CERNO CAPITAL

TM CERNO *Pacific*

UCITS Regional Equity Portfolio (Class B)

Q1-2024

Fund Data

NAV/Share (Class B Acc)	£13.76
Fund Size (£mn)	43
Currency Share Class	GBP (Base)
Investment Management Charge	0.75%
Ongoing Charges Figure	0.99%
Dealing Frequency	Daily
Legal Structure	OEIC (UCITS)
Co-Managers	Michael Flitton & Fay Ren
Inception Date Fund	2017
Inception Date Strategy	2009
Share Type	Acc & Inc

Investment Objectives

The Cerno Pacific portfolio is a geographically specific fund, which invests primarily across the Pacific area but also the wider emerging markets. The fund's objective is to produce capital growth over the long term through a focus on companies that are judged to be innovators or are beneficiaries of innovation through their products, services or business models. The optimal route to access the full benefit of innovation is likely to be, directly or indirectly, in the form of equity, which will be the predominant asset class in the portfolio. The manager takes an active approach to currency exposures and may hedge where deemed appropriate.

Q1 Investment Report

Fund Activity

Michael Flitton provides performance commentary and details position changes during the quarter.

Revisiting semiconductor exposure in Pacific

Fay Ren revisits semiconductor exposure in Pacific in the context of AI

Fund Activity

Michael Flitton

The Cerno Pacific Fund returned 1.0% in Q1 of 2024 lagging the index return of almost 6% in GBP.

Growth broadened out beyond the US during Q1, despite the 3% strengthening of the dollar index. All markets delivered positive returns bar China. Here, authorities have succeeded in stabilising growth but the uncertainty over the cadence of improvement, ready alternatives for capital, and hostile geopolitics has contributed to lack of investor interest. Ordinarily, lack of ownership would be helpful signal of a bottom but it is, of itself insufficient to push markets higher.

There are signs that parts of the economy in China are doing just fine. The consumer is not dead but spending less broadly. Services are benefiting, in particular travel. However, housing remains a drag and the repricing of assets is needed to clear the decks. Instead, the authorities appear focused on subsiding industrial capacity and exporting, utilising foreign demand rather than stimulating more domestically. This strategy is likely to have limited road to run. Countries from Europe to Brazil are progressively resisting ultra-competitive Chinese imports. Eventually, China will have to focus more on supporting domestic demand. This pivot would be broadly welcomed by markets. The fund's investments in China have been run down from their peak of late 2020 and we have been debating the risks of the residual holdings, not so much from the operating company point of view but the risks of Western governments actively constraining their investment institutions on account of China's alignment with Russia. We note that capital controls are now very tight in China and the stockmarkets are the one remaining exception.

Despite the good headlines, Japan has presented a challenge for the strategy. At a macro level Japan is pursuing a policy mix which places it out of step with other countries. Rather than attempting to dampen domestic demand and inflation, policymakers are pushing in the opposite direction. This is an attractive divergence for global investors. In addition, regulatory reform has accelerated, forcing staid Japanese companies with little concern for external shareholders into corporate actions to drive value. Unfortunately, the companies most likely to benefit from these dynamics are unlikely to be ones we own. Businesses in low growth domestic industries with poor management alignment tend not to be candidates for the portfolio. As a result, shares in invested businesses have tended to be used as sources of capital by those chasing this reform momentum.

Semiconductor companies continued to provide strong returns for the portfolio during Q1, led by TSMC and Tokyo Electron. The companies we own will play key roles in enabling the AI revolution and as such the growth runway is long. However, given the speed of the moves we rebalanced during the quarter to take some profits. Other contributors included Trip.com and Sea Limited, both of which produced strong quarterly numbers, which caused investors to recalibrate upwards the expected path of earnings.

By far the largest negative contributor during the quarter was Wuxi Apptec. The stock dropped around 45% in the final week of January following the introduction of the US Biosecure Act to the US Senate Committee on Homeland Security & Government Affairs. The bill mentions Wuxi Apptec as a company representing a national security risk to the US and recommends it should be prohibited from gaining access to US taxpayer dollars. To the extent of our knowledge Wuxi Apptec has no ties to the military and does not process or hold genetic data on US citizens. It is a business, whose moat relies not so much on sensitive cutting-edge technology, but scale and deep expertise in small molecules. All the top 20 global pharma companies utilise Wuxi's platform to enable low-cost discovery, development, and production of drugs. It manufactures, on the behalf of Western companies, many of the GLP-1 drugs garnering so much investor attention. Our reasoning that this criticality to end patients and low technology sensitivity would insulate the business was clearly wrong. It remains our view that the bill is unlikely to pass given these factors, but the damage has been done.

Two stocks returned to the portfolio in the quarter after a period of time on the bench. ASM Pacific Technology is a semiconductor business focused on packaging. The importance of advanced packaging is increasing as the pace of gains from simply making transistors smaller decelerate. More complex 3D structures are set to emerge in memory and logic to optimise for heat dissipation and conductivity. These will all require more advanced bonding technologies for which ASMPT is the No 2 player behind BESI in Europe.

Delta Electronics is the global leader in power management components. It faces an emerging opportunity in AI as the group's technology leadership in cooling systems and power conversion drives higher a higher content opportunity in AI servers. More generally, the market for superior power management products continues to expand in a world where energy efficiency is of inexorably rising concern.

While relative performance has been challenging, the potential of the companies in the portfolio has increased, in our view. Stock selection is driven by business strength, management quality, and durable long-term growth. Exposure to automation, digitalisation, AI, advanced healthcare, and upgrading consumption are well represented. For 25x earnings portfolio growth is 40%. The broader market costs 10x for 10% growth. This lower growth also comes with higher leverage and less cash generation per unit of sales. Over time the quality within the portfolio will result in superior returns.

In the following article, Fay Ren discusses the emerging opportunities of generative AI for semiconductor companies in the portfolio.

- Michael Flitton

Revisiting semiconductor exposure in Pacific

Fay Ren

Semiconductors has long been a theme within the Pacific portfolio.

The sector is levered to multiple structural megatrends including digitalisation, automation, EV/ADAS, and now entering a new upcycle with the advent of Generative AI, given increased demand for compute power.

But almost like a microcosm of the wider stock market, AI exposed names (aka. Nvidia suppliers) have outperformed general purpose names, as the consumer electronics recovery cycle remains tepid and the EV sector momentum slows.

We own five companies in this space: TSMC (foundry), Samsung (memory/foundry), Tokyo Electron (front-end equipment), and ASMPT (packaging). Aggregate weight in the portfolio currently stands at 20%.

In this piece we focus on the two newer technologies enabling AI training and inferencing and discuss how our companies are positioned to benefit: i) high-bandwidth memory (HBM), and ii) advanced packaging.

*Nvidia's H100 AI GPU*

Source: Nvidia

High-bandwidth memory (HBM)

HBM is a key component in AI chips, including GPUs and ASICs. It is the fastest growing sub-category of the DRAM market. As the name suggests, HBM targets increased memory bandwidth above traditional forms of DRAM.

The characteristics that make HBM ideally suited to AI applications are three-fold: i) capacity for parallel multi-channel processing of large datasets (versus conventional memory modules with only linear single channel capacity); ii) low power consumption, iii) low latency, due to compact form-factor, using advanced packaging technology.

These characteristics of HBM significantly improves the speed, energy efficiency, and scalability of data transfer, addressing the critical performance bottlenecks of the 'memory wall' and its thirst for energy. The HBM players have responded to increasing memory intensity as parameters in AI models increased exponentially in the short span of six years from 117 million in Chat-GPT 1 (2018) to 1.7 trillion in Chat-GPT 4 (2024). The latest generation HBM3e 12H by Samsung handles up to 60GB/second providing 2 terabytes (TB) of capacity.

HBM Performance Evolution
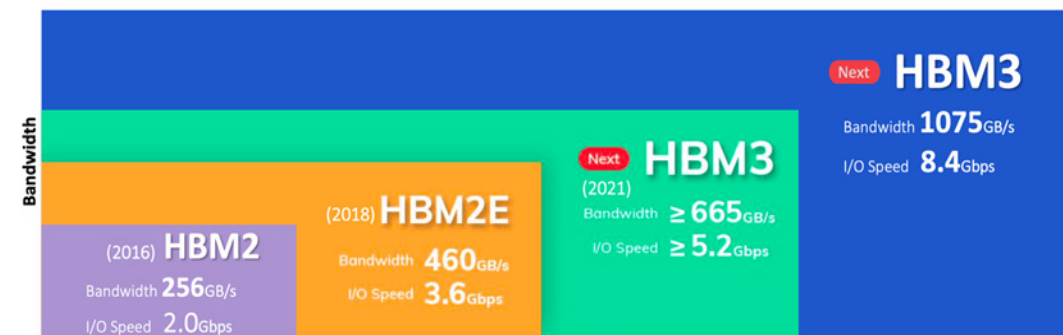
Source: Semi-engineering

Samsung Electronics is one of the two leading players in this market, with around 38% market share, behind SK Hynix (53%), with Micron being a distant third, estimated by analytics firm Trendforce. Although SK Hynix had a head start in HBM3, Samsung is catching up with the release of AMD's MI300 and close to completing verification to supply HBM3e to Nvidia's upcoming B100/H200 models in 2H24 (it is already a 2.5D packaging supplier). It is pouring KRW1 trillion investment to expand capacity for mass production, with the aim to double to 130k by end-2024.

HBM was first introduced in 2013, but until generative AI became mainstream it remained a highly niche product reserved for gaming. Ironically today, the biggest beneficiary of a technology pioneered by AMD is its rival Nvidia, as the highest volume procurer.

At only 2% of the DRAM market currently, the market size of HBM is expected to grow from US$2.5bn in 2024 and to US$7.9bn by 2029, a CAGR of 26% [1]. Server is outpacing PC and smartphone to become the leading driver of DRAM demand, where HBM and DDR5/6 is forecast to rise from 9% to 19% of total server content.

Among the applications outside of AI, high-performance computing (HPC), VR/AR systems, and autonomous driving technologies (ADAS) are all potential end-markets with high growth potential.

[1] High Bandwidth Memory Market Size (mordorintelligence.com)

Advanced Packaging

As mentioned in the previous section, one important technology facilitating the compact form-factor and energy optimisation of AI chips is via advanced packaging. This is a segment of the semi supply chain gaining significance as a compelling alternative to Moore's Law as the economics becomes increasingly unfavourable. Each successive node evolution adds ~35% more process steps (to an already elevated number), the technical hurdles can mount very quickly, resulting in high yield loss.

Instead of squeezing more transistors onto a die, the solution is to stack multiple function-specific chips onto a single package, in what is known as a 'chiplet'. The target is to achieve greater performance and interconnection density (thereby low latency & energy loss), at a much more reasonable cost.

TSMC's CoWoS (chip on wafer on substrate) and its variants are by far the most dominant technology that offers the highest density and package size to cost ratio, used by almost all leading AI accelerators that contains HBM. Even Intel, its rival in the US, is using TSMC to fab its Gaudi AI accelerators.

Architecture of an HBM-based packaging design
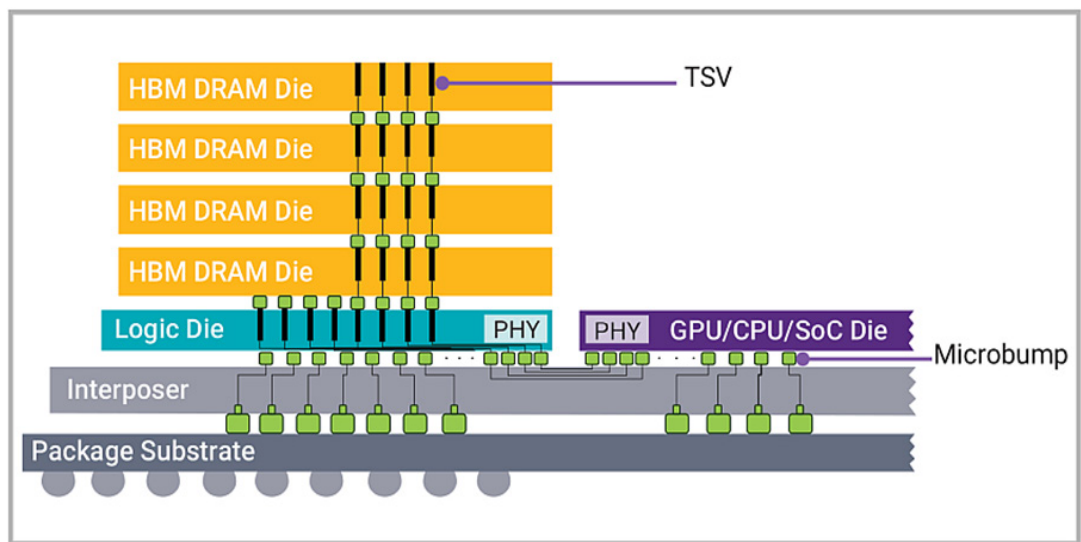
Source: Techtime

TSMC has almost exclusive manufacturing hold on Nvidia's GPUs, where Nvidia has been its largest CoWoS customer for a number of years and continues to ramp up in volume and package size (next gen GPU expected to be 2x H100 package size).

High performance chips make up 43% of TMSC revenues. The company is expecting AI revenue to reach 27% by 2027, with datacentres to account for 21%, contributed by AI Accelerators (GPUs, ASICs, FGPAs), CPUs in AI servers, and networking. The company expects to retain 90%+ manufacturing share in AI with capacity expansion plans across the US, Germany, and Japan.

As we write, the company announced signing up to US$6.6bn in CHIPS Act subsidy from the US government, with further expansion plans for its Arizona fabs.

One crucial step in the packaging process is bonding, which creates the interconnection between different components, ensuring signal transmission, power distribution and thermal management. HBM and chiplet design adoption has driven developments in bonding, the two core methodologies being: thermocompression bonding (TCB) and hybrid bonding. The biggest advantages of these are in facilitating much thinner interconnects (<10 microns) and packages, and also solving the issue of heat reflow (aka. different materials expand under heat at different rates).

We own **ASMPT** and **Tokyo Electron**, who are two of the critical equipment providers in this space (and beyond).

ASMPT is a leader in TCB due to their long-standing relationship with Intel, having co-developed the technology over a decade. Their installed base is expected to double over next few years. It is also a #2 in hybrid bonding, behind BESI of the Netherlands. Despite being a relative newcomer to hybrid bonding, ASMPT's Lithobolt tool (D2W) is gaining traction with major customers, who have placed multiple orders.

Tokyo Electron is more of an all-rounder. It offers an extensive portfolio of tools across front-end processes catering to both logic and memory customers, with high shares in deposition, coater/developers, and etch. It entered the bonding space with their Synapse tool (W2W), which integrates plasma activation, cleaning, alignment, bonding and also the post-bond annealing steps.

Final comments

Semiconductor companies, as the infrastructure backbone, are expected to capture 40-50% of the total value from the AI technology stack – particularly for storage, networking, and compute, as estimated by Deloitte. It projects the market for specialised AI chips to exceed US$50bn by 2024, accounting for c.19% of total semi market by 2025, comparing to 7% in 2017.

The excitement over Gen-AI is high, understandably so. There appears to be real opportunities for productivity gains and revenue generation, on a wide scale. Potentially, it can give rise to new industries yet unknown to us, such as in the internet era, which gave birth to SaaS, e-commerce, cloud, and social media, to name a few.

Of the existing companies in the portfolio, we can envision AI accelerating businesses in different industries: automation (Keyence – machine vision), healthcare (Syngene – drug discovery), software (Wisetech – logistics, Affle – digital marketing, CE Info – mapping & smart cities), digitalisation (Globant – digital consulting), E-commerce (Sea & IndiaMart – customer service).

However, we hesitate to paint blue sky scenarios just yet. The financial impact of AI incorporation outside of the core technology and infrastructure providers will likely disappoint in the short-term but may be underappreciated over the long-term. We will continue to monitor this development and will no doubt revisit this topic in the future.

- Fay Ren

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FUND FACTS
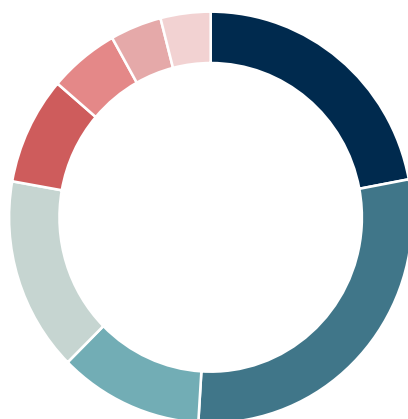
Geographic Exposure

- China/Hong Kong - 20%
- Japan - 26%
- Australia - 10%
- Taiwan- 14%
- Korea - 8%
- India - 5%
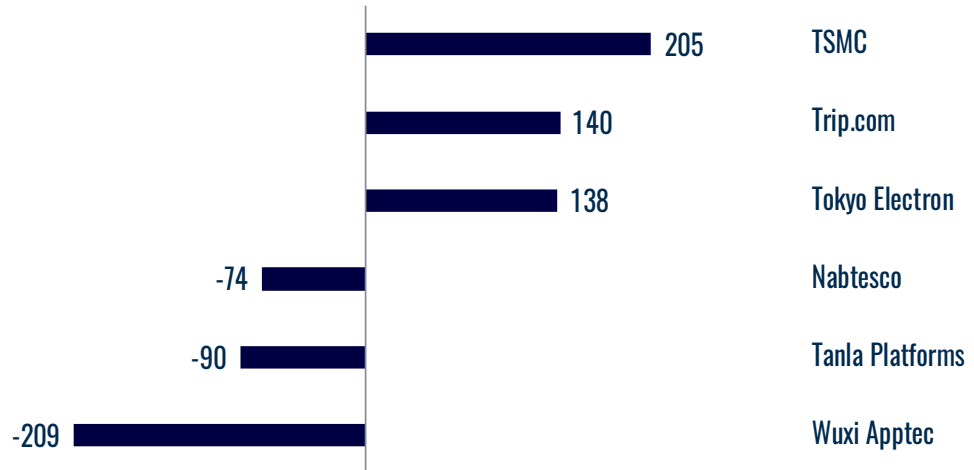- Singapore - 4%
- LATAM - 4%
- Cash - 9%

Top 10 Holdings

Samsung Electronics	7.6%
TSMC	6.8%
CSL	5.7%
Trip.com	5.0%
Harmonic Drive	4.0%
Midea Group	4.0%
Advantech	3.7%
Sea Ltd	3.7%
Globant	3.6%
Sysmex Corp	3.6%

Allocation by Sector

Information Technology	36%
Industrials	24%
Health Care	15%
Consumer Discretionary	12%
Communication Services	4%
Cash	9%

Top/Bottom Quarterly Contributors (bps)

Value	Contributor
205	TSMC
140	Trip.com
138	Tokyo Electron
-74	Nabtesco
-90	Tanla Platforms
-209	Wuxi Apptec

Performance Since Inception

Performance is based on a Net Asset Value (NAV) price basis with income reinvested, net of fees.
Past performance is not a guid to future performance.
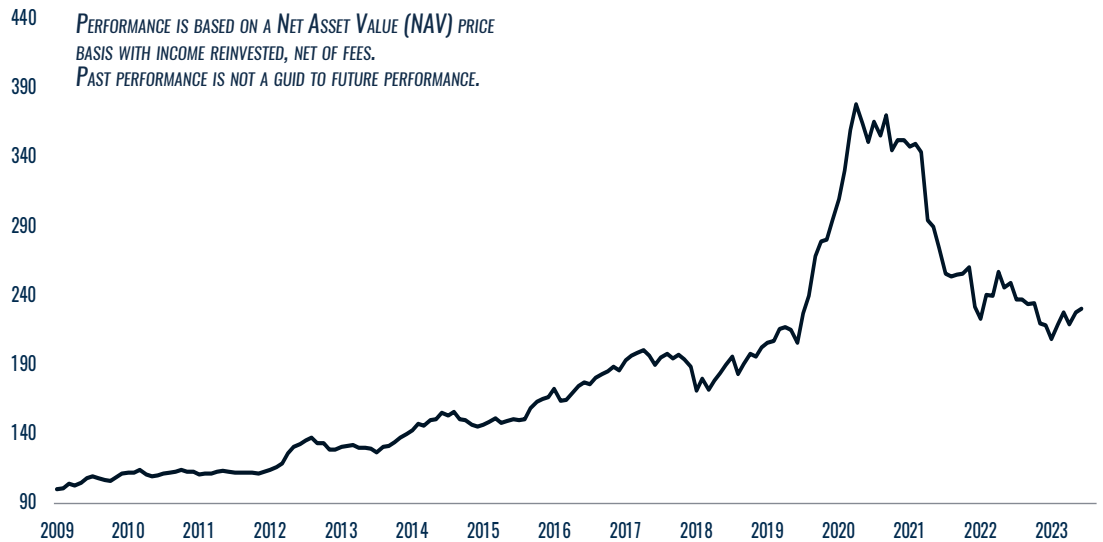
Performance

Year Ended	Mar 2024	Mar 2023	Mar 2022	Mar 2021	Mar 2020
Net Performance	-7.6%	-9.2%	-21.8%	+70.3%	+8.7%

*INCEPTION AS A UCITS: 27 JANUARY 2017

Fund Codes

	ISIN:	SEDOL:	Bloomberg:
A Acc	GB00BDCJ9Z32	BDCJ9Z3	TMCPEAA LN
B Acc	GB00BDCJB138	BDCJB13	TMCPEBA LN

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Key Fund Information

NAV/Share Class (Acc)	£13.76
Fund Size (£mn)	43
Currency	GBP (Base)
Authorised Corporate Director	Thesis Unit Trust Management
	(Authorised and regulated by FCA)
	Exchange Building
	St John's Street, Chichester, West Sussex PO9 1UP
Fund Custodian	The Northern Trust Company
Auditor	Pricewaterhouse Coopers LLP
Fund Legal Structure	UK OEIC (UCITS)
Inception Date - Fund	January 2017
Fund Saving Structures	SIPPs, ISAs & JISAs
Key Fund Documents	cernocapital.com/cerno-pacific
Ongoing Charges - Class A	Management Fee 1.00%
(incl. Management Fee)	Other Fees (incl. running costs) 0.24%
	OCF 1.24%
Ongoing Charges - Class B	Management Fee 0.75%
(incl. Management Fee)	Other Fees (incl. running costs) 0.24%
	OCF 0.99%
Transaction Costs	Explicit Costs 0.06%
	Implicit Costs 0.10%*
Initial Charge	5% - waived as standard
Contact	Tom Milnes
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*We have only started calculating this data from 1st July 2021, and as such this is an estimate based on the available data so far

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