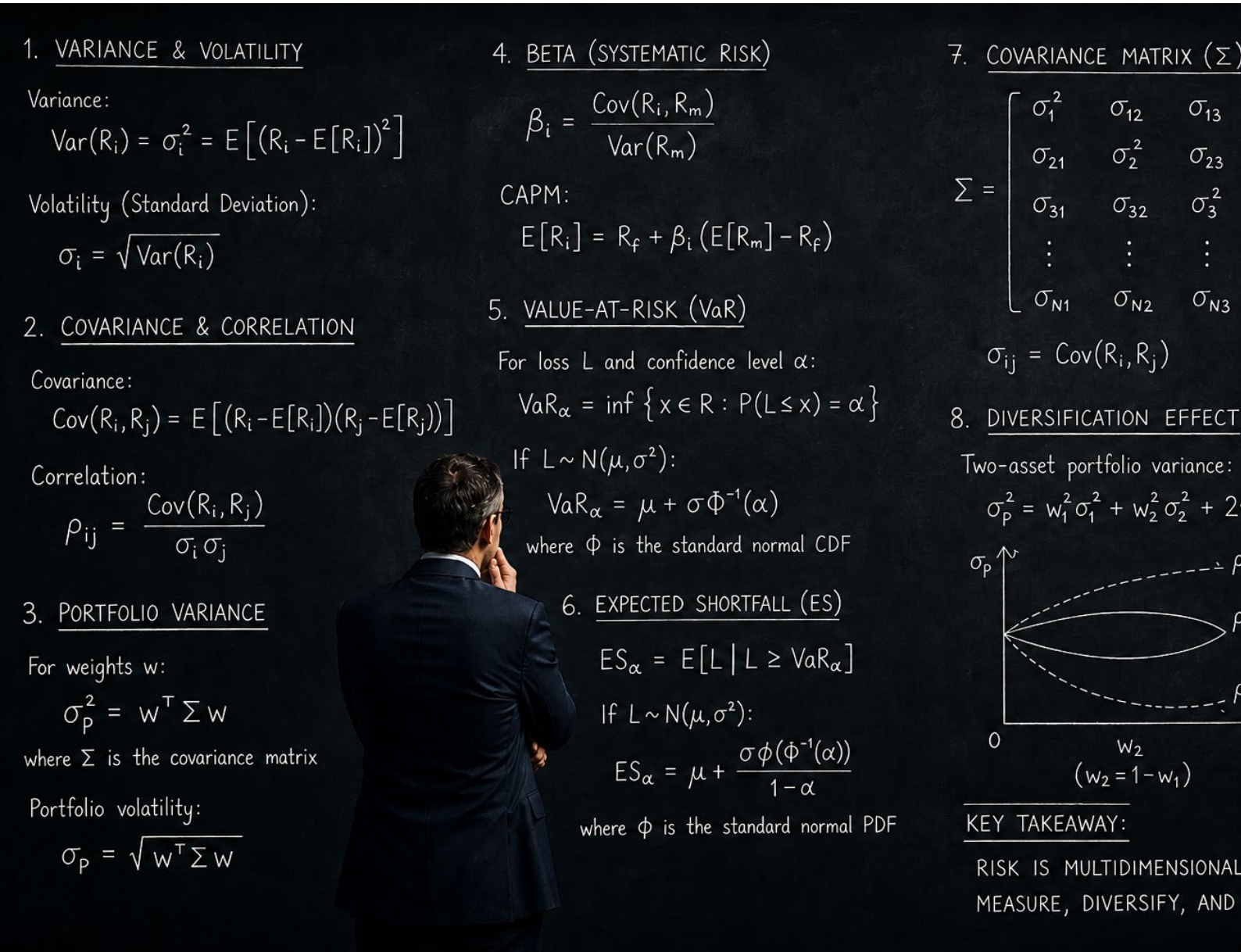
Yves Bonzon: Asset pricing models are valuable because they impose discipline: They force investors to articulate which risks they believe they should be compensated for. At the same time, these models remain simplified representations of a much more complex reality. They inevitably rely on assumptions, such as stable correlations, continuous liquidity, and the relevance of historical relationships. The sense of precision they create can be dangerous. Backtests always look convincing. Strategies calibrated on historical data appear remarkably robust—until real capital is deployed. It is only then that investors discover that liquidity can evaporate, correlations can shift, and market depth may be far more limited than assumed. The issue is not that the models are mathematically incorrect, but that markets rarely remain in the world the models implicitly assume. This is why experienced investors complement models with judgment developed through years of observing how markets behave under stress.

Do you think financial markets have become too confident in their ability to price risk?

Yves Bonzon: In a word, yes. Financial markets display a strong degree of confidence in their ability to measure and price risk efficiently. On the one hand, markets have become broader and more complex. On the other hand, advances in technology and data processing have greatly increased our ability to analyze historical information. Investors may therefore believe they are optimizing risk-adjusted returns based on past observations and that markets are pricing risk appropriately. The difficulty is that the underlying conditions are evolving. History shows that relationships that appear stable for long periods can shift unexpectedly. The correlation between U.S. Treasuries and equities provides a good illustration. For much of the period from the early 2000s until the early 2020s, these assets tended to move in opposite directions, which made government bonds a powerful portfolio diversification tool. Yet this relationship has not been constant over time. Structural changes in inflation regimes, monetary policy, or macroeconomic conditions all alter it. Academic models are remarkably useful, but relying on them as if markets would always price risk correctly requires a degree of confidence that reality does not justify.

Pierre Collin-Dufresne: Views about the ability of financial markets to price risk have evolved considerably over time. In the 1960s and 1970s, financial markets were widely considered to be highly efficient. Later, research in behavioral finance highlighted persistent anomalies and limits to rationality. More recently, attention has shifted toward market structure and the role of large institutional investors. Today's markets are dominated by institutions that operate across asset classes, geographies, and financial instruments. These investors have the capacity to process large quantities of information and to arbitrage obvious pricing discrepancies across markets. At the same time, much of this capital is relatively slow moving, being tied to mandates, benchmarks, or regulatory constraints, allowing certain pricing discrepancies to persist for some time. Capital flowing into highly liquid markets reinforces price movements and concentrates investment in a relatively small number of firms—typically those included in benchmarks or perceived to offer strong growth prospects. Risk pricing is thus heavily influenced by large flows into a narrow set of securities, particularly in highly visible segments of the market such as large technology companies. When expectations change, these flows reverse quickly. Markets may not be perfectly efficient, but they remain competitive. As a result, large and persistent mispricing of risk is unlikely to endure, even if shorter-term distortions can emerge.

Amit Goyal: It is hard to answer this question definitively from an empirical standpoint. What has clearly changed in recent years is the composition of market participants. The democratization of trading platforms has lowered barriers to entry and significantly increased retail participation, particularly during the Covid-19 pandemic. At one end of the spectrum are long-term investors allocating capital through diversified Exchange-Traded Funds (ETFs). At the other end are short-term traders, who may have limited financial training, focusing on individual stocks or options. At the same time, institutional investors are managing trillions of U.S. dollars using increasingly sophisticated datasets and algorithmic tools. The coexistence of these very different types of investors increases dispersion in market behavior. Episodes such as the rapid rise of cryptocurrencies illustrate how large amounts of capital can be mobilized even when traditional valuation anchors are weak. Whether these changes have fundamentally altered market efficiency and risk pricing remains an open question.



3. How Markets Attempt to Price Risk

What assumptions does modern asset pricing rely on that investors may underestimate?

Renato Flückiger: Many asset pricing frameworks assume stable correlations, continuous liquidity, and the existence of a reliable risk-free benchmark. These assumptions are fragile. Correlations between asset classes are not constant. In times of stress, markets often move into "risk-on" or "risk-off" regimes, in which many assets move in the same direction. When this happens, diversification provides less protection than the models would suggest. The notion of a risk-free asset also deserves some caution. In Switzerland, the sovereign framework remains structurally solid, but in France, Italy, Japan, the United Kingdom, and the United States, rising debt levels and persistent fiscal deficits mean that the concept of a truly risk-free asset becomes increasingly conditional. Investors must consider fiscal sustainability and the credibility of monetary policy when evaluating what qualifies as risk-free.

Amit Goyal: Models remain extremely useful because they provide structure and discipline. They help investors identify which risks are being taken and how those risks should be compensated. Alongside these models, investors rely on a range of tools, such as discounted cash flow analyses and the information contained in corporate disclosures and annual reports. Still, each of these frameworks inevitably simplifies reality. Liquidity conditions, policy decisions, and macroeconomic regimes change over time. As a result, models should be viewed as guides rather than as precise descriptions of how financial markets will behave.

Under what conditions do financial markets price risk efficiently?

Amit Goyal: Market efficiency is best understood as a benchmark rather than a guarantee. Financial markets tend to price and allocate risk efficiently when information is broadly available and participants trade without excessive friction. Prices aggregate the dispersed information, while competition among investors helps correct mispricing over time. But even relatively simple valuation questions can become complex. For example, changes in discount rates should translate into adjustments in asset prices. Yet expectations about future policy, economic growth, or inflation matter as much as current conditions. Pricing becomes even more challenging when outcomes are difficult to quantify, such as the long-term impacts of technological change, geopolitical fragmentation, or climate change. Markets tend to handle risk that can be measured and compared relatively well, but they struggle with long-term structural changes whose economic implications are difficult to quantify.

Renato Flückiger: Market efficiency also depends on depth and liquidity. In large and liquid markets with broad participation, where capital moves freely and arbitrage opportunities are limited, prices reflect the underlying risk relatively well. In smaller or less liquid markets, relatively modest flows of capital can generate significant price movements. A simple illustration is the difference between the gold and silver markets. Gold is a deep and globally traded market with substantial liquidity. Silver is a much smaller market. As a result, similar flows have a much larger price impact on silver than on gold.

Pascal Froidevaux: Markets allocate risk efficiently when two conditions are present. First, liquidity must be sufficient so that investors can adjust their positions without destabilizing prices. Second, participants must bear the consequences of their decisions. When investors have meaningful capital at risk and operate with long horizons, pricing discipline tends to hold. When capital becomes very short-term or heavily leveraged, prices reflect flows and positioning, rather than underlying economic value.

What role do arbitrage, liquidity, and competition play in disciplining risk pricing?

Pierre Collin-Dufresne: In theory, arbitrage and competition are central to pricing. When assets deviate from their fundamental value, investors with conviction have an incentive to trade against that mispricing. Large institutional investors, who operate across asset classes and geographies, increase the speed at which new information is incorporated into prices. Liquidity facilitates this process by allowing investors to take positions without generating an excessive impact on prices. Deep and well-integrated markets, therefore, reduce the persistence of obvious mispricing. However, arbitrage is neither unlimited nor frictionless. Investors may recognize mispricing, but still face constraints related to leverage, funding conditions, risk limits, or institutional mandates. As a result, deviations from an asset's fundamental value may persist longer than theory might suggest, even in a highly developed market.

Yves Bonzon: In practice, market dynamics indeed differ from the textbook description, particularly over shorter horizons. A substantial share of trading activity today is driven by retail investors reacting to market sentiment, or else by systematic strategies executed according to predefined rules. In the short term, prices are influenced by flows and technical factors, rather than by fundamental value. Liquidity also plays an important role, as mentioned above. When markets are deep and participation is broad, arbitrage capital helps stabilize prices. In periods of stress, however, liquidity deteriorates quickly. Price adjustments then reflect a need to rebalance a position, rather than a change in fundamental value.

Amit Goyal: Market infrastructure and regulatory frameworks also play important roles in maintaining pricing discipline. Transparent trading venues, disclosure requirements, and fair access to financial markets all allow information to be incorporated into prices more efficiently. Over the past two decades, access has improved significantly, particularly through the growth of ETFs and electronic trading platforms. The objective of regulators should be to safeguard market integrity by ensuring fair access, transparency, and the smooth functioning of trading venues. Regulators should not dictate investor behavior or attempt to determine what prices should be. Well-functioning markets rely on competition among investors to discover prices and to allocate risk.

Pascal Froidevaux: Arbitrageurs play an important role in market functioning. By buying assets others want to sell, and selling assets others want to buy, they provide liquidity and help align prices more quickly with the available information. Arbitrage strategies, however, also profit from mistakes made by other investors. Many of these mistakes are behavioral, such as chasing performance, reacting emotionally to market movements, or following fashionable investment themes. Systematic strategies and hedge funds are designed to exploit precisely these behaviors. In addition, large market makers now execute a substantial volume of retail orders routed to them by trading platforms. For example, Citadel Securities pays hundreds of millions of U.S. dollars each year to execute a significant share of Robinhood's equity and options order flow. This retail order flow is viewed as less informed and therefore attractive for trading against.

How central are diversification and risk sharing in financial markets?

Amit Goyal: Diversification and risk sharing lie at the heart of modern portfolio theory. Diversification has been described as one of the few "free lunches" in finance. By holding assets whose returns are not perfectly correlated, investors reduce the overall volatility of their portfolios without necessarily reducing their expected returns. At the same time, financial markets do not provide ways to hedge every possible risk. Derivatives markets allow investors to transfer certain types of risk exposure, but these instruments exist only for a limited set of underlying assets and risks. Options markets are well developed for equities, indices, currencies, and some commodities. For many other risks, however, no hedging instruments exist. Ski resorts, for example, can obtain only partial protection against the risk of insufficient snowfall, and farmers find it difficult to hedge crop yields, which depend on highly localized weather conditions. As a result, diversification across activities and assets remains the most practical form of risk management.

Renato Flückiger: Hedging and diversification serve different purposes within portfolio construction. Hedging strategies allow investors to reduce specific exposures, a common example for Swiss investors being foreign exchange risk. When holding international assets, Swiss investors may choose to hedge their currency exposure to reduce the impact of fluctuations in the exchange rate relative to the Swiss franc. Hedging currency exposure, however, is not the same as hedging price exposure. Price risk generally cannot be eliminated without giving up a substantial share of the potential return associated with that asset.

Pierre Collin-Dufresne: Diversification operates along several dimensions. Investors diversify across asset classes, such as equities, bonds, and real estate. They diversify geographically across regions and countries. They also diversify across sectors and economic drivers that respond differently to changes in the business cycle. Diversification in each case is a powerful tool for managing risk, but it does not eliminate it. Its effectiveness also depends on the structure of the market itself. Equity markets, for example, have become increasingly concentrated. The United States now represents roughly two-thirds of global equity market capitalization, and within the U.S. market a small group of very large companies accounts for a substantial share of the

total index weight. The so-called Magnificent Seven companies alone represent a large fraction of the S&P 500. This phenomenon is not unique to the United States. In Switzerland, a small number of firms—most notably Nestlé, Novartis, and Roche—represent an even larger share of the domestic equity market. Investors could diversify further by allocating capital to less liquid asset classes, but gaining exposure beyond the publicly listed markets is more complex and less accessible. As a result, investors who believe they hold a broadly diversified portfolio through market indices may still have substantial exposure to a relatively small number of firms.

Pascal Froidevaux: Diversification can be viewed as a protection against ignorance. Since investors cannot know in advance which asset class or strategy will perform the best, spreading their exposure across different assets reduces the impact of unexpected outcomes. At the same time, diversification dilutes upside potential and therefore I do not agree with calling it a "free lunch." Highly diversified portfolios tend to deliver results close to the market average. Investors seeking outperformance therefore need some degree of concentration, typically driven by strong conviction. Portfolio construction becomes a balance between diversification and concentration. Diversification helps manage uncertainty, while concentration can generate excess returns. This logic is visible in the market indices themselves. Capitalization-weighted indices naturally allocate more capital to companies that create the most value. As successful firms grow, their weight in the index increases. In that sense, some degree of market concentration simply reflects the way the market rewards its winners.

Market Concentration in Major Equity Indices

		MSCI ACWI		MSCI USA		MSCI Europe		MSCI Switzerland	
Index Characteristics	No. Constituents	2'514		537		403		40	
	Top-3	11.9%		18.7%		8.3%		41.8%	
	Top-10	24.6%		37.5%		20.3%		74.0%	
	Market Cap (USD tn)	98.8		62.6		14.0		1.6	
Top Constituents	1	NVIDIA	4.9%	NVIDIA	7.7%	ASML	4.0%	Roche	14.4%
	2	Apple	4.0%	Apple	6.4%	HSBC	2.3%	Novartis	14.2%
	3	Microsoft	2.9%	Microsoft	4.6%	AstraZeneca	2.1%	Nestlé	13.1%
	4	Amazon	2.6%	Amazon	4.1%	Roche	2.0%	ABB	7.9%
	5	Alphabet A	2.3%	Alphabet A	3.6%	Novartis	2.0%	UBS	7.1%
	6	Broadcom	1.9%	Broadcom	3.0%	Nestlé	1.9%	Richemont	5.2%
	7	Alphabet C	1.9%	Alphabet C	3.0%	Shell	1.8%	Zurich	5.1%
	8	Taiwan Semiconductors	1.7%	Meta	2.1%	Siemens	1.6%	Swiss Re	2.4%
	9	Meta	1.4%	Tesla	1.7%	TotalEnergies	1.3%	Holcim	2.4%
	10	Tesla	1.1%	JPMorgan	1.4%	Banco Santander	1.3%	Lonza	2.2%

Notes: The figure shows the largest constituents and selected concentration measures of the MSCI ACWI (All Country World Index, covering 23 developed and 24 emerging market countries), MSCI USA, MSCI Europe (15 developed market countries), and MSCI Switzerland as of April 2026. The MSCI indices are designed to cover approximately 85% of the free-float-adjusted market capitalization in each market. Concentration measures include the combined weights of the three and ten largest constituents in each index. Company weights are based on free-float-adjusted market capitalization. Different share classes of the same company are reported separately when included separately in the underlying MSCI indices.

Sources: MSCI

4. When Markets Misprice Risk

Which types of risk do financial markets tend to price most effectively?

Renato Flückiger: Short-term interest rate movements, broad equity market volatility, and currency fluctuations in highly liquid markets are examples where pricing mechanisms are generally robust. Markets tend to price risk reasonably well when trading is frequent and the markets themselves are deep and liquid. Under these conditions, large numbers of participants trade continuously, and prices rapidly adjust to new information. Competition among investors and the ability to arbitrage small discrepancies keep prices close to the underlying fundamental values. Pricing efficiency weakens as markets become smaller, less liquid, or more concentrated; then relatively modest flows can move prices significantly.

Pierre Collin-Dufresne: Financial markets tend to price risk well when the risks are observable, frequently repeated, and supported by reliable data. Capital will then move quickly toward opportunities that appear to be mispriced. The more investors analyze a particular exposure, the harder it becomes for the obvious mispricing to persist. The difficulty in pricing risk arises when the risks are rare, nonlinear, or associated with structural change. Then, investors may disagree not only about a valuation, but also about the underlying model used to interpret the data. When the economy itself is evolving, pricing becomes inherently more uncertain.

Which risks tend to be under- or overpriced, and what sources of uncertainty go largely ignored?

Amit Goyal: One area where markets struggle concerns risk that unfolds slowly and whose economic consequences remain difficult to quantify. Climate change is a good example. Investors increasingly recognize that environmental risk may affect asset values, but the precise timing, magnitude, and geographic distribution of these effects remain uncertain. Because financial markets tend to focus on shorter horizons and observable data, risks that materialize gradually may be incorporated only slowly into prices. Policies aimed at mitigating climate change also evolve unpredictably, creating additional uncertainty about future regulatory and economic conditions.

Pierre Collin-Dufresne: Markets face similar challenges when technological or structural change reshapes an entire industry. In such situations, traditional valuation frameworks may provide only limited guidance. During the early 2000s, Amazon was frequently cited as a case of apparent overvaluation. The company generated little or no earnings at the time, making it impossible to compute a meaningful price-to-earnings ratio. To many investors, its valuation was disconnected from fundamentals. In hindsight, the picture looks different. Amazon used the capital raised during those optimistic valuation periods to invest aggressively in logistics infrastructure and later in cloud computing. What appeared to be excessive valuation reflected expectations that were not yet visible in the financial statements. The difficulty for investors is that such judgments must be made in real time. Elevated valuations may reflect unrealistic extrapolation or genuine structural transformation.

Yves Bonzon: Risk can also be mispriced when financial engineering leads to the creation of instruments whose complexity makes it difficult for investors to fully understand their underlying exposure. The structured credit products offered prior to the global financial crisis of 2008 provide a clear illustration. These securities appeared to offer attractive yields with limited risk. In reality, the risks embedded in these products were highly sensitive to correlated defaults and liquidity conditions. Because these scenarios seemed unlikely, the risk was priced too cheaply. When the market conditions deteriorated, the true nature of those exposures became apparent very quickly.

Renato Flückiger: Markets also tend to underestimate the risk associated with rare, potentially disruptive events. These risks are difficult to quantify, because they occur infrequently and may involve nonlinear dynamics. Investors therefore assign them very low probabilities or simply exclude them from standard risk models. Events sometimes described as "gray swans" fall into this category, as they are not entirely unpredictable, but their timing and magnitude remain uncertain. A well-known example is the Swiss National Bank's decision in 2015 to abandon the EUR/CHF exchange rate floor. While the possibility of such a policy change was understood, its sudden implementation triggered large and rapid market adjustments.

Pascal Froidevaux: Financial markets are generally effective at incorporating available information, which makes consistently identifying mispriced assets extremely difficult. At the moment, risks appear plentiful, while the compensation for bearing them is somewhat limited. Globally, credit spreads remain tight and equity valuations in some regions are elevated. I do not mean to say that interesting investments have disappeared entirely. At present, investors can find opportunities in specific segments of the market, such as certain assets in emerging markets or in commercial real estate. Rather than widespread mispricing, a few pockets exist where risk and reward appear to be consistently unbalanced. One example, partly driven by behavioral factors, is duration in fixed income portfolios. Many investors prefer investing over relatively short horizons, while simultaneously borrowing over very long horizons. From a purely financial perspective, it is generally better to do the opposite, namely to invest in long-term bonds while borrowing at short-term rates.

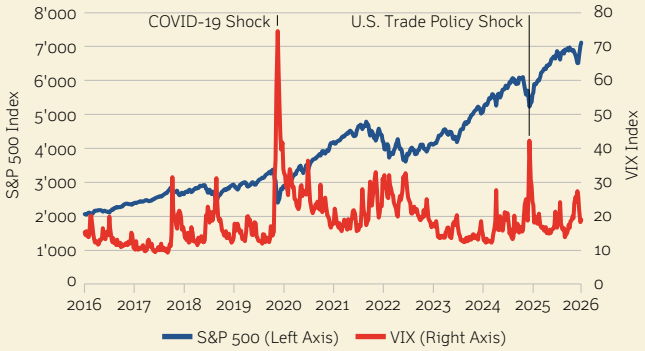
Why are certain vulnerabilities or tail risks underestimated by investors?

Yves Bonzon: One reason lies in how risk is measured and managed. Many investment strategies focus on outcomes that fall within the 95% or even the 99% range of expected scenarios. Within those ranges, markets appear to be predictable and manageable. The difficulty lies in the remaining extreme outcomes. These occur infrequently, but they have disproportionately large consequences. From the client's perspective, the true worth of a financial professional is not shown by maximizing the upside during a favorable period, but by protecting the client's capital when the markets move sharply downward. Avoiding large losses is more important than generating marginal gains. This question also relates to the concept of alpha, commonly understood as a return that exceeds what would normally be expected, given the level of risk taken. Investment strategies that appear to generate consistent excess returns during stable periods may, in fact, be accumulating hidden tail risks. When those risks materialize, the resulting losses quickly destroy years of apparent outperformance. Tail risks frequently originate outside the financial markets themselves, in the form of sudden changes in taxation or regulatory frameworks. Because such risks depend heavily on the investor's country of residence, they are underestimated in portfolio construction.

Renato Flückiger: Periods of calm markets can encourage the buildup of hidden vulnerabilities within the financial system. When volatility remains low for an extended period, leverage tends to increase, and investors become more comfortable holding positions that rely on stable market conditions. The turmoil in the United Kingdom's government bond market in 2022 illustrates how quickly such dynamics can reverse. Pension funds had adopted liability-driven investment strategies designed to match long-term obligations, often relying on leverage to gain exposure to interest rates. When gilt yields rose sharply following the government's fiscal announcements, these positions required rapid collateral adjustments. The resulting forced sales amplified price movements and created severe stress in the gilt market. Episodes like this one demonstrate how vulnerabilities that appear manageable under normal conditions can quickly become destabilizing when market conditions shift.

Pascal Froidevaux: One reason tail risks remain underestimated is that long periods without major disruptions create a sense of complacency. Investors gradually abandon hedging strategies, because they are costly and seem unnecessary. After a crisis, the opposite tends to happen, and protection suddenly becomes very popular—at the worst possible moment. Hedging does serve a clear purpose, because it transfers risk to other market participants. Yet this transfer comes at a cost. Hedging removes a part of the expected return of a portfolio; in other words, hedging risk implies giving up return potential. For that reason, hedging is most appropriate for risks not compensated for by a premium, such as certain currency exposures.

Market Performance and Implied Volatility in U.S. Equities



Notes: The figure shows the evolution of the S&P 500 Index and the CBOE Volatility Index (VIX) between 2016 and May 2026. The VIX measures the implied volatility of S&P 500 index options and is commonly interpreted as a measure of expected market volatility and investor uncertainty. Often referred to as Wall Street's "fear gauge," values below 20 are generally associated with relatively calm market conditions, while sharp increases above 30 typically coincide with periods of elevated financial stress and market turbulence.

Sources: Chicago Board Options Exchange and S&P Dow Jones Indices via Federal Reserve Bank of St. Louis

5. The Expanding Landscape of Risk

How have financial innovation, globalization, and institutional change expanded the sources of financial risk and uncertainty?

Yves Bonzon: Financial markets are increasingly being influenced by geopolitical developments and considerations of national security. Capital markets are no longer purely economic arenas. They are becoming instruments of state policy. Governments restrict technology transfers, impose sanctions, or shape access to capital in ways that reflect strategic priorities, rather than purely financial considerations. Geopolitical fragmentation will introduce new forms of uncertainty for investors. Supply chains will be reorganized, technological systems will be disrupted, and companies will find themselves operating in a world where politics determines economic outcomes. Decades ago, investing in a relatively small set of large multinational firms was thought sufficient to gain broad exposure to global economic growth. Today, the global economy is far more complex. Even very large companies operate within specific technological, regulatory, and geopolitical ecosystems, which means that diversification across a handful of global blue chip companies no longer provides the same breadth of exposure. Recent tensions in the semiconductor industry illustrate this dynamic. Firms operating at the technological frontier increasingly face constraints related to export controls, industrial policy, and strategic competition among states.

Amit Goyal: Financial innovation and institutional change have significantly expanded the range of risks that financial markets must evaluate. After the global financial crisis of 2008, regulators strengthened the oversight of banks through higher capital requirements and tighter supervision. These reforms made the banking system more resilient, but they also shifted a growing share of financial intermediation to non-bank institutions. These private markets have expanded dramatically. Private equity, private credit, and other forms of non-bank financing now represent a multi-trillion-U.S. dollar segment of the financial system. Financial innovation has also increased the range of exposures that can be created and traded. Derivatives, structured products, and other complex financial instruments allow investors to isolate and transfer increasingly specific risks. These developments improve the ability of markets to allocate risk across participants, but they also increase the complexity of the financial system as a whole. When exposures are distributed across multiple institutions and markets, it becomes more difficult to identify where vulnerabilities ultimately reside. As a result, risk may migrate toward areas of the financial system where transparency and oversight are more limited.

How do interactions across markets transform localized risks and uncertainties into system-wide dynamics?

Pierre Collin-Dufresne: Financial markets can behave in ways that resemble coordination problems, in which individually rational actions lead to collectively unstable outcomes when many participants respond to the same signals at the same time. A useful analogy is the Millennium Bridge in London, when it first opened in 2000. Engineers had designed the bridge to be structurally sound, yet when large numbers of pedestrians began crossing it, the natural side-to-side motion created by their footsteps caused small lateral movements of the structure. As the bridge began to sway, the pedestrians instinctively adjusted their steps to maintain their balance. Those adjustments unintentionally synchronized their movements and transformed the small oscillations into a positive feedback loop that amplified the motion of the bridge, forcing it to be closed shortly after its opening. Financial markets exhibit similar dynamics. Individual investors make decisions that appear to be rational, when considered in isolation. However, when many investors respond to the same signals or incentives simultaneously, their collective actions amplify the market's movements. Selling triggers further selling, leverage forces deleveraging, and modest price changes cascade into much larger adjustments. The result is that price fluctuations become larger and more synchronized than investors initially anticipated.

Renato Flückiger: Interactions across markets also occur through capital flows and portfolio allocation decisions. When investors are comfortable taking a risk, capital tends to move toward assets that offer higher returns. Investors then seek broad exposure to market risk through equities, private markets, or other assets. Private markets illustrate both the advantages and the limitations of this process. On the one hand, private equity and private credit provide valuable long-term capital and reduce short-term market volatility because assets are not continuously marked-to-market. On the other hand, the absence of frequent pricing makes it more difficult to assess risk in real time. When market sentiment changes, these flows reverse. The adjustment propagates across multiple markets simultaneously, as investors rebalance their portfolios and reassess their exposure to risk.

Why do risks and uncertainties tend to migrate to, concentrate in, or re-emerge in unexpected parts of the financial system?

Yves Bonzon: When governments face fiscal constraints, they may resort to policies that alter the financial landscape in ways that redirect risk. Maintaining strong nominal growth is seen as a way to stabilize public debt dynamics, as higher nominal GDP helps contain debt-to-GDP ratios. When growth proves difficult to generate, governments increasingly rely on financial policies that shape how capital is allocated. Financial repression, changes in tax regimes, and capital controls all influence where risks ultimately accumulate. As fiscal pressures increase, investors seek assets that lie outside the traditional financial system. Monetary expansion and concerns about the sustainability of public debt lead to renewed interest in assets like gold, perceived as being less exposed to government policies. Financial risks thus migrate beyond the areas that regulators and policymakers targeted. Efforts to stabilize one segment of the financial system can unintentionally push the risk toward other segments.

Amit Goyal: Another factor is the rapid evolution of information flow. Social media platforms and digital communication channels play an increasingly visible role in shaping investor behavior and market dynamics. Online communities such as WallStreetBets and StockTwits allow market participants to exchange information, ideas, and narratives at unprecedented speed. The technology itself does not cause financial instability or bank runs. What matters is the information—or misinformation—spread through these networks. When large numbers of investors react simultaneously, capital moves rapidly between assets and sectors. These dynamics amplify market movements that might otherwise have remained more localized.

How do risks that markets believe they can measure suddenly become uncertain, and how does uncertainty eventually become priced risk again?

Amit Goyal: Because markets cannot function if every unknown remains classified as uncertain, investors are constantly building models, estimating probabilities, and using historical data to translate uncertain outcomes into quantities that can be priced. The challenge is when the underlying culture changes in ways that historical data cannot capture. A risk that appeared to be well understood suddenly behaves differently, because the economic structure itself has shifted. At that moment, what investors believed to be measurable risk becomes uncertainty again. Over time, the markets attempt to learn from these episodes. New data emerge, models are updated, and investors again begin to treat the previously uncertain phenomenon as a quantifiable risk. In this sense, financial markets are constantly engaged in the process of converting uncertainty into risk and then revising that classification when reality proves to be more complex than expected.

Global Geopolitical Risk Since 1985

Notes: The figure shows the evolution of the Geopolitical Risk (GPR) Index between 1985 and April 2026. The index is constructed from articles published in 10 major English-language newspapers covering adverse geopolitical events and tensions, including wars, terrorism, military conflicts, and international crises. The index is normalized to 100. Higher values indicate periods of elevated geopolitical risk and uncertainty.

Sources: Caldara, D., & Iacoviello, M. (2022). Measuring geopolitical risk. *American Economic Review*, *112*(4), 1194–1225.

6. Where the Next Financial Fault Lines May Appear

Which financial structures or market mechanisms tend to amplify financial distress when shocks occur?

Yves Bonzon: During extended periods of stability, when volatility remains low, investors are likely to become more comfortable with increasing leverage and taking concentrated positions. As long as markets continue to rise, this behavior appears rational. When conditions change, however, the process may reverse abruptly. Forced deleveraging and liquidity shortages then accelerate price declines and transmit stress across markets. These dynamics become even more significant if fiscal constraints begin to influence monetary policy. If government debt continues to expand, markets may increasingly question whether central banks can maintain price stability independently from fiscal pressure. In this situation, inflation risks and financial instability could reinforce one another.

Pierre Collin-Dufresne: Another amplification mechanism arises when risks migrate outside of the traditional banking sector. Prior to the global financial crisis of 2008, a growing share of credit intermediation had moved to what became known as the shadow banking system. Activities such as securitization and structured credit allowed financial institutions to distribute risk across a complex network of balance sheets. While these innovations initially appeared to diversify risk, they also made it more difficult to identify where vulnerabilities were concentrated. When the housing market deteriorated, losses propagated through this network in ways that were difficult to anticipate. This episode illustrates how financial structures designed to distribute risk can amplify shocks. As credit intermediation continues to expand through non-bank financial institutions, similar dynamics could emerge again, with risk accumulating in parts of the system that remain less transparent or less tightly regulated.

Which institutional features dampen financial instability and allow markets to absorb shocks?

Pascal Froidevaux: Major market corrections are typically triggered by unexpected events. By definition these surprises are unpredictable—if they were widely anticipated they would already be reflected in asset prices. However, new sources of information may offer additional signals. Prediction markets, where participants bet on future events, generate continuously updated probabilities. Platforms like Polymarket aggregate the assessments of thousands of participants in real time, although their legal and regulatory status remains debated in some jurisdictions. Because participants commit capital to their views, these markets can sometimes reveal information that remains dispersed across many individuals. For investors, they provide a useful complement to traditional financial indicators by offering a continuously updated measure of the probabilities of political, economic, or geopolitical events occurring. Abrupt shifts in these probabilities sometimes signal emerging risks before they are reflected in traditional market indicators.

Pierre Collin-Dufresne: Regulatory reforms introduced after the global financial crisis of 2008 strengthened the resilience of the banking sector. Higher capital requirements and more robust liquidity standards have made banks better able to absorb losses during periods of stress. These measures do not eliminate financial instability, but they slow the propagation of shocks and provide time for policymakers and market participants to respond. Recent episodes such as the failure of Silicon Valley Bank and the collapse of Credit Suisse illustrate how authorities can intervene rapidly to limit broader contagion.

Renato Flückiger: One of the most important stabilizing forces in modern financial systems is the credibility of the central banks. Independent monetary authorities can respond to financial stress by providing liquidity and stabilizing expectations. When markets believe that central banks can act decisively and without political interference, confidence in the system remains strong. Switzerland offers a good illustration. The credibility and independence of the Swiss National Bank, combined with the country's strong fiscal discipline, contribute to the perception of stability that is reflected in the strength of the Swiss franc. If that independence were to weaken, financial stability could become more difficult to maintain. When investors suspect that monetary policy is influenced by fiscal pressure or political considerations, the credibility of stabilization policies erodes.

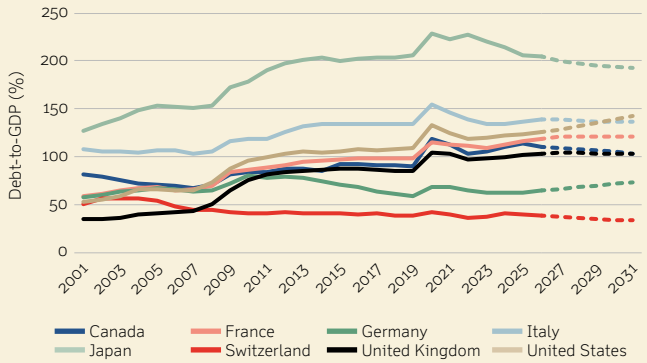
How might rising public debt and changing policy frameworks affect financial stability in the future?

Amit Goyal: Public debt levels in many advanced economies have increased significantly over the past decades. As debt levels increase, the interaction between fiscal policy and monetary policy becomes more complex. One possibility is the emergence of fiscal dominance, where central banks face increasing pressure to maintain low borrowing costs in order to stabilize government finances. In this case, inflation may become more volatile and monetary policy less predictable.

Yves Bonzon: Such developments would fundamentally change the world in which investors operate. For many years, investors have assumed that central banks would primarily focus on price stability and financial stability. If fiscal pressures begin to influence monetary policy decisions, that assumption may no longer hold. This could introduce new forms of uncertainty into financial markets, particularly with respect to inflation dynamics and long-term interest rates.

Pascal Froidevaux: Rising public debt is discussed primarily as a source of financial instability. However, its implications differ significantly across jurisdictions. The United States provides an interesting example. Despite high and rising debt levels, the U.S. economy remains highly innovative and dynamic, supported by deep capital markets and a strong capacity to generate growth. Institutional structure plays an important role here. The United States operates as a relatively integrated economic and fiscal entity, whereas the euro area remains a monetary union composed of multiple sovereign states with differing fiscal positions. Another important distinction concerns monetary sovereignty. The U.S. government issues debt in a currency controlled by its own central bank, and the Federal Reserve retains the capacity to act as a buyer of last resort in Treasury markets. The international role of the U.S. dollar provides an additional buffer. Because the United States issues the world's dominant reserve currency, global demand for U.S. dollar-denominated assets remains strong. Euro area governments, by contrast, borrow in a currency they do not individually control, making debt sustainability more sensitive to market confidence. These structural features do not eliminate the risks associated with rising public debt, but they significantly delay how and when those risks become visible in financial markets.

General Government Gross Debt as a Percentage of GDP



Notes: The figure shows the evolution of general government gross debt as a percentage of GDP for the G7 countries and Switzerland between 2001 and 2031. General government gross debt refers to the total amount of debt liabilities issued by the general government (including central, state, and local levels), without deducting the value of government financial assets. Data from 2026 onward are projections.

Sources: International Monetary Fund (IMF)

Looking ahead, where might the next sources of financial instability emerge?

Pierre Collin-Dufresne: As noted above, risk rarely disappears; instead, it tends to migrate. When regulation or market discipline reduces vulnerabilities in one part of the financial system, risk reappears elsewhere. Over time it accumulates in areas that are less transparent or less well-regulated. Understanding where risk will accumulate next remains a central challenge for policymakers and investors.

Yves Bonzon: Periods of stability can create the conditions for future instability. When markets remain calm for long enough, as we discussed above, investors gradually increase their risk-taking. The strong upward trend in asset prices since 2020 illustrates how prolonged monetary accommodation encourages risk-taking across multiple markets. Recognizing these cycles—and avoiding complacency during favorable periods—remains one of the central challenges of financial risk management.

Renato Flückiger: Ultimately, financial stability depends on confidence. As long as investors believe that institutions—central banks, regulators, and financial intermediaries—can respond effectively to shocks, the system will remain resilient. If that confidence weakens, adjustments that would normally occur gradually will happen abruptly.

Pascal Froidevaux: For the global economy, technological change may emerge as a major source of structural risk. Artificial intelligence could act as a deflationary force by replacing certain jobs and weakening wage growth. While beneficial for corporate profitability, it may also reduce demand and increase inequality. The result could be a more pronounced "K-shaped" economy, in which some sectors benefit strongly from technological progress while others fall behind. Over time, this may shift income distribution toward capital relative to labor, with important consequences for economic growth, investment opportunities, and, last but not least, society as a whole.

Swiss Finance Institute

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