

BURSA In-Depth Equity Analysis (IDEA) Research Competition

IDEA



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Water Utilities – Boring is the New Sexy

By Te Ren Kai, Champion of Bursa IDEA Research Competition

- Not since Reform-er Pilates has reform been so badly needed** – We have experienced a crippling deficit over the past decade with expenditures surpassing revenues (at an increasing amount every single year). The water sector has notched a measly operating profit of less than <1% since 2017, whilst 4 of the 13 states are making operating losses totalling ~RM765m. As of the last available data in 2020, revenue only covers 76% of total cost, representing a huge 24% shortfall that needs to be bridged immediately. The persistent neglect which is evident in the huge underinvestment of water infrastructure has resulted in a sink or swim scenario which should have been addressed yesterday.
- Policies, action plans, transformation strategies, blueprints? It's time for the next wave... Execution!** – From the enactment of Water Services Industry (WSIA) and Suruhanjaya Perkhidmatan Air Negara (SPAN) Acts 2006 to the formation of Pengurusan Aset Air (PAAB; Water Asset Custodian) and SPAN (Regulator), to the most recent Water Sector Transformation 2040 (WST 2040) and RM1.1bn allocated in Budget 2024 addressing water woes, it is high time for implementation and execution. We take comfort in the most recent announcements by Minister Nik Nazmi in there being unanimous consensus among all state governments on raising water tariffs – with some states (Pahang) not seeing a revision in the past 40 years. With these revisions in tariffs to be implemented, we hope to improve upon our high non-revenue water (NRW) of 36.4% (Developed nation average is 15%) and low water reserve margins of 14.3% (World standard is 20%).
- Leading or lagging indicators? Let's dive into this** – With a potential increase in water tariffs, an increase in revenue and corresponding capex cycle should be expected. As such, we believe the subsectors that would stand to benefit would be operations & maintenance (O&M) concessionaires, water-related engineering & construction players, and pipe manufacturers. Diving into to the first order beneficiaries of the potential tariff revisions, we will 1) scrutinize the reinvestment allowances (RA) in two concessionaires: Ranhill (65% of revenue from water) and PBA Holdings (100% water pure play), 2) observe significant recent share ownership % 3) benchmark our local players' multiples with regional comps.

The “Plumbers” who keep the pipes running (Regulatory Structure and Key players)

Figure 1: Malaysian water value chain



Source: Suruhanjaya Perkhidmatan Air Negara (SPAN), MWIG 2022, Company data as of 8 Nov 2023

The diagram above illustrates the dynamics and intricacies between each key player within Malaysia's water industry. For the sake of brevity, the boxes in blue are either institutions or privately listed entities that play a role in ensuring our nation has acceptable water and sewerage services at a financially sustainable and innovative level. The entities in green boxes are entities which provide an avenue for potential alpha generation if the next wave of water sector reforms come to fruition.

PAAB was formed with the enactment of WSIA and SPAN in 2006 and is primarily functioning as our national water asset management company. They are also tasked with sourcing financing from private markets to help develop water infrastructure in WM and FT of Labuan. Water operators that are licensed by SPAN will then lease these water assets whilst taking up the role of operating and maintaining these assets. As highlighted in the diagram, **SPAN** mainly functions as a regulator to the entire industry overseeing economic and technical areas.

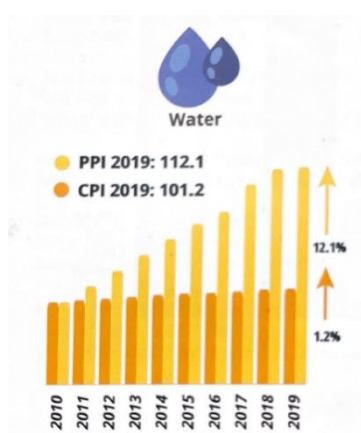
Macroeconomic conditions are not going to rock this boat (Macroeconomic analysis)

Figure 2: Economic indicators

Malaysia Indicator	Actual/ Forecasts Probability of Recession 12.58									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Economic Activity										
Real GDP (YoY%)	4.50	5.70	4.70	4.30	-5.60	3.10	8.70	4.00	4.50	4.50
CPI (YoY%)	2.10	3.80	1.00	0.70	-1.10	2.50	3.40	2.80	2.50	2.30
Unemployment (YoY%)	3.40	3.40	3.30	3.30	4.50	4.60	3.90	3.50	3.30	3.30
External Balance										
Curr. Acct. (% of GDP)	2.41	2.81	2.21	3.51	4.21	3.91	3.11	2.41	2.51	3.10
Fiscal Balance										
Budget (% of GDP)	-3.11	-2.91	-3.70	-3.41	-6.21	-6.41	-5.61	-5.01	-4.31	-3.30
Interest Rates										
Central Bank Rate (%)	3.00	2.91	3.18	3.00	1.75	1.75	2.72	3.00	2.95	3.05
3-Month Rate (%)	3.41	3.44	3.69	3.35	1.94	2.05	3.68	3.45	3.40	3.32
2-Year Note (%)	3.42	3.14	3.53	3.01	1.83	2.33	3.55	n.a.	n.a.	n.a.
10-Year Note (%)	4.23	3.91	4.08	3.31	2.65	3.58	4.09	3.75	3.70	4.15
Exchange Rate										
USDMYR	4.49	4.05	4.13	4.09	4.02	4.17	4.40	4.65	4.40	4.25

Source: Bloomberg

Figure 3: Cost to produce and consume water



Source: Malaysia Water Industry Guide (MWIG 2022)

Utilities is widely considered to be a defensive sector and a semi-safe haven as they have 1) inelastic demand, 2) tend to be regulated monopolies, 3) pay high and consistent dividends and 4) generally have low correlation with the overall market.

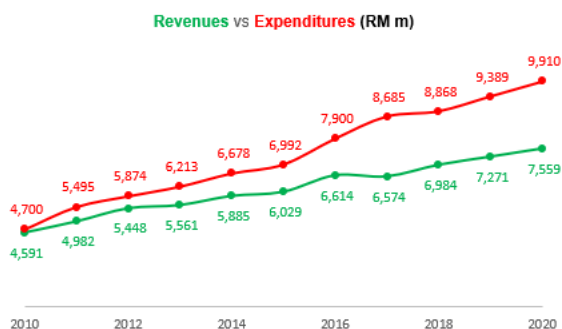
The main data indicator that we foresee having a tangible influence on the water sector is Malaysia's OPR. With consensus estimating the rates to plateau around 2.95-3.05% over the next 2 years, it seems that Malaysia's water sector can flourish without foreseeable macro headwinds. Rising interest rates are usually unfavourable to the sector due to 1) higher borrowing costs, 2) higher competition from bonds which can offer higher yields, 3) slowing economic activity growth because of lower demand. Another indirect indicator is real GDP growth and this looks to grow at a

modest rate over the next 2 years – which bodes well for positive economic activity growth.

Although projected overall CPI for Malaysia looks to be gradually decreasing, this has not been reflected in the CPI of water from 2010-19; growing at a meagre 1.2% vs the cost of producing the water supply which has grown by 12.1%. This is another evidence of the current environment being unsustainable to water related producers. Hence, it is paramount for tariff hikes to occur with more urgency.

We are moving to uncharted waters (Sector analysis)

Figure 4: Cost vs Revenue for Malaysian Water and Sewerage Sector



Source: MWIG 2022

The 10-year historical trend of revenue vs expenditure sets the tone with expenditure outpacing revenue every single year – at a 10Y CAGR of 7.7% vs 5.1%. To date, the cumulative deficit has ballooned to RM13.2bn because of constant tariffs in select states that have not been revised for at least 40 years.

Figure 5: Average domestic tariff (for the first 35m³) and last reviewed year

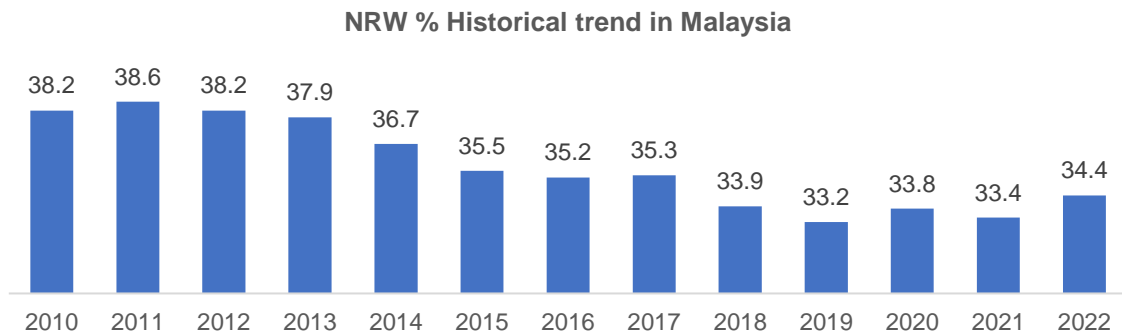
State	Last domestic tariff review	Average tariff (RM/m ³)
Johor	2015	1.31
FT Labuan	2015	0.91
Selangor	2006	0.77
Melaka	2015	0.75
Perak	2006	0.73
Negeri Sembilan	2015	0.68
Kedah	2010	0.67
Kelantan	2013	0.67
Pahang	1983	0.57
Perlis	1996	0.57
Terengganu	1997	0.52
Pulau Pinang	2015	0.32
Sabah	2015	0.52
Sarawak	1992	0.56
Sarawak (Bintulu)	1995	0.56
Sarawak (Other parts)	1984	0.56

Source: MWIG 2022

Although non-domestic tariff hikes were recently revised in Peninsular Malaysia and Labuan in August 2022, the quantum of increase was low (RM0.25 increase per m³). These increases did not even cover the actual non-domestic cost of water supply services that is approximated to be RM1.68 per m³.

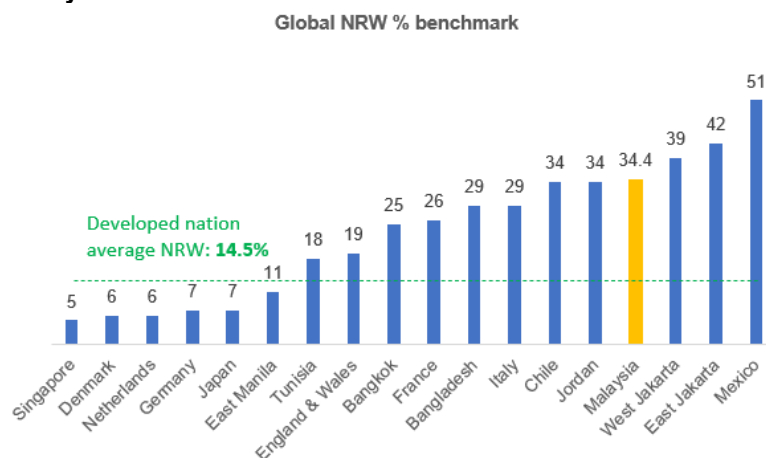
On the domestic front, tariffs have not been revised for at least 8 years as shown in figure 5. A revision in domestic tariffs would be a huge needle mover as 63% of water is consumed by domestic users vs 37% to non-domestic as of 2022 data by SPAN. The combined average water tariff rate of both domestic and non-domestic categories for 2023 stands at RM1.59 per m³ vs the overall cost of RM2.03 per m³ – hence any increase in domestic tariff would serve to bridge this gap. The highly anticipated PADU database is expected to be up and running soon, and it would be a huge enabler to the much talked about targeted subsidies approach – this aid in reducing the reliance of costly blanket subsidies.

Figure 6: Malaysia NRW % historical trend



Source: MWIG 2022

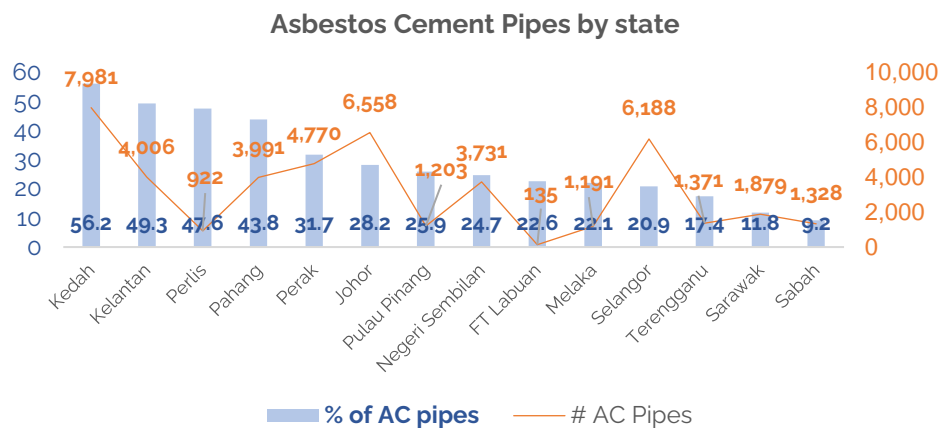
Figure 7: NRW Globally



Source: HiLeak

Non-revenue water (NRW) is a key metric that is referred to in the water industry and was 34.4% in Malaysia as of 2020. Although it has been on a downtrend the past decade, it is still at an alarming level when compared to the developed nation average NRW of 14.5%. The contribution breakdown of MY's NRW comprises of 1) physical or real losses (28%), 2) commercial or apparent losses (6%), and 3) unbilled authorised consumption (<1%).

Figure 8: AC pipes by state

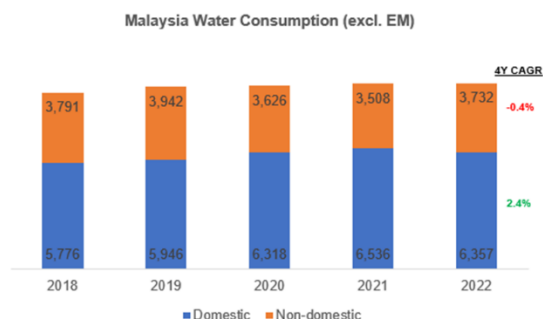


Source: MWIG 2022

Diving into the largest contributor of NRW is the large proportion of legacy Asbestos Cement pipes which are non-ductile in nature and are vulnerable to breaking – resulting in many physical losses due to the many pipe bursts that have occurred. These old and vulnerable AC pipes are still widely used to distribute water, and they comprise of 27.4%, or 45,284km of our total piping system based on the MWIG2022. These ancient pipes must be replaced as they bring the risk of a pernicious type of cancer known as mesothelioma – mainly caused by asbestos fibres.

It will soon be water under the bridge, time to dip your toe in the water (Market Outlook)

Figure 9: Water consumption trend



Source: MWIG 2022

The next catalyst for this sector is unlikely to come from growing demand as shown in figure 9 – growth has been negligible with the 4Y CAGR for non-domestic at -0.4% and domestic at +2.4%. The main driver that is projected to boost topline is the revamped tariff setting mechanism.

Figure 10: Tariff setting mechanism

Domestic Water Consumption per month	
Consumption band	Tariff setting considerations
1 First 20,000 litres	OPEX
2 20,000 - 35,000 litres	OPEX + CAPEX
3 More than 35,000 litres	OPEX + CAPEX + Environmental Costs + Regulated Profits

Trade Water Consumption per month	
Consumption band	Tariff setting considerations
1 First 35,000 litres per month	OPEX + Capex + Regulated Profits
2 More than 35,000 litres	OPEX + Capex + Environmental Costs + Regulated Profits

Source: SPAN

There has been no structured mechanism in place; hence the current state that the water industry currently finds itself in. However, it has been two decades since the government initiated the National Water Services Industry Restructuring (NWSIR) which has actually paved the way for approved mechanisms since 2009 and 2016 known as the Tariff Setting Mechanism (TSM) and the Water Regulatory Accounting (Warga). Following those mechanisms, two tariff review consultation processes were carried out and completed between 2018 and 2021. These TSMs were structured with the aim of creating a financially sustainable and efficient water services industry. Hence, the OPEX + CAPEX based determination with regulated profits as outlined in figure 10.

It is positive that the first domino has fallen in favour of positive reform with the government granting state governments autonomy to increase non-domestic water tariffs last year. This was then reiterated by Minister Nik Nazmi on various channels and is further backed by supportive Menteri Besars that have echoed the rhetoric. There's also been considerations on allowing more frequent adjustments to ensure electricity costs are accurately represented (this is a huge component of water treatment costs). The shift in more autonomy to state governments could make the whole process seamless and efficacious with less bureaucracy in seeking approval from SPAN or the federal government every time there is a need to revise tariffs. All these recent positive developments might just be the tectonic shift needed to bring about a tsunami of change.

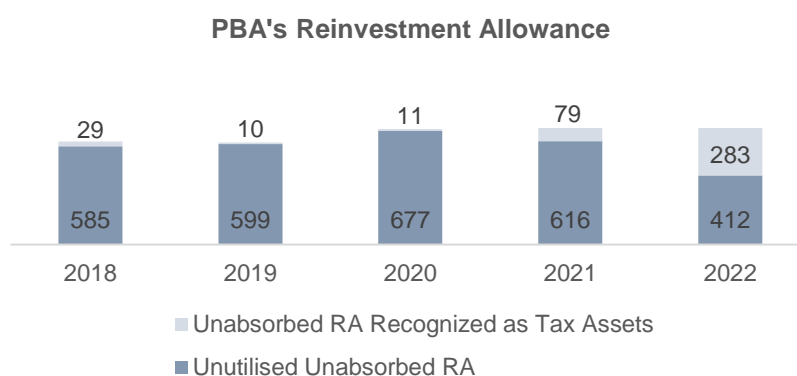
Is it time to make a splash? (Investment Opportunities/Catalysts)

Being the remora fish amongst the sharks – there have been two recent acquisitions by the big boys in companies that are in the water sector ecosystem. The first being Berjaya Corporation's wholly-owned subsidiary Inter-Pacific Capital increasing their equity interest in Salcon (Water Infrastructure Contractor) to 5.43%, and most recently YTL Power becoming a substantial shareholder in Ranhill (Water operator/Concessionaire) by acquiring a 18.87% stake. It is a playbook as old as time in Malaysian capital markets to interpret these moves as positive reaffirmation that the likelihood of reforms going through may happen this time round.

Water is wet and reinvestment allowances (RA) can indicate performance – RA is a tax incentive that allows companies to offset 70% of statutory business income in a single year of tax assessment. Only qualifying companies, including PBA and Ranhill, are allowed to claim 60% of their qualifying capex as RA, and unutilized RA can be carried forward for seven years.

Using PBA as an example, they have RM695 millions of unabsorbed RA available as of end-2022. Assuming a tax rate of 24%, the potential tax savings is around RM167 million. However, only RM283 million of the unabsorbed RA has been recognized as deferred tax assets, as shown in Figure 11.

Figure 11: PBA's reinvestment allowance



Source: PBA Annual report 2022

This implies that the firm could potentially record one-off gains of close to RM100 million on the remaining unabsorbed RA. In the event that utilization of those allowances become probable - which is dependent on the timing and level of future taxable profits - PBA could increase the amount of its deferred tax assets and realized the gains at the income tax level on its income statement.

The substantial increase in recognized unabsorbed RA during 2022 implies that PBA is projecting cumulative PBT of RM404 million through FY25-31. Recognized unabsorbed RA surged by more than RM200 million to RM283 million in 2022 as the imposition of new water tariff has improved PBA's anticipated future taxable income.

The annual average PBT works out to be RM67 million which is much higher than the average level of RM25 million over FY18-22. It is to be noted that forecasts of RAs are usually conservative for qualified companies and this projection by PBA can be seen as a low base case.

Boiling the ocean for a sea of possibilities – We take a closer look at the possible names in the water value chain who stand to benefit from the impending reforms. As highlighted in figure 1, we have categorized the three as 1) Water Service Providers/Concessionaires, 2) Pipe Manufacturers and 3) Water Infrastructure Contractors.

1) Water Service Providers/Concessionaires

We highlighted two names (PBA and Ranhill) which stand to benefit as higher tariffs can directly increase their profit pools – this is also dependant on the regulated profit allowed by the regulatory bodies. Ranhill also has potential to derive some gains from NRW reduction initiatives as they have prior operational experience in these projects.

2) Pipe Manufacturers

According to the 12th Malaysia Plan, there is an allocation for the installation and replacement of 367 km of water distribution pipes nationwide. This spurs the demand for pipe manufacturers and may be likely tailwinds for the three companies highlighted in figure 1 – Hiap Teck Venture, Engtex and YLI Holdings.

3) Water Infrastructure Contractors

The uptick in investment cycle results in a lot of new projects that require consultancy, feasibility assessments and design & planning. These would entail creation of pipe system blueprints and consultation to the asset operators and relevant stakeholders. Hence, we highlighted Taliworks, Salcon and HSS Engineers – these are the players in this space that may stand to derive meaningful upside.

From a valuation perspective, we see value in the water service providers space from a T12M PER at 8.6x vs regional peers at 11.3x. We are highlighting this subcategory as they would be the first order beneficiaries of any change in tariff.

Figure 12: MY Comparables

Name	Price (local)	Market cap (RM m)	T12M PER	CY23 PER	CY24 PER	CY23-24 EPS Growth (%)	T12M EV/EBITDA	CY23 EV/EBITDA	CY24 EV/EBITDA	P/B	DY (%)	ROE (%)
Water Service Providers/Concessionaires												
1 PBA HOLDINGS BHD	1.12	371	6.3	N/A	N/A	N/A	3.7	N/A	N/A	0.4	3.0	7.2
2 RANHILL UTILITIES BHD	0.90	1154	10.9	22.9	23.6	-2.6	3.4	3.8	4.1	1.5	1.7	14.6
Average		762	8.6	22.9	23.6	-2.6	3.5	3.8	4.1	1.0	2.3	10.9
Water Infrastructure Contractor												
1 TALIWORKS CORP BHD	0.86	1724	30.5	32.3	22.7	42.3	12.9	15.0	12.7	2.3	7.9	7.1
2 SALCON BHD	0.28	289	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3 HSS ENGINEERS BHD	1.03	516	N/A	20.2	15.0	34.6	N/A	13.0	9.9	2.1	0.9	N/A
Average		843	30.5	26.3	18.9	38.5	12.9	14.0	11.3	2.2	4.4	7.1
Pipe Manufacturers												
1 HIAP TECK VENTURE BHD	0.44	767	24.4	N/A	N/A	N/A	60.8	N/A	N/A	0.6	1.1	2.4
2 ENGTEX GROUP BHD	0.68	298	65.4	22.2	9.6	130.0	16.0	12.7	9.5	0.4	N/A	0.6
3 YLI HOLDINGS BHD	0.40	42	9.8	N/A	N/A	N/A	7.4	N/A	N/A	0.4	N/A	3.6
Average		369	33.2	22.2	9.6	130.0	28.1	12.7	9.5	0.4	1.1	2.2

Source: Bloomberg

Figure 13: Regional Concessionaires

Regional Peers												
Name	Price (local)	Market cap (USD m)	T12M PER	CY23 PER	CY24 PER	CY23-24 EPS Growth (%)	T12M EV/EBITDA	CY23 EV/EBITDA	CY24 EV/EBITDA	P/B	DY (%)	ROE (%)
1 MANILA WATER COMPANY	17.12	793	7.4	6.5	5.8	12.7	9.0	7.9	6.9	0.7	3.6	9.1
2 WHA UTILITIES AND POWER	3.78	407	15.2	11.1	11.3	-1.5	22.2	15.5	12.4	1.1	4.2	7.1
3 EASTERN WATER RESOURCES	4.22	198	16.6	N/A	N/A	N/A	10.4	N/A	N/A	0.6	3.3	3.1
4 PHNOM PENH WATER SUPPLY	7260	153	5.8	N/A	N/A	N/A	8.1	N/A	N/A	2.7	4.5	8.1
Regional Peers' Average		388	11.3	8.8	8.5	5.6	12.4	11.7	9.7	1.3	3.9	7.1

Source: Bloomberg

Things to look out for, to keep your head above water (Risks and Challenges)

In the past, the main hurdle was the political buy-in coupled with the need to pander to the public. It is different now as political figureheads across the spectrum have acknowledged the unsustainable predicament that the water industry faces. On top of that, having gone through the most recent state elections, the current government is in a stable position to bite the bullet and implement tariff increases and reforms to the mechanism. Political will has always been the main key risk for the local water utilities space – and with the recent happenings, this is unlikely to get in the way this time.

A few initiatives can be proactively pursued to complement the ongoing reforms:

- 1) More engagements with the public to detail true cost of water and disclose more details of mechanisms – this would increase awareness and education of how unsustainable it is currently in the sector.
- 2) Starting education from formative years (primary and secondary schools) whilst embarking on a social media blitz on how valuable water is and what goes into producing every drop.

Pipe dream or oasis? We shall see where the flow goes (Conclusion)

The oasis in the desert seems viable with the unsustainable water sector operating environment being highlighted by various stakeholders. A united front by the ministry, regulators and state governments in forging a new path forward is a positive sign that indicates this sector is finally seeing the light.

As highlighted in figure 1, the portfolio of the eight companies we highlighted have a decent possibility of reaping the rewards in an industry that has been neglected for far too long.

Market Trends and Sector Analysis: The Semiconductor Sector in Malaysia

By Yeoh Jia Xin, First Runner-up of Bursa IDEA Research Competition

Executive Summary

The continuous advancement of technologies such as electric vehicles, artificial intelligence, and 5G, has set to foster chip demand over the coming decade, and it is anticipated that the global semiconductor industry could grow to a trillion-dollar industry by 2030.

Malaysia claims 13% of the global market share in assembly, chip testing, and packaging, accounting for 40% of its exports, which places the nation among the top 10 global hubs for semiconductors and electronics and the seventh largest exporter of semiconductors in the world, with a market share of 7%. The industry continues to underpin the external trade of Malaysia amid temporarily waning economic sentiment both domestically and globally.

Seeking stability of the supply chains, foreign players reinstated their renewed focus on the leading and pivotal status of Malaysia as a powerhouse in the global semiconductor value chain. The potential through strengthening diplomatic ties and bilateral agreements owing to Malaysia's neutral stance in global events, as well as commitment in pursuing Environmental, Social, and Governance (ESG) and green investing practices in securing both inputs and technological transfers could enhance the resiliency of the local semiconductor sectors. The commitments of foreign players to continuously invest and allow for technological transfers that trickle down in strengthening indigenous innovation and empowering local firms allow the realisation of the nations' aspirations in moving up the value chain and create more high-paid jobs.

Section 1: Macroeconomic Analysis

Economic Growth

The momentum of Malaysia's economic growth in 2023 is expected to moderate significantly amid global headwinds. Decelerating growth in advanced economies owing to tight labour market and aggressive monetary tightening, as well as worse-than-expected China's recovery, constituting weakening external demand that weighs on the trade-dependent Malaysian economy. The latest figure recorded a 2.9% quarterly year-on-year (yoy) growth as of 2Q 2023, trailing below the average of 2011-2022. Domestic consumption and investment underpinned the growth in the quarter. Domestic supply experienced a slowdown across all economic sectors with contractions in the agriculture, mining, and quarrying sectors. The manufacturing sector only improved marginally by 0.1%, owing to weaker electrical & electronic (E&E) production (World Bank Group, 2023).

Figure 1: Contributions to real Gross Domestic Product (GDP) growth (in %)



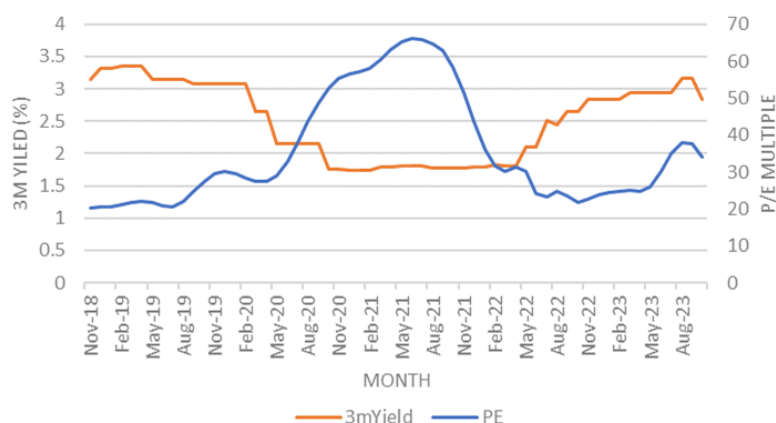
Note. GFCF represents gross fixed capital formation.

Source: Malaysia Economic Monitor October 2023 by World Bank Group Malaysia

Monetary Policy Analysis

Bank Negara Malaysia (BNM) started its rate hike cycle in mid-2022, raising the Overnight Policy Rate (OPR) from a historical low of 1.75% to 3%, following the recovery of the domestic economy and subsequent ranging inflation. Headline consumer price inflation is expected to moderate between 2.5% to 3% this year, whilst BNM is vigilant in navigating changes to domestic policy on subsidies and price controls, global commodity prices and financial market developments, as well as the degree of persistence in core inflation. BNM's tightening stance has raised the risk-free rate of the economy, impacting the balance sheets and, hence, the financing capabilities of corporations, as well as the valuation of growth or tech stocks.

Figure 2: Evolution of the 3-month Malaysia treasuries yield and the Price-to-earnings (P/E) ratio of semiconductor sector



Note. P/E represents the market valuation of the sector. A high negative correlation of -0.778 is recorded, signifying the negative association between the two.

Source: Author's calculation and illustration

Fiscal Policy Analysis

By projecting a fiscal deficit of 4.3% of the Gross Domestic Product (GDP), the unveiled Budget 2024 under the framework of **Ekonomi Madani: Empowering the People and the Nation**, was a landmark in showcasing holistic efforts of fiscal consolidation and structural reforms. Splicing with the National Energy Transition Roadmap (NETR), New Industrial Master Plan 2030 (NIMP 2030), and the Mid-term Review of the Twelfth Malaysia Plan, the Malaysian government is dedicated to enhancing the delivery of public service as a key enabler to direct the economy towards high-value proposition in E&E, energy, tech, digitalisation, etc., while simultaneously restructuring the economic landscape towards the path of sustainability and climate-resilient. With RM2 billion and RM200 million allocated as seed funds for the NETR and NIMP 2030 in the Budget 2024 would enable catalytic blended finance, grants, and matching funds towards those strategic frontiers, which, in turn, foster investment opportunities, particularly in fields such as solar integrated parks, hydrogen, and biofuel energies; as well as advanced front-end E&E manufacturing.

International Trade and Foreign Exchange Analysis

Malaysia's export sector experienced a steeper-than-expected decline, marking a consecutive contraction of seven months. Some latest figures were -13.7% as of September, following reduced demand for E&E, petroleum, and palm oil-based manufactured products.

Malaysia experienced the highest annual percentage increase in net foreign direct investments (FDI) inflows relative to its ASEAN peers in 2022. It was driven by investments approved in the manufacturing sector, largely attributable to multinational IT and semiconductor firms. The nation alone approved RM 71.4 billion in FDI in the 1Q of 2023—more than twice as much as the RM 32.4 billion recorded for the entire 2019.

Concerns regarding the Israel-Hamas war and the hawkish stance of global central banks, particularly the United States (US) Federal Reserve, have sent the ringgit to freefall. The currency has breached its lowest level since the 1997-98 Asian Financial Crisis (AFC) against the greenback. In fact, the real value of the ringgit, as measured by the real effective exchange rate, has been experiencing a secular decline for decades, making it the worst-performing country among the ASEAN-5. The long-term weaknesses of the ringgit have harmed the economic structure, hindered industrial upgradation, and caused stagnant wages.

Figure 3: Real board effective exchange rate for the ASEAN-5



Note. The ringgit is the only currency that underperformed relative to the base year of 2000, recording a value of 84.4.

Source: Federal Reserve Economic Data

Section 2: Sector Analysis

Semiconductors are the backbone of this digitalisation era, particularly the sub-sector of integrated circuits (ICs) that account for more than 80% of the industry, a plethora of downstream applications ranging from household electronics devices to military and defence technologies. Furthermore, it is subjected to the highest technical barriers sub-sector with the fastest growth, indicating lucrative margins as outlined in the NIMP 2030 that envisaged Malaysia to tap into.

Seeking stability of the supply chains following the disruption due to the upheaval of the COVID-19 pandemic and geopolitical rivalry between the US and the People's Republic of China (China), foreign players reinstated their renewed focus on the leading and pivotal status of Malaysia as a powerhouse in the global semiconductor value chain, a role the nation has been assuming since 1972. Penang, which is dubbed as the Silicon Valley of the East, houses the first batch of multinationals including Intel, Robert Bosch, Advanced Micro Devices (AMD), etc. In 2019, Penang itself was estimated to contribute to 5% of global semiconductor exports. The nation boasts a competitive edge in terms of business climate, strategic location, the provision of robust and comprehensive infrastructure, and a well-educated talent pool, as well as its neutral stance that secured a variety of FTAs (free-trade agreements) that investors could tap into in accessing the worldwide market of over four billion people by establishing businesses in Malaysia.

Malaysia claims 13% of the global market share in assembly, chip testing, and packaging, accounting for 40% of its exports, which places the nation among the top 10 global hubs for semiconductors and electronics and the seventh largest exporter of semiconductors in the world, with a market share of 7%. Malaysia's semiconductor exports grew from RM87 billion in 2009 to over RM193 billion in 2022. The E&E as a whole, contributes 78% of the external trade surplus, employs about 590,000 Malaysians and indirectly employs millions of Malaysians in other industries. Beyond just being significant economically, the semiconductor sector is vital to Malaysia's aspirations in the digital sphere and national security aspects.

Figure 4: Silicon Malaysia



Source: Federal Reserve Economic Data

Owing to the cyclical nature of the semiconductor industry, the local industry was experiencing a near-term contraction this year as a result of weakening end-user demand and excessive inventory accumulation during the past few years. Nevertheless, Malaysia continued to experience an impressive inflow of approved investments in the semiconductor industry, owing to the anticipation of the robust recovery of 11.8% of the global semiconductor market in 2024. By the end of the year, Malaysia's E&E exports are expected to be driven by the semiconductor ecosystem, due to the increased demand for microchips in the automotive sector.

The expertise that the nation offers has strengthened the commitments of foreign players to continuously invest and allow for technological transfers that trickle down in developing indigenous firms that provide support services serving foreign semiconductor manufacturers, brand owners, IC developers and fabricators. Much of those companies eventually get listed in Bursa Malaysia. Nomura Research has placed Malaysia as the 4th biggest beneficiary of trade diversion arising from the escalation of the USA-China trade war since 2018, in which Malaysia accounted for 24% of the US semiconductor global trade in the year 2021. The nation is also expected to further benefit from the spillovers indirectly due to the enactment of the Creating Helpful Incentives to Produce Semiconductors for America (CHIPS) Act in 2022, as more companies are shifting their productions out of China to the USA and its allies. Nevertheless, with fewer players in the front-end (i.e. ICs design and wafer fabrications), Malaysia has produced no major chip manufacturers nor any top developers, and the locally-listed companies are primarily engaged in the low-end sector, providing outsourced semiconductor assembly and testing (OSAT), along with subsequent supporting services, such as the manufacturing of automated test equipment (ATE) and high-performance test sockets in aiding the assembly, testing, and packaging processes.

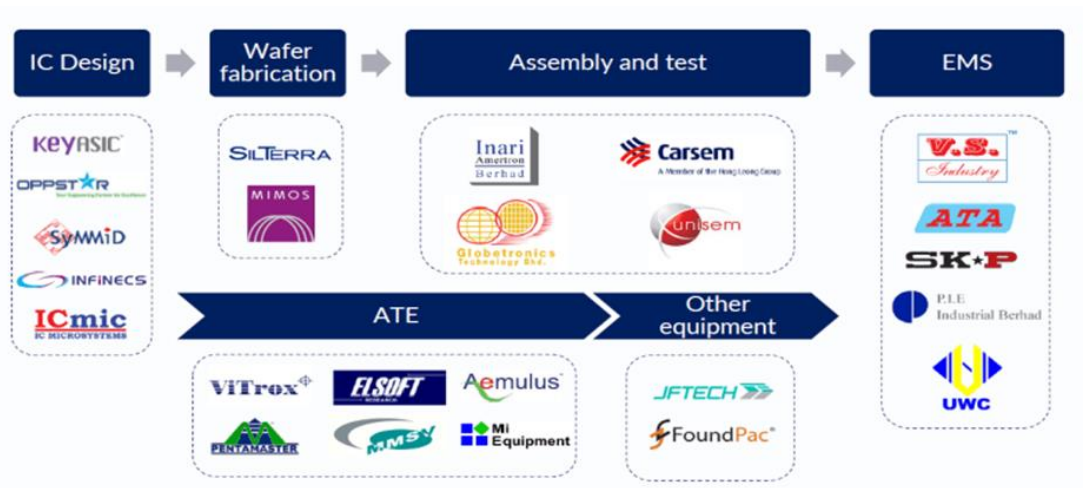
Figure 5: The global semiconductor value chain



Note. Malaysia typically involved in the fifth step, which is assembly, testing, and packaging services. The nation relies on developed countries for technologies transfers whilst relies on China for end-market usage.







Source: Semiconductor Industry Association



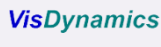
Figure 6: Key Malaysian players in the local value chain



Source: CLSA, a capital markets and investment group headquartered in Hong Kong

Figure 7: List of selected listed-Malaysian players in the semiconductor sector

Company	Major Provision of Services	Market Capitalisation (RM)
 Oppstar Berhad	IC Design covering front-end design and back-end design and complete turnkey solutions to integrated device manufacturers (IDMs)	973.4M
 Inari Amertron Berhad	OSAT service provider for radio frequency, sensors, custom integrated circuit (IC) technologies etc.	10.6B
 Pentamaster Corporation Berhad	Provision of ATEs	3,454.7M
 KESM Industries Berhad	Engaged in the provision of semiconductor burn-in services.	297.7M
 JF Tech Berhad	Innovator and manufacturer of test contacting solutions (high performance test sockets) for global integrated circuit (IC) makers.	903.9M
 Edeltec Holdings Berhad	Involved in the provision of engineering support (semiconductor equipment and materials) for IC assembly and test processes.	167.7M

Company	Major Provision of Services	Market Capitalisation (RM)
 UWC Berhad	Engineering service provider for semiconductors and life sciences.	3,921.9M
 Dagang Nexchange Berhad	Fabrication of semiconductor wafers serving multinational fabless and integrated device manufacturer companies.	1,341.4M
 Vis Dynamics Berhad	Provides technical research and solutions involving the design, software development, assembly, and installation of ATEs for the semiconductor industry	103.8M

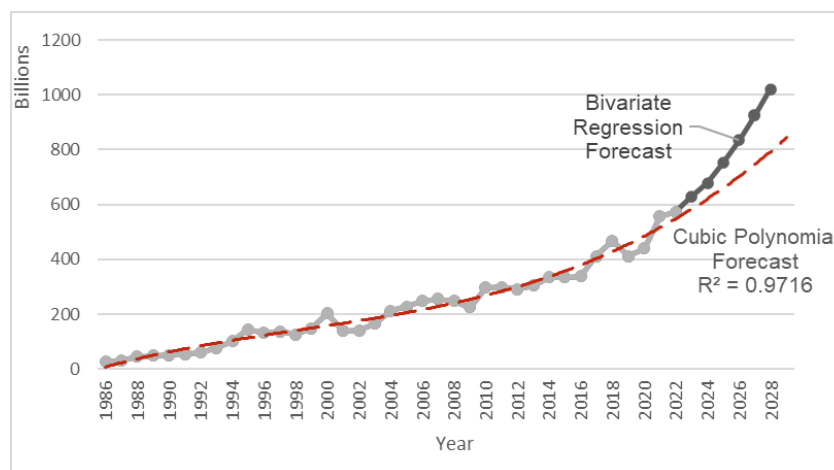
Note. Companies are selected to illustrate the different principal activities involved and may be not comprehensive. Market capitalisation as of 31st October 2023.

Source: KLSE screener

Section 3: Market Outlook and Forecasts

The continuous advancement of technologies has set to foster chip demand over the coming decade, and it is anticipated that the global semiconductor industry would grow to a trillion-dollar industry by 2030. It is anticipated that Malaysia's local semiconductor sector would expand at a compound annual growth rate (CAGR) of 7%, reaching an output of RM212.52 billion by 2028.

Figure 8: Global semiconductor billings forecasts



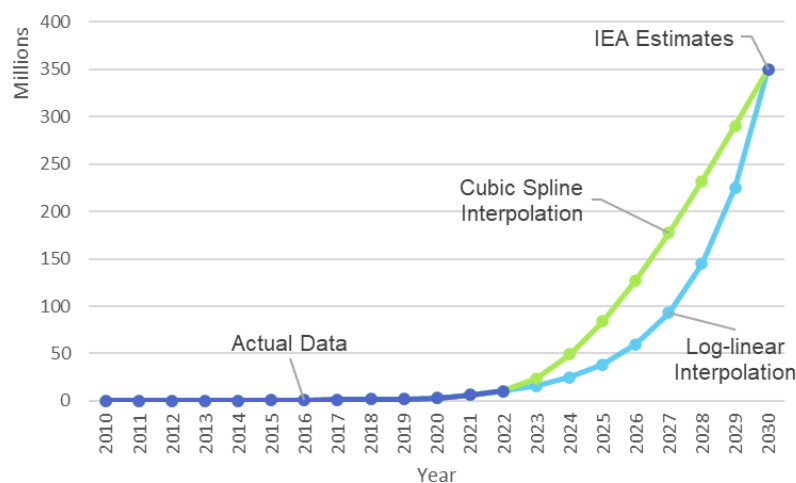
Note. Both forecasts are under the assumption of no severe economic recession in the near future.

Source: Semiconductor Industry Association, Author's calculations and illustration.

Electric Vehicles

According to both McKinsey and KPMG International, the automotive industry, particularly the electrification of vehicles (EVs) following the global consensus of opting for green solutions, is expected to drive 20% of the semiconductor growth between 2021-30. China, the US, and the European Union (EU) would be the main driving forces. In the local nuances, revenue from EVs is expected to at a CAGR of 4.95%, projecting a market volume of US\$214.4m by 2028. Semiconductors are poised to provide support to components such as power systems for EVs to ensure high functionality and driver assistance and autonomous driving features such as the Advanced Driver Assistance System (ADAS), Light Detection and Ranging (LiDAR) etc.

Figure 9: Global EV sales forecasts



Note. Latest data of 2022 and estimates in 2030 are obtained from International Energy Agency (IEA) open database, interpolation techniques are employed to forecast the annual sales between 2023-2029.

Source: IEA, Author's calculation and illustration.

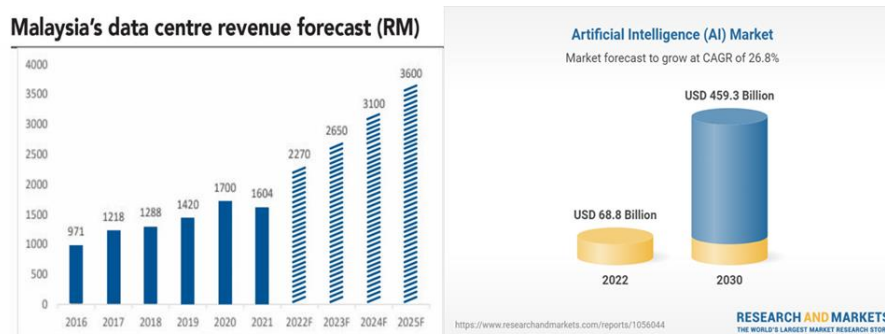
The prerequisite for EV adoption is a robust charging infrastructure, which is projected to grow at a CAGR of 36.0% from \$16.43 billion in 2023. Semiconductors assume the role of facilitating power conversion, battery management, connectivity, and efficiency. Malaysia targets to have 10,000 charging stations for EVs by 2025, following the enactment of the NETR and the assistance provided by newly entered Tesla and its supercharger network. To garner and seize the electrification trend and possibility of autonomous driving technologies, domestic players have simultaneously ramped up their investments and efforts following the trickle-down of multinational corporations' high value-added investments to provide supporting services such as burn-in and test service, which is essential for cars and protecting digital information, as well as semiconductor application technology.

Computer and Data

The data and computation sector constitutes another 25% growth of the global semiconductor in 2021-30 fuelled by the extensive use of generative artificial intelligence (AI), large language models, server memory, and cloud computing in processing and storing humongous volumes of data. The development of generative AI and data centres and customised chips for cloud services, according to DIGITIMES Research, would be crucial in determining the direction of the sector over the next five years. AI-based chips that can be produced using higher node sizes can

be utilised in autonomous driving, robots, drones, production control, and quality assurance, which are still in their infancy, providing Malaysia with a chance to develop an indigenous ecosystem supply of technology for the local and regional industry. The Budget 2024 has demonstrated Malaysia's commitment to setting AI as one of the pillars of investments, which has seen an allocation of RM20 million for pioneering research and development of AI in striding towards nurturing talent for AI development and digital content production.

Figure 10: Forecasts of Malaysia's data centre and AI market

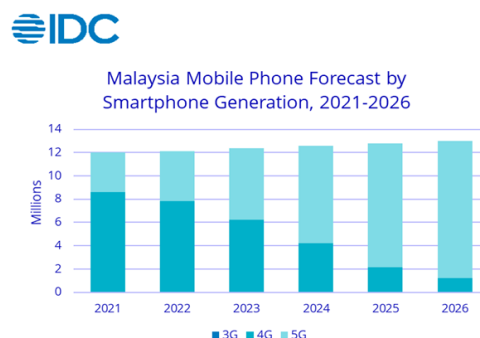


Source: The Malaysian Reserve, Research and Markets

5G Technologies

The 5G supercycle has also enticed investors looking to get exposure to this emerging technology that can facilitate limitless Extended Reality (XR), seamless Internet of Things (IoT) capabilities, new enterprise applications, instant cloud access, local interactive content, and so forth. Local firms stand a chance of assuming a pivotal role through the spillover of global semiconductor companies working collaboratively and vertically with their outsourcing and low-end counterparts to design chips into devices for emerging use cases. Malaysian firms could also gain from the deployment of 5G in terms of greater chip demand for power management, radiofrequency automotive, inspection and testing capabilities, and subsequent end-use consumer electronics. The task of 5G rollout in the nation is delegated to Digital Nasional Bhd (DNB), which has achieved 70.2% coverage in populated areas as of September 2023, marching towards 80% coverage this year-end. The Budget 2024 has also allocated RM60 million to create the 5G Cyber Security Testing Framework and 5G Technology Local Expertise.

Figure 11: Mobile subscriptions by technology growth



Source: International Data Corp (IDC) Quarterly Mobile Phone Tracker

Section 4: Risks and challenges

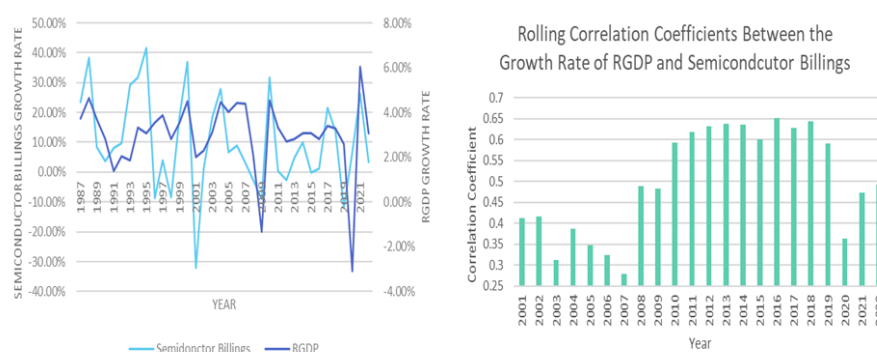
The export and business performance of the local semiconductor industry is heavily dependent on external demand and global economic climate, particularly the US, the EU, Taiwan, and China, which represent Malaysia's major trading partners and pivotal players in the semiconductor value chain.

The identified risks and challenges included:

1) Global monetary policy tightening that leads to financial imbalances and global recession (Moderate probability, High Impact)

Central bankers in major economies have resonated and expressed their stance in pursuing "higher for longer" tightening in combating rigid-than-expected inflation, even under the context of unprecedented monetary tightening. The recent inflation was further exacerbated by adverse supply shocks and geopolitical conflicts that resulted in rising commodity prices, such as crude oil. Higher interest rates could weigh on consumption and investment due to the high borrowing costs and initiate imbalances in the financial markets that are contagious to the real economy, hampering the external demand and foreign investment outlook for Malaysia. The decisions of the Bank of Japan (BoJ) require the most scrutinization. Being the outlier of global central banks, a shift to a less-accommodative policy could severely strain global liquidity and bond markets of \$133 trillion as the Japanese are net acquires of foreign equity and bonds.

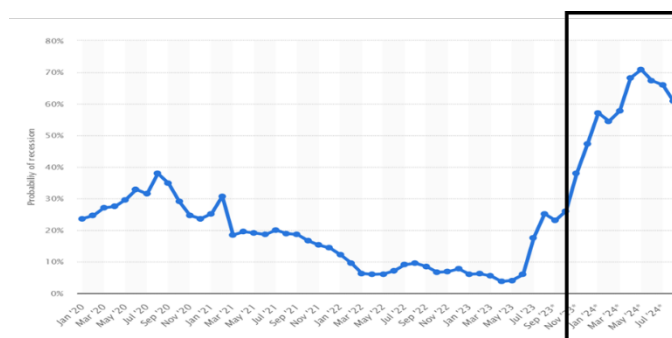
Figure 12: Relationship between economic growth and semiconductor billings



Note. There is an increasing association between the two as seen by the evolution of the correlation coefficient throughout the years.

Source: World Bank, Semiconductor Industry Association, Author's calculation and illustration

Figure 13: Recession probabilities for the US (January 2020 to August 2024)



Note. Recession probabilities are computed by the differences in the 10-year and 3-month treasury rates. The implied recession probability is hovering around 60% for next year.

Source: Statista

2) The downfall of the Chinese economy (High probability, High Impact) and its moves to annex Taiwan (Moderate-to-low probability, Very High Impact)

Malaysia's semiconductor industry is reliant on China for both imports, such as rare earths and silicon, and exports. As such, the structural decline in the Chinese economy following its demise in property sectors and concealed state government debt, draconian regulatory actions that shun foreign investors, and deteriorating households' balance sheets and deflationary pressures. In terms of diplomatic relations, China has been actively decoupling from the global consensus, as seen in its ambiguous stance in supporting Russia in the Russia-Ukraine conflict, as well as its intention to challenge the hegemony of the greenback and the US.

Owing to intricate historical and identity conflicts, China's potential invasion of Taiwan could send a systemic shock to the global semiconductor markets. Taiwan-based Taiwan Semiconductor Manufacturing Company (TSMC) is one of the world's most important companies in the world. TSMC's cutting-edge microchips are largely unsurpassed. In addition, the US, Australia, South Korea, Japan, and the EU may all deploy armed forces in a cross-strait conflict, and China could face trade and investment restrictions from these nations, further hindering Malaysian semiconductor firms that operate in China.

3) The expansion of the Israel-Hamas war (Low probability; High impact)

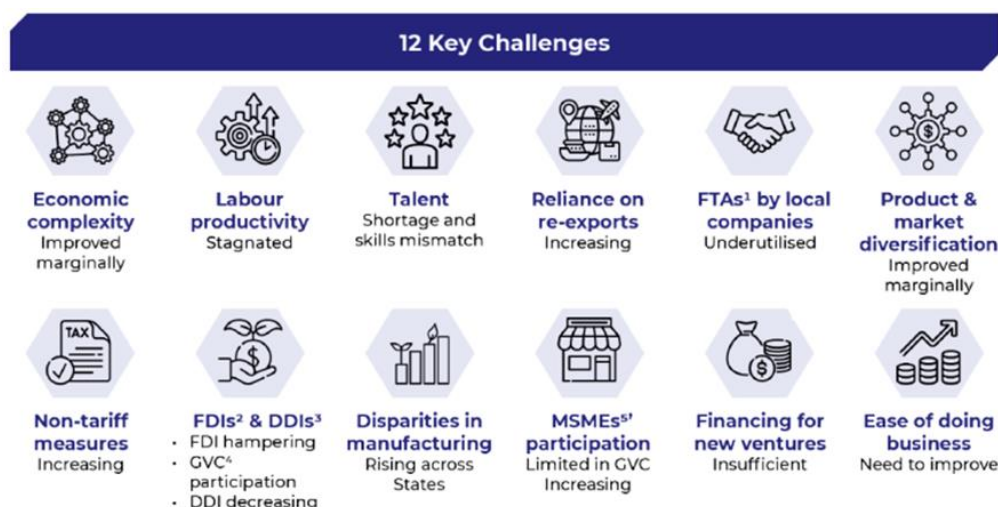
Concerns arise in regard to the possibility of military conflict between Israel and Hamas to escalate into a larger-scale and prolonged war. Global oil prices have climbed for two consecutive weeks, reaching \$94 per barrel since Hamas launched its shock attack on Israeli civilians on 7 October that sent tremors worldwide. Many fear that if tensions in the area increase, it could obstruct a vital route, the Strait of Hormuz, which is used to transit more than 20% of the oil consumed globally, in shipping petrol and oil from the Middle East to the global market, driving up oil prices significantly. Oil is the backbone for all manufacturing services, including semiconductors, while higher logistic costs and disruptions could further weigh on the costs of the sector. Currently, a resolution urging an urgent humanitarian truce between Israel and the militant Palestinian organisation Hamas was approved by the UN General Assembly with a resounding vote. It further calls for more humanitarian aid to be sent to Gaza and emphasises the necessity of preventing a more widespread escalation of the violence.

4) Increasing competition from neighbouring countries (Minimal immediate impact but profound consequences in the future years to come)

The rise of Vietnam, Indonesia, and other neighbouring countries as alternative absorbers of foreign capital due to the production capacity shifts from China, also signalled the potential to divert some investment decisions by multinationals from the local semiconductor sector. Vietnam has been particularly poised as the major beneficiary in the semiconductor sector as the US has agreed on billions of dollars in economic transactions and partnerships due to geopolitical conflicts with China. Relative low labour costs of those neighbouring countries as compared to Malaysia, represents one of the decisive factors. It may possess the potential to crowd out back-end or labour-intensive part of the semiconductor production sectors if Malaysia does not promptly move up and expand into higher-margin sectors in the future.

In conclusion, the mentioned risks that pose significant challenges to the Malaysian semiconductor sector are not able to be easily mitigated. Nevertheless, there lies the potential through strengthening diplomatic ties and bilateral agreements owing to Malaysia's neutral stance in global events, as well as commitment in pursuing Environmental, Social, and Governance (ESG) and green investing practices in securing both inputs and technological transfers could enhance the resiliency of the local semiconductor sectors.

Figure 14: Key challenges identified in the NIMP 2030



Note. Malaysia seeks to address and mitigate the above key challenges as part of the efforts to move up the value chain. GVC = Global Value Chain, DDI = Domestic Direct Investments, MSMEs = Micro, Small, and Medium Enterprises.

Source: NIMP 2020, by the Ministry of Investment, Trade, and Industry

Section 5: Investment Opportunities/ Catalysts

This section showcases how current and future trends benefit the indigenous ecosystem and companies, which hope to shed some light on the possible investment opportunities. Note that the nomination of individual companies is just to provide examples and does not constitute any investment advice. The success of those mentioned companies also benefits other companies in different processes operating in the local ecosystem, holistically driving our semiconductor sector forward.

Malaysia is to accelerate the electrification pathway in tandem with worldwide developments with all the favourable legislative measures in place. The NIMP 2030 have identified EV as a growth factor, which along with the NETR, targets a robust EV manufacturing base with 90% of local production and 50% of both two- and four-wheeled electrified vehicles. The semiconductor content of an EV doubles compared to a typical combustion vehicle due to the growing reliance on software to control nearly every aspect of the vehicle. LED technologies that ensure the safety features of the vehicle and enhance aesthetic purposes provided bright prospects for companies like D&O Green Technologies Berhad (MYX: 7204), producer of the world's first automotive Intelligent Smart Digital Embedded LED that paved the way for the development of new features that can tap into EV models made by high-end carmakers.

Discrete automotive components that are made from silicon carbide (SiC) and gallium nitride (GaN) as potential replacement semiconductor materials could make up over 52% of the total semiconductor content per vehicle as of 2030. Through thorough engagement and pipeline buildup throughout the deployment of SiC & GaN wafer technology, Malaysian Pacific Industries Berhad (MYX: 3867) and its upstream and downstream processes are well-positioned to benefit from these key prospects. It, in turn, drives demand for automated test equipment (ATEs) and burn-in and test services in validating the reliability and functionality of the protocol of the products,

benefiting companies like Pentamaster Corporation Berhad (MYX: 7160) and KESM Industries Berhad (MYX: 9334), and their subcontracted electric manufacturing services (EMS) provider.

Infineon Technologies, a German semiconductor manufacturer, has revealed plans to invest an additional \$5.5 billion to construct the world's largest 200mm silicon carbide power fab in the world at the new plant that supports a broad range of industrial applications, particularly EV and EV charging. To garner and seize the electrification trend and possibility of autonomous driving technologies, domestic players have simultaneously ramped up their investments and efforts following the trickle-down of multinational corporations' high value-added investments to provide supporting services.

Malaysia's OSAT firms have been consistently offering cutting-edge supporting technology proliferation following the surging global adoption of advanced technologies like the Internet of Things (IoT), AI, and 5G. Our OSAT firms are typically involved in advanced engineered packaging and testing that forms an integral part of the supply chains and are expected to experience brighter forecasts from providing services by offering third-party IC packaging and test services. Such instances include Inari Amertron Berhad (MYX: 0166) and Unisem (M) Berhad (MYX: 5005) owing to their growing exposure in radio frequency (RF) packages and fibres-optics transceivers for cloud-connected data components. Designers and manufacturers of equipment used in vision inspection, die bonding and final test processes for chips that go into telecommunication and high-performance computing applications, such as MI Technovation Berhad (MYX: 5286) are also poised to benefit. This ultimately spurs demand for testing applications, driving business for companies such as JF Technology Berhad (MYX: 0146), which specialises in offering test sockets for high-performance 5G test contact.

Taiwanese-based Phison Electronics Corp, which is a prominent player in flash memory chips that are used extensively in data and programs on computers and data storage devices, intended to re-establish an IC research and development (R&D) hub in Malaysia. It provides enormous opportunities for the indigenous as the corporation is actively seeking local partners for collaboration on the R&D of ICs, allowing Malaysian companies to participate in the deemed higher value-added, high profit margins and greater specialisation sector by the NIMP 2030. Examples of companies that are capable to tap into the opportunity include: IC Microsystems Sdn Bhd, Oppstar Berhad (MYX: 0275), Key Asic Berhad (MYX: 0143), and Symmid Corporation Sdn. Bhd.

The enactment of The CHIPS Act of 2022 with the aim to stifle China's innovation, has led leading firms specialises in lower node semiconductors (a lower node is crucial in catering high-end and computation-intensive industry), such as Dutch-based ASML Holding NV to consider Malaysia as alternative route for its supply chain. ASLM is the only company with the capacity to mass produce Newer Extreme Ultraviolet (EUV) lithography that can process chips of 2 nm and beyond, which is a critical boost in widening Malaysia's semiconductor value chain, especially in the front-end wafer fabrication and fabless design fields, which the nation currently lacks with. The possible opportunity can be embraced by Mimos Berhad, a strategic agency owned by the Ministry of Science, Technology, and Innovation (MOSTI), to advance the nation's involvement in the higher-end sector.

High-end medical technology (MedTech) and medical devices represent an untapped opportunity as a hidden gem in Penang. Because semiconductors can precisely control electrical currents, they have been used to construct powerful medical devices that have led to the invention of unique and advanced products that are capable of diagnosing, treating, and detecting a wide range of medical diseases. Some examples of products produced in Penang include wearable sensors, implantable devices, diagnostic devices, and imaging devices catering to cardiovascular products or orthopaedic implants and tools. UWC Berhad (MYX: 5292) has been devoted to

developing an automated instrument for high-throughput extraction of DNA, RNA, protein, and cells using a diverse set of validated protocols for multinationals. Consequently, Malaysia is regarded as the East's top centre for the production of medical devices, rivalling established centres like Puerto Rico, Costa Rica, and Ireland.

Below represents a forecast for the self-constructed Malaysian semiconductor index. The whole sector is expected to grow gradually in the forthcoming 52 weeks, which represents an investment opportunity to invest the local semiconductor industry.

Figure 15: 52-weeks ahead forecasts of the self-constructed semiconductor index



Note. It does not constitute any investment advice for a particular stock. INDEXF represents the 52-weeks forecasts.

Source: Author's calculation and illustration.

Conclusion

The E&E industry, especially the semiconductor sector, is expected to continue to underpin the external trade of Malaysia amid temporarily waning economic sentiment both domestically and globally. Following the trend of de-globalisation and fragmented supply chain, Malaysia, with its internal strengths, is poised the chance to tap into the opportunities to venture into higher-margin sectors following technological transfers in promoting indigenous innovation and ecosystem. Technology companies continued to expand their production capacity in Malaysia, with some semiconductor firms moving output from China. In terms of the regulatory landscape, the Malaysian government has outlined clear and concise roadmaps and master plans and has demonstrated considerable efforts in identifying key sectors that aligned with the evolving global trend of EV, AI, and 5G, which constitute the detrimental trend in the semiconductor industry moving forward.

The commitments of foreign players to continuously invest and allow for technological transfers that trickle down in strengthening indigenous innovation and empowering local firms in order to realise the nations' aspirations in moving up the value chain and create more high-paid jobs.

Continued monetary tightening, geopolitical conflicts, and subsequent supply chain disruptions could weigh heavily on the global economy and pose a risk to the operations of the local semiconductor industry. Furthermore, the nation is also prone to emerging competition from its neighbouring countries. Nevertheless, the continuing in strengthen collaborative efforts with key trading partners to build an indigenous robust supply chain and innovation that may possibly ease some of the adverse effects, making the semiconductor industry stronger in the face of ongoing deglobalisation trends.

Gold Commentary (September) – Market Trends and Sector Analysis

By Nik Mohammad Izzul Azfar Bin Nik Razali, Second Runner-up of Bursa IDEA Research Competition

I. Executive Summary

In September, the gold market grappled with a formidable array of challenges, resulting in a notable 3.7% decline in the precious metal's value. This decline was predominantly attributed to the relentless ascent of US Treasury yields and the strengthening of the US dollar¹. As the month drew to a close, a late sell-off was triggered by several key factors, including the release of robust US economic data, a notable drop in the Chinese local premium, and a technical breach in gold's price structure.

Figure 1: Gold pressured lower in September by soaring rates and a stronger US dollar*



Sources: Bloomberg, World Gold Council (WGC)

Figure 2: Gold prices were down across the board, but helped by FX weakness in Europe, Japan and the UK

	USD (oz)	EUR (oz)	JPY (g)	GBP (oz)	CAD (oz)	CHF (oz)	INR (10g)	RMB (g)	TRY (oz)	AUD (oz)
30 Sep 2023 Price	1,871	1,769	8,983	1,533	2,540	1,712	49,939	439	51,293	2,907
September return	-3.7%	-1.3%	-1.1%	0.0%	-3.5%	-0.2%	-3.4%	-3.2%	-1.0%	-3.2%
Y-T-D Return	3.1%	4.4%	17.5%	2.1%	3.3%	2.1%	3.5%	9.1%	51.2%	9.2%

Source: Bloomberg, ICE Benchmark Administration, World Gold Council

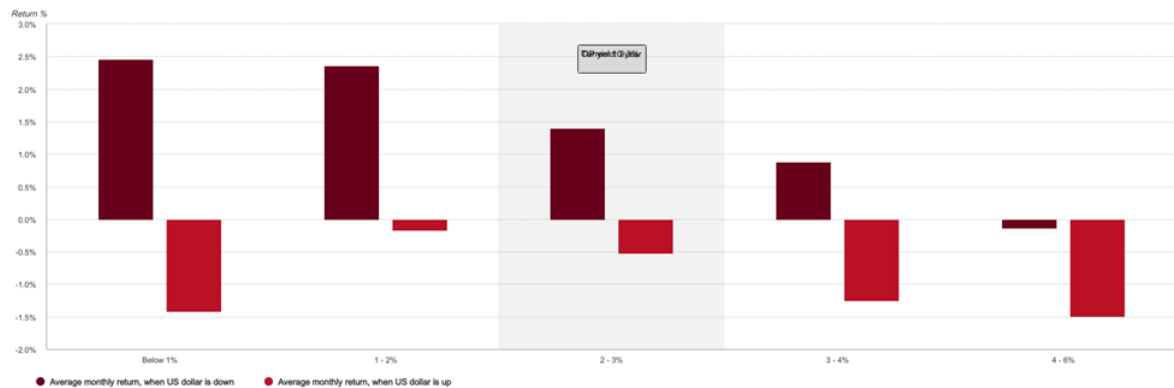
Amidst the September challenges, central bank activity in Q2 acted as a stabilizing force for gold. Q2 saw a modest 2% YoY dip in gold demand (excluding OTC transactions) at 921 tons. Impressively, jewellery consumption defied constraints, posting a 3% YoY increase at 476 tons. The bar and coin segment surged by 6% YoY to 277 tons, driven by Turkey's expansion. ETFs reported smaller outflows at 21 tons, an improvement from the previous year's 47-ton outflows. Conversely, Q2 witnessed a substantial boost in OTC investments, totalling 335 tons. Gold's enduring appeal, coupled with Malaysia's unique gold market dynamics, remains a pivotal factor shaping global market dynamics.

¹ The US dollar index (DXY) has risen c. 5% since the beginning of August

II. Macroeconomic Analysis

Amidst the multifaceted landscape that shaped the gold market in September, a convergence of macroeconomic forces and Malaysia's role as a gold jewellery exporter played pivotal roles. Notably, a 50-basis point surge in the yield of the US 10-year Treasury yield and a 2.5% strengthening of the US dollar index (DXY) were instrumental in influencing the trajectory of gold.

Figure 3: Real yields might be starting to bite*



Source: Bloomberg, ICE Benchmark

The uptick in US Treasury yields created headwinds for gold as it potentially diverted investor focus to fixed-income securities offering higher returns. Gold, as a non-yielding asset, became comparatively less attractive with rising interest rates, increasing the opportunity cost of holding the precious metal. Concurrently, the stronger US dollar made gold relatively more expensive for foreign investors, diminishing international demand for the metal.

Towards the end of September, the release of US Capital and Durable Goods data marked a turning point². The market had grown highly sensitive to shifts in monetary policy, particularly the anticipation of "higher for longer" interest rates, leading to an overreaction. This triggered pronounced changes in investor behaviour, with divestment in Western markets and substantial outflows from global gold Exchange-Traded Funds (ETFs).

An intriguing observation emerged when scrutinizing year-to-date figures for gold ETF holdings and total assets under management (AUM). While gold ETF holdings experienced a decline of over 5%, the impact on total AUM was less pronounced, with only a 2% decrease. This discrepancy can be attributed to the cushioning effect of a higher gold price in 2023, reaffirming gold's historical role as a haven during economic uncertainty.

² US capital goods for August: +0.9% vs e0.1%, Durable goods were also strong (+0.2 vs -e0.5).

Figure 4: Commodity Returns

Returns						2018 - 2023	
2019	2020	2021	2022	3Q '23	YTD '23	Ann. Ret.	Ann. Vol.
Gold (E) 51.1%	M&M (E) 27.6%	Energy (E) 44.3%	Energy (E) 42.6%	Energy (E) 12.5%	Energy (E) 9.9%	M&M (E) 10.3%	Gold (E) 33.6%
M&M (E) 17.1%	Gold (E) 25.7%	Comdty. 27.1%	Comdty. 16.1%	Comdty. 4.7%	US M&M (FI) 4.7%	Gold (E) 10.0%	M&M (E) 30.3%
EM M&M (FI) 16.5%	Agri. (E) 19.5%	Agri. (E) 23.1%	Agri. (E) 7.2%	Euro M&M (FI) 0.4%	Euro M&M (FI) 3.1%	Agri. (E) 7.7%	Energy (E) 29.5%
US M&M (FI) 14.0%	EM M&M (FI) 10.6%	M&M (E) 23.0%	M&M (E) 3.8%	US M&M (FI) -0.3%	EM M&M (FI) 2.2%	Energy (E) 7.0%	Agri. (E) 19.0%
Agri. (E) 13.8%	US M&M (FI) 8.5%	US M&M (FI) 6.6%	US M&M (FI) -6.5%	M&M (E) -0.4%	Energy (FI) 0.8%	Comdty. 6.1%	Comdty. 16.1%
Energy (FI) 13.4%	Energy (FI) 6.0%	EM M&M (FI) 2.0%	Euro M&M (FI) -13.5%	EM M&M (FI) -1.7%	M&M (E) 0.0%	US M&M (FI) 4.1%	Energy (FI) 11.8%
Energy (E) 9.5%	Euro M&M (FI) 3.5%	Energy (FI) -0.7%	Gold (E) -14.5%	Energy (FI) -2.9%	Comdty. -3.4%	Energy (FI) -0.3%	US M&M (FI) 8.7%
Comdty. 7.7%	Comdty. -3.1%	Euro M&M (FI) -0.7%	Energy (FI) -16.5%	Agri. (E) -3.2%	Gold (E) -5.6%	EM M&M (FI) -0.5%	Euro M&M (FI) 7.2%
Euro M&M (FI) 5.2%	Energy (E) -28.5%	Gold (E) -7.7%	EM M&M (FI) -27.1%	Gold (E) -10.3%	Agri. (E) -9.5%	Euro M&M (FI) -0.9%	EM M&M (FI) 0.0%

Source: Bloomberg, FactSet, J.P. Morgan Asset Management

In this complex landscape, where macroeconomic factors, Malaysia's unique position, and shifting tax dynamics intersect, gold remains a vital asset. Its role as a hedge against inflation, especially amid the uncertain macroeconomic terrain, adds to its enduring appeal. Investors must navigate these intricacies, recognizing that gold's appeal remains multifaceted, enduring, and profoundly influenced by economic forces and shifting dynamics, including those emerging from Malaysia's vibrant gold market.

III. Sector Analysis

The global gold sector, a critical component of the global economy, plays multifaceted roles, including wealth preservation, portfolio diversification, and acting as a hedge against economic uncertainties. Its status as a traditional safe-haven asset, particularly during market volatility and inflationary pressures, underscores its profound significance.

Recent market developments revolve around the complex interaction of gold prices, interest rates, and the US dollar's strength. Rising US Treasury yields and the robust US dollar index have pushed gold prices lower, highlighting the market's sensitivity to interest rate fluctuations. Economic data releases have triggered significant outflows from global gold Exchange-Traded Funds (ETFs), especially in North America and Europe, where investors seek higher yields. Amid these challenges, the GOLDETf market has rebounded, demonstrating gold's ongoing importance in investor portfolios as they adapt to changing economic conditions.

Figure 5: Traded value and volume include both market transaction and direct business transaction

Figure 1: Top Five Most Active ETFs by Value (RM), September 2023

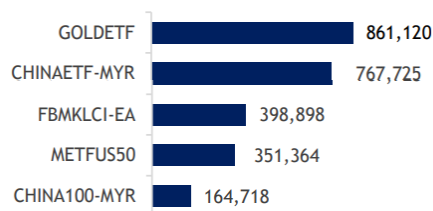
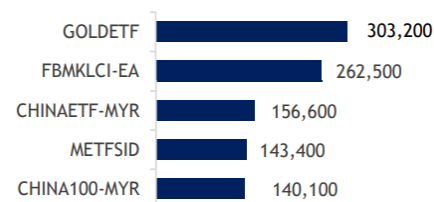


Figure 2: Top Five Most Active ETFs by Volume (units), September 2023



Source: ETF PERFORMANCE REPORT SEPTEMBER 2023, Bursa Malaysia

Figure 6: Traded value and volume include both market transaction and direct business transaction

Figure 3: Top Five Most Active ETFs by Value (RM), YTD September 2023

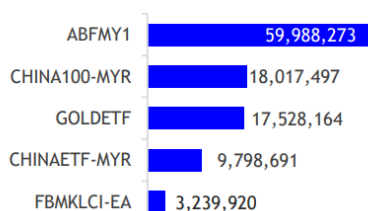
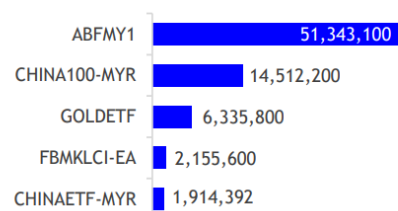
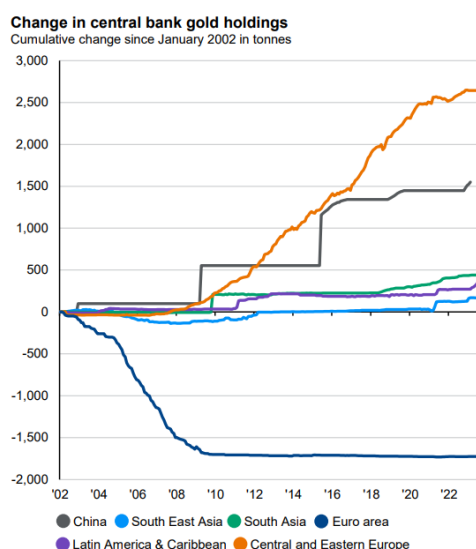


Figure 4: Top Five Most Active ETFs by Volume (units), YTD September 2023



Source: ETF PERFORMANCE REPORT SEPTEMBER 2023, Bursa Malaysia

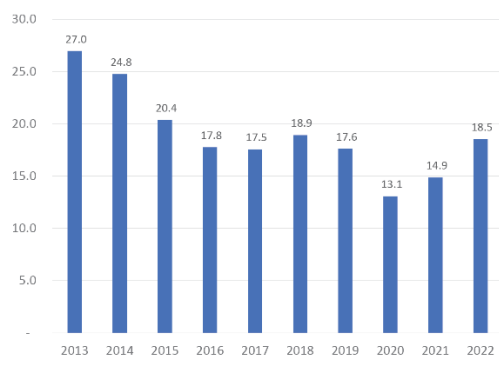
Figure 7: Change in Central Bank Gold Holdings



Source: FactSet, J.P. Morgan Asset Management

When examining the broader economic implications of the gold sector, it is crucial to consider supply and demand dynamics, central bank policies, and geopolitical influences. Central banks, particularly in emerging economies, have bolstered their gold reserves, attesting to gold's enduring role as a reserve asset. For instance, Turkey's exceptional gold demand, driven by political developments and economic factors, highlights the importance of this precious metal in navigating uncertainty.

Figure 8: Malaysia Domestic Gold Demand (tonnes)



Source: Metals Focus

Expanding our perspective to Malaysia, gold holds a pivotal role in the nation's investment landscape. Malaysians traditionally perceive gold as a store of wealth and a hedge against currency fluctuations. This is exemplified by Malaysia's global ranking as the 13th largest gold jewellery exporter, despite a temporary setback due to the COVID-19 pandemic. Gold mining in Malaysia is anchored by 14 gold mines, primarily Penjom and Selinsing, contributing to nearly 80% of domestic gold output, which remained relatively steady from 2020 to 2022.

Malaysia offers a diverse range of gold product offerings, including jewellery, bars, coins, digital tokens, gold accumulation programs, and exchange-traded products. The retail sector boasts around 3,500 jewellery shops, with a predominance of 22K gold. Major publicly listed jewellery companies, including Tomei Consolidated, Poh Kong Holdings Bhd, and Habib Jewels Sdn Bhd, operate approximately 200 retail outlets, underscoring the sector's significance.

Despite challenges, the gold jewellery and retail segments in Malaysia have displayed impressive resilience, attesting to the country's unique position in the global gold sector. These dynamics emphasize the sector's role as an investment vehicle and a store of value within the broader financial markets, ensuring its continued pivotal position.

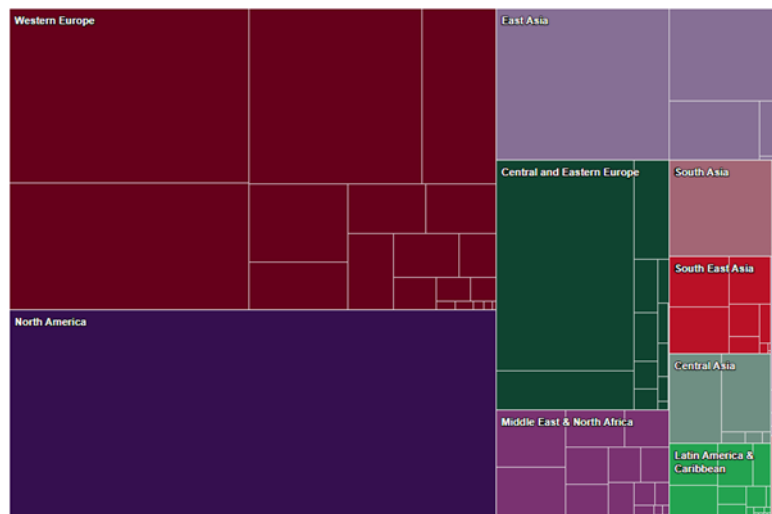
IV. Market Outlook and Forecasts

The global gold market is poised for a dynamic future, shaped by several influential factors.

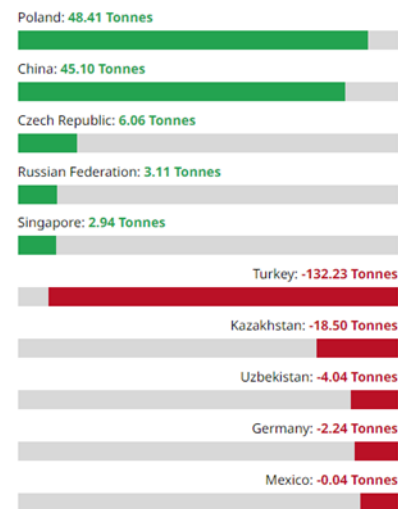
- **Bond Yields and Central Bank Policies:** Central banks, especially the Federal Reserve, have driven the ascent of bond yields, elevating the opportunity cost of holding non-yielding gold and exerting downward pressure on its prices.
- **Economic Resilience:** Amid robust economic conditions, there is a consensus leaning towards a "soft landing." While global economies stabilize, gold is expected to experience periods of turbulence rather than pronounced weakness. Its historical role as a safe haven remains a source of support.
- **Inflation Hedge:** Gold's enduring appeal as an inflation hedge remains intact, with high inflation rates prompting central banks to signal their intention to maintain elevated interest rates. This environment favours gold as a store of value in times of inflationary uncertainty.
- **Shifts in Demand:** Recent data reveals a decline in gold purchases by central banks, primarily driven by concerns about global interest rate hikes and a growing belief that the US economy evades a significant downturn. China and Japan, however, have bolstered their gold reserves.

Figure 9: Q2 2023: Gold Reserves (Tonnes)

Q2 2023: Gold reserves (Tonnes)



Largest increases / decreases



Source: Central Banks, Federal Reserve Bank of St. Louis, International Monetary Fund, World Bank, World Gold

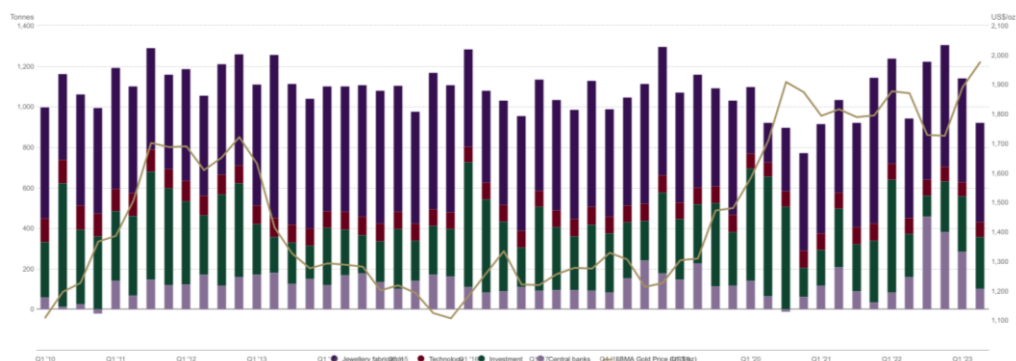
Figure 10: Gold Reserves (Tonnes): Q2 2023 Snapshot

Country	Region	Economic grouping	FX Reserves	Total Reserves	Gold Reserves Tonnes	Gold Reserves Millions	Holdings %
China	East Asia	Upper middle income	3,254,813.00	3,384,750.39	2,113.46	129,937.39	3.84
Japan	East Asia	High income	1,195,165.29	1,247,176.35	845.97	52,011.06	4.17
Switzerland	Western Europe	High income	827,698.72	893,893.95	1,040.00	66,195.23	7.41
Taiwan (POC)	East Asia	High income	560,279.00	587,242.51	423.63	26,963.51	4.59
India	South Asia	Lower middle income	551,219.00	600,246.21	797.44	49,027.21	8.17
Russian Federation	Central and Eastern Europe	Upper middle income	439,325.18	582,552.70	2,329.63	143,227.53	24.59
Saudi Arabia	Middle East & North Africa	High income	438,237.21	458,800.23	323.07	20,563.03	4.48
Hong Kong SAR	East Asia	High income	430,619.00	430,751.64	2.08	132.64	0.03
South Korea	East Asia	High income	419,972.23	426,620.09	104.45	6,647.87	1.56
Brazil	Latin America & Caribbean	Upper middle income	335,621.09	343,592.23	129.65	7,971.14	2.32

Source: Central Banks, Federal Reserve Bank of St. Louis, International Monetary Fund, World Bank, World Gold

Figure 11: Gold Supply and Demand Statistics

Supply and Demand Statistics



Source: ICE Benchmark Administration, Metals Focus, Refinitiv GFMS, World Gold Council

- **ETF Trends and Geopolitical Uncertainty:** ETF trends vary globally, with Asia witnessing positive flows and North America and Europe experiencing net negatives. Geopolitical tensions

and potential bond market selloffs remain crucial factors that could influence the gold market's trajectory.

- **Seasonal Patterns:** Gold's performance follows seasonal patterns, with heightened jewellery demand in November and December contributing to positive average returns. A seasonally weaker US dollar in December has historically provided a tailwind for gold prices.

Price Projections

- **Q4 2023 - Fundamental and Technical Insights:**

The fourth quarter of 2023 poses challenges for gold, with declining demand due to rising real interest rates and a strong US dollar. From a technical standpoint, gold shows a consolidation pattern, with debate surrounding a triple-top pattern within a crucial range at \$2070-2075.

Figure 12: Gold Forecast Q4 2023 – Technical (1)



Source: CAPEX.com

Figure 13: Gold Forecast Q4 2023 – Technical (2)

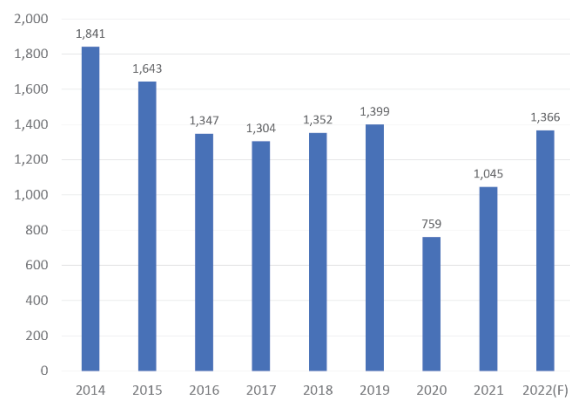


Source: CAPEX.com

- **Price Forecasts:**

Projections for 2024 vary widely among leading financial institutions, ranging from an average gold price of \$1,700 per ounce (World Bank) to \$2,175 (JPMorgan Chase & Co)³. These diverse forecasts highlight the complex nature of the gold market and the differing perspectives of market analysts.

Figure 14: Malaysia Gold Jewellery Export (Million USD)



Source: Metals Focus

The global gold market's outlook remains multifaceted, characterized by resilience, growth, and Malaysia's exceptional performance. The nation's strong position in the global gold jewellery market reflects the industry's ability to navigate economic uncertainties and maintain its pivotal role in the financial landscape.

V. Risks and Challenge – Strategies for Astute Investment

In the realm of the gold sector, both globally and in Malaysia, astute investors must grapple with a spectrum of potential risks and challenges while embracing the opportunities that arise. To illuminate this intricate landscape, we'll examine the identified risks and proffer strategies to master them adeptly.

Identified Risks in the Gold Sector

- **Regulatory Changes:** Alterations in regulations can reshape the gold sector significantly. Changes in taxation, trade policies, or mining regulations can have substantial impacts. A vigilant approach to ensure compliance and adaptability is paramount when new laws or policies emerge.

³ <https://www.physicalgold.com/insights/gold-price-forecast-for-2024/>

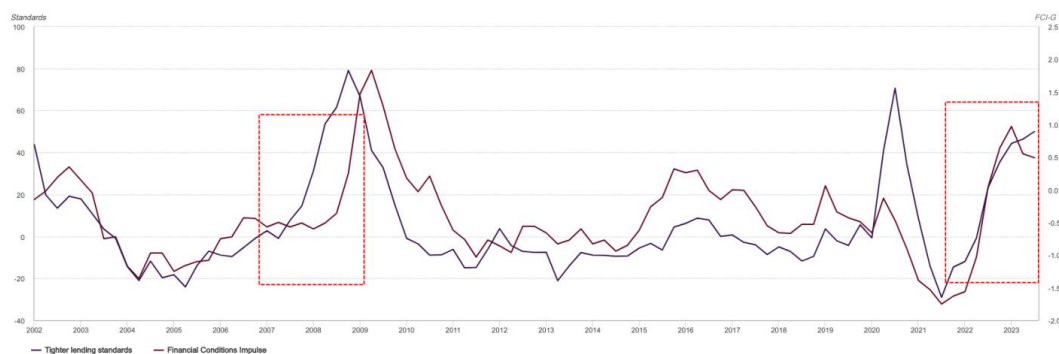
Figure 15: Different Regional Regulation and Sustainable Policies

Practice/Region	The Middle East and Turkey	Asia
Regulation and sustainable policies	<p>UAE On 6 December 2020, the Ministerial Development Council adopted four initiatives to promote the UAE's position as a global hub for gold trade, including the establishment of the UAE Good Delivery Standard and a federal platform for gold trading and tracking.</p> <p>Saudi Arabia In June 2020, Saudi Arabia's cabinet approved a new mining law that aims to accelerate foreign investment in the sector as part of its efforts to diversify its economy away from hydrocarbons. As regards gold financial products and services, there are no specific laws and regulations. However, existing banking and capital market regulations are conducive and might cover gold financial products.</p> <p>Turkey The Turkish government has set favorable laws and regulations on foreign investment in the mining industry.</p> <p>Borsa Istanbul issued various regulations to govern the operations of the Precious Metals and Diamond Market, which consists of three sub-markets, i.e., (i) Precious Metals Market; (ii) Precious Metal Lending Market; and (iii) Diamond and Precious Stone Market.</p>	<p>Malaysia Bank Negara Malaysia regulates any deposit-taking in the gold trade offered by financial institutions which are governed by the Financial Services Act 2013 and Islamic Financial Services Act 2013. Similarly, Securities Commission Malaysia and Bursa Malaysia regulate gold-related capital market products such as gold futures and gold funds.</p> <p>Indonesia Prior to the financial services regulation moving to OJK (Otoritas Jasa Keuangan), Bank Indonesia issued regulations on gold pawning and Murabahah gold in 2012. It is understood that OJK has maintained the same regulations on gold pawning and Murabahah gold for banks. On the other hand, BAPPEPTI is the regulatory body responsible for issuing rules on gold futures contracts traded on the commodity exchanges, JFX and ICDX.</p> <p>Pakistan Commodity brokers dealing in gold need to register with Pakistan Mercantile Exchange (PMEX) and acquire a license from the Securities and Exchange Commission of Pakistan (SECP). On the other hand, the gold trading and investment market offered by financial institutions is not developed and it appears that favorable regulations and policies are lacking in the country.</p>

Source: Deloitte - The global gold investment markets

- **Economic Uncertainties:** The continual surge in bond yields, driven by central bank policies, is casting a shadow of economic uncertainty. This situation raises concerns about a potential recession over the next 6-12 months, echoing conditions before the 2007 financial crisis. The resultant volatility can significantly affect the gold market.

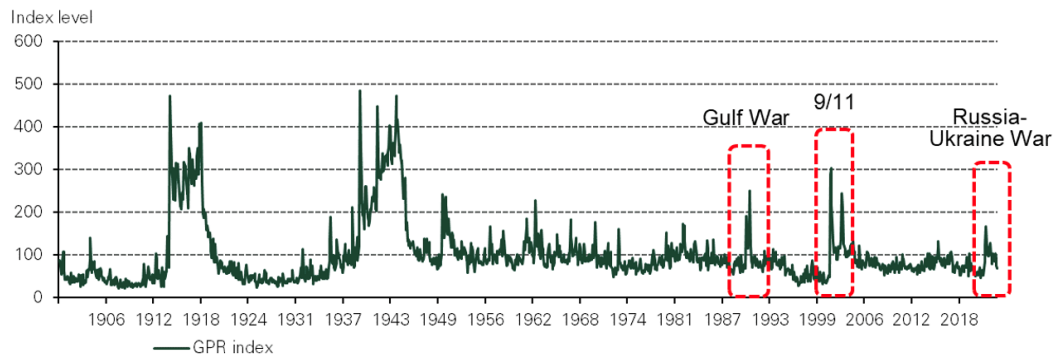
Figure 16: Financial conditions at worrying levels*



Source: Bloomberg, World Gold Council

- **Geopolitical Tensions:** Geopolitical tensions are unpredictable and far-reaching, presenting pervasive risks in the gold sector. These tensions can disrupt supply chains, impact demand dynamics, and create unpredictability, influencing gold prices and trading patterns.

Figure 17: The Iacoviello GPR Index

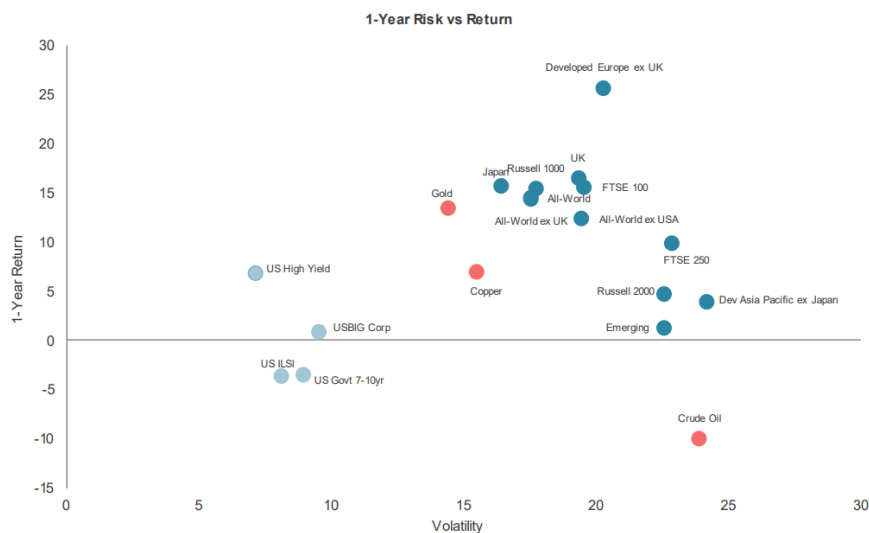


Source: Matteo Iacoviello, World Gold Council

Proposed Mitigation Strategies

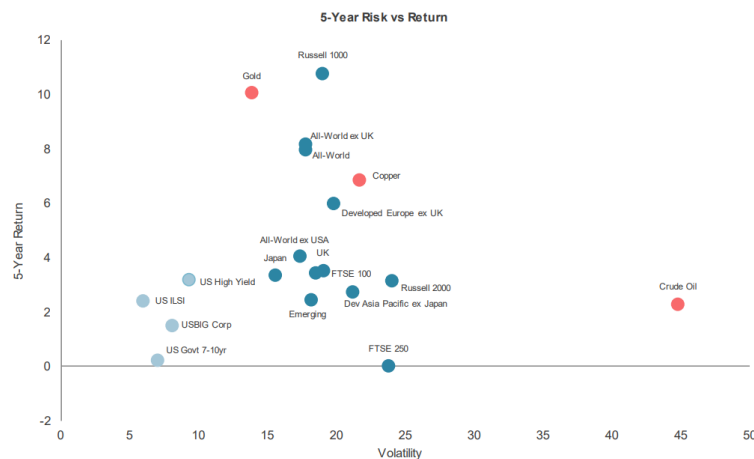
- **Diversification:** Mitigating risk in the gold sector hinges on diversification. A balanced portfolio, encompassing various asset classes, can cushion the impact of adverse gold market movements. Diversification reduces exposure to vulnerabilities associated with a single asset class.

Figure 18: Asset Class Risk/Return – 1-Year Annualized (USD)



Source: FTSE Russell and LSEG

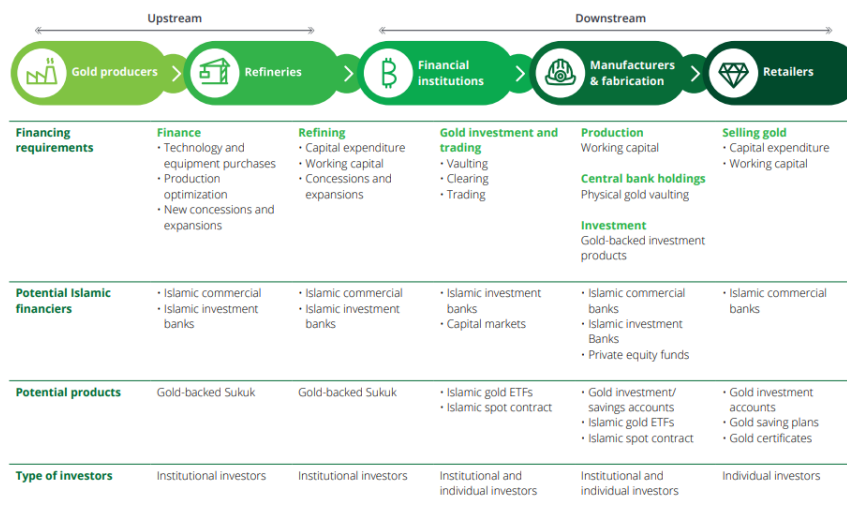
Figure 19: Asset Class Risk/Return – 5-Year Annualized (USD)



Source: FTSE Russell and LSEG

- **Risk Management:** Effective risk management entails the development of contingency plans and the implementation of hedging strategies. Investors must regularly assess their portfolios, stress-test them against potential economic crises, and employ risk-mitigating tools like gold options, futures, or ETFs.
- **Geopolitical Intelligence:** Staying informed about international affairs is vital in a gold market intricately linked to geopolitical developments. Monitoring geopolitical shifts, trade agreements, and international conflicts enables investors to anticipate potential market disruptions and adjust their strategies accordingly.
- **Regulatory Compliance:** Remaining attuned to evolving regulations is a non-negotiable aspect of risk mitigation. Compliance safeguards against regulatory penalties and fosters trust among stakeholders.
- **Supply Chain Resilience:** Recognizing the vulnerabilities of the global gold supply chain to geopolitical tensions, establishing resilient supply chain practices is prudent. This can involve sourcing from politically stable regions, maintaining strategic stockpiles, and introducing redundancy into supply chain networks.

Figure 20: Global Supply Chain: Potential for Islamic Financial Services



Source: Deloitte - The global gold investment markets

In Malaysia, the gold market's intricacies encompass taxation changes, adherence to Shariah-compliant principles, and a preference for physical gold. A comprehensive understanding of these subtleties and a commitment to adaptability enable astute investors to traverse the intricacies of the gold sector while harnessing its potential for growth and stability.

Navigating the multifaceted risks and seizing the opportunities in the gold sector necessitates a comprehensive and agile approach. By diversifying portfolios, monitoring geopolitical developments, staying compliant with evolving regulations and bolstering supply chain resilience, market participants can enhance their resilience and adaptability. While history's echoes remind us of the importance of vigilance, they also highlight the need for strategic flexibility in this dynamic and invaluable sector.

Figure 21: Key Challenges with Gold Investment



Source: Deloitte - The global gold investment markets

VI. Investment Opportunities/Catalysts

The gold sector continues to allure investors, driven by its enduring status as an inflation hedge and a safe haven asset. To navigate this complex landscape effectively, understanding the emerging opportunities and catalysts shaping its trajectory is crucial.

Uncovering Investment Potential

Gold, revered for centuries, remains an attractive investment avenue. Its merits as an inflation hedge and safe-haven asset are steadfast, making it an appealing prospect for astute investors.

Emerging Trends and Opportunities

Two pivotal trends command our attention:

- **Digital Gold:** The integration of digital platforms into gold investments is revolutionizing accessibility and convenience. These platforms simplify gold ownership and trading, removing traditional barriers associated with physical gold.

Figure 22: Solid Gold vs Digital Gold

Gold Investing Vehicle	Advantages	Disadvantages
Solid Gold	It is easy to trade. Assets can be passed on to the next generation.	Security is a constant worry. There are additional costs for security and storage. Passive investment; returns can only be realized upon sale
Digital Gold	It is easy to trade. Can be converted to physical gold (once a certain number of units are held).	No government regulations currently. Transaction fees for purchase, sale and storage of gold units. Account activity required every six months.

Source: Forbes Advisor

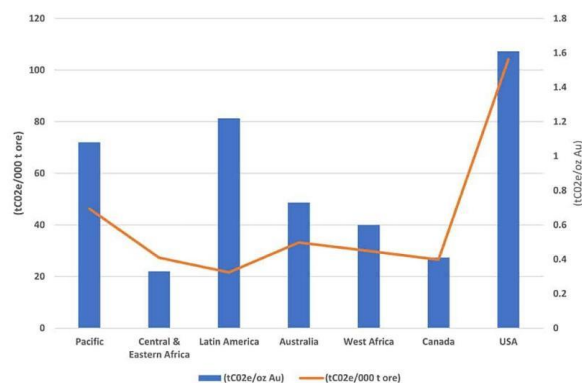
Figure 23: Advantages and Disadvantages of Investing in Digital Gold

Gold Investing Vehicle	Advantages	Disadvantages
Gold ETFs	Excellent liquidity for short-term and medium-term investors. No wealth tax, sale tax, value added tax or securities transactions tax levied	Extra costs from asset management fees. Can't be converted into physical gold. Capital gains are tax breaks applicable to other ETFs may not apply to gold ETFs.
Gold Mutual Funds	Well-understood, well regulated security, safe to invest in. No need for a demat trading account.	Annual fees in the form of expense ratios. Can't be converted into physical gold.
Gold Futures Contracts	Provides good short-selling opportunities. No storage or security worries.	Risk of total loss on trade. High volatility. Can't be converted to physical gold.
Sovereign Gold Bonds (SGBs)	Offers a fixed 2.5% annual interest rate. Low-risk, since backed by the government. Low impact of market fluctuations. Tax-free capital gains at maturity.	Lower market interest due to lack of awareness on dates of issues. Low liquidity for trading in the secondary market.

Source: Forbes Advisor

- **ESG Considerations:** Ethical and environmental factors are increasingly prominent in gold mining and production. Ethically sourced and ESG-certified gold is resonating with conscientious investors.

Figure 24: Regional Gold Production (tCO₂ footprint) as of Aug. 11, 2021



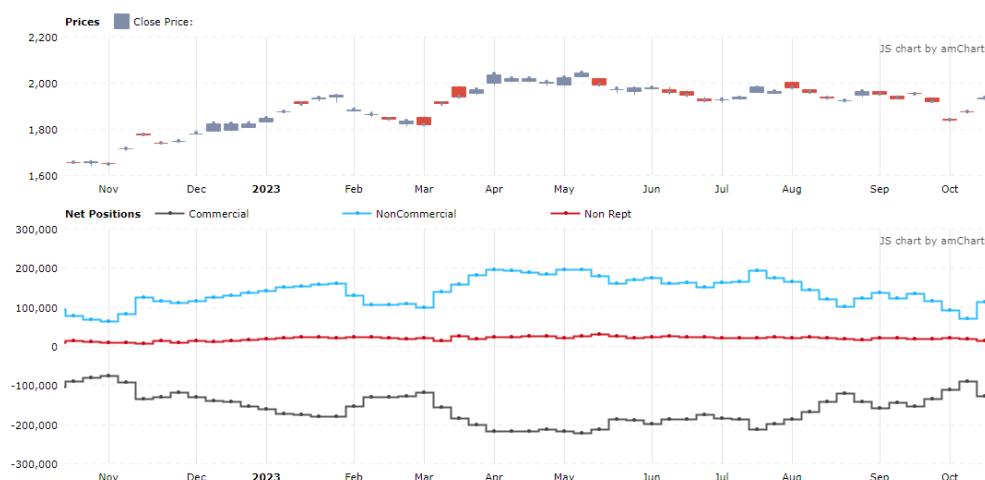
Source: S&P Global Market Intelligence; company sustainability reports

Navigating Market Realities

The gold market currently grapples with multifaceted dynamics:

- **Rising Bond Yields:** Escalating bond yields, orchestrated by unwavering central bank policies, challenge gold's allure as a non-yielding asset.
- **Economic Resilience:** Robust global economic conditions point towards a consensus on a soft landing, injecting uncertainty into the gold market.
- **Choppiness over Weakness:** Gold is likely to exhibit choppiness due to a delicate equilibrium between risk and reward in equities, a looming recession risk, inflation fluctuations, and persistent central bank interest in gold.
- **Short Squeeze Opportunity:** Notably, COMEX short positions, last seen in March 2023, alongside ongoing ETF outflows, create potential scenarios for abrupt upward movements in gold prices.

Figure 25: COT Report: GOLD - COMMODITY EXCHANGE INC (Prices & Net Positions)



Source CFTC COT Report, Tradingster

Insights into ASEAN Markets

The ASEAN markets reflect distinctive trends:

- **Universal Downturn:** ASEAN markets collectively experience year-on-year declines.
- **Vietnam's Demand:** In Vietnam, a 5% year-on-year drop in bar and coin demand is attributed to liquidity constraints, leading investors to favour chi rings over SJC tael bars.
- **Thailand's Caution:** Thailand registers a 10% year-on-year reduction in gold investments as investors wait for more favourable entry points.
- **Indonesian Prudence:** Indonesian investors exercise patience, awaiting substantial price corrections before re-entry, mirroring the 10% year-on-year decline in bar and coin demand.
- **Malaysian Stabilize:** Malaysia's GDP stabilizes at 4.5% in 2023. Gold jewellery exports recover to USD 1,341 million, but a luxury tax looms.

In summary, the gold sector is a dynamic realm shaped by economic, financial, and societal currents. Its enduring appeal as an inflation hedge and sanctuary from uncertainty is complemented by digital innovations and ethical considerations. Market resilience and potential catalysts promise continued undulations in the realm of gold.

VII. Conclusion – Navigating Gold's Path Ahead

In conclusion, the global gold market, with its multifaceted nature, presents both immediate challenges and long-term promise. Short-term headwinds include the impact of rising bond yields, a stronger US dollar, and global economic fluctuations. These factors have created turbulence, with September notably marked by concerns over higher interest rates and pronounced outflows from global gold ETFs. However, regional variations reveal distinct trends; while some regions like Turkey and the Middle East have seen a surge in gold investment due to economic and political factors, Europe has experienced reduced interest attributed to interest rates and elevated gold prices.

Low global gold ETF holdings, a noteworthy trend, are counterbalanced by segments showing resilience and net inflows. Furthermore, the unwavering interest of central banks, such as China and Japan, in bolstering gold reserves and the potential for short squeezes in the long term offer strategic opportunities for investors.

Figure 26: Gold ETF Flows by Region

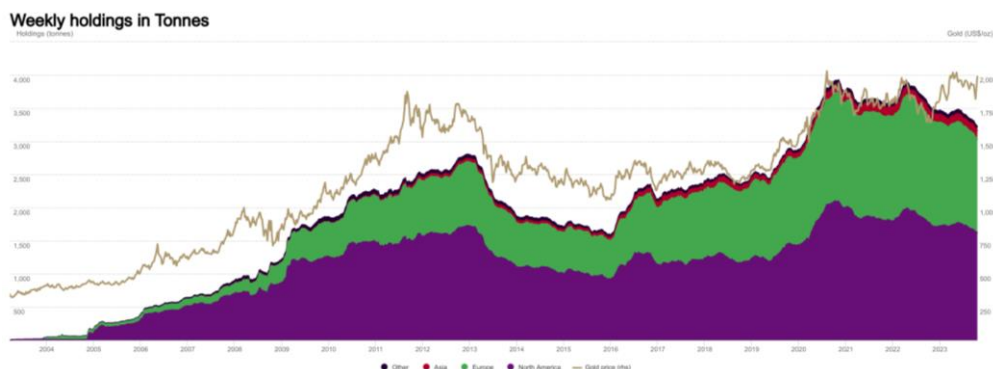
Gold ETF flows by region



Source Bloomberg, Company Filings, ICE Benchmark Administration, World Gold Council

Figure 27: Gold ETFs Holdings by Region

Gold ETFs holdings by region



Source Bloomberg, Company Filings, ICE Benchmark Administration, World Gold Council

In a parallel context, Malaysia's gold landscape presents a dynamic picture with a blend of local and global influences and unique regulations. Short-term challenges, including rising bond yields, a resurgent US dollar, and fluctuations in global economic sentiment, are evident. However, the country's expected GDP growth stability in 2023 and resilient gold jewellery exports worth USD 1,341 million stands out, despite the looming luxury goods tax. While short-term headwinds prevail, the enduring allure of gold as a safe haven and an effective hedge against inflation remains strong.

In summary, the gold market is a multifaceted realm, influenced by a multitude of factors. While short-term turbulence prevails, the long-term outlook is underscored by the enduring appeal of gold as a safe haven and an effective hedge against inflation. Understanding the intricacies of this market, recognising regional subtleties, and closely monitoring macroeconomic currents are pivotal for investors seeking success in this unique and valuable sector.

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Market Trends and Technology Sector Analysis with Focus on Malaysian Semiconductor

By Rajkumar Periannan, Consolation Prize Winner of Bursa IDEA Research Competition

I. Executive Summary

This report provides an analysis of the market trends and the technology sector, in order to identify investment opportunities in Malaysia within this sector. As the technology sector in Malaysia is largely dominated by companies within the semiconductor industry, the report will focus on this industry.

The report provides an overview of the market trends starting with macroeconomic analysis impacting the technology sector, and followed by overall trends in the form of innovation cycles that drives growth of the technology sector in the past and in the future. Thereafter detailed market outlook for the global semiconductor industry within the technology sector is presented together with key factors that could drive future growth of this industry in Malaysia. The report also presents overall value chain of the semiconductor industry, activities within this value chain and analyses opportunities for investment in Malaysia within these activities, and subsequently ranks them taking into account risks and challenges.

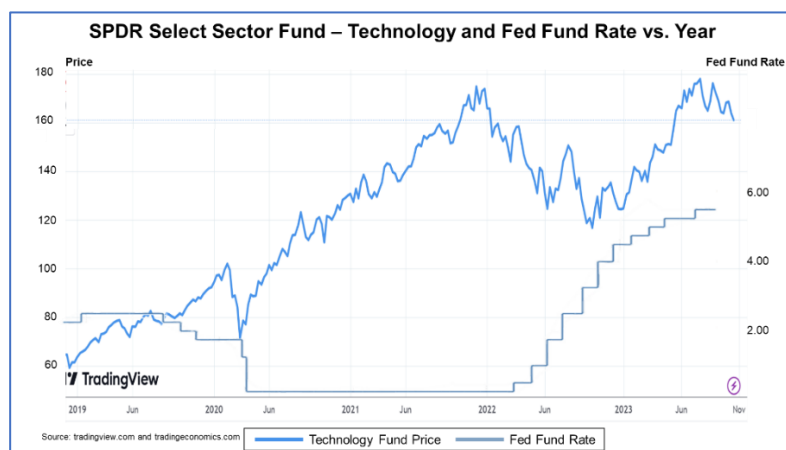
The study found that the overall technology sector is set to expand, and the semiconductor industry growing in tandem particularly due to additional demands from electrification and computerization of vehicles, computation and data storage associated with Artificial Intelligence (AI) and cloud computing, and supporting wireless technologies.

The report concludes given the favourable market trends, industry outlook and manageable risks, that there are compelling investment opportunities within the semiconductor industry particularly in the value chain activities of ATE & Equipment and Assembly & Testing. Wait and see approach is recommended for Integrated Circuit Design.

II. Macroeconomic Analysis

Post COVID 19 pandemic, inflation globally has surged resulting in central banks around the world to tighten monetary policies, especially by increasing interest rates. The Fed Fund Rate in the US has been increased dramatically from 0% to 0.25% to 5.25% to 5.5% range. Sectors where present valuations are based on future earnings and cashflows could generally become less attractive to investors. The technology sector is one such sector, where equity valuations have reduced in the short term whenever interest rates are increased. The chart below shows equity pricing of companies within the Technology Sector in the US vs. Fed Funds Rate.

Figure 1: SPDR Select Sector Fund – Technology and Fed Fund Rate vs Year

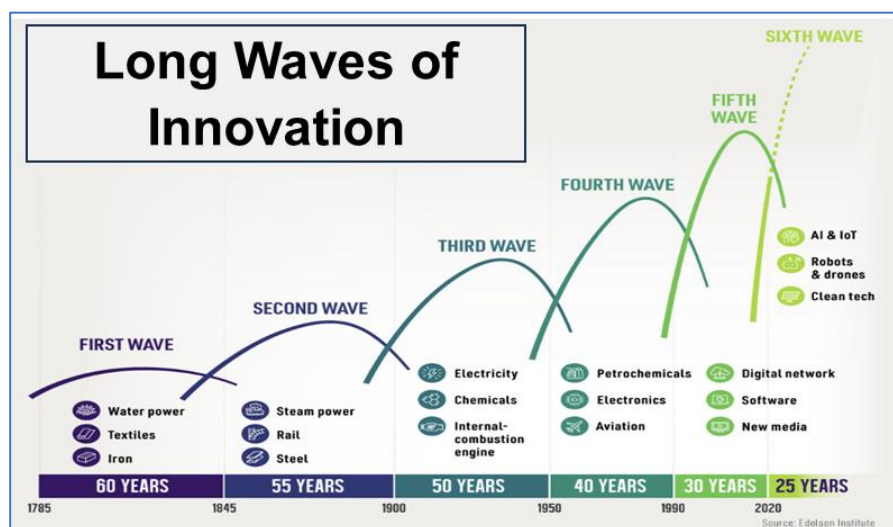


Detailed inspection of the chart reveals that equity valuation reduces not due to the absolute value of the interest rate, but with the **magnitude of each increase in interest rates**. This is evident when observing 2022 where steep rate hikes (0.5% to 0.75%) each time (see Fed Fund Rate line) has reduced equity pricing, and thereafter in 2023 the equity prices increased in response to lower magnitude of rate hikes (0.25%) that signalled nearing of peak interest rates. Moving forward, **technology sector's equity pricing is heavily influenced by the expectation of the magnitude of changes to the Fed funds rate**. Since the Fed has paused rate hikes during the latest two FOMC meetings, and 80% probability that the next meeting would have no hike as well, from a macroeconomic standpoint, the outlook for the technology sector is positive.

III. Sector Analysis - Technology

The technology sector is unique in the sense that it is a horizontal sector that adds value to practically all other sectors that can be viewed as verticals in this context, ranging from banking and insurance, aerospace, oil & gas and so forth. It has enabled companies within these verticals to deepen their competitive advantages, improve their customer experiences as well as their productivity. According to Edelson institute, the technology sector has been the bedrock of the fifth and the current sixth innovation cycle. Please see diagram below

Figure 2: Long Waves of Innovation

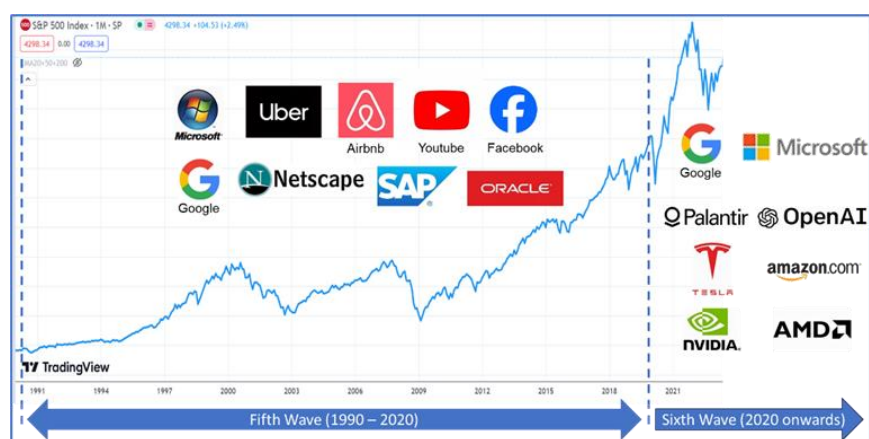


As per the diagram above, the fifth wave since the 1990s was primarily centered around the development of the Internet enabling consumers to have access to information previously unavailable to them, and consume them via newspapers and social media platforms. It enabled development of the sharing economy where properties were shared via Airbnb, vehicles were shared for transportation and logistics via ride sharing services providers such as Grab and Uber, and server capacities were shared via Cloud computing provided by Amazon, Microsoft and Google. In terms of businesses, the technology sector provided software such as Enterprise Resource Planning that enabled automation of various enterprise processes reducing costs and ultimately improved productivity for those that adopted them successfully. In short, the technology sector has revolutionized how we lead our lives, interact with each other and how companies do their work.

Moving forward, we are at the beginning of the sixth wave where Artificial Intelligence (AI), Internet of Things (IoT), robots and clean technology are the key drivers of change in our economy and the way we lead our lives. Key to these again is the technology sector. AI, in development for several years has taken centre stage recently with the introduction of ChatGPT. ChatGPT is a form of AI known as Generative AI enabling computers to understand the context of our specific requests or conversations, and respond to them by generating texts, images and videos. The ease to interact with Generative AI and the practical applications in our daily lives has promoted awareness of the transformative capabilities of AI within a short period of time. According to McKinsey, Generative AI alone is expected to add USD 6.1 to 7.9 trillion annually into our economy, and AI as a whole is set to add USD 17.1 to 25.6 trillion annually. It is important to note that this is significant as it forms 17% to 25.5% of the global GDP in 2022 (USD 100.56 trillion).

The diagram below shows sample companies in the forefront of the fifth and sixth waves within the technology sector.

Figure 3: Sample companies in the forefront of the fifth and sixth waves within the technology sector



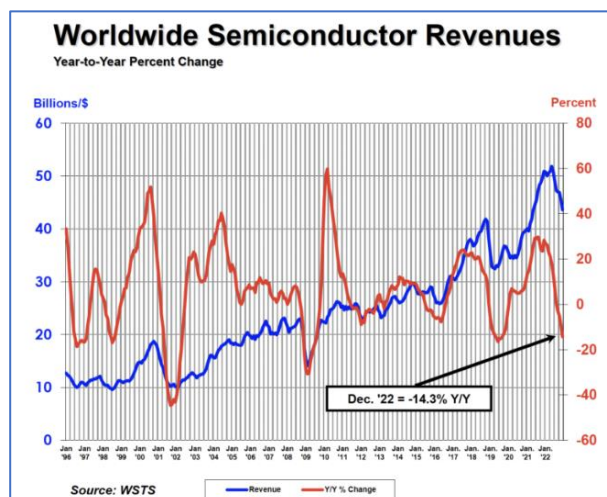
The companies above are mostly in the US. However Malaysian companies have played a key role in enabling the fifth wave and very likely the sixth wave. Our participation in these innovation cycles is via the semiconductor industry, which is an Industry within the larger technology sector. Semiconductors are the building blocks of the technology sector. It enables development of powerful hardware components such as microprocessors, memory and sensors to be used in servers, computers and mobile devices enabling running of the software above possible. The rest of this report focuses on the semiconductor industry as the majority of companies investable in Malaysia within the larger technology sector are within this industry. According to Bursa Malaysia, 4 out of 5 Malaysian technology companies in the BM Technology Index with the highest market capitalisation are semiconductor companies. 74% of the market capitalisation of companies in the BM Technology index are also from the semiconductor industry. Additionally, according to MIDF

Research, semiconductor commands the highest percentage of total Malaysian export for 7MCY23 (27.8%). Thus, focus on this industry will enable us to focus on the technology sector in Malaysia appropriately.

IV. Market Outlook and Forecast

The semiconductor Industry grows in tandem with the overall technology sector. It is also a cyclical industry that is prone to overcapacity due to overestimation of shorter-term demand. However, over the longer term, this is an industry with growing demand primarily due to the innovation cycles highlighted in figure above.

Figure 4: Worldwide Semiconductor Revenues

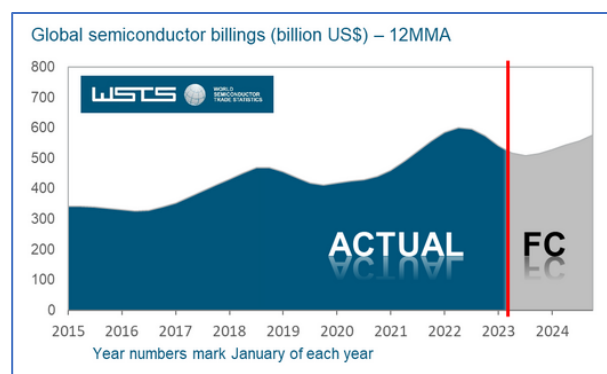


The figure above clearly shows while the semiconductor industry is cyclical, it has had an overall upward trend over the long term since the 90s.

Growth Prospects and Expectations for the Semiconductor Industry

In the near term, according to World Semiconductor Trade and Statistics (WSTS), the semiconductor industry has been forecasted to return to revenue growth in 2024. The global billing is projected to increase from expected USD 515 billion in 2023 to USD 576 billion in 2024.

Figure 5: Global Semiconductor Billing (billion US\$) – 12MMA



Over the longer term, the industry is expected to continue with the upward trend. According to McKinsey, this industry is expected to reach USD 1 Trillion in global sales by 2030.

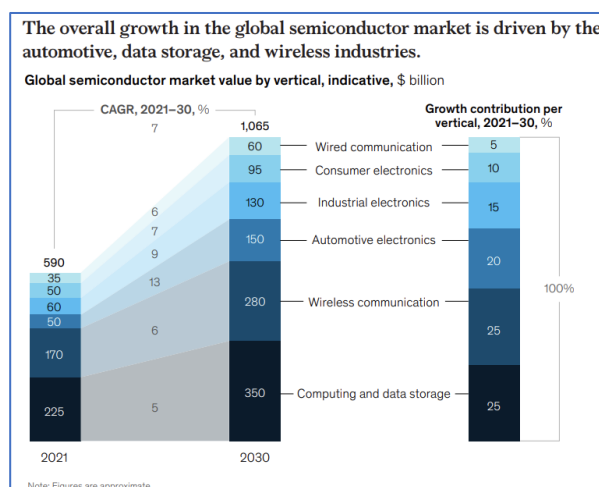
Factors Driving Growth of the Semiconductor Industry

The factors moving forward driving growth in the local semiconductor industry are the increased usage of semiconductors in selected industries and the government's focus to promote and develop the local ecosystem of this industry.

Usage of Semiconductors in other Industries

According to McKinsey, 70% of the growth within the semiconductor market could be driven by its uses in the automotive (electrification and computerization of vehicles), computing and data storage related to AI and cloud computing, and wireless industries in the form of expansion of 5G services that would enable communication between IoT devices, driverless cars and drones. See diagram 3 below that summarises the expected changes to the composition of global semiconductor sales from 2021-2030.

Figure 6: Global Semiconductor Market Value by Vertical, Indicative, \$billion



Note that driver of growth with the highest CAGR (13%) is due to electrification and computerization of automotives. Thus, semiconductor companies serving this industry is expected to benefit the most.

Government focus in promoting the Semiconductor Industry

The Malaysian government recently released its New Industrial Master Plan 2030 (NIMP) that aims by 2030 to boost high end manufacturing by 61%, create 3.3 million jobs and increase median salary by 128%. The Electrical and Electronics (E&E) sector (of which semiconductor is part of within the context of this plan) is one of top 5 priority sectors. The plan has 4 missions where one of them is to advance economic complexity. Areas under this mission are to **create global IC Design champions from Malaysia, attract global leader to establish wafer fabrication in Malaysia and integrate value chains between semiconductor and EV.**

Government focus has already generated results. According to Nikkei, Infineon (large semiconductor player in automotive) has announced to expand their facility in Malaysia for the tune of USD 7 billion to create the world largest silicon carbide (SiC) wafer facility, and Intel is set to invest USD 7 billion to make Malaysia their primary production base in Asia. These expansions create opportunities for various semiconductor companies in Malaysia to grow as their suppliers in the local ecosystem.

Thus, semiconductor companies **performing IC Design and those companies already serving the EV industry and able to expand their services here are expected to benefit as a result of this focus.**

V. Risk and Challenges

The positive trends highlighted above are subject to risks and challenges. The following are key ones with the associated mitigation strategies:

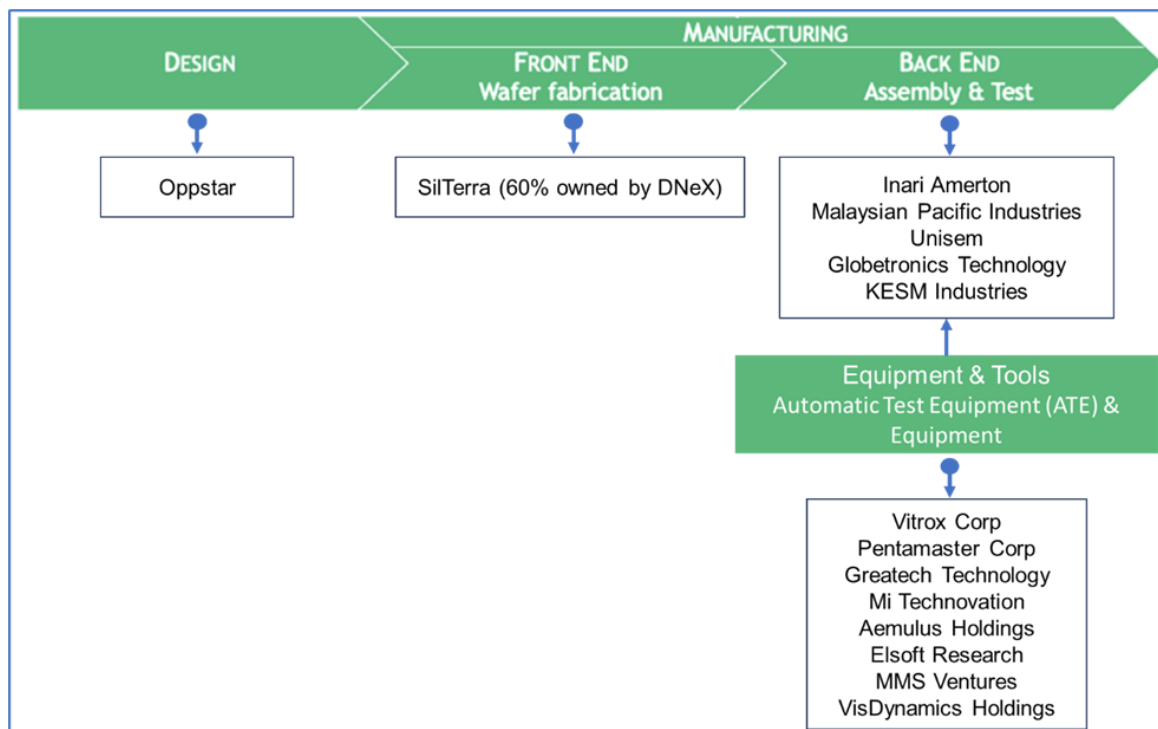
Figure 7: Risk and Challenges, and Associated Mitigation Strategies

Risk and Challenges	Mitigation Strategies
<p>Escalation of geopolitical conflicts especially between Israel and Hamas that involves more oil producing Middle Eastern countries</p> <p>According to Worldbank, a small resulting disruption (removing 500K to 2 million barrels per day) could cause oil price to increase to between USD 93 to USD 102 per barrel and the worse disruption (removing 8 million barrels per day) could cause oil price to increase USD 157 per barrel. It inevitably increases inflation placing high magnitude interest rate increases back into play that can suppress equity prices in the technology sector.</p>	<p>Adopt a long-term investment horizon</p>
<p>Slowdown of EV Sales</p> <p>According to Forbes, various car manufacturers are scaling back on producing EV cars due to consumer concerns such as high purchase price and limited charging network.</p> <p>(Note: According to Akio Toyoda, Chairman of Toyota, a non-supporter of EV, the alternative to EVs is going towards hybrid vehicles. It still has significantly higher semiconductor content compared to current internal combustion engine (ICE) ones.</p>	<p>Invest in companies that can switch to different variants within an industry, or the industry itself.</p>
<p>Regulations that prohibit development of AI</p> <p>This is a possibility if there are adverse unforeseen developments within AI.</p>	<p>Invest into companies that can switch to serving different industries.</p>

VI. Investment Opportunities

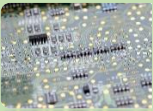
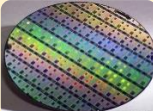
In order to identify investment opportunities within the semiconductor industry in Malaysia, it is essential to have an overview of the value chain of this industry. The following diagram from Semiconductor Industry Association (SIA) provides an overview of the value chain of this industry, and included within are listed Malaysian companies operating within the various value chain activities.



Figure 8: Overview of the Value Chain of Semiconductor Industry



The table below provides description about the activities involved within the value chains above with details regarding economic moat (as per Bursa Malaysia sustainable competitive advantage), current competitive advantages, financial ratios that validate advantages provided, and opportunities generally applicable for companies within these activities. The investment opportunities have been ranked from 1 (Best) to 5 (Poorest).

Figure 9: Description of Activities and Relevant Details

<p>Integrated Circuit Design</p> 	<p>Description about Activity</p> <p>High End activity involving design of integrated circuits. There is only a single listed company in this space, Oppstar as per Diagram above.</p> <p>Economic Moat: Intangible assets (Patents)</p> <p>Competitive Advantages: Expertise and customer relationship</p> <p><u>Financial Ratios</u></p> <p>Return of Equity (ROE): 26.8%</p> <p>Return on Capital (ROC): 19.9%</p> <p>Net Profit Margin (NPM): 34.6%</p> <p>Has highest Financial Ratios</p> <p><u>Opportunities</u></p> <p>According to NIMP, there is specific government focus to create a champion from Malaysia in IC design. This catalyst makes investment into this value chain activity attractive. However, impact of this government support needs to be monitored.</p> <p>According to Worldbank reported in the Edge¹, this area in Malaysia currently lags behind others and only contributes 0.07% within the semiconductor industry. This activity has missing track record and expansion opportunities are dependent on effectiveness of government support.</p>	<p>Investment Ranking</p> <p>3</p>
<p>Frontend: Wafer Fabrication</p> 	<p>Description about Activity</p> <p>Front end manufacturing process of creating the Integrated Circuit designed above onto a flat piece of wafer, typically made from pure silicon. There is only one listed company in this space, DNeX that owns 60% of SilTerra.</p> <p>Economic Moat: Intangible assets (Patents)</p> <p>Competitive Advantages: High barrier for entry</p> <p><u>Financial Ratios</u></p> <p>ROE: 17.8%</p> <p>ROC: 8.3%</p> <p>NPM: 14.3%</p> <p><u>Opportunities</u></p> <p>According to NIMP, there is focus to attract global leader in wafer fabrication in Malaysia. This would be neutral for the Malaysian company in this activity given that global leaders are manufacturing far more advanced chips (3nm as opposed to 28nm to 40nm planned).</p> <p>SilTerra's progress however has been lagging far behind its global peers such as TSMC and Samsung. They are focused on fabricating lower end chips.</p>	<p>Investment Ranking</p> <p>4</p>

Backend: Assembly and Test	Description about Activity	Investment Ranking
	<p>Performs backend manufacturing processes of assembly, packaging and testing the semiconductor chips. Malaysia has several listed companies as per <i>Figure 8</i>.</p> <p>Economic Moat: Switching cost</p> <p>Competitive Advantages: Increasing barrier of entry due to increasingly complex packaging processes, and Customer Relationship</p> <p><u>Average Financial Ratios</u></p> <p>ROE: 9.2%</p> <p>ROC: 9.1%</p> <p>NPM: 12%</p>	<div>2</div>
	<p><u>Opportunities</u></p> <p>Consumption growth of semiconductors in the 3 industries (automotive, computing and data storage and wireless technologies) augurs well for companies within this activity. Together with government's focus in integrating semiconductor and EV industries is set to benefit those performing assembly and testing for automotive related chips.</p> <p>However major companies within this activity are generally dependent on few large customers having concentration risks. As an example, both Inari Amerton and Globetronic are dependent on the Apple supply chain. They have economic moat but weaker than those in ATE & Equipment. However, they have faster ability to increase revenue when volume processed increases, able to switch to different industries to mitigate risks with some companies already serving the automotive sector.</p>	
Equipment & Tools: ATE and Equipment	Description about Activity	Investment Ranking
	<p>Provide equipment such as handlers and testers used by companies performing Assembly and Test and EMS</p> <p>Economic Moat: Switching Cost, Non-tangible (Patents)</p> <p>Competitive Advantages: Customer Relationship</p> <p><u>Average Financial Ratios</u></p> <p>ROE: 17.6%</p> <p>ROC: 15.6%</p> <p>NPM: 23.3%</p>	<div>1</div>
	<p>Has 2nd highest financial ratios.</p> <p><u>Opportunities</u></p> <p>Consumption growth of semiconductors in the 3 industries could drive demand for fabrication and packaging, which in turn drive demand for equipment.</p> <p>According to McKinsey, the market for SiC wafers commonly used in EV is set to increase at 26% CAGR until 2030. This together with government's focus in integrating semiconductor and EV industries and Infineon setting up the largest SiC facility to benefit those providing equipment for the EV sector. Companies in this segment have also demonstrated ability to switch to different industries. As an example, Pentamaster's revenue contribution from automotive in FY22¹ has increased from 20.5% to 42.4% in the span of 1 year. This is</p>	

key in mitigating risks highlighted in the Risk and Challenges section. This activity has the best balance of economic moat, high potential demand increases in the near term and ability to mitigate risks highlighted.

VII. Conclusion

Over the long term, the macro trends and semiconductor industry drivers below would be supportive:

- 1) Possibly relatively lower magnitude to no interest rate hikes moving forward is supportive of companies within the semiconductor industry as part of technology sector.
- 2) Current sixth innovation cycle and more importantly ensuing semiconductor demand for automotive, AI and cloud computing, and wireless technologies could drive consumption of semiconductors that, in turn, drives demand for assembly and testing services and equipment in Malaysia.
- 3) The government's strong focus as part of NIMP could enable expansion of local semiconductor ecosystem that could drive demand for the services of local semiconductor players. Case in point are the recent large expansions announced by Infineon and Intel.

There are also risks such as near-term inflation surge due to escalation of geopolitical conflicts, potential slowdown of semiconductor consumption by automotive industry and regulations that restrict development of AI. These require adoption of long-term investment horizon and focus into semiconductor value chain activities that can switch providing services to different industries. Together with proven track record, companies within the ATE & Equipment and Assembly & Test activities are the most compelling.

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Market Trends and Sector Analysis Based on Top-Down Approach

By Chang Kwok Boon, Consolation Prize Winner of Bursa IDEA Research Competition

Executive Summary

Purpose and Objectives:	Aim to find a potential sector through in-depth analysis from the top-down approach.
Key Findings or Highlights:	Based on the top-down approach, this research found that the construction sector tends to outperform all other sectors.
Scope and Methodology:	<p>Sector performance (to identify trends in all sectors), sector valuation (to discover undervalued sectors and construction sector tends to be the winner among all), sector seasonality (to identify the best and worst performing months in the construction sector), and analysis of key components in the construction sector (to identify factors that affecting the sector from various perspectives).</p> <p>Data gathering is from various sources such as Department of Statistics Malaysia, KLSE Screener, Tradingview, and etc.)</p>
Investment Opportunities/Catalyst	Most of the mega infrastructure projects have been revived, with increased funding for infrastructure and road upgrades. More funds allocation on infrastructure development based on Malaysia Budget 2024, which also includes a higher budget allocation for the development of Sabah and Sarawak. In line with the 12 th Malaysia plan to establish environmentally friendly building (solar energy), and the EV infrastructure.
Main Challenges or Issues	<p>Economic perspectives: Ringgit depreciation</p> <p>Sector perspectives: Supply chain disruption</p> <p>Company competitiveness: Compliance with environmental regulation and technology adoption.</p>

Macroeconomic Analysis

Global Macroeconomics:

- **Geopolitical conflicts** including the ongoing Palestine-Israel conflict and the unresolved Ukraine-Russia war have greatly disrupted the business supply chains, causing a notable increase in raw material costs, particularly for major commodities such as oil and gas.
- **US Federal Reserve (FED)** responded to a surge in the Consumer Price Index (CPI) by aggressively raising interest rates, reaching 5.5%. This move successfully reduced inflation from 9.1% to the current 3.7%. The FED doesn't foresee an imminent rate decrease, strengthening the US Dollar against major currencies. Additionally, Japan's continued low-interest rate policy, known as "Yield Curve Control" (YCC), has led to cost-effective financing

options, with individuals and institutions taking advantage of arbitrage opportunities by borrowing low-rate currencies like the Japanese Yen to fund higher-rate US Dollar carry trades, increasing the demand for US Dollar-denominated assets.

- **The recent US Gross Domestic Product (GDP)** report for October revealed impressive growth at around 4.9%, the fastest pace in recent quarters (refer Appendix 3). Such high GDP growth signifies a strong economy with increased economic activity, productivity, and higher incomes for individuals and businesses. This has allowed the US Federal Reserve (FED) to maintain high-interest rates, making US assets appealing to investors and boosting global demand for the US Dollar.

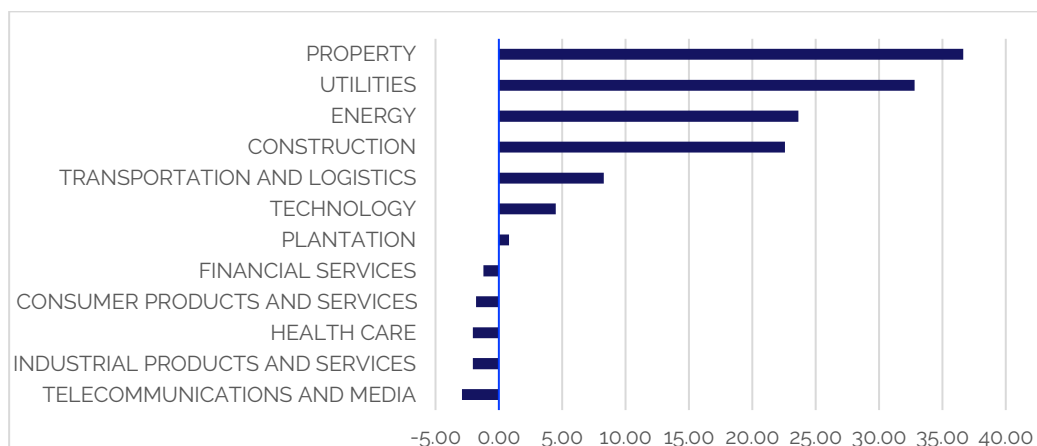
Malaysia Macroeconomics:

- **Ringgit depreciating to a record low** against major currencies like the USD, SGD, GBP and EUR, creating significant pressure to Malaysia economy. Although the Ringgit's depreciation may benefit export-oriented countries like Malaysia, it could also lead to capital flight as investors prefer stable or appreciating currencies.
- **The Bank Negara Malaysia has maintained its overnight policy rate (OPR) at 3%**, while the US is pursuing interest rate hikes, which is a primary factor behind the Ringgit's depreciation. Inflation in Malaysia has been steadily decreasing over the past year, currently standing at 1.9%, making the current OPR of 3% reasonable, as it exceeds the inflation rate.
- **Malaysia's recent GDP growth of 3.3% in the most recent quarter**, though slightly higher than the previous quarter's 2.9%, is the second lowest since Q4 2021. This low GDP growth indicates limited room for the Bank Negara Malaysia to raise interest rates, as tightening monetary policy might worsen future GDP growth. The depreciation of the Ringgit and sluggish economic growth, influenced by external factors, present a dilemma for policymakers in deciding whether to raise interest rates, reflecting the economic challenges Malaysia faces in the global economic landscape.

Sector Analysis

Sector Performance Overview

Figure 1: Sector Performance from Oct 2022- Oct 2023



Source Tradingview

The Malaysian stock market comprises 12 distinct sectors, offering diverse investment opportunities based on sector performance. Despite sluggish economy, some sectors, such as Utilities, Construction, Property, and Energy, have performed exceptionally well, with returns exceeding 20%. The **energy sector's** remarkable return can be attributed to increased oil prices due to the Israel-Hamas conflict and oil supply cuts by Saudi Arabia and Russia. The outstanding performance in other sectors may be due to government budgets and sector rotation following a prolonged downside correction.

Figure 2: Analysis by Sector

SECTOR INDEX	ALL TIME HIGH	LAST CLOSE AS AT 30/10/2023	CORRECTION FROM TIME ALL-HIGH (%)
CONSUMER PRODUCTS AND SERVICES	747.16	551.13	-26.24
TECHNOLOGY	168.65	60.98	-63.84
PLANTATION	9406.75	6898.68	-26.66
HEALTH CARE	4520.15	1656.65	-63.35
UTILITIES	1158.25	1102.94	-4.78
INDUSTRIAL PRODUCTS AND SERVICES	225.33	172.12	-23.61
FINANCIAL SERVICES	18519.95	16212.2	-12.46
TELECOMMUNICATIONS AND MEDIA	751.18	556.5	-25.92
CONSTRUCTION	595.21	185.04	-68.91
PROPERTY	3555.78	838.52	-76.42
ENERGY	1303.21	863.64	-33.73
TRANSPORTATION AND LOGISTICS	981.4	928.08	-5.43

Source KLSE Screener

Figure above displays the corrections in 12 sector indices from their all-time highs. Sectors that exhibit the widest gap from their all-time high include property (-76.42%), construction (-68.91%), technology (-63.84%), and healthcare (-63.35%), all having declined more than 60% from their peak values. The **technology sector** is poised for growth, aligning with global digitalisation trends, and Malaysia's efforts to attract tech investments. Companies in this sector encompass hardware, software, and digital services. The **healthcare sector** may gain a competitive edge in exports due to the Ringgit depreciation, notably in healthcare product exports such as gloves.

Figure 3: Price trend of construction and property sector index



Source: Tradingview

The construction and property sectors typically move together, and this year, both have seen significant upward trends following a period of correction at lower levels. The construction sector is set to benefit from the Malaysian Budget 2024, featuring major projects like the Pan Borneo Highway, LRT, MRT, and ECRL. The property sector is leading the construction growth, with more projects secured from property development. Recent data from the Department of Statistics Malaysia shows that the construction sector has been among the top 5 industries with the highest economic output growth in the past two quarters in Malaysia.

Figure 4: Descriptive Summary

Top 4 sectors based on sector performance.	Top 4 sectors based on correction from all-time high.	Sector to be selected (Construction)
Property (+36.64%)*	Technology	The property sector takes the lead over the construction sector, with capital initially entering the property sector before shifting to construction due to sector rotation. Given the property sector's growth of 36.64% compared to the construction sector's 22.58%, there is still room for growth.
Utilities (+32.81%)	Health care	
Energy (+23.64%)	Construction*	
Construction (+22.58%)*	Property*	

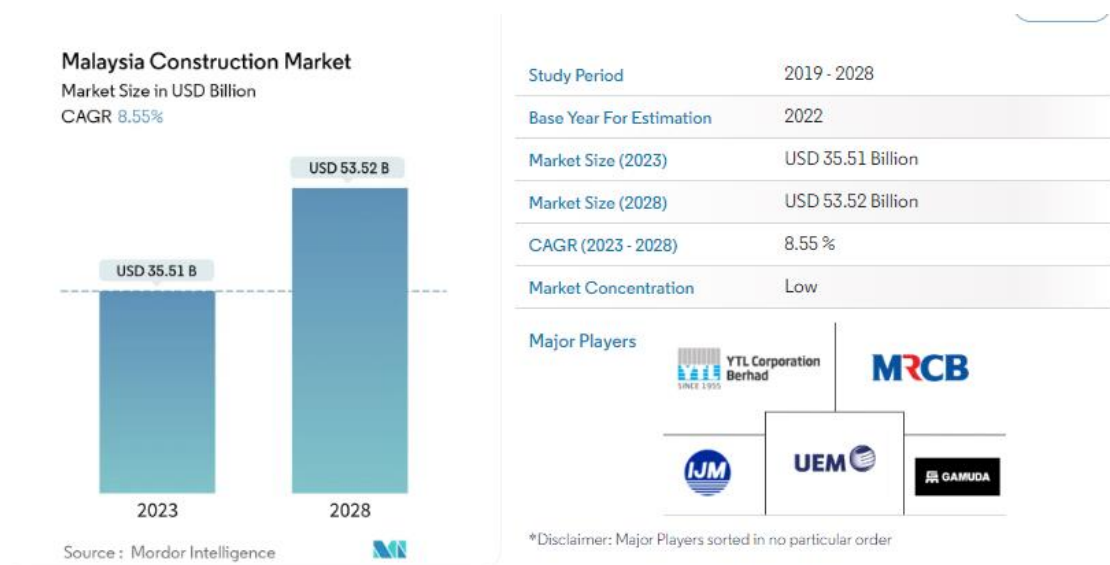
Note: Asterisks (*) indicate the sectors in the top 2 best-performing sectors that have the lowest correction from all-time high.

Source: Author's analysis

In summary, the construction sector appears to be a potential subject for further analysis based on the sector performance and correction above.

Market Outlook and Forecasts

Figure 5: Market Size of Malaysia Construction Sector



Source Mordor Intelligence

According to the data presented above, it is projected that the size of the Malaysian construction market would increase from USD 35.51 billion in 2023 to USD 53.52 billion in 2028, reflecting a compound annual growth rate (CAGR) of 8.55% over the forecast period.

- Amidst the COVID-19 pandemic, Malaysia's construction industry experienced substantial challenges. The majority of construction activities, with the exception of those deemed critical or essential services, came to a standstill during the Movement Control Order (MCO). The construction sector faced a shortage of 400,000 workers post-covid pandemic. The depreciation of the Ringgit and multiple interest rate hikes in 2022 have raised borrowing costs for contractors. These combined factors have contributed to a significant market decline of approximately 68.91% from its all-time high before the COVID-19 pandemic.
- This year, the construction market has experienced remarkable growth and has become a substantial contributor to the nation's overall economic expansion in 2023 with a sector performance growth of +22.58% from Oct 2022-Oct 2023.
- In terms of stock market activities, foreign investors stand out as net buyers in the construction sector despite significant capital flight from the broader market, driven by underperformance in the general economy and a weakening Ringgit. In September 2023, the net foreign fund flow into the construction sector was about RM132 billion.
- Based on the data from the National Property Information Centre (NAPIC), the number of houses started to be built shows a trend of increasing from 4,939 units in November 2022 to 6,490 units in March 2023. It indicates a good sign of increasing construction activities, driven by the growing number of projects to be launched and constructed.
- According to the Economic Outlook 2024 by the Ministry of Finance, the construction sector is forecasted to contribute the highest year-on-year (YoY) GDP growth among the other sectors, with projected rates of 6.3% and 6.8% for 2023 and 2024, respectively.

Construction Sector Seasonality Analysis

Figure 6: Construction sector seasonality analysis based on monthly return for 18 years of sector data from 2003-2020

Construction	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Up (times)	13	9	10	11	6	9	13	4	9	14	6	11
Down (times)	5	9	8	7	12	9	5	14	9	4	12	7
Up%	0.72	0.50	0.56	0.61	0.33	0.50	0.72	0.22	0.50	0.78	0.33	0.61
Down%	0.28	0.50	0.44	0.39	0.67	0.50	0.28	0.78	0.50	0.22	0.67	0.39
Highest value	18.15	5.75	8.60	14.74	15.56	7.93	9.94	4.00	6.17	14.89	14.37	8.16
Lowest Value	-5.85	-10.93	-27.74	-5.34	-36.33	-9.69	-3.15	-14.82	-13.12	-20.91	-8.62	-8.05
Average +ve return (%)	5.13	3.21	5.56	5.78	7.96	3.27	3.65	2.09	2.91	3.87	6.35	2.72
Average -ve return (%)	-2.95	-4.58	-7.66	-2.85	-6.25	-3.06	-1.71	-5.41	-4.00	-12.15	-3.86	-3.16
Expected return (%)	2.89	-0.68	-0.31	2.42	-1.52	0.10	2.16	-3.74	-0.55	0.31	-0.45	0.43
Rank (EX)	1	10	7	2	11	6	3	12	9	5	8	4
Rank (+ve)	5	9	4	3	1	8	7	12	10	6	2	11
Rank (-ve)	3	8	11	2	10	4	1	9	7	12	6	5

Source: Author's analysis

Based on the analysis, the construction sector tends to yield positive returns in January, April, June, July, October, and December. This suggests that as the year ends and the new year begins, the construction sector is expected to perform well due to seasonality, with January being the top-performing month historically. Even though November has a lower probability of positive returns based on past 18 years of seasonality, it can still achieve up to a 14.4% return in the best-case scenario and as low as -8.6% in the worst-case scenario, making it one of the top 2 and top 6 best performing months respectively, under best-worst market conditions.

Key Components in the Construction Sector

Component	Justification	Prospects/Risk
Market Overview	The construction sector has shown substantial growth this year, but it is still undervalued compared to its historical performance.	Good, low risk.
Economic Factors and Economic Stimulus Package	The government has introduced the Malaysia Budget 2024, with a theme of "Economic Reform, Empowering People," allocating a substantial budget of RM393.8 billion, with a significant focus on infrastructure and road upgrades.	Good, low risk.
Demographics and population trend.	The population has steadily increased from 1975 to 2023, with the latest count rising from 33,938,221 to 34,308,525, reflecting a growth of about 1.09% from 2022 to 2023. Approximately 78.30% of the population resides in urban areas, which significantly influences the demand for upcoming projects.	Good, low risk.
Industry Segmentation and competitive landscape	The construction sector comprises residential, commercial, industrial, and infrastructure segments in Malaysia. Many construction companies operate across multiple segments, and the market has a significant number of players with relatively lower market concentration. For mega infrastructure projects, experienced and financially strong construction companies are crucial in securing such projects due to their expertise and financial capabilities.	Good, low risk.
Supply Chain	Serious geopolitical situations can disrupt the supply chain, leading to higher raw material prices and increased construction costs. Malaysia's advantage as a source of building materials, such as steel, reduces the risk of severe shortages. Still, the depreciation of the Ringgit may lead to higher costs for imported mechanical and electrical components, many of which come from the United States.	Neutral, medium risk.
Labour and Work Force	As of December 2022, the construction sector in Malaysia experienced a shortage of 400,000 workers. This shortage has disrupted their ability to perform work as intended and meet operational fixed costs.	Neutral, high risk.
Technology, Innovation, and Sustainability	Embracing sustainable and green construction practices is becoming a future requirement due to global commitments to sustainable development goals. In Malaysia, some market players are prepared for this shift, particularly in technologies related to green energy projects like solar panels and EV infrastructure. Collaborations, such as the ECRL projects with China,	Good, medium risk.

Component	Justification	Prospects/Risk
	provide opportunities for Malaysia's construction industry to adopt advanced Chinese construction technology and expertise.	
Financing and Investment.	Malaysia can tap into Chinese financing and investment for infrastructure development through China's Belt and Road Initiatives. China is a major global hub for green financing, offering support to companies with environmentally sustainable projects. This is advantageous for construction firms with green initiatives and sustainable construction practices.	Good, low risk.

Investment Opportunities/ Catalysts

This section mainly highlights the catalysts and the opportunities that could boost the construction sector based on the current development.

- The reinstatement of five previously postponed LRT3 stations is expected to benefit the construction sector with a total value of RM4.7 billion.
- An LRT system linking Penang Island and the mainland, costing approximately RM10 billion, to be developed through a public-private partnership model.
- Infrastructure projects, including expanding lanes on the PLUS highway, road improvements in Kota Bharu, Kelantan, and road projects in Sabah, to continue.
- Major projects like the Mass Rapid Transit (MRT), Light Railway Transit (LRT), East Coast Rail Link (ECRL), and the second phase of the Sarawak-Sabah Link Road are in progress.
- The development of electric vehicle (EV) infrastructure would provide extensive coverage throughout Malaysia. Tesla plans to invest in a network of fast-charging and standard-charging stations at strategic sites.
- Private nursing homes for the elderly approved by the Malaysian Ministry of Health would be eligible to receive an Industrial Building Allowance (IBA) at an annual rate of 10% for qualifying expenses related to building purchase, construction, or renovation between January 1, 2024, and December 31, 2026.

Below are the highlights and expected values for the construction sector in the Malaysia Budget 2024.

Highlights/Measure	Value (in RM)
<ul style="list-style-type: none"> • RM2.4 billion is allocated for building, maintaining, and repairing quarters for civil servants, teachers, hospitals, police, armed forces, and firefighters. 	2,400,000,000
<ul style="list-style-type: none"> • RM150 million is set aside for the maintenance and repair of public toilets in 150 local authorities nationwide. 	150,000,000
<ul style="list-style-type: none"> • RM2.8 billion is designated for the maintenance of federal roads and bridges. 	2,800,000,000
<ul style="list-style-type: none"> • Development allocations for Sabah and Sarawak are increased, with Sabah receiving RM6.6 billion and Sarawak receiving RM5.8 billion. 	12,400,000,000

Highlights/Measure	Value (in RM)
<ul style="list-style-type: none"> Phase 2 of the Sarawak-Sabah Link Road (SSLR), covering 320km and costing nearly RM7.4 billion, is expected to commence by the end of the year. The Sarawak Pan Borneo Highway is planned for completion in 2024. 	
<ul style="list-style-type: none"> Prasarana is set to acquire 150 electric buses and build three bus depots at a cost of RM600 million. 	600,000,000
<ul style="list-style-type: none"> A total of 33 high-priority flood mitigation projects, with a cost of RM11.8 billion, to be implemented next year. 	11,800,000,000
<ul style="list-style-type: none"> RM1.9 billion is allocated for the upgrading and maintenance of schools nationwide in 2024. 	1,900,000,000
<ul style="list-style-type: none"> RM2.47 billion is allocated for the implementation of people's housing projects in 2024. 	2,470,000,000
Total	34,520,000,000

Of the total budget of RM393.8 billion, approximately 8.76% is allocated to the construction sector.

Risks and Challenges

- **The depreciation of the Ringgit** could pose a risk to the construction sector's growth. Foreign labour-dependent construction firms may face challenges as a depreciating currency might incentivize workers to seek opportunities abroad, potentially disrupting construction operations. The Ringgit's depreciation may continue as long as the U.S. maintains its high-interest rate agenda.
- **Supply chain disruption** caused by the escalating geopolitical conflicts in the Middle East leading to price increases for raw materials. As the construction sector heavily relies on building materials and various mechanical and electrical components, the rising costs of these materials could erode their profits.
- **Compliance with the environmental regulations** could add complexity and cost for the construction projects. As the Malaysian government aims to achieve carbon neutrality by 2050, implementation of environmental regulation may pose challenges for construction firms lacking prior knowledge of green and sustainable technology adoption in the construction sector.

Conclusion

In conclusion, the construction sector presents promising opportunities that outweigh the associated risks. Factors like infrastructure development, urbanization, the government's 2024 budget allocation, and the 12th Malaysia Plan make it a compelling field for investment in 2023-2024. While challenges and risks exist, adopting construction technologies can ensure a competitive edge in the market. It is recommended to invest in the construction sector with a target return of more than 20% growth in the sector index, driven by major players in mega-infrastructure projects and beneficiaries of highway and road upgrading projects.