ORTEC FINANCE

Stress Testing your Balance Sheet in the Global Trade War Era:
Is your investment portfolio robust?

2025

Contents

Highlights

Global markets have been on a rollercoaster like no other since President Trump's announcement of the April 2nd, 2025 reciprocal tariffs. The real-life impact of this **uncertainty** has been experienced by investors globally.

In such radically uncertain situations, the **combination of stochastic and deterministic analysis** offers the best quantitative approach to achieve robust investment decision making. Stochastic analysis is crucial to understand the key risk-return tradeoffs for portfolio construction, while applying a narrative-based deterministic stress scenario is key to test the robustness of an investment strategy.

In addition to our stochastic scenarios, we have developed a **trade war deterministic stress scenario** that is characterized by a fractured geopolitical environment and a global shift toward economic nationalism. The trade war stress scenario reflects a mild contraction, stagnation, and low growth in Canada, the U.S., and Europe, respectively.

We perform a deterministic trade war **stress test on three hypothetical cases**: a U.S. endowment fund, an Asian life insurer, and a European pension fund. We see a **large impact on key outcome measures** for these institutional investors. The analysis reveals for example the importance of hedging currency exposure and interest rate risk.

Until there is a firm conclusion on the intentions to reassert Liberation Day, the underlying market anxiety will remain. When institutional investors are operating in such an uncertain financial landscape, the standard investment risk management safeguards may not be sufficient. The **insights from our analysis** can provide a starting point for discussion and further analysis of **potential policy measures**, reviews, and investment decision-making.

Introduction

Global markets have been on a rollercoaster like no other since President Trump's announcement of the April 2nd, 2025 reciprocal tariffs, which is affecting dozens of countries. China was singled out for stronger measures with tariffs being raised to 145% on imports, several notches higher than the tariffs applied in 2018/19. Following the announcement, President Xi Jinping said on April 11th, 2025, that "there are no winners in a tariff war and China is not afraid of unreasonable suppression.". The subsequent days and weeks showed global financial markets reeling with several pendulum swings between bear and bull markets. This was amidst sharp sell-offs and frenzied activity as traders looked to hedge against or profit from these rapid market reversals. In the end, the bond market played a crucial role in bringing this initial tumult to a halt as yields on U.S. government bonds surged and the tariffs were eventually paused. Much of the initial market losses have been recovered.

Indeed, the recovery has been particularly strong in European markets due to optimism over increased defense spending for example. Whilst U.S. stocks have also recovered, they are still below the all-time highs experienced in February. Recent outlooks from the U.S. Federal Reserve amongst others show an expected slowdown in real GDP growth this year. Notwithstanding very recent hints towards the completion of various trade deals, we see a mixed picture for different sectors and regions. Some industries and markets have rebounded strongly whereas others continue to face challenges.

As the dust settles, the situation remains fluid with investors closely monitoring developments in trade negotiations and any U.S. and China policy decisions. The lack of a clear global trade policy motivation, alongside new geopolitical tensions means that institutional investors face a tough task to measure and manage these impacts. In China, President Xi Jinping stressed the need for China to "keep improving our manufacturing sector, insist on self-reliance and self-improvement [and] master key technologies.". In the short term, many investors reduced their exposure to U.S. markets, isolated allocations to sectors which are highly sensitive to tariffs (e.g. auto manufacturing), increased levels of hedging, adapted U.S. currency positions and increased allocations to safe commodities such as gold and silver.

In the medium-term investors have contemplated a 'wait and see' approach where feasible, with a view to understanding whether widescale multi-country tariffs will be reapplied again after the 90-day pause. Eventually however, all investors will need to understand the potential direction of tariffs and impacts on their balance sheets in 2025 and beyond to ensure effective decision making.

In this paper, we discuss the purpose of both stochastic scenarios and deterministic stresses and how we might formulate an appropriate deterministic trade war stress scenario, given the many open questions on the trade war impacts globally. We outline our methodology before showcasing the impact of the deterministic trade war stress scenario on different types of balance sheets. Specifically, we perform a deterministic trade war stress test on three hypothetical cases: a U.S. endowment fund, an Asian life insurer, and a European pension fund. It is clear to see the value of utilizing stochastic analysis to understand the key risk-return tradeoffs for portfolio construction, as well as applying a narrative deterministic stress that otherwise could not be captured to test the robustness of an investment strategy.

How can we investigate the impact of a trade war?

People who make investment decisions face considerable uncertainty. The real-life impact of this uncertainty has been experienced by investors globally during the recent turmoil on financial markets following the new global tariffs plan rolled out by President Trump. The initial dramatic shocks to global equity indices sent them into bear territory. Since then, we have seen a rebound following solid first-quarter economic and earnings data, as well as the U.S. administration easing its stance on trade and tariff policies.

While the initial losses have mostly been recovered, the end of the 90-days pause is approaching and many are wondering what will happen next. How should investors deal with the uncertainty that affects the future outcomes of investment decisions that they must make today?

In Focus: What is the economic impact of tariffs?

Our own research review concluded that the medium to longer-term impacts on expected growth, risk appetite, and economic uncertainty would be negative.

There are two channels through which trade war shocks affect asset returns:

- The growth news channel, i.e. trade war shocks change investors' growth expectations.
- The risk premium channel, i.e. trade war shocks shift risk appetite and economic uncertainty.

In the short term, we might see increased volatility on financial markets, declining equity prices and long-term sovereign yields as investors have a preference for safer assets, and similarly depreciations of emerging market currencies against the USD.

Particularly if tariff costs are passed onto consumers, trade wars are expected to cause upward pressure on inflation, exacerbated by reduced competition. This inflationary pressure could well materialize, since some studies have indicated that the majority of the 2018/2019 tariffs between the U.S and China were passed directly to consumers. At the same time, rising prices act to reduce investments, consumption and growth, offsetting inflationary pressures.

Main references

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Scenario analysis provides crucial quantitative insight

While it is very challenging to predict what *will* happen, we can certainly describe as realistically as possible what *might* happen in the future. Investors therefore need to make use of *scenarios* that describe what might happen to economies and financial markets. The question remains how to construct such scenarios. We believe that proper models, when properly used, are the best tool for this because they are consistent, objective, and transparent. Clearly, such a model needs to consider all elements that materially impact the consequences of investment decisions as realistically as possible. To achieve this, our model should generate scenarios that reflect well-chosen robust empirical regularities regarding the evolution of economies and financial markets over time, referred to as stylized facts.

We can practically construct realistic scenarios for the economic and financial variables that affect institutional investors' balance sheets by using a probabilistic model. Such a model should be based on a clear and robust methodology that can capture economic and financial market behavior, while taking into account the fact that history is only one very specific realization of what might have happened.

The trade war situation can be reflected in such stochastic scenarios by using long historical data series for model calibration, so that the input data contains previous trade war episodes. In addition, it might be appropriate to incorporate adjustments to, for instance, projected volatility if the uncertainty surrounding the current situation is not (or not sufficiently) reflected in the data that is processed by the model.

Importantly, stochastic scenarios generated by a probabilistic model can reflect the full range of uncertainties, rather than only one or a few possible outcomes. Moreover, a probabilistic model indicates which ranges of outcomes are more likely than others. Therefore, the resulting stochastic scenarios can be used to support making *risk-return tradeoffs* that are essential to investment decision making and prove useful in controlling risk budgets.

In Focus: The Ortec Finance Economic Scenario Generator

The Ortec Finance Economic Scenario Generator provides real-world stochastic scenario sets that capture risk and return characteristics of more than 700 economic variables and asset classes of 23 developed and emerging countries.

Key aspects at a glance:

- Ability to integrate short and long investment horizons consistently across all asset classes and economies.
- The projection horizon ranges from one month to several decades and beyond.
- The scenarios incorporate important stylized facts such as:
  - Risk and return vary across the investment horizon
  - Time-varying volatility, which tends to be high in times of market stress
  - Non-normal distributions and tail risk
  - Correlations between asset returns increase in times of market stress, so that diversification benefits disappear when needed most
  - Business cycles
- We produce a new house view calibration every month.
- We offer functionality to impose alternative capital market assumptions.

Our economic scenarios enable investors to make high-quality investment decisions based on realistic time-dependent risk and return projections.

Alternatively, a deterministic scenario approach helps to explore *specific outcomes* and stimulates outside-the-box thinking about what the future might look like. Typically, a deterministic scenario is based on a narrative that describes which developments drive the specific scenario under consideration. This helps to *identify risks that might be overlooked* by other methods. Because of these advantages, deterministic scenarios are especially useful for creating risk awareness and testing the *robustness* of investment strategies. Nevertheless, one should be aware that a deterministic scenario approach on its own will not necessarily cover the full spectrum of uncertainties that await us and will not provide information on how (un)likely certain outcome ranges are.

As we have discussed, stochastic and deterministic approaches fulfill different purposes. Fortunately, in practice we see more and more that deterministic and stochastic scenario approaches are used together to support investment decisions, where the strengths of both approaches are combined.

We currently find ourselves confronted with radical uncertainty surrounding the trade war situation. Particularly in such cases, the combination of stochastic and deterministic analysis offers the best quantitative approach to achieve robust investment decision making.

Constructing quantitative deterministic stress scenarios

If we plan to develop a deterministic stress scenario to create risk awareness and test robustness of investment strategies, we need a methodology. It is a challenging exercise to construct deterministic stress scenarios. The following questions come to mind:

- How to obtain values for every relevant economic and financial market variable, and every future time period?
- What co-movements or correlations to assume?
- How extreme should a scenario be?
- How to efficiently update to new economic and financial market conditions?
- How to achieve fast ad hoc scenario development in times of market stress?

With these challenges in mind, we have developed our approach for constructing narrative-based deterministic scenarios. We start by writing a narrative that characterizes our deterministic scenario. Then, we obtain the quantitative formulation of our deterministic scenario through a filtering approach. Through filtering, we retain the stylized facts, relations between different variables, and the dynamics of risk and return that are reflected in the stochastic scenarios. We can summarize our approach to construct deterministic scenarios in terms of the following steps:

1. Write a narrative that tells the story of a deterministic scenario.
2. Choose a small number of key variables and time horizons to characterize the deterministic scenario. For example, to reflect a stagflation outcome, we might target GDP growth over the next 5 years to be in the lowest 5% and price inflation over the next 5 years in the highest 5% of the probability distribution.
3. Apply a scenario filter to select a number of scenarios that are closest to these target values. Through filtering a full scenario set based on criteria for the target variables, we automatically obtain our deterministic scenario for all other variables as well.
4. The selected scenarios can be condensed into the desired deterministic scenario by calculating the standardized deviation of the filtered scenarios from the baseline. The baseline is simply the average of the stochastic set. If desired, we may apply final manual tweaks to the standardized impacts to better align the scenario with the narrative.

Once this exercise has been completed and the standardized impacts have been determined, we can now efficiently apply these to stochastic scenario sets and thus easily obtain deterministic scenarios for different market conditions reflected at different calibration dates.

The approach allows us to derive deterministic scenarios from stochastic scenarios in an efficient way, addressing all the challenges mentioned above, while retaining the benefits of a deterministic scenario approach. Since the deterministic scenario is defined for all relevant asset classes and economic variables across many regions, it is ideally suited to perform balance sheet calculations to assess impact on outcomes and test robustness of investment strategies.

We have used this approach to build a set of deterministic stress scenarios covering a stagflation scenario, a low inflation scenario, a financial repression scenario, a growth-driven inflation scenario, and in response to the recent events we developed a trade war scenario.

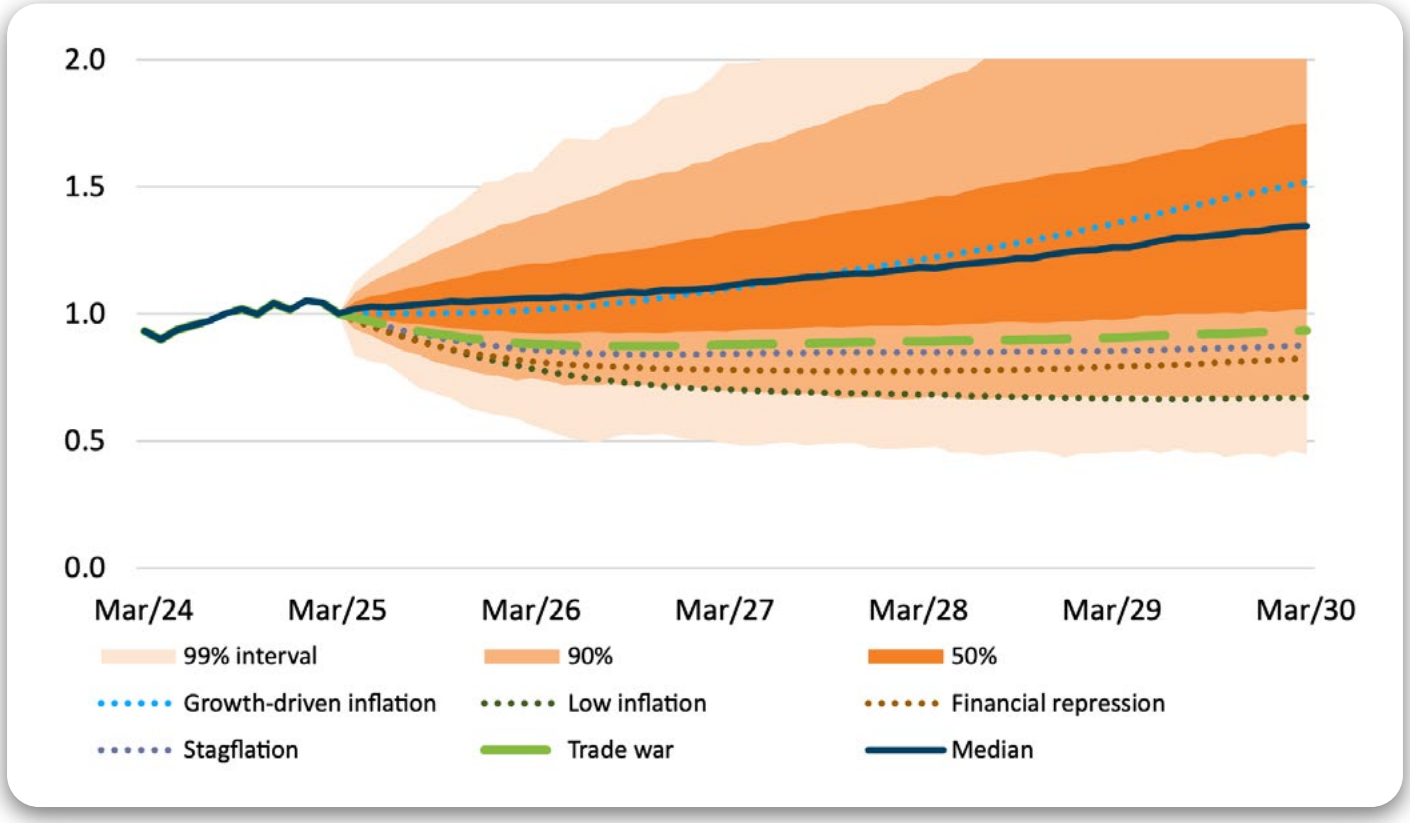
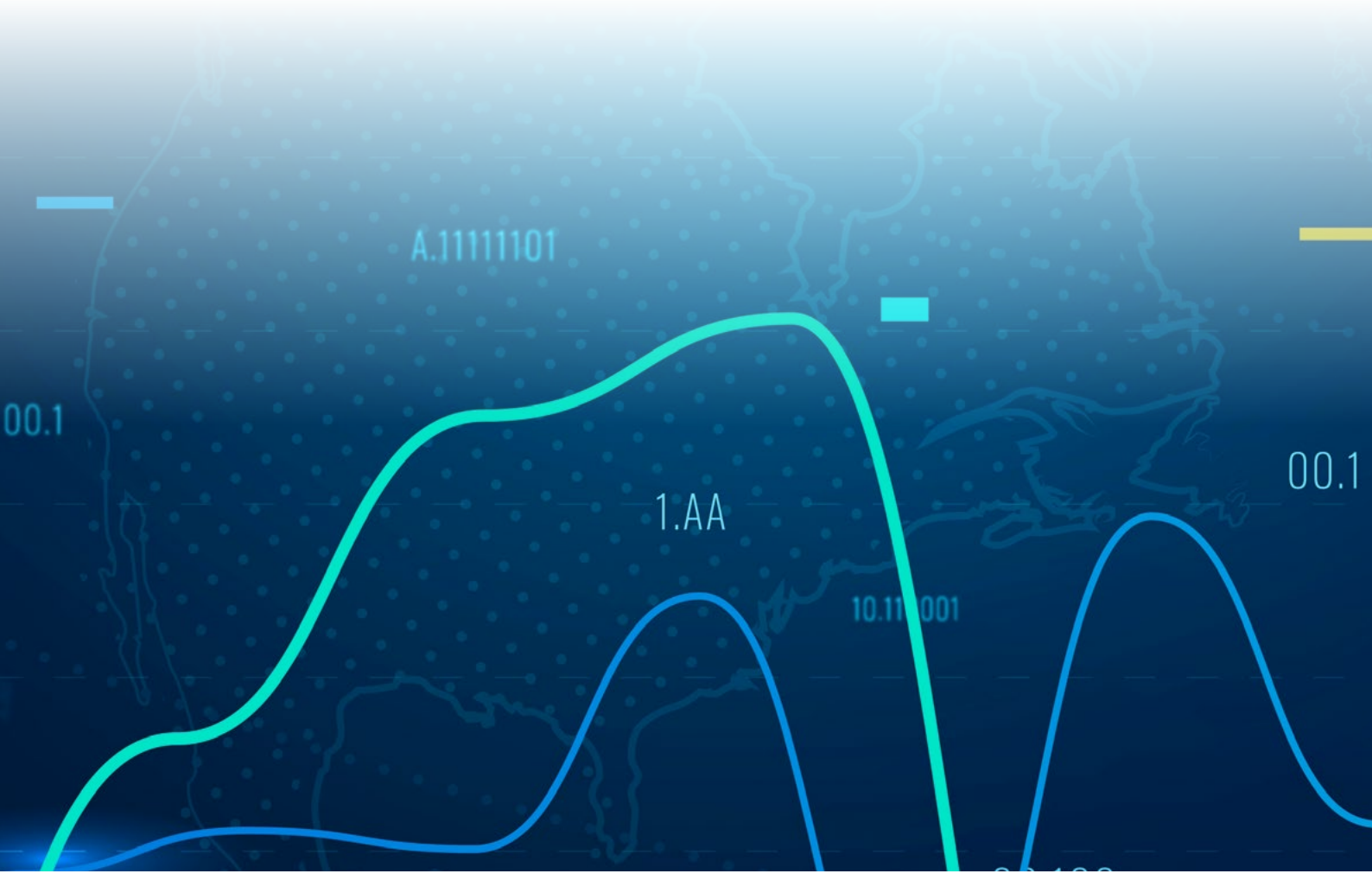


Figure 1: Stochastic and deterministic scenario projections for developed markets equity.

The trade war deterministic stress scenario

The trade war deterministic stress scenario is characterized by a fractured geopolitical environment and a global shift toward economic nationalism. These drive a steady rise in protectionist policies and trigger a global trade war. Strategic rivalry between major economies—particularly the U.S. and China—leads to widespread tariffs, export controls, and reshoring incentives. Other countries follow suit, gradually fracturing global trade into competing blocks causing economic and geopolitical fragmentation. Additionally, as the U.S. withdraws from the global stage as an international security provider for the west, geopolitical risks significantly rise.

Over the scenario horizon, the global economy transitions into a more fragmented, inflation-prone, and politically steered environment. Investors face an investment landscape marked by regional divergence, shifting trade dynamics, and elevated policy uncertainty—requiring a reassessment of long-held assumptions about globalization, inflation, and cross-border capital flows.



Global shifts in the macroeconomic environment

Governments prioritize domestic production and industrial policy, especially in strategic sectors such as infrastructure and defense. These transitions improve long-term resilience but remain inefficient in the short run. Reduced economies of scale, higher input costs, and tighter trade flows lead to persistent supply-side pressures. Inflation remains elevated—not due to overheating, but because of policy shocks, declining productivity, and rising costs for critical goods such as semiconductors, energy components, and agricultural inputs.

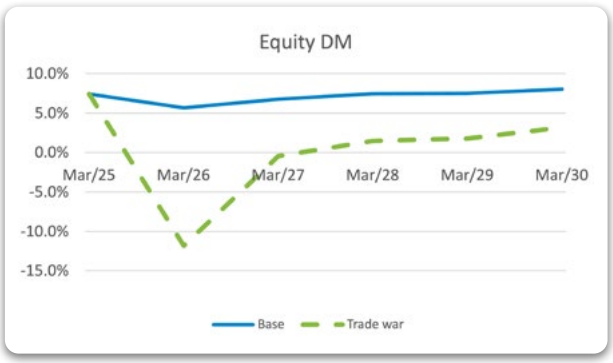
Central banks face a difficult trade-off where inflation stays above target but financial conditions remain relatively loose, versus tight monetary policy with the side effect of hampering investments in domestic industries. Given the precarious geopolitical backdrop and the associated urgency for countries to transition to more domestic production, central banks maintain relatively loose financial conditions. This causes real interest rates to drop and nominal rates to remain relatively low engineered by yield curve control where central banks buy long dated bonds.

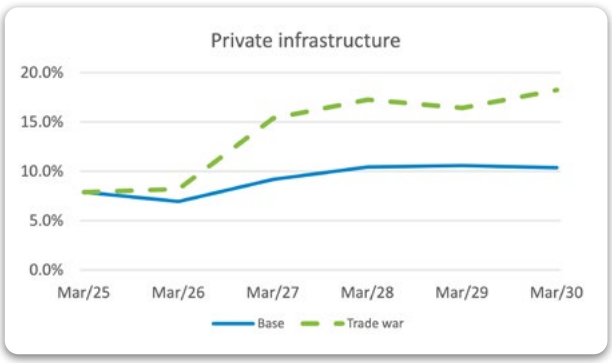
Regional divergence becomes more pronounced. The euro area is supported by stronger policy coordination and targeted fiscal support, having more fiscal space for increased stimulus than in other regions. As such, medium-term growth in Europe trends higher than some other developed economies despite the persistent negative impact on productivity growth. The U.S. is the focal point of trade tensions and therefore bears the brunt of economic fragmentation. Additionally, Canada is more exposed to the U.S. economy than other developed economies translating to a recession in the short term.

Figure 2: The baseline and the deterministic trade war stress scenario for U.S. GDP growth, U.S. price inflation, and the U.S. 10-year Treasury rate.

Winning and losing asset classes

In response to the shock to the global economic and geopolitical order, risk premia rise across asset classes causing a selloff in equities and credits. After initial falls returns on equity-assets start to stabilize but still below the baseline scenario. On the other hand, commodities, especially energy, metals, and agricultural goods—outperform, reflecting persistent scarcity and supply bottlenecks as nationalist security concerns become priorities for governments globally. This is further amplified by the formation of a new power bloc around China potentially withholding key energy and rare earth metal exports for the West. Meanwhile, sectors aligned with national policy priorities, particularly defense and infrastructure, benefit from sustained public investment and offer relative resilience, particularly for the European Union. As global imbalances shift, the U.S. dollar weakens, amplifying return differentials across regions.





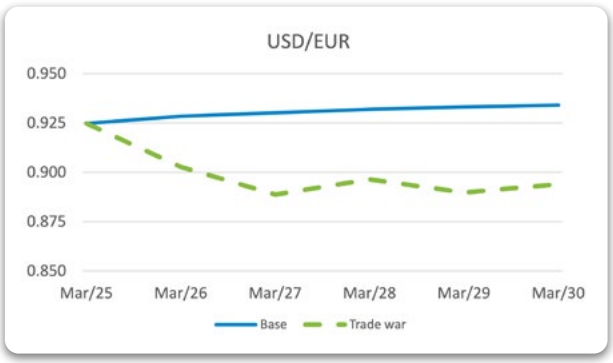


Figure 3: The baseline and the deterministic trade war stress scenario for developed markets equity (USD unhedged), global private infrastructure (USD unhedged), and the USD/EUR exchange rate.

To summarize, we observe in the application of the trade war stress scenario that growth eventually recovers over the five-year period, with more sustained trends in inflation and 10-year interest rates, signaling a structural, permanent shift in the shape and concentration of global trade and the wider economy.

In Focus: Quantitative implementation of the trade war stress scenario

To quantitatively implement the trade war stress scenario, we define cumulative two-year targets for GDP in Canada, the U.S., and Europe reflecting a mild contraction, stagnation, and low growth, respectively.

In addition, we set two-year cumulative targets for CPI Europe, U.S. equities, and the U.S. dollar reflecting elevated inflation and USD currency depreciation.

Finally, we set targets for the nominal 10-year interest rate in the U.S. and the real 10-year interest rate in Germany to remain somewhat lower than our baseline projections.

What does this mean for institutional investors?

In this section, we show the type of key insights that can be obtained by applying a deterministic trade war stress test on three hypothetical cases: a U.S. endowment fund, an Asian life insurer, and a European pension fund.

A U.S. endowment fund

The hypothetical U.S. endowment fund that we analyze has 1 billion USD of assets under management. It has a 55% allocation to equity, which consists of 35% public equity and 20% private equity. It has 15% allocated to public fixed income and the remaining 30% to alternatives. The endowment receives a fixed stream of donations of 20 million USD per annum and spends 4.5% of the asset value each year. The endowment does not apply hedging strategies.

Under the trade war scenario, the endowment experiences much lower nominal returns. Due to the elevated inflation, we even see negative real returns. The corresponding drop in asset values implies a large drop in spending, with spending 20% below the baseline outcome in the fifth year of the projections. This translates into a cumulative difference in spending over the 5-year period under the trade war stress scenario of around 40 million USD below baseline.

Figure 4: The baseline and the deterministic trade war stress scenario for spending, the nominal asset return, and the real asset return for the hypothetical U.S. endowment fund.

An Asian life insurer

We consider a hypothetical Singaporean life insurer with a substantial allocation to fixed income as an instrument to service and hedge liabilities. The insurer has a relatively large allocation to public equities, corporate credits, and illiquid assets to ensure sufficient return generation.

The asset allocation has 50% allocated to sovereign bonds, 30% to corporate and private credits, 10% to global equity, and the remaining 10% spread across emerging markets debt, alternatives, and cash. Strict rebalancing rules are in place to maintain this allocation. Hedging programs are in place to offset 90% of currency and interest rate impacts on both the own funds and the Singapore RBC Capital Adequacy Ratio (CAR).

We see a large impact on outcomes due to negative equity returns and credit spread increases. The underlying analysis shows that the hedging of currency exposure and interest rate risk as well as rebalancing discipline are crucial to avoid insolvency. As Figure 5 shows, the trade war scenario can still have a large impact, even with all these measures in place.

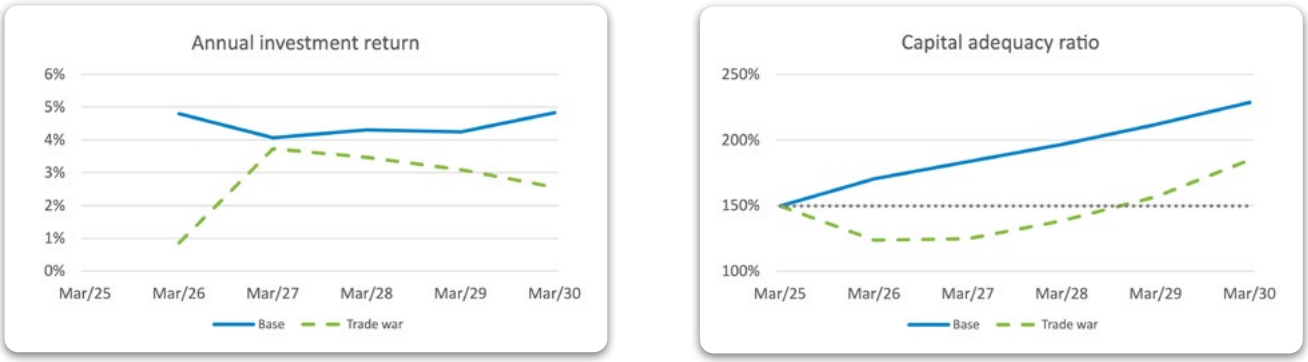


Figure 5: The baseline and the deterministic trade war stress scenario for the annual investment return and Singapore RBC CAR for the hypothetical Asian life insurer. In the CAR graph, the dotted line indicates the lower bound risk threshold of 150% that is generally maintained by Singaporean insurers.

A European pension fund

We analyze a hypothetical Dutch pension fund that invests 40% of their assets in return-seeking assets and 60% in fixed income. The allocation to return-seeking assets consists of 25% listed real estate and 15% global listed equity. The fixed income allocation consists of 50% sovereign bonds and 10% corporate credits. They apply an interest rate hedge with a hedge ratio of 70% as well as a full currency hedge. Their initial funding ratio is 111.4%.

The analysis shows that under the trade war stress scenario the funding ratio is impacted severely relative to baseline. While the funding ratio remains above the regulatory lower bound of 105% even under the trade war stress scenario, the negative impact comes at a particularly challenging time given the anticipated transition of this fund to the new regulatory framework in 2027.

If the fund has a funding ratio above 115% then they can compensate their participants for potential negative impact on pension payments due to how transition rules determine the capital under the new framework for different age groups. The analysis shows that the trade war impact is concerning as it will be much more difficult for the fund to provide such compensation than under the baseline. Therefore, it is very important for this fund to monitor, for instance on a quarterly basis, how the situation evolves until the transition to the new pension contract under the new regulatory framework. In addition, the fund might consider actively protecting their funding ratio, for instance by increasing the interest rate hedge ratio.

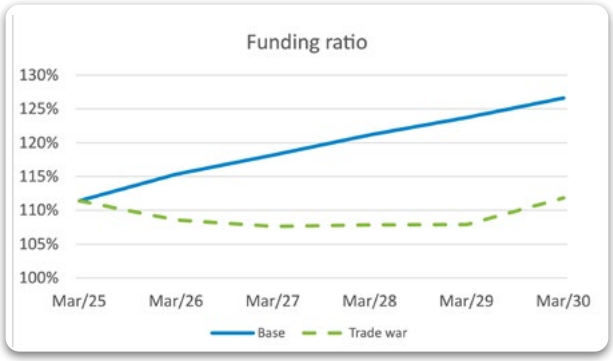


Figure 6: The baseline and the deterministic trade war stress scenario for the funding ratio of the hypothetical European pension fund.

What have we learned?

In all cases, we see a large impact on key outcome measures for these institutional investors. It is of course important to allow for the ability to capture the intricacies of the asset-liability profiles, relevant risk measures, coverage ratios and thresholds for different types of institutional investors in an appropriate way, and here one can see that the short to medium term impact of the trade wars can potentially be significant in each context.

The analysis reveals for example the importance of hedging currency exposure and interest rate risk, as well as strict rebalancing rules for the Asian life insurer to safeguard against insolvency. One other outcome to consider is the robustness of the risk measures and thresholds themselves – does your pension fund for example have an appropriate funding buffer given the potentially new economic landscape? How robust are the safeguards in place outside of those imposed by regulations, and is that good enough for all the relevant stakeholders? Such insights can provide a starting point for discussion and further analysis of potential policy measures, reviews, and investment decision-making.

What's next on the horizon?

The global financial markets have been subjected to near unparalleled levels of volatility this year due to the tariffs – followed by reciprocity in trade policy, short-term protectionist measures, pauses and changes in large scale public and private investment projects and geopolitical maneuvering in Europe and Southeast Asia. The oscillating game of one-upmanship resulting in the escalation of trade tariffs has now been replaced by a period of supposed deal-making, which may or may not bear fruit in the medium and long term. It is difficult to anticipate the next flash point in the trade wars, and which direction this may come from.

We have seen during the pandemic and conflicts in Yemen that supply chain disruptions can have a significant effect on trade volumes and at the time, this contributed towards rising inflation. There has now been a sharp contraction in global trade between the U.S. and China and indirect trade is persisting at potentially higher costs. New tariff classifications and requirements are causing delays and volume reductions at ports. It remains to be seen how long it will take for these effects to unwind under the U.S. - China tariff reduction agreement made on May 14, 2025, which reduced reciprocal tariffs from 145% to 10% for a 90-day period. Both countries also agreed to suspend some non-tariff retaliatory measures, but some pre-April measures relating to IP infringement and national security stay in place.

The U.S. has also recently agreed a trade deal with the U.K., and this alongside the U.S.- China agreement has meant a period of global markets stability. Nevertheless, the most significant of these deals is temporary - in this type of political environment one can certainly imagine making more permanent contingency plans and considering alternative routes for future trade.

Central banks appear to be taking a cautious stance to these events and further rate decisions are due between now and July 2nd, 2025, when the global reciprocal tariffs pause ends. Assuming no other deals or pronouncements to the contrary, the Liberation Day tariffs will resume on this date. Broader concerns about the status of the U.S. Dollar and global growth appear to have abated somewhat but until there is a firm conclusion on the intentions to reassert Liberation Day, the underlying market anxiety will remain.

The uncertainty will stay with us

All of these economic and political shifts are taking place in the context of several unresolved geopolitical conflicts and tensions in Europe, the Middle East and most recently in South Asia. It goes to show that, aside from any volatility arising from the trade wars, we could still be subject to shocks from a completely unexpected direction.

When institutional investors are operating in such an uncertain financial landscape, the standard investment risk management safeguards (either driven by internal governance frameworks or imposed by sector and country-specific regulation) may not be sufficient. In addition to stochastic analysis of risk-return tradeoffs, the application of deterministic stresses that aim to capture a particular trade war narrative can be one of many powerful tools that investors can use to test the robustness of their investment strategies.

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