globalmatters weekly

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"One poorly chosen investment can derail an otherwise perfectly planned portfolio"

Why we pay attention to seemingly small risks – lessons from 1986

11 October 2021

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When it comes to risk management, a little bit of paranoia is probably a good thing. This applies when managing your finances, but history tells us that it is even more critical in the field of aerospace engineering. On the morning of 28th January 1986, the crew of the Space Shuttle Challenger tragically fell victim to one such failure as their spacecraft disintegrated a mere 73 seconds after launch. The cause of the accident was a seemingly insignificant faulty part, namely the rubber O-ring which sealed together field joints used to connect sections of the rocket boosters. These O-rings were a mere 7.1 millimetres in diameter, yet the malfunction had the gravest of consequences. A silver lining to emerge from the disaster is that lessons have been learnt; the accident is used as a case study in engineering safety, and academics have applied its principles to fields as diverse as economics, finance, and even football.

The basic premise of the so-called "O-ring theory" is simple; seemingly small and insignificant parts within a complex process can cause the entire enterprise to fail completely. The economist Michael Kremer first formalised this theory in 1993 in his paper "The O-ring theory of economic development" [(1)]. This paper helps to explain why high skilled workers cluster together, as their combined efforts will yield far greater results than simply the sum of their parts; in other words, it is far more efficient to employ a small number of skilled workers than a large number of lower skilled workers, as the latter approach increases the probability of terminal errors. This theory has been used to explain the persistence of large wage and productivity differentials between rich and poor countries, and can also apply to the success of big tech companies in recent years.

Henning Vöpel applied the O-ring principle to a more surprising field, namely top-level professional football. In his 2013 paper "A Zidane Clustering Theorem", Vöpel argues that "the best midfielder is most efficiently allocated when combined with an ace striker, and vice versa" [(2)]. This is based on the same principle as Kremer's work, and effectively explains why Premier League clubs can justify spending hundreds of millions of pounds on the very best players when they already have extremely talented squads. Cristiano Ronaldo's addition to the Manchester United squad this season is a case in point; his addition adds more to Manchester United's output given that they already have world cup winning midfield maestro Paul Pogba, than it would if he had joined say, Yeovil Town (it would be interesting to test this out in practice, but somehow I don't think Yeovil would be overly keen to pay Ronaldo's reported £385k per week salary).

We can also apply these lessons to investment matters. When combining stocks, bonds or funds, one poorly chosen investment can derail an otherwise perfectly planned portfolio. There are many instances of this in history, whether it be in the foreign exchange markets where a single leveraged carry trade can blow up an otherwise successful business, or in illiquid private debt markets where liquidity squeezes can be terminal. This is why competent, regulated, financial professionals add value for clients. With proper due diligence and risk management procedures, well resourced teams can avoid the pitfalls of O-ring type failures, giving clients the highest likelihood of achieving their goals.

Perhaps the most shocking aspect of the Challenger disaster is that problems with the O-ring design were known before launch. There was sufficient evidence at the time to show that the failure rate at low temperatures was as high as 13%, but the analysis was only conducted with selective data [(3)]. Part of the recommendations of the Rogers Commission Report into the accident were about management structure, as there were concerns that project managers were overly pressurised to produce results given the political importance that space travel held at the time. The final lesson to take from this must surely then be that incentives matter. Giving smart people the freedom to assess information critically and consider all the risks is key to any organisation, and it is how we strive to operate our own business.

[(1)] *https://www.jstor.org/stable/2118400*

[(2)] *https://www.hwwi.org/uploads/tx_wilpubdb/HWWI_Research_Paper_141.pdf*

[(3)] *https://priceonomics.com/the-space-shuttle-challenger-explosion-and-the-o/*

Market Focus

- **Global equities rose 0.7% last week**
- **Following on from a preliminary deal in July, the OECD said 136 nations have agreed to enforce a 15% minimum global corporate tax rate to address adequate taxation of multinational firms**
- **Brent crude rose 3.9% over the week to $82.4 a barrel**
- **Gold fell -0.2% to $1757.1 per ounce**

US

- US equities rose 0.8% last week
- Nonfarm payrolls increased +194k in September, much lower than consensus expectations of +500k
- ADP's private payrolls report came in at a stronger-than-expected +568k (vs +430k expected)
- The unemployment rate dropped below 5% to 4.8% for the first time since the pandemic hit in March 2020
- The services PMI declined to 54.9 vs expectations of 54.4. The composite PMI declined to 55.0 in September from 55.4 in August, its lowest level in a year, albeit still above the 50 mark separating expansion from contraction
- The September ISM services reading rose slightly in September to 61.9 vs expectations of 59.9.

Europe

- European equities returned 0.9% last week
- The Eurozone composite PMI was revised up to 56.2 from its preliminary reading of 56.1
- German industrial production fell by -4.0% in August (vs -0.5% expected)
- The Manheim used car index increased by +5.3% in September, its first positive reading in four months
- German factory orders plummeted -7.7% in August (vs -2.2% expected).

UK

- UK equities rose 1.1% last week
- UK services PMI rose to 55.4 in September (vs 54.6 expected), up from the six-month low recorded in August
- The construction PMI fell to an eight-month low of 52.6 (vs 54.0 expected), adding to signs that economic growth has taken a hit recently.

Rest of the World/Asia

- The benchmark Global Emerging Markets index returned 0.9% last week
- Japanese equities fell -1.2% over the week
- Chinese equities rose 2.0% last week
- Japan's services PMI rose to 47.8 (vs 47.4 expected), still in contractionary territory but above August's reading of 42.9
- Japan's household spending dropped -3.0% year-on-year in August vs expectations of -1.2%, amidst a surge in the delta variant there
- China's Caixin services PMI for September came in at 53.4 (vs 49.2 expected) from August's reading of 46.7, now in expansionary territory
- 60 coal mines closed in the Shanxi province due to heavy floods, compounding a global energy crisis.

Past performance is not indicative of future returns. Source: Bloomberg Finance L.P., returns in local currency unless otherwise stated.

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Market Summary

		Cumulative returns			
Asset Class / Region	**Currency**	**Week ending 08 October**	**Month to date**	**YTD 2021**	**12 months**
Developed Markets Equities					
United States	USD	0.8%	2.0%	17.8%	28.7%
United Kingdom	GBP	1.1%	0.2%	14.0%	23.8%
Continental Europe	EUR	0.9%	0.5%	16.1%	25.6%
Japan	JPY	1.2%	-3.4%	10.8%	21.0%
Asia Pacific (ex Japan)	USD	1.1%	0.2%	-1.9%	12.6%
Australia	AUD	1.9%	-0.2%	14.6%	24.2%
Global	USD	0.7%	1.3%	14.5%	27.2%
Emerging Markets Equities					
Emerging Europe	USD	4.3%	4.4%	28.7%	57.9%
Emerging Asia	USD	0.8%	0.0%	-4.1%	9.9%
Emerging Latin America	USD	-1.7%	-0.2%	-5.7%	22.2%
BRICs	USD	1.7%	1.8%	-4.9%	6.2%
China	USD	2.0%	1.8%	-15.1%	-8.3%
MENA countries	USD	0.5%	0.5%	28.2%	33.7%
South Africa	USD	1.9%	1.9%	6.1%	27.9%
India	USD	0.7%	0.3%	25.6%	49.3%
Global emerging markets	USD	0.9%	0.3%	-0.9%	14.8%
Bonds					
US Treasuries	USD	-0.8%	-0.4%	-3.2%	-3.5%
US Treasuries (inflation protected)	USD	-0.1%	0.3%	3.7%	5.6%
US Corporate (investment grade)	USD	-1.2%	-0.8%	-2.0%	0.9%
US High Yield	USD	-0.3%	-0.3%	4.2%	9.6%
UK Gilts	GBP	-1.5%	-1.4%	-8.9%	-7.3%
UK Corporate (investment grade)	GBP	-1.3%	-1.3%	-5.0%	-1.0%
Euro Government Bonds	EUR	-0.5%	-0.2%	-3.2%	-2.3%
Euro Corporate (investment grade)	EUR	-0.3%	-0.2%	-0.5%	1.0%
Euro High Yield	EUR	-0.4%	-0.5%	3.2%	7.5%
Japanese Government	JPY	-0.3%	-0.1%	-0.2%	-0.1%
Australian Government	AUD	-0.9%	-0.9%	-2.8%	-3.2%
Global Government Bonds	USD	-0.8%	-0.4%	-6.0%	-3.6%
Global Bonds	USD	-0.7%	-0.4%	-4.9%	-2.1%
Global Convertible Bonds	USD	0.0%	0.2%	-1.1%	8.8%
Emerging Market Bonds	USD	-0.6%	-0.6%	-4.8%	0.0%

Source: Bloomberg Finance L.P. Past performance is not indicative of future returns.

Market Summary

		Cumulative returns			
Asset Class / Region	**Currency**	**Week ending 08 October**	**Month to date**	**YTD 2021**	**12 months**
Property					
US Property Securities	USD	-0.1%	1.4%	23.9%	29.1%
Australian Property Securities	AUD	1.1%	-1.3%	10.2%	18.0%
Asia Property Securities	USD	0.1%	-1.1%	0.7%	6.1%
Global Property Securities	USD	-0.1%	0.5%	13.5%	22.4%
Currencies					
Euro	USD	-0.3%	-0.1%	-5.4%	-1.6%
UK Pound Sterling	USD	0.4%	1.2%	-0.2%	5.2%
Japanese Yen	USD	-1.1%	-0.7%	-7.9%	-5.5%
Australian Dollar	USD	0.5%	1.3%	-5.0%	2.0%
South African Rand	USD	-0.4%	1.2%	-1.8%	11.0%
Swiss Franc	USD	0.3%	0.7%	-4.6%	-1.1%
Chinese Yuan	USD	0.0%	0.0%	1.3%	5.4%
Commodities & Alternatives					
Commodities	USD	2.5%	3.2%	40.6%	58.7%
Agricultural Commodities	USD	1.2%	1.9%	26.8%	46.5%
Oil	USD	3.9%	4.9%	59.1%	90.1%
Gold	USD	-0.2%	-0.1%	-7.2%	-6.8%
Hedge funds	USD	0.0%	0.2%	4.0%	8.3%

Source: Bloomberg Finance L.P. Past performance is not indicative of future returns.

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