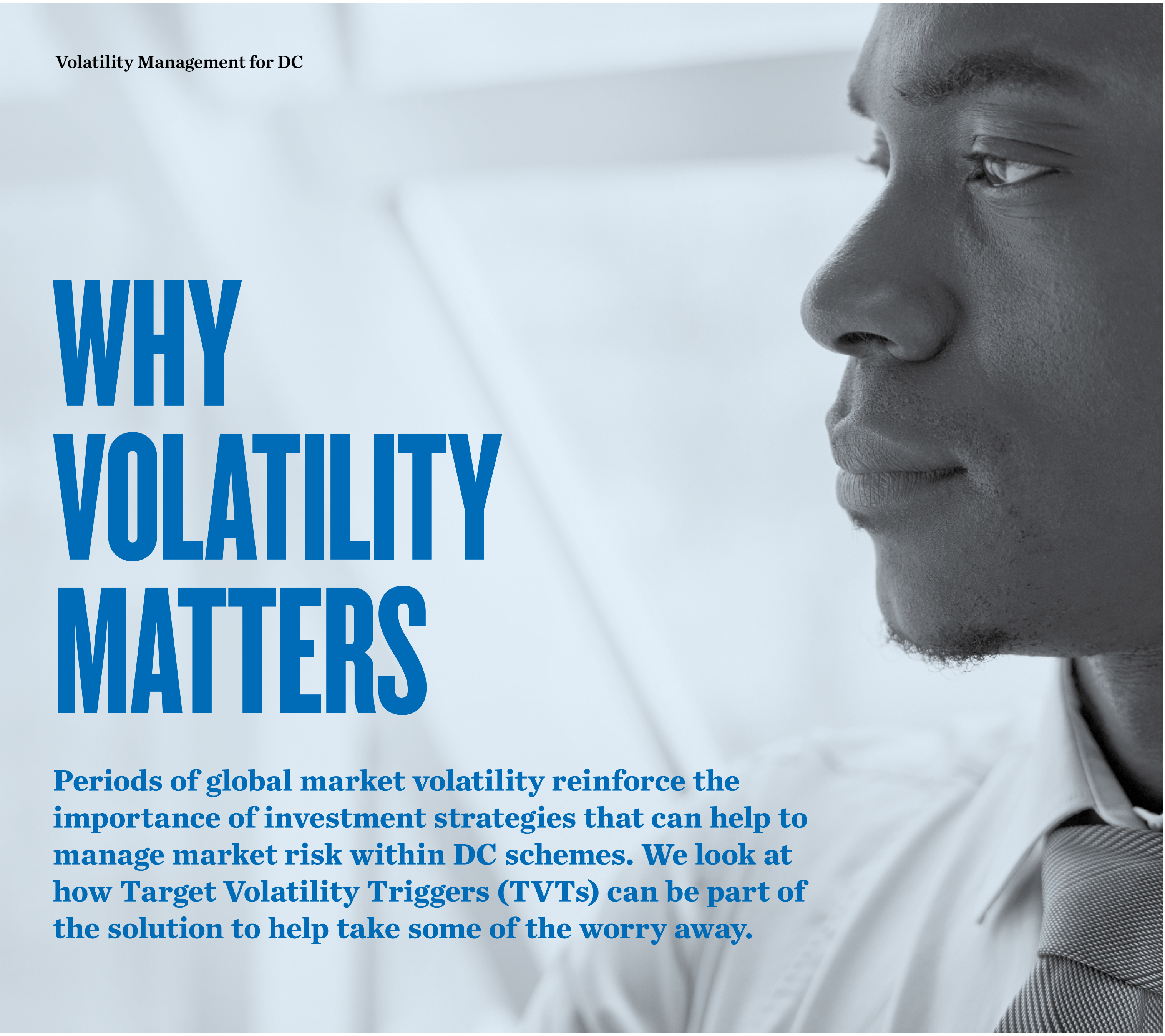
VOLATILITY MANAGEMENT FOR DC

STATE STREET GLOBAL ADVISORS



WHY VOLATILITY MATTERS

Periods of global market volatility reinforce the importance of investment strategies that can help to manage market risk within DC schemes. We look at how Target Volatility Triggers (TVTs) can be part of the solution to help take some of the worry away.

Large falls in financial markets have the potential to seriously knock the confidence of DC savers.

The impact of volatility on pension savings can play a critical role in how members perceive their savings and how they react over the longer term. Additionally, scheme sponsors and trustees prefer more consistent outcomes for their members.

The potential for volatility to undermine the strides that have been made in getting so many workers into pension schemes and on the retirement savings journey is significant.

Evidence suggests consumers are becoming increasingly sensitive to market shocks. How might we have expected members to react amid the market turmoil that ensued during 1987's Black Monday, 1998's Russian debt default, the bursting of the technology bubble in 2000 or the Global Financial Crisis in 2007?

In addition to behavioural impacts, heightened volatility can also damage returns. The impact is intensified, of course, as members approach retirement, when their ability to tolerate loss diminishes and they have less time to recover.

Even more critical are falls in value experienced when individuals are in retirement and are 'drawing down' an income — so called 'sequencing risk'. It's worth remembering, for example, that a 50% decline in market return value requires the market to subsequently double, just to recover to the starting point.

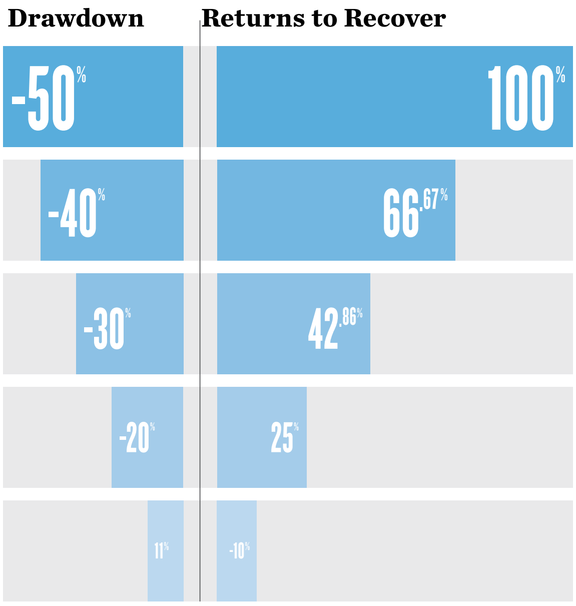
Target Volatility Triggers

One way of helping to protect a portfolio against significant market upheaval is to reduce equity exposure when volatility is high. TVTs, an in-built monitoring and adjustment mechanism, can be an effective way of managing equity market volatility. They help to limit the impact of movements in the markets on the portfolios value. Over time, this strategy can help deliver improved consistency of returns.

TVTs

- ☐ ARE SIMPLE, SYSTEMATIC AND TRANSPARENT
- ☐ HELP TO STABILISE VOLATILITY IN THE PORTFOLIO
- ☐ DELIVER BETTER RISK-ADJUSTED RETURNS
- ☐ ARE HIGHLY CUSTOMISABLE TO CLIENT REQUIREMENTS
- ☐ OFFER DRAWDOWN PROTECTION

Recovery Can Be Hard



Source: SSGA as of 31 May 2016. For illustrative purposes only. The figures shown above do not reflect the effect of unforeseen economic and market factors on decision-making.

Market and World Events Drive Volatility

The CBOE Volatility Index (VIX), sometimes referred to as investors' 'fear gauge', shows clear spikes related to world and market events.

Source: SSGA as of 31 March 2016.

HOW DO TVTs WORK?

A Simple System

TVT strategies typically overlay a portfolio's equity exposure. A level of volatility (such as a maximum of 14%) is set, either within an off the shelf product or tailored according to a scheme's requirements.

De-risking

If volatility moves above the set target level for the portfolio, the equity exposure is automatically decreased accordingly, using a risk-reducing asset such as cash. In the simplest terms, when predicted volatility is high the equity exposure is reduced to bring the portfolio's risk level back to the desired volatility threshold.

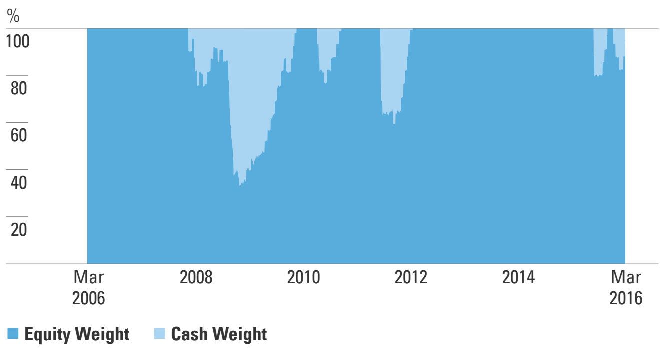
Re-risking

If volatility goes below the set target level for the portfolio, equity exposure will be increased accordingly, with a maximum allocation to 100% in equities. This trigger mechanism means that equity allocations are kept high in times of steady volatility.

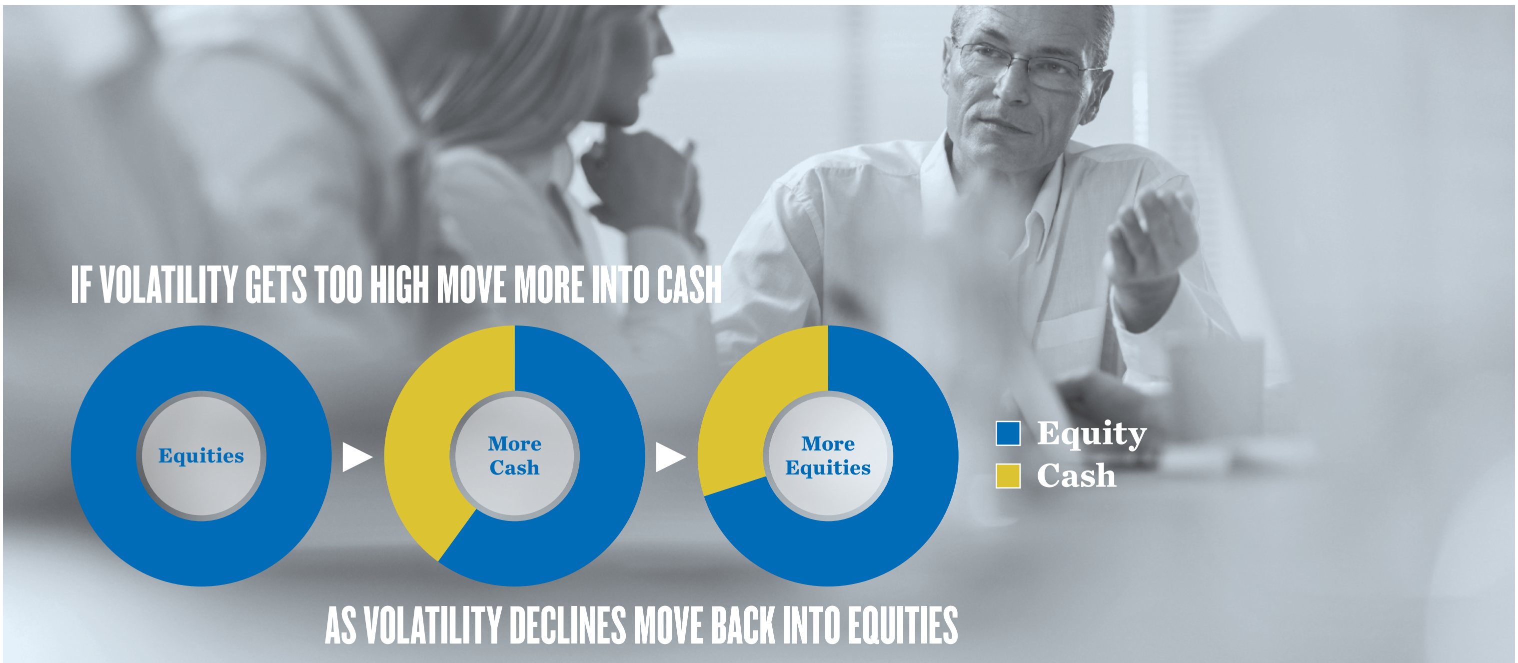
Equity Allocations Through Time

The graph below shows how the 14% TVT strategy changes equity allocation of the portfolio over time. Equity exposure is reduced in times of high volatility, with the extent of the reduction being determined by a rules based approach.

Equity exposure for a 14% target volatility on FTSE All World Developed Index GBP



Source: SSGA. For illustration purposes only. Research for SSGA's TVT Solution was conducted for the time period from March 2006 through March 2016 based on the availability of daily data. Simulated Exposures are subject to change, and should not be relied upon as current thereafter.

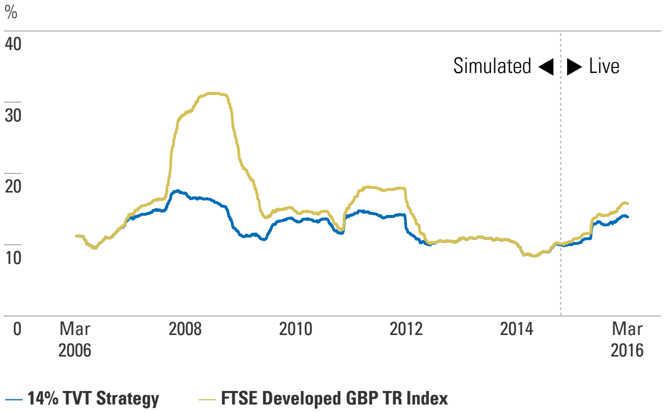


The information contained above is for illustrative purposes only.

WHAT CAN THEY ACHIEVE?

Targeting Lower Volatility

We aim to reduce realised volatility with a TVT strategy. In comparison to the FTSE Developed GBP Index the daily realised volatility shows that the TVT strategy clearly would have reduced volatility over the period. In addition, risk exposure would have been more consistent over this time frame. Consistent, controllable volatility is beneficial in a Lifestyle or Target Date Fund structure where schemes want to manage risk over time, particularly as members approach retirement and beyond.



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Index returns reflect capital gains and losses, income, and the reinvestment of dividends.

Reduced Downside

The right downside protection strategies can help shield investors and trustees from significant losses, which is important in preserving portfolio value while still helping to allow maximum participation in future gains.

Are there Drawbacks?

TVTs aim to provide downside protection while retaining potential upside participation. They can help provide better risk-adjusted returns with reduced volatility and a reduction in maximum drawdown. However, the mechanism also means that the portfolio may not participate fully in rebounds where volatility remains high and it may not fully protect against sudden market falls or 'gap downs' where stocks open lower than they closed the previous day.

The SSGA Solution

Our target volatility funds are straightforward volatility management strategies guided by principles of transparency and simplicity. We forecast future equity volatility by using historic realised volatility data reviewed daily. We then dynamically adjust the equity exposure, by holding equities and cash in varied proportion, to the target volatility level. Our funds target a maximum volatility of 14% however the target volatility level can be adjusted for clients with bespoke solutions.

Implementation

For DC pension schemes, SSGA's TVT strategies are available as standalone funds that can be incorporated within the scheme's default fund glide path. The glide path can be implemented via a lifestyle strategy or a target date fund. TVT's are a feature of SSGA's Timewise Target Retirement Fund™ range.

Volatility management, through the use of tools such as TVTs, is an important consideration for DC schemes and their members. In aiming to limit potential stock market losses it also aids in narrowing the potential range of member outcomes.

All World Developed Equity Hedged Target Volatility Fund

Approach

This fund seeks to grow capital by investing in global developed equities. The overall equity allocation of the fund adjusts based on actual volatility in the market at any point in time, using a 14% target volatility trigger level.

The All World Developed Equity Target Volatility Fund invests in developed market equity and cash in varying proportions depending on developed market volatility. When volatility levels are less than 14%, the fund will be invested 100% in equity.

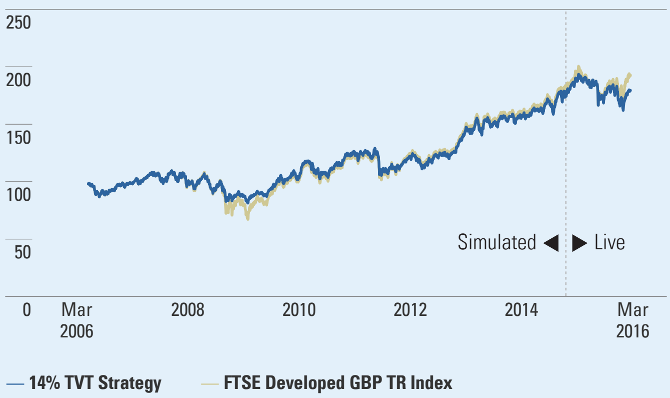
Performance

Performance of TVT Strategy
(March 2006–March 2016)

	All World Developed Equity Hedged 14% Target Volatility	FTSE All World Developed Index GBP
Return (% pa)	6.08	6.82
Standard Deviation (%)	12.45	15.97
Reward to Risk Ratio	0.49	0.43
Maximum Drawdown (%)	-25.06	-37.56

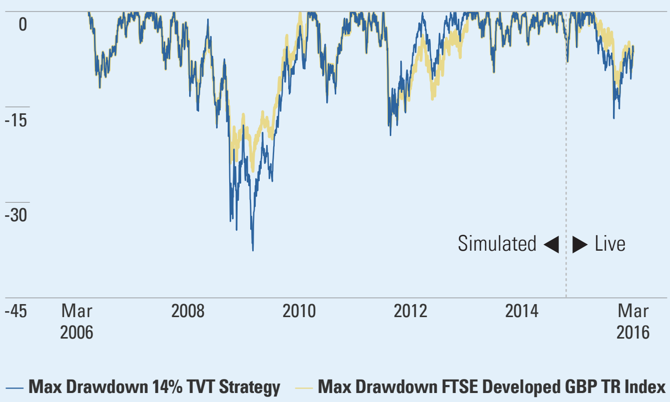
Source: SSGA. Research for SSGA's TVT Strategy was conducted for the time period from 31/03/2006–31/03/2016 based on the availability of daily data. Performance returns are simulated up until the fund launched on the 17/11/2014. The data after 17/11/2014 are live fund returns. 10 years of data is shown to demonstrate performance over a full business cycle. Past performance is not a guarantee of future results. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in sterling. Index returns reflect capital gains and losses, income, and the reinvestment of dividends. The simulated performance shown is not necessarily indicative of future performance, which could differ substantially. Please see appendix for additional information. The performance figures contained herein are provided on a gross of fees basis and do not reflect the deduction of advisory or other fees.

Performance (%)



Drawdown (%)

The peak to trough decline over the last 10 years.



Emerging Markets Equity Target Volatility Fund

Approach

This fund seeks to grow capital by investing in global emerging equities. The overall equity allocation of the fund adjusts based on actual volatility in the market at any point in time, using a 14% target volatility trigger level.

The Emerging Markets Equity Target Volatility Fund invests in emerging market equity and cash in varying proportions depending on emerging market volatility. When volatility levels are less than 14%, the fund will be invested 100% in equity.

Performance

Performance of TVT Strategy
(March 2006–March 2016)

	Emerging Markets Equity 14% Target Volatility	FTSE All Emerging GBP
Return (% pa)	3.27	5.58
Standard Deviation (%)	13.92	19.58
Reward to Risk Ratio	0.23	0.28
Maximum Drawdown (%)	-32.13	-53.07

Source: SSGA. Research for SSGA's TVT Strategy was conducted for the time period from 31/03/2006–31/03/2016 based on the availability of daily data. Performance returns are simulated up until the fund launched on the 17/11/2014. The data after 17/11/2014 are live fund returns. 10 years of data is shown to demonstrate performance over a full business cycle. Past performance is not a guarantee of future results. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in sterling. Index returns reflect capital gains and losses, income, and the reinvestment of dividends. The simulated performance shown is not necessarily indicative of future performance, which could differ substantially. Please see appendix for additional information. The performance figures contained herein are provided on a gross of fees basis and do not reflect the deduction of advisory or other fees.

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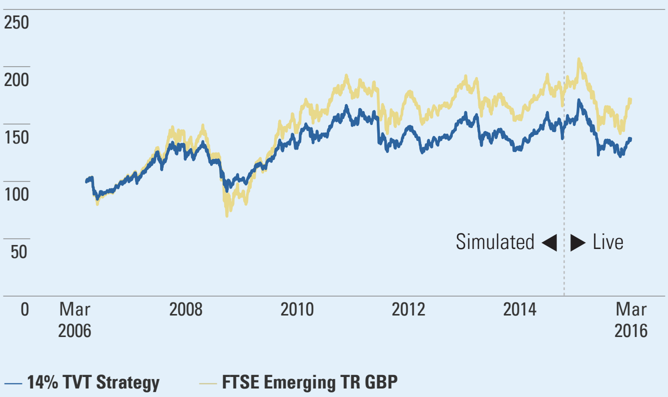

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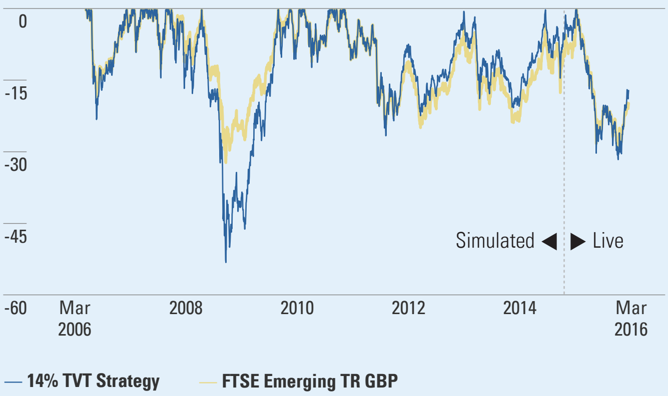

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