Indonesia 2.0: a better tomorrow

"Sudden events cannot be handled by the unprepared mind."

- Mo Di-

Q4 2021

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Heyokha's Indonesia 2.0 patch version

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Indonesia 2.0: a better tomorrow

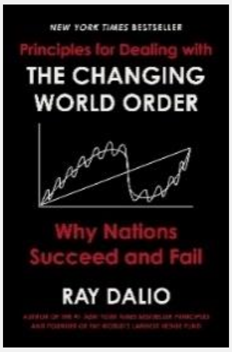
The dawn of an era

On the surface, the world is getting richer, healthier, better educated, more connected and people are living longer. Yet half of the world is potentially unstable and divided.

Around the world, protestors are unwilling to tolerate unethical decision-making by power elites. The educated and internet-connected generation is rising against the abuse of power.

Meantime, food prices are rising, water tables are falling, and climate changes continue to threaten environmental viability. Corruption and organized crime are increasing, debt and economic insecurity are rising, and the gap between the rich and poor is dangerously widening.

The subject of the massive wealth gap is particularly interesting. Reading Ray Dalio's new book *Principles for Dealing with The Changing World Order*, it is stimulating to learn his conclusion from decades of investing experience and learning that the biggest thing affecting most people in most countries through time is the struggle to make, take, and distribute wealth and power.



History often rhymes

Renowned investor Ray Dalio who has spent about half a century studying global markets shares his view on the major ongoing confluence of political and economic conditions. The dynamics of the brewing conflict between the rising world power (China) and the existing (US), large indebtedness, near-zero interest rates, and the wide divisions of wealth, politics, and values among countries are some topics covered by this book.

The Changing World Order puts those dynamics into the perspective of five hundred years of history. By studying the rise-and-fall of nine major empires in a multidimensional way, the book reveals the relevancy of today's condition for policymakers, business leaders, and investors.

If current trends in the wealth gap, population growth, resource depletion, climate change, terrorism, organised crime, and disease continue and converge in the coming decades, the world will be unstable with likely catastrophic results.

While the future is still unknown, a confluence of political and economic conditions: huge debts and zero or near-zero interest rates that led to massive printing of money in the world's major reserve currencies; big political and social conflicts within many countries; the largest wealth, political, and values disparities in decades; and the rising of a world power (China) to challenge the existing world power (US); are likely to result in some major shifts of world orders.

Reading the book, we came away with a deeper understanding that in the era of big government everywhere, it is very important to weigh a geopolitical risk analysis in managing a portfolio. The good news, in our view, is that it is not all gloom and doom.

There are trends and events that represent the beacon of hope. Human inventiveness in self-organisation via future internets, transnational cooperation, materials science, 3-D printing, alternative energy, cognitive science, synthetic biology, and nanotechnology may produce a world that works for all. Information and communications are augmenting human decision-making. These changes will eventually connect humanity and technology into new kinds of decision-making and a potentially more stable, more livable, and less divided world.

The year 2022 may mark the beginning of decades of tectonic changes in world orders. As the world scrambles for security, resources, or dominance, our research points to a number of 'once in a few generations' investment opportunities, namely Indonesia 2.0 and Web 3.0.

In this report, we focus on Indonesia 2.0, a rediscovery that may surprise you in many ways. Since we have been talking about the commodity supercycle, this time we also opt to spend time on internal reforms (second part of the report) that make Indonesia 2.0 story more complete. The combination of commodity supercycle and structural reform should make the story of Indonesia mesmerising.

External backdrop favourable to Indonesia

In the forthcoming time, we acknowledge four major themes that potentially dictate the gyration of the market: (1) commodity supercycle, (2) escalating cold tensions among global superpowers, (3) the rotation from growth to value, and (4) investors pivoting to other markets after China's tech crackdown.

Given Indonesia's strategic positionings, the stars are aligned for the country to outperform in the years to come.

#1 Indonesia: a big beneficiary of the commodity supercycle

Indonesia has vast resources to begin with

Indonesia's reputation as a commodity land is unrivalled. The country is blessed with vast resources ranging from hydrocarbon fuels, metals, minerals and agriculture like the highly productive palm oil that supplies 40% of world's vegetable-oil demand with under 6% of land used for producing vegetable oils. The following table describes how rich Indonesia is in commodities:

The vast resources of Indonesia

List of Indonesia's top commodities reserves (for minerals and hydrocarbons) or production (for agriculture)

Commodities	Reserve/ annual production	Global market share	Global Rank
Nickel (in MT)	21,000,000	22.1%	1
Tin (in MT)	800,000	16.3%	2
Cobalt (in MT)	600,000	7.9%	3
Gold (in MT)	2,600	4.8%	5
Bauxite (in '000 dry MT)	1,200,000	3.8%	6
Copper (in '000 MT)	24,000	2.7%	7
Coal* (in mn MT)	24,910	2.2%	11
Natural Gas * (in Bcf)	103,350	1.5%	13
Crude Oil* (in mn BBL)	3,693	0.2%	27
Palm Oil** (in mn MT)	44.5	59%	1
Corn** (in mn MT)	12	1%	12
Rice ** (in mn MT)	35.4	7%	4
Rubber**** (in mn MT)	2.88	22%	2

Source: US Geological Survey (2022), *Energy Information Administration (2016, 2017), **USDA (2022), ****Statista (2020)

Commodity prices have a high correlation with Indonesia's market returns

As a resource-rich country, commodity upswings have a high affinity with wealth and good times for Indonesia.

Our study suggests commodity prices movements have a strong correlation with the acceleration of Indonesia's real GDP growth rate and the annual return of the Jakarta Composite Index (JCI). Between 1991 and 2020, commodity prices represented by the Bloomberg commodity index have 48% and 50% correlation with the annual return of JCI and acceleration in Indonesia's real GDP growth rate, respectively.

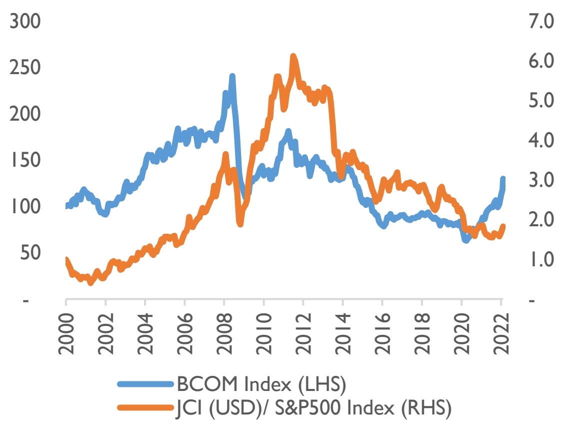
A more recent study by UOB Indonesia Research shows that the Real GDP growth rate has an even higher correlation of 91% with JCI return over 2012 to 2020, underscoring that Indonesia is a macrodriven market. Given that macroeconomics plays an important role in determining Indonesia's market return, the booming commodity cycle increases the odds for the Indonesian stock market to reverse a decade of painful underperformance.

As a matter of fact, Indonesia has outperformed recently. On a year-to-date basis, Indonesia's JCI in USD terms outperformed S&P 500 by 14% with the backdrop of rising commodity prices reflected by a 26.7% increase in the Bloomberg commodity index. JCI recorded a 4% return while S&P500 lost 10% of its value in that period.

The following two-decade worth of data suggest that this outperformance may continue should commodity prices remain at the top.

Indonesia's outperformance to S&P 500 heavily relies on commodity prices

Bloomberg commodity (BCOM) index (31/01/2000=100) and JCI versus S&P500 relative performance



Source: Bloomberg as of 10 March 2022

Commodity prices are expected to remain favourable for a considerable time

In our Q4 2020 report (link), we discussed the potential coming of a commodity supercycle.

The commodity sector's chronic underinvestment due to dreadful returns in the last decade, the greening of finance, resource exhaustion, and industry consolidation have led us into a limited supply. We discuss the severity of this underinvestment in our appendix titled "ESG and the vanishing fossil fuel".

Besides supply-side problems, we also notice today's demand is allowing the commodity supercycle to happen.

This is important because aggregate demand strength reflects buyers' willingness and ability to pay. It determines how high commodity prices could rise and how long they would last. Strong demand was the main driver of the 1970s and 2000s supercycle.

Back in the 1970s, we had a war on poverty in the US. In the 2000s, we saw China rising to be the global manufacturing plant which raised major capital spending and provided hundreds of millions of low-income rural Chinese new higher-paying jobs. This surging wealth of the low-income people and major capital expenditure cycle are real consumption that drives commodity prices up.

Similar things are happening today. This time, the strong aggregate demand resembles the following:

1. *Demand from the middle-low-income group is supported by governments' colossal stimulus during the COVID-19 pandemic*

   In 2020, McKinsey estimated the stimulus checks for backstopping the COVID-19 recession reached about USD 10 trillion globally. This response as a percentage of GDP terms is nearly ten times the stimulus for relieving the global financial crisis in 2008. We discussed the COVID-19 policy response on income redistribution in our Q3 2020 report (link).

2. *Escalating commitment to a green economy entails a major capital expenditure cycle from the developed market.*

   Jeff Currie of Goldman Sachs estimated about USD 16 trillion is about to be spent in this decade and USD 32 trillion in the next decade for green investment. This figure is roughly three times China's 2000s capital expenditures being spent in the next two decades.

We are already in an extremely tight commodity market

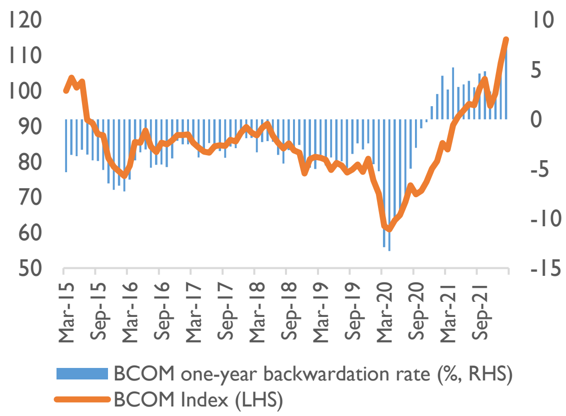
The commodity market is roaring now. In principle, the commodity spot market reflects current supply and demand conditions instead of discounting future growth rates as the financial market. Hence, the currently strong commodity spot price suggests an extremely tight market. Especially with the conflict between Russia and Ukraine added fuel to the fire.

This tightness is visible in the broad backwardation in commodity futures whereby longer-term contracts trade at a lower price than shorter-term contracts.

At the end of February 2022, 22 out of 27 commodities covered in the Bloomberg commodity index were in backwardation. This suggests that shortages were happening in many commodities and buyers were willing to pay more for securing short-term supply. The premium of which stood at 8.7%, the highest reading since the 1990s.

Extreme tightness in the commodity market reflected in the extreme backwardation

Bloomberg Commodity (BCOM) Index backwardation rate (RHS) versus its price movement (LHS)



Source: Bloomberg as of 28 February 2022

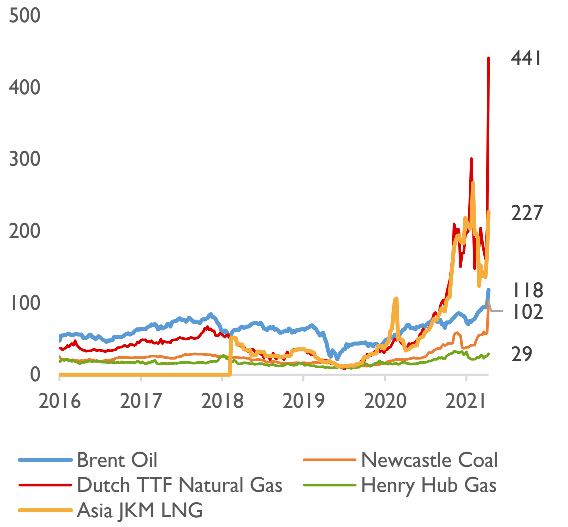
The great backwardation of commodities is happening in the three major commodity groups, namely energy, metals, and agriculture.

The following are brief market observations that reflect the tightness in each respective commodity vertical:

1. *In the last 18 months, energy prices went from the lowest level in mankind's history to historical highs. Oil once traded negative and recently Europe natural gas and Asia imported LNG traded beyond USD 90 per MMBtu or USD 522 per oil-equivalent barrel*

The blazing energy prices

Fossil fuel prices in USD per barrel-oil equivalent

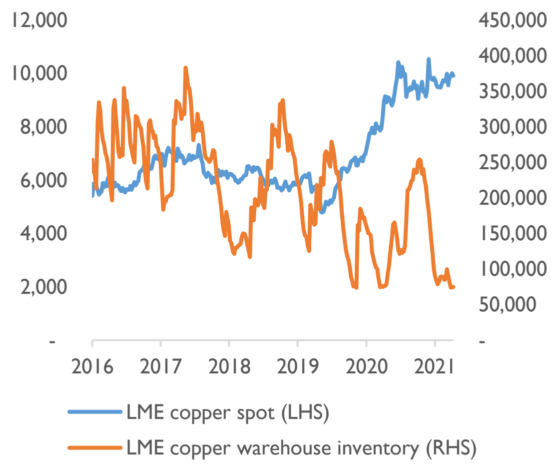


Source: Bloomberg as of 03 March 2022

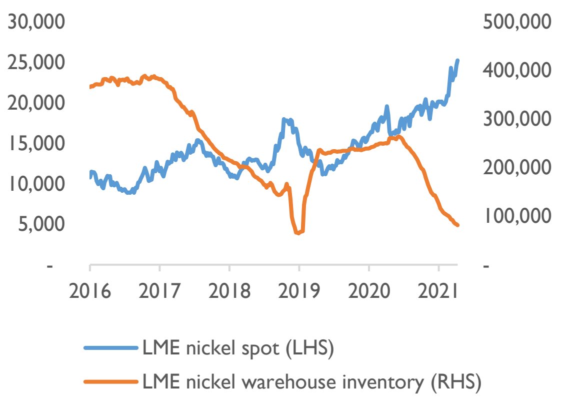
2. *Copper and nickel LME inventories continue to deplete and yet to see a fresh supply*

The depleting availability of metals

LME copper spot price (USD/ton) versus LME copper warehouse inventory (in tons)



LME nickel spot price (USD/ton) versus LME nickel warehouse inventory (in tons)

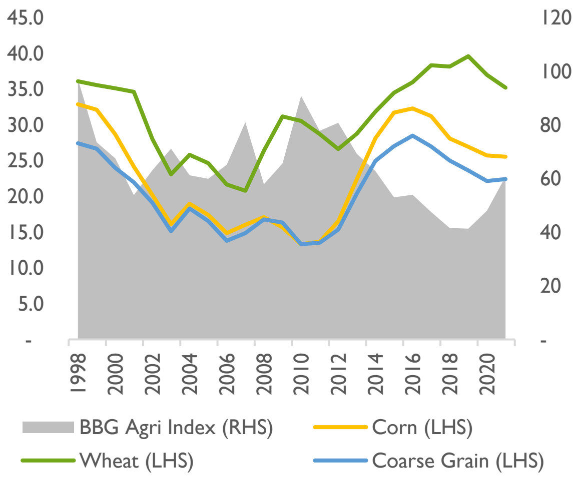


Source: Bloomberg as of 03 March 2022

3. *The availability of grain stock has been falling and sending food prices high*

Grains availability has been falling for years and sending prices high

Global grains stock-to-use ratio (%) versus Agriculture Commodity Price Index



Source: Bloomberg as of 03 March 2022

We also observed that there are some intertwining relationships between the energy and agriculture markets. The high energy cost sent fertilizer prices sky-high to the extent that it may threaten the future crop yield once it becomes unaffordable or unavailable for the farmers. In other words, we might be on a brink of an agricultural crisis.

There are two ways to prevent a further shortage in the agriculture market: (1) agricultural product prices must rise or (2) energy prices have to decline. We provided a concise overview on this matter in our latest blog (link).

The mounting risk premium from Russia and Ukraine tension might suggest either we will see demand destruction first or a miracle in the supply to cure it. Therefore, commodity prices might see some corrections once this risk premium dissipates.

However, that does not mean the end of the commodity supercycle. In fact, our primary thesis suggests the current supply-demand structure alone is set to drive the commodity supercycle without a need for a war.

Metals, the new oil?

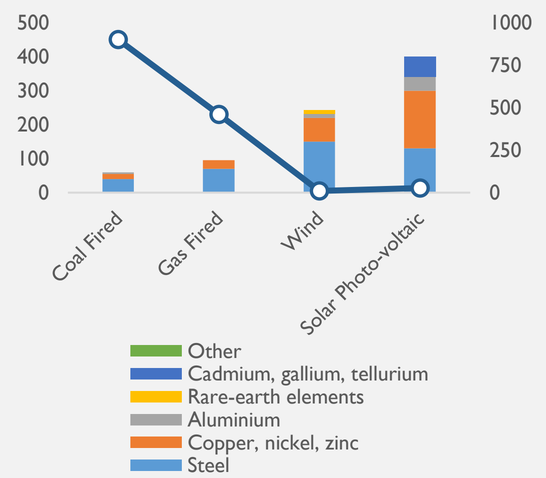
Given the nature of the currently preferred green technology, the war on climate change is diverting hydrocarbon consumption into metals. The transition into more power generation by wind and solar photovoltaic, and transportation with electric vehicles will require more metals as compared to the existing hydrocarbon-fuelled power plants and internal combustion engine (ICE) vehicles.

The metal intensity of which can be reflected in the following illustration provided by McKinsey:

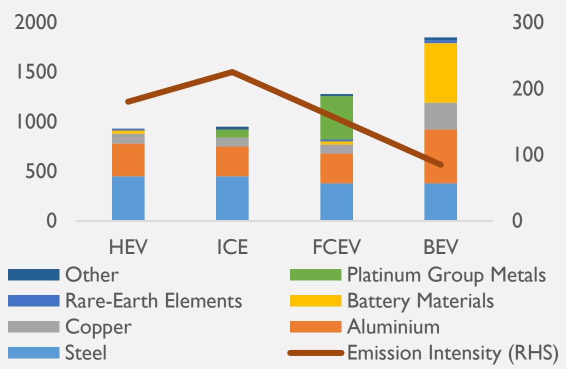
Less carbon, more and more metals

Comparison of material intensity in Cu Eq. tons/ TWH (left axis) and CO^2 KT/TWH (right axis)

Power generation alternatives



Transportation alternatives



HEV: Hybrid Electric Vehicle, ICE: Internal Combustion Engine, FCEV: Fuell-Cell Electric Vehicle, BEV: Battery Electric Vehicle

Source: McKinsey (2022)

Given this greening trend, base metals like copper, nickel, and aluminium should benefit because of their use case in energy and road transport.

Copper in particular might see its price skyrocketing as it is getting scarcer every day. Wood Mackenzie's study in 2020 suggested that there are only 1.7 Mt/a of probable copper projects for development that are only capable of meeting three years of consumption growth.

#2 Geopolitical competition between superpowers is likely to be rewarding for Indonesia's independent and active policy

Rising geopolitical competition should be considered for our investment decision

As we enter a new era of geopolitical competition between the US and China and a war that is currently going on in Ukraine, we believe that geopolitical risk should be considered when managing a portfolio.

As such, we borrow from Ray Dalio's framework in his book The Changing World Order, which discusses five major types of wars in the era of a geopolitical contest:

1. Trade/economic wars
2. Technology wars
3. Geopolitical wars
4. Capital Wars
5. Military Wars

He also added Culture Wars and the War with ourselves to the list.

The general perspective is that the US and China's geopolitical war in the East and South China Seas is escalating militarily because both sides are testing the other's limits. Dalio is of the view that China is now militarily stronger than the US in the East and South China Seas, while the US is stronger around the world.

In the context of Indonesia, the South China Seas is essentially the country's backyard. As such, a hot war in South China Seas is the last thing that Indonesia needs.

Experts consider a hot war as a black swan event these days

Before the war in Ukraine, we would have thought that option no 5, a hot war, is a distant possibility in the modern era. After the war broke out, many will ask if warfare is indeed part of humanity.

Responding to the war in Ukraine, historian Yuval Noah Harari recently wrote in The Economist Feb 9th edition, pointing out that contrary to popular misconceptions, the first clear evidence for organised warfare appears in the archaeological record only 13,000 years ago. Even after that date, there have been many periods devoid of archaeological evidence of war.

"Hate. It has caused a lot of problems in this world, but it has not solved one yet."

- Maya Angelou -

Unlike gravity, in Harari's view, war isn't a fundamental force of nature. Its intensity and existence depend on the underlying technological, economic, and cultural factors. As these factors change, so does war.

There are several factors not in favour of a major hot or military war in the modern world:

1. Nuclear weapons have turned war between superpowers into a mad act of collective suicide.

2. The global economy has been transformed from one based on materials to one based on knowledge. Whereas you can seize oil fields by force, you cannot acquire knowledge that way. The "profitability" of conquest has declined as a result.

3. In the past few generations, however, for the first time in history, the world became dominated by elites who see war as both evil and avoidable.

The clash between hegemons may have started.

But this time, they exchange blows with finance.

So, despite what currently happens in Ukraine, we think that it is reasonable to believe that China has a strong desire not to have a hot war with the US. With regards to the issue of Taiwan, an article by Walter Lohman from The Heritage Foundation "China Thinks Time Is on Its Side Regarding Taiwan Takeover," written in March 2022 is something we certainly think is worth reading.

Firstly, Lohman is of the view that an invasion of Taiwan is fraught with risk for Chinese leaders. In addition to the operational military risk, the Russian experience suggests that the blowback from the international community can be very harsh. Commercially, unlike Russia, the eastern parts of China are too rich and too deeply integrated into global value chains, to absorb the sort of isolation that the world is now imposing on Russia.

Secondly, why would Beijing take any chances at all if it calculates that Taiwan's security guarantor, the United States is in terminal decline? With this view, China just needs to continue pressing its global advantages and biding its time.

Likewise, for the US, we think a hot war with a nuclear power like China will also be too damaging. Here's hoping that a hot war, in Taiwan or the South China Sea, between US and China will never materialise.

In the event of scenario 1-4 in terms of the type of war, it is important to note that over the next 5-10 years, in addition to there being decoupling in many areas such as technology and economy, we will be seeing which countries align themselves with either the US or China.

Indonesia neutrality has been paying off

In the case of Indonesia, neutrality has been successfully preserved, largely thanks to its strategic importance (geography, population, resources) and the leadership of President Jokowi. So far, this can be indicated by the fact that Indonesia has managed to secure vaccines from both China and US when it comes to combating covid.

In terms of developing its economy and defense, Indonesia has opted to choose "independent and active" foreign policy. Meaning that Indonesia won't take sides and will be proactive to promote world peace.

This policy may become handy in attracting FDI as global manufacturers would seek to diversify political and commercial risks for their production base and secure feedstock supply at the same time.

It is a bit like where two giants fight over a bone, the third person walks away with it. Indonesia, with a large market and endowed with vast resources that are very relevant in the greening of the economy, is likely to benefit from the geopolitical competition (not war) between superpowers.

#3 Higher inflation expectation is kickstarting the redirection of capital to value names

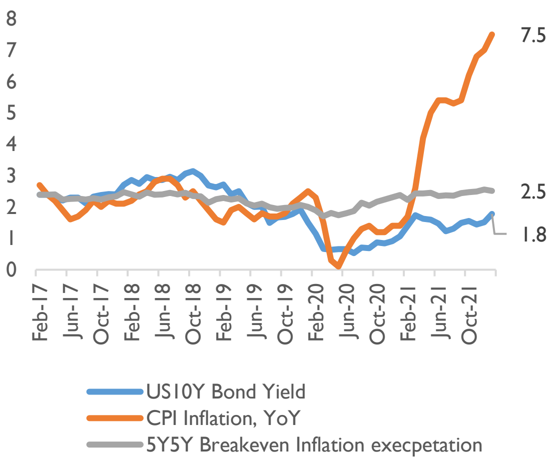
In our Q2 2020 report (link), we wrote about how to prepare for inflation. Back then, it was not clear yet if the era of inflation had finally arrived.

Since then, both the Fed Chairman Jerome Powell and Treasury Secretary Janet Yellen have said that it is time to retire the term "transitory" when talking about the US inflation.

This indicates that inflation is stickier than they had expected. Recently, the US recorded a 7.5% y-o-y CPI inflation for January 2022, way above the 2% long-term target, and was the highest reading since the 1980s.

The fading belief of transitory inflation

US10Y Bond Yield versus actual and expected inflation



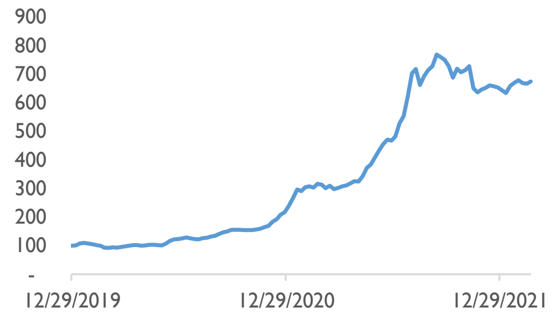
Source: Bloomberg

Considering the Fed Chairman Jerome Powell's frequently mentioned inflation drivers, we observed that inflationary forces have been sticky if not mounting so far:

1. High global freight cost continues to hold up
2. Wages adjustment and strong labour market recovery emit cost-push and demand-pull inflation force
3. Tight market and Russia-Ukraine risk premium keeps commodity prices elevated
4. Economic reopening creates lots of pent-up demand

Freight costs are still seven times higher than the 2019 level

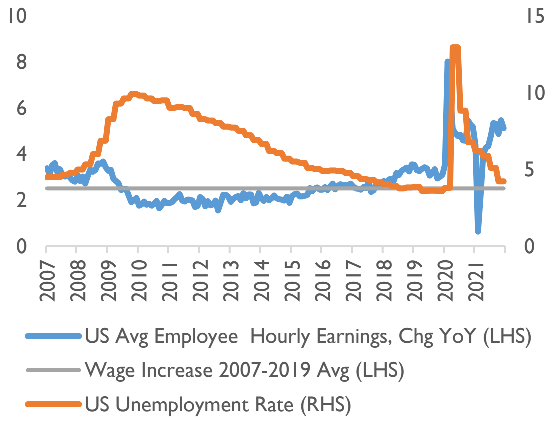
Freightos Baltic Index Global (31/12/2019=100)



Source: Bloomberg as of 20 February 2022

US Labour market almost recovered fully with wages rising at rapid pace

US average employee hourly earnings change %YoY (LHS), Wage Increase Average %YoY(LHS), and unemployment rate (RHS)



Source: Bloomberg as of 28 February 2022

In our view, these persistent inflationary forces raised the market's and the Fed's inflation expectations.

The US 10Y bond yield, the benchmark of the global risk-free rate, has crept as investors demand more compensation for inflation and expect some policies response from the central banks. This has an important consequence for growth and value stocks performance.

Our study on inflation and interest rates (link) arrived at the conclusion that value stocks may represent a better investment for years to come compared to growth stocks. The period of sustained inflation will replace the low-yield and abundant liquidity architecture that favoured growth stocks with the one that favours value stocks. The reasonings are as follows:

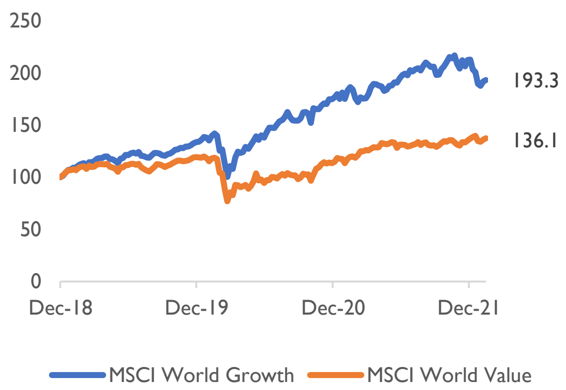
1. ***A bird in the hand worth two in the bush***
   High valuation multiple growth stocks are prone to higher interest rates because it reduces the present value of their projected future cash flows that heavily lies in the distant future. On the other hand, value stocks are more resilient to face higher discount rates on their future cash flows because they are already cash-flow-generative and have affordable valuation multiple in the first place.

2. ***Being asset-heavy comes in handy given the operating leverage impact***
   Value stocks tend to have high operating leverage and are capital-heavy. During inflationary period, value stocks may see their earnings power enhanced because their costs are predominantly fixed. Furthermore, the capital-heavy feature comes in handy as inflation will naturally appreciate their asset value.

As a matter of fact, value stocks have been outperforming growth by almost 10% year-to-date. This suggests that the rotation from growth to value has started.

Value stocks underperformed growth stocks when rising inflation expectation caused risk-free rate to rise

Year-to-date, value stocks have outperformed growth by 9.5%



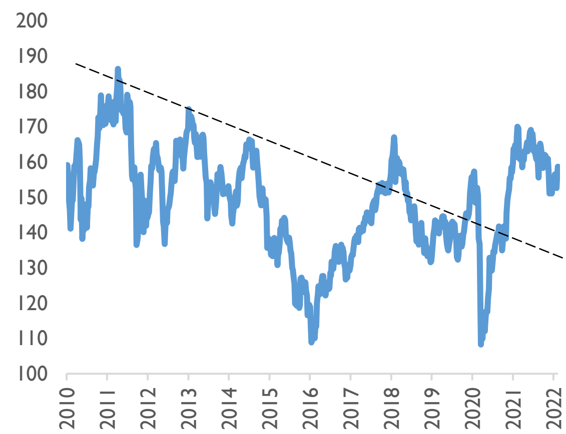
Source: Bloomberg as of 9 February 2022

This investment rotation to value should reward investors in the value-dominated market. Because of their predominantly lower valuation multiple than developed markets, emerging markets offer a good start for searching value names.

After years of outflows from 2011 to 2020, some investors have returned to the emerging markets.

Investor's appetite for emerging markets is not dead

Bloomberg emerging market capital flow proxy index (points)

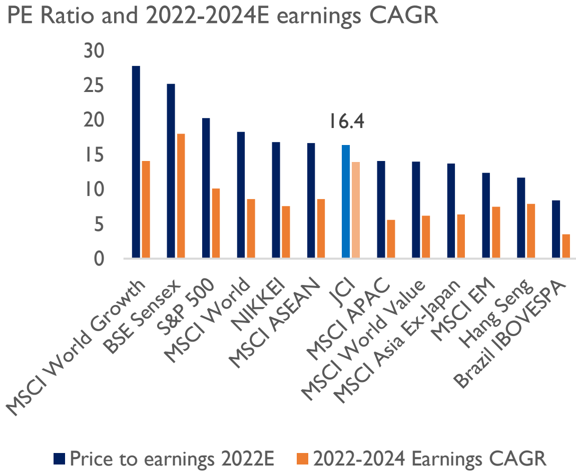


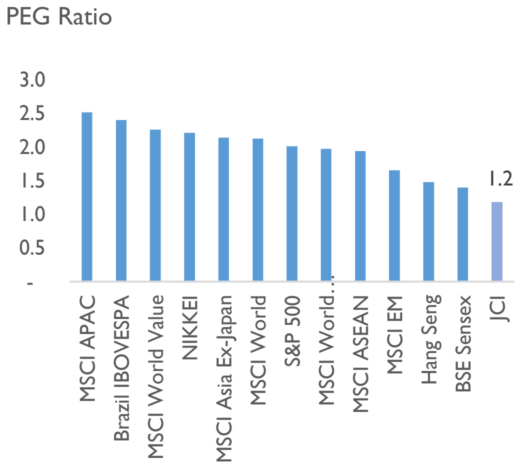
Source: Bloomberg as of 09 February 2022

"The farther one goes, the less one knows."
- Tao The Ching -

In this voyage of seeking value investments, we believe that the Indonesia market is too attractive to ignore because of the following five reasons:

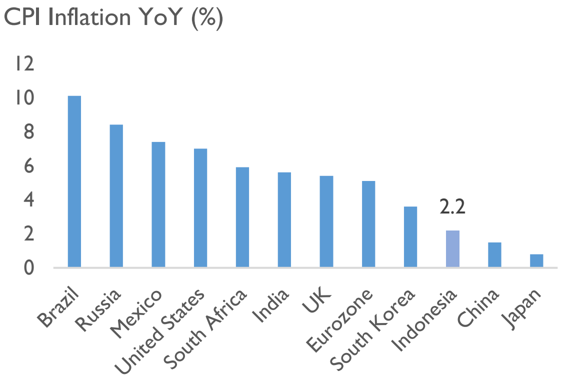
1. **Indonesia's market valuation is undemanding when compared to the relatively high prospective growth that is charged up by the commodity upswing.**

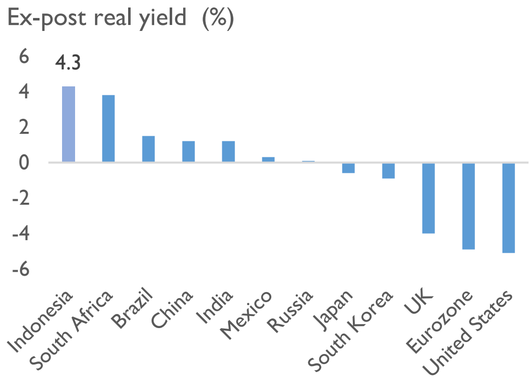




Source: Bloomberg as of 09 February 2022

2. **Indonesia provides a good shelter in the negative real yield era because of its manageable inflation and the real yield is still among the highest globally.**

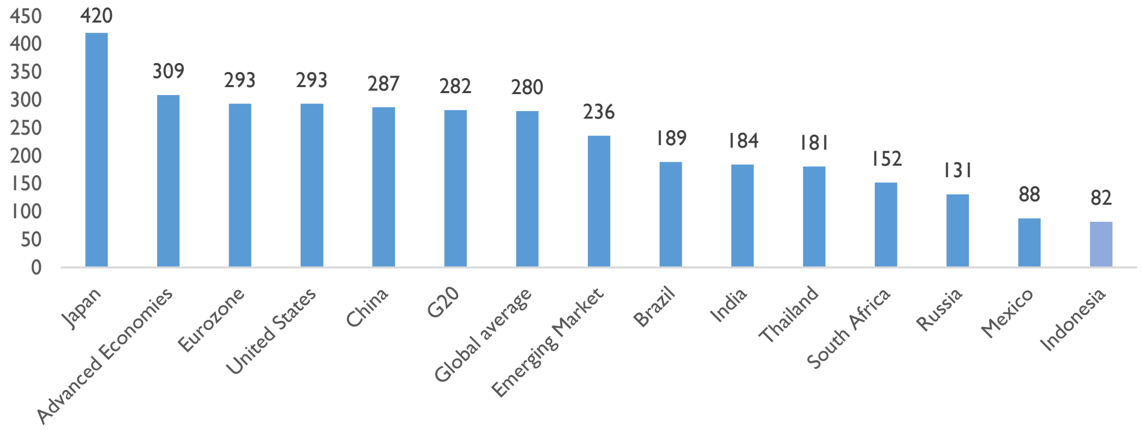




Note: Ex-post real yield represents the risk-free investment return deducted by historical inflation.
Source: Bloomberg as of 09 February 2022

3. **Indonesia's fiscal conservatism cushions the country's currency, reduces tapering risk and avoid financial repression; when other highly indebted countries might be forced to do so. Indonesia stands out as a safe haven against global deleveraging risks.**

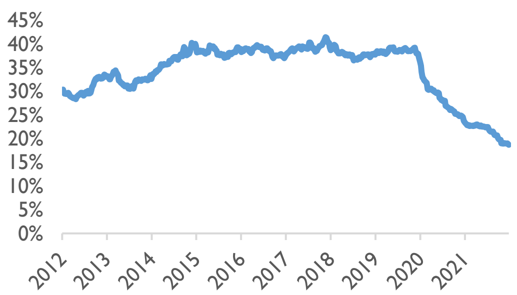
Total Debt (non-financial private and government) to GDP (%)



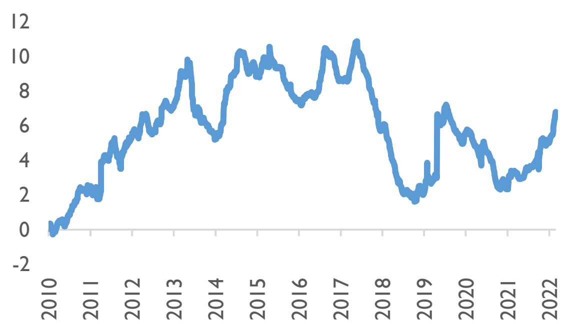
Source: BIS, 3Q2021 data

4. **Foreign investors' ownership in Indonesian financial assets is at a low base compared to 2013's taper tantrum. This skews the risk to the upside. Net foreign inflows also have been visible in Indonesian equities.**

Foreign's ownership on Indonesia government bond



Cumulative JCI foreign net inflow (USD Bn) since 2010



Source: Bloomberg as of 02 March 2022

5. **The shutdown of numerous foreign stock brokers in Jakarta in the past few years may indicate the contrarian bottom for Indonesia**

In the last few years, five big foreign brokers closed their research or trading offices in Indonesia, namely: Nomura, Citigroup, Merrill Lynch, Deutsche, and Morgan Stanley. The decision to shrink or shut down their Jakarta operation is likely related to the low foreign ownership in the Indonesian stock market. We view this as a contrarian bottom for Indonesia.

#4 Discouraged Chinese tech investors may find Indonesia tech names interesting

The past year has been a perfect storm of Chinese tech names with hundreds of billions of dollars of values being shredded, as many saw their share prices decline by more than 50 percent.

Chinese tech companies were trapped in the crossfire between US and China trade war. To rub salt in the wound, these firms have been facing domestic regulatory crackdown inspired by the common prosperity thought.

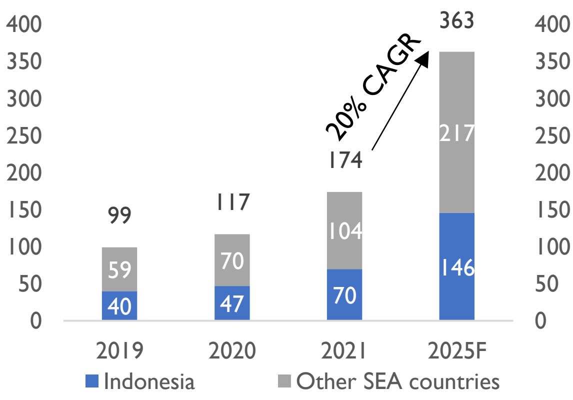
Facing such immense uncertainty, some investors decided to cut exposure or check out of this market completely. Still, money has to flow somewhere.

We see Southeast Asia and Indonesia, in particular, to be their potential new home considering the market fit for those who would like to maintain their emerging market tech exposure. The interest in the region has been confirmed by deals made in the private market:

1. *Southeast Asia's digital economy offers a big addressable market and high growth potential with Indonesia accounts 40% of the region*

The digital economy in Southeast Asia is expected to grow rapidly

Southeast Asia Internet economy GMV, in USD Bn

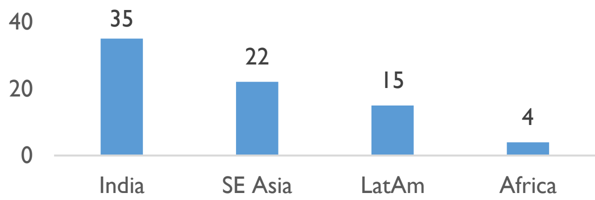


Source: Google, Temasek and Bain, e-Conomy SEA 2021

2. *Southeast Asia tech is the most preferred market after India based on capital invested by venture capitalists*

Southeast Asia market is the next stop after India

Capital invested by region, 2019-1H21 in USD Bn

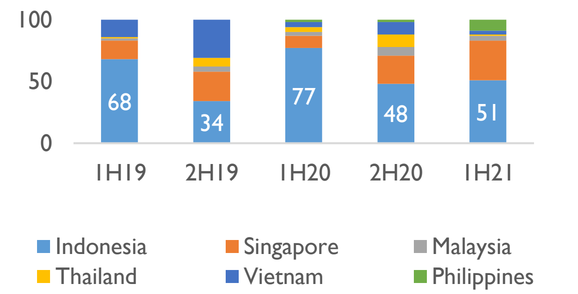


Source: Cento Research

3. *Indonesia has been the center stage of the investment flow of venture capital investment in Southeast Asia*

Indonesia owns the VC flow show

Shares of capital invested by VC based on countries (%)



Source: Cento Research

Our view on the allure of Indonesian tech has pretty much been reflected in the shares of private market capital inflows towards Indonesia tech names. The upcoming IPO of Indonesia's biggest tech ecosystem, GoTo, may showcase the promise of digital economy in Indonesia.

Going forward, more new economy companies will populate the public market, completing the bull market DNA that the market did not possess in the last decade.

The big addressable market, high growth potential, and plentiful problems to be solved are the triple endogenous growth sources that fuel Indonesia's digital economy story. In addition, commodity upswing will supercharge their growth ahead.

Internal reforms to make Indonesia 2.0 story more complete

There is an adage saying that luck is when opportunity meets preparation.

Indonesia 2.0 story is about internal reforms that optimise the impact of the ongoing favourable backdrop, especially the commodity supercycle. This is the second chance for Indonesia to accelerate its economic development after wasting the chance from the previous commodity supercycle.

The previous commodity supercycle was suboptimal because of the premature deindustrialisation

In our observation, premature deindustrialisation prevented Indonesia to take full advantage of the 2000s commodity boom. During that period, the short-sightedness of capital owners hollowed out their investment in manufacturing for producing raw commodities like coal and palm oil.

We think of two main reasons for this shift. First, local manufacturers were facing tight competition from China industrialisation. Meanwhile, raw commodities like coal and palm oil offer quick-easy bucks for investors. As such, these factors disincentivised investments towards manufacturing in favour of commodities. This underinvestment caused Indonesia's economy unable to produce globally competitive products and rely on raw commodities instead.

Based on our study, the premature deindustrialisation in the 2000s blunted Indonesia's competitiveness and set meaningful barriers for the economy to grow. Some of them are:

1. uncompetitive industry because of the underinvestment,
2. structurally weak current account because of the dependency on raw commodity exports and end-product import, and
3. low level of labour productivity because manufacturing jobs that enhance low-skilled workers' productivity were limited

We wrote more detail on the impact of premature deindustrialisation on Indonesia's economy in the appendix.

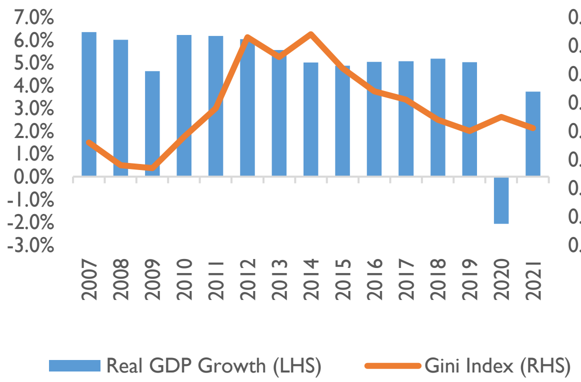
Internal reforms to optimise the windfall of favourable external backdrop

Being close to Indonesia allows us to witness first-hand the reforms addressing many growth limitations. After years of constructive developments, these structural improvements will at the margin add further reasons to expect a stronger and more inclusive economic growth ahead.

The following figures may suggest that the overall GDP impact of the reforms has been marginal. However, improvement in income distribution is apparent. This is reflected in the declining Gini index that represents the income inequality ranging from zero as absolute equality to one as absolute inequality.

Internal reforms have yet to accelerate economic growth but have improved income distribution

Indonesia's real GDP growth rate (LHS) and Gini Index (RHS)



Source: Bloomberg

Gini ratio in Indonesia dived since Jokowi's first elected in 2014. Many of his programs address the equality of economic developments throughout the country. Indonesia is one of the few that sees a narrowing gap between the rich and the poor in the world where this gap is getting wider.

For evaluating the internal reforms of Indonesia, we apply Ray Dalio's framework of the eight determinants of a nation's wealth and power:

1. Education
2. Competitiveness
3. Innovation and technology
4. Economic output
5. Shares of world trade
6. Military strength
7. Markets and Financial center strength
8. Reserve currency status

This assessment does not suggest that we are expecting Indonesia to become a world or regional power in the foreseeable future.

Being in proximity to all these reform processes, we are merely pointing out important changes at the margin that potentially lend a helping hand to the external tailwind. We found promising progress in factors number one to six:

#1 Education

Since 2007, the Indonesian government has spent about 20% of its spending on education budget annually. This reflects their sense of urgency to educate the massive population in seizing the demographic bonus. Accessibility for education has improved as indicated by a 5% increase in school enrollment of the overall population. However, education quality remains an issue.

Within one year, the newly appointed Ministry of Education, Nadiem Makarim, the co-founder of Gojek has started innovative programs that address the challenges of education quality and inclusiveness, and reform the education budget spending. Changes are happening at the margin but are set to deliver a meaningful impact if this reform prevails.

Educating the massive population is paramount to seize demographic bonus

As the fourth most populated country with 270 million people, having a low-quality human capital population can be extremely problematic. Especially when the country's current demographic bonus, whereby the productive age population exceeds the non-productive age population, is about to end in 2037, according to the Bureau of Statistics.

Research conducted by Bloom and Williamson (1998) suggested that demographic bonus has a substantial contribution towards East Asia's economic miracle (China, Hong Kong, Japan, South Korea, Singapore, and Taiwan).

The reason is that those countries had social-economic, political institutions, and policies that allowed them to realise the growth potential provided by the demographic trend. The higher growth of the working-age population compared to the dependent population during 1965-1990 had expanded their per capita productive capacity.

This demographic trend must not be wasted if Indonesia were to accelerate its economic development.

"The secret of all victory lies in the organization of the non-obvious."

- Marcus Aurelius –

Education has been more accessible, but quality remains a problem

Despite the massive budget allocation since 2007, poor quality of education casts shadows on Indonesia's future.

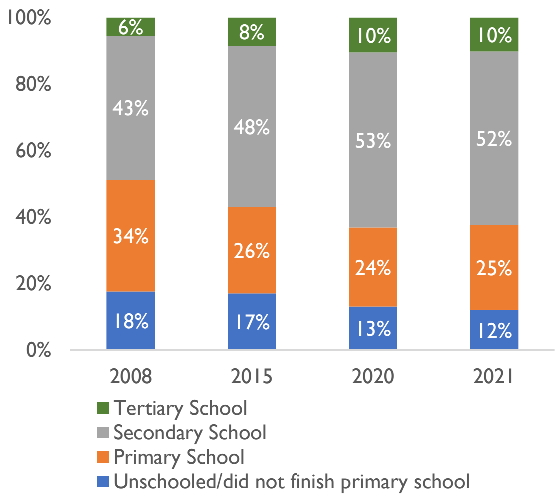
According to the PISA survey that measures the competence of students aged 15 years old in reading, science, and mathematics, Indonesia ranked 74h out of 79 participating countries in 2018. It is also quite puzzling for us not seeing any of the country's top universities be ranked within the world's top 200 universities in the QS rank.

While today's education has been more accessible as indicated by a 5% increase in overall school and higher education enrolment, Indonesia has so far achieved far from satisfactory results. As such, massive upgrading in the learning environment at school is in order if the country wants to be competitive.

The challenge is massive. After all, Indonesia represents the fourth largest education system in the world. The system boasts 3 million teachers, 300,000 schools, and 60 million students.

The improvement in school enrollment, a good start but not enough

Indonesia adult population profile based on education



Source: Bureau of Statistics

Nascent reforms brought by the new Minister of Education

There is light at the end of the tunnel. In 2019, the appointment of the co-founder of Gojek Nadiem Makarim as Education and Culture Minister has elevated hope for the long-awaited sweeping education reform.

In the education field, Nadiem is an outsider, which is probably the best way to introduce a culture of risk-taking into the country's education sector.

Three years on, what Nadiem has achieved is remarkable. Borrowing from the iterative approach in the tech world, Indonesia is doing a trial for its school transformation project in stages. The starting point is modest with 2,500 schools targeted this year, before scaling it up to 10,000 in 2023, and 50,000 schools by the end of Makarim's term in 2024.

GoJek co-founder Nadiem Makarim, Minister of Education, Culture, Tech and Innovation to deal with Indonesia's educational challenges

Image source: Nawacita

Some of the important education reforms that have been executed since Nadiem's arrival in the Ministry of Education include:

1. Using technology to train teachers. His department has launched Guru Penggerak (mover teachers). This is a nine-month training program for selected educators to teach in a personalised manner. They can then go on to train other teachers in their own community.

2. Scrapping Indonesia's high school and middle school national exams. That will be replaced with a national assessment system for schools. Ministry of Education will analyze the data on the cloud to help schools gauge their current performance and determine what can be done to improve.

3. The Merdeka Belajar policy gives teachers the freedom to select parts of the curriculum that suit the competence and interests of their students. His ministry is also creating tools and platforms for teachers to conduct assessments on their students. That will give them the visibility and data needed to determine how to teach more effectively.

4. A grant program, Organisasi Penggerak, to invite non-profits in the education sector to submit proposals for teacher training programs. This creates a "hyper-innovation"

system in which effective proposals are scaled, and non-effective ones are culled.

5. Partnering with local companies and foreign universities to create internship or attachment opportunities for students.

6. Kampus Mengajar program will also send 15,000 university students to remote elementary schools to be teaching assistants. That will help support teachers.

7. Kampus Merdeka, a web-based student-development platform, that facilitates internships, participation in humanitarian projects, research, and mentoring.

Perhaps the question is whether all these efforts can move the needle in the long-awaited education reform? Makarim readily acknowledges that education reform can never be fully achieved during the duration of his political appointment. But he hopes to use tech to get the ball rolling in a way that will make it very hard to reverse.

For channel checking purposes, we spoke to Titian Foundation, an organisation that gives education access to less fortunate kids. Titian is also involved in a teacher training program, and in the past was consistently excluded from a similar program by the government as Titian is very idealistic about this and wanted to do it the right way. Nadiem's era represents a wind of change and Titian is now considered as part of Organisasi Penggerak and receives grants from the government to help execute the teacher training program.

Image Source: Titian Foundation documentation

#2 Competitiveness

Indonesia's economy is getting more cost-competitive than ever.

According to Cushman & Wakefield's manufacturing risk index in 2021, Indonesia is the world's second most cost-competitive manufacturing destination right after China. This assessment evaluates 47 countries' manufacturing labour cost per hour, electricity for industrial use, construction building cost, and registering property cost.

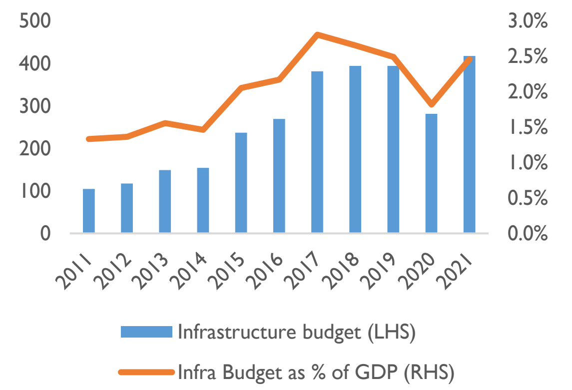
We feel that Indonesia's rising cost competitiveness last year is worth highlighting. Indonesia moved to second place from fifth place by overtaking Malaysia, India, and Vietnam at once.

Based on our study, this accomplishment is a result of policies that took place years ago:

1. **Major infrastructure developments since 2014 helped to improve the efficiency of the economy**

The big bang for Indonesia's infrastructure

Indonesia's government spending for infrastructure in IDR trillion and its relative size to GDP



Source: Indonesia Ministry of Finance

Since first elected in 2014, President Jokowi's administration has spent over USD 165 Bn for infrastructure developments across the countries mainly for transportation, energy, and utilities.

This ramp-up on infrastructure spending made Indonesia's logistics more efficient. Based on The World Bank's logistic performance index, Indonesia's rank has moved from number 53 in 2014 when Jokowi first took the office to 46 in 2018 as the latest available data.

2. **The creation of special economic zones adds cost competitiveness to the designated areas**

To make investments more attractive and a seamless process, the government has designated 18 special economy zones (SEZ) across the country since 2014.

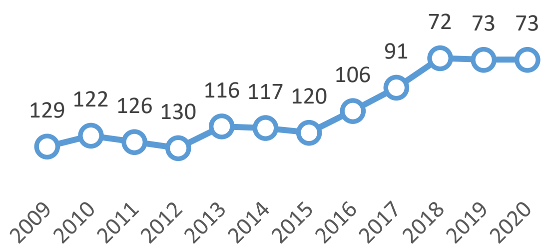
Industries built in these SEZs are receiving fiscal and non-fiscal incentives, including priority support for government services and permission. Such incentives increase the cost competitiveness and substantially cut the cost for permission and legal.

3. **Omnibus Law to solve the pain points of businesses and raise competitiveness**

After years of eliminating red tape and incentivizing more investments in the country, Indonesia has seen its ease of doing business rank rising substantially from 117 in 2014 to 73 in 2020. It is a remarkable progress, but Indonesia's position was still way behind Malaysia and Thailand's 12th and 21st position, respectively, in 2020.

It is getting easy to do business in Indonesia

Indonesia's ease of doing business rank



Source: World Bank

Last year, the government made another breakthrough by ratifying the Omnibus Law, a comprehensive law governing various sectors, aiming to boost investment in Indonesia by addressing the pain points of conducting business in Indonesia and setting up incentives for new investments.

The extent of this law amendment is unprecedented in the country's legal history. Omnibus law amends 76 laws across a wide range of sectors and industries and 49 government implementing regulations into a single legal instrument. Many of these laws were enacted in February 2021, so their impacts are yet to be seen in the statistics.

The notable changes from Omnibus Law include: (1) more business-friendly labour law by lowering minimum wage escalation and severance pay, (2) improvement in ease of doing business from red tape elimination and regulation overhaul, (3) providing investment incentives in form of tax incentives and free land lease in a government-owned industrial estate, (4) lower corporate income tax rates from 25% to 20%, and (5) removing some industries from the negative investment lists.

When they turn a golf course into a hospital, we know that they mean business

Photo source: trip advisor

A case in point is how the recent Omnibus Law deregulation has enabled foreign hospital investments in Indonesia, seen in the partnership with Mayo Clinic USA in the Bali International Hospital project. For the first time, foreign doctors can practise in Indonesia.

This deregulation also means that local healthcare providers are about to face meaningful competition from new entrants in the spectrum of quality. As such, the incumbents must improve themselves to remain relevant.

The fact that the Singapore Medical Tourism Association mentioned about 250 thousand Indonesians visit Singapore for their healthcare and spend hundreds of millions of dollars annually describes much about the quality of Indonesia's healthcare today. The economics of competition would suggest that things are about to change.

Indonesia healthcare: under a new management

Photo of Budi Gunadi Sadikin

Source: Wikipedia

Different from many of his predecessors, the Ministry of Health Budi Gunadi Sadikin is not a doctor by educational background. Instead, he is well-known as a heavy-caliber banker with experience in managing one of Indonesia's biggest banks, Bank Mandiri. Just like Nadiem, he is a complete outsider, allowing significant changes to occur.

During the COVID-19 pandemic, Budi and his team have proved their managerial skill in orchestrating the availability of healthcare infrastructure and supply chain for national vaccination.

Combined with Jokowi's diplomatic prowess in securing vaccine supply from the West and the East, Indonesia achieved a 69% vaccination rate, the 20th highest rank in the world according to Our World in Data.

Last but not least, the unique approach to improve healthcare quality by a market mechanism through investment deregulation in the hospital sector is likely initiated by this new healthcare manager.

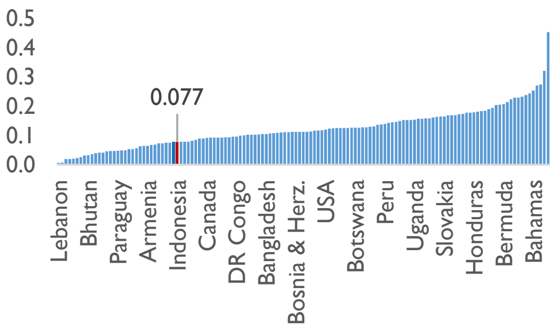
4. **Capped energy cost makes Indonesia manufacturers cost-competitive, especially during the global energy crisis**

The Indonesian government has capped coal prices for power plants and natural gas prices for seven selected industries.

Local coal producers are mandated to sell their product at USD 70 per ton with reference to a similar specification of Newcastle's coal for the local power plants. In Indonesia, coal accounts for 38% of the energy mix in 2021. With such a portion, Indonesia's energy could remain affordable and resilient because the coal is sourced domestically. As of June 2021, Indonesia's business electricity price ranked in the 1st lowest quartile in the world.

Indonesia's business electricity cost ranked the 1st lowest quartile in the world

Business electricity prices as of June 2021(in USD/kWh)



Source: Global Petrol Prices

Natural gas price is capped at USD 6 per MMBTU for the following sectors: (1) fertilizers, (2) petrochemical, (3) oleochemical, (4) steel, (5) ceramics, (6) glass, and (7) rubber gloves. This gas price facility is in discussion to be expanded for another thirteen industries.

These caps of hydrocarbon fuels help to control the cost nationally and make local manufacturers more competitive, especially during the soaring energy prices.

On 3rd of March 2022, Newcastle coal traded over USD 440 per ton while gas prices in Europe and Asia hovered around USD 40 and 50 per MMBtu. Thanks to this regulation, Indonesian manufacturers avoid the pain of the high energy prices globally.

#3 Innovation and technology

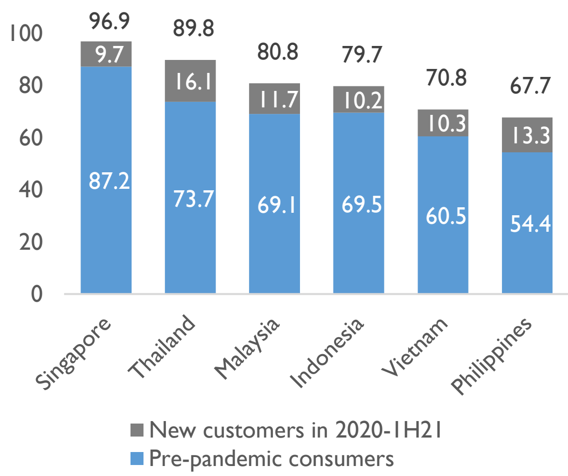
The presence of local techpreneurs has reshaped Indonesia in the last decade.

Indonesia is not known for producing tech products. However, it is a fertile ground for technology to make a meaningful impact because of its huge growing market and numerous problems to be addressed. Most techpreneurs in Indonesia innovate by applying technology to solve the pain points of the local economy. So far, it has created substantial businesses.

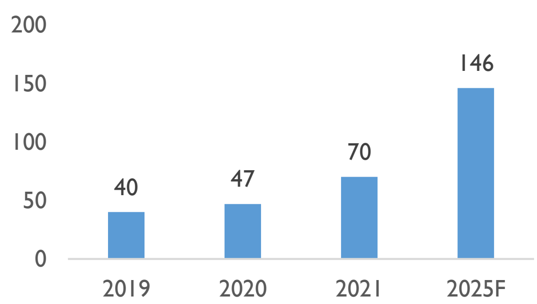
In the last two years, we witnessed the digital economy expand tremendously as the pandemic drives society to procure their needs from online platforms. This trend is reflected in Google, Bain, and Temasek research:

Covid-19 pandemic accelerates digital service adoption

Digital service penetration rate in ASEAN (%)



Indonesia digital economy GMV in USD Bn



Source: Google, Bain, and Temasek

We think the mass adoption of the digital economy will play an important role in distributing the current commodity boom tailwind to the grassroots. It is possible because the nature of this technology promotes market inclusivity.

The mass adoption of e-commerce, ride-hailing, and social media made the national consumer market inclusive. These platforms connect merchants with the nationwide market, cut the distribution layer, and provide an affordable alternative to do commerce.

On the other hand, fintech has made financial services more convenient and accessible. Recently, digital banks that harness the power of machine learning or artificial intelligence have emerged in Indonesia. They can cater the long-tailed market and acquire users at record speed. Because of this, we expect them to deepen Indonesia's financial market in years to come.

The inclusiveness in the consumer market makes more participants in the economy to be able to enjoy the upcoming vigorous consumer spending. Better access to investment products allows people to benefit more from their capital. Financial inclusion enhances the spending from the middle-lower income and the expansion of small businesses. All in all, we think digital technology adoption propels more economic growth and its inclusivity.

The following is our further elaboration on how the digital economy distributes the economic pie:

E-commerce to empower the grassroots

Our view on e-commerce and social commerce's role in distributing the economic pie is based on the idea that most merchants in this space are micro, medium, and small enterprises (MSMEs).

90% of more than 11 million Tokopedia merchants belong in this category according to the company's statement. We see this statistic as representative because Tokopedia and its nearest competitors Shopee governed about 80% of e-commerce GMV and they are operating with a similar marketplace model.

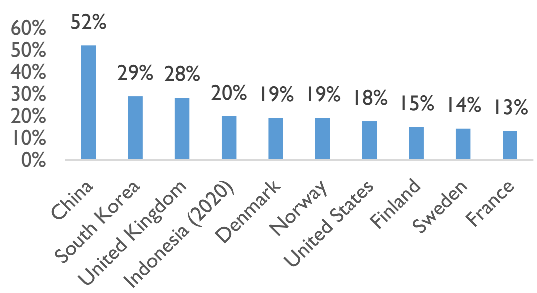
This means that the amount spent on their platform is likely flowing into the pockets of MSMEs. The subject is worth highlighting, MSMEs accounted for almost 97% of Indonesia's labour force in 2019. With their relatively simple operation, they are absorbing numerous unskilled labour force. There is no equitable economic growth story without prosperous MSMEs.

Furthermore, e-commerce has been deeply ingrained into the economy. According to Momentum Works, Indonesia's e-commerce share on national retail sales has risen from 2% to 20% from 2016 to 2020. This share was among the highest globally.

Citing the data from the e-Conomy Sea 2021 report, the 20% e-commerce GMV share to national retail sales was equal to USD 35 Bn worth of consumer spending. The pandemic swells this number further to USD 53 Bn, a 51% increase last year. Better yet, the commodity supercycle is about to supercharge this figure.

Indonesia's e-commerce penetration is among the highest globally

Shares of e-commerce sales to national retail sales 2021



Source: eMarketer, Momentum Works

Based on these settings, we believe that the grassroots will enjoy the windfall from the current commodity supercycle with e-commerce becoming a pipeline that distributes the bonanza. Compared to the previous commodity boom, only few can enjoy this luxury, i.e – big corporates.

Fintechs are on the way to bring financial inclusivity

Financial inclusion is an important economic driver. For savers, access to financial investments improves welfare because they can receive a return on their capital. This capital accumulation becomes the source of future economic growth. The excess capital will finance investments that generate a higher return than the cost of fund. In turn, these activities will create jobs and economic value added.

The more inclusive a financial market is, the bigger this virtuous cycle can be.

In our Q4 2017 report (link), we covered the early days of fintech in Indonesia and compared it to China. We foresee fintech 1.0, an internet-driven fintech, as a prelude to a bigger financial market transformation. It introduces the concept of online services and starts the shift into a market-driven financial institution from a bank-centric structure.

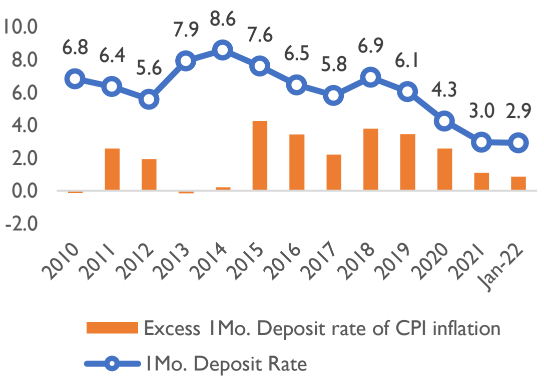
Online user experience and automated process are two main ingredients that enable fintech to be scalable swiftly. In the last two years, we saw the rise of online investment platforms and digital banks. The former allows more people to benefit from financial market appreciation. The latter will deepen the financial market like never before. Below is our observation:

1. **Online investment platforms rise to prominence**

   During the pandemic, we saw an uptick in the adoption of fintech 1.0 in the investment verticals. Online investment platforms came into prominence as many people seek extra money from their capital. Especially when many people are becoming unsatisfied with savings returns offered by the banks. Gone are the days of sitting the money at the bank.

Saving in the bank is no longer fun

Indonesia commercial bank one-month time deposit rate (per annum, %)



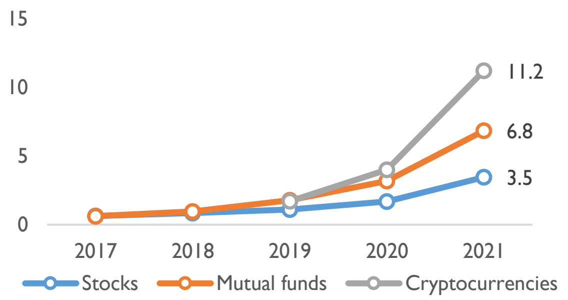
Source: Bank Indonesia

The higher adoption of online investment platforms translated into the rising numbers of individuals who own stocks, mutual funds, and cryptocurrencies.

Cryptocurrencies' interest in Indonesia is worth noting. After being legalised in 2019, its number of investors exceeded stocks and mutual funds within two years. It took decades for stocks and mutual funds investors number to achieve this level. We wrote more about cryptocurrencies and digital assets in our Q1 2021 special report (link).

Venturing towards non-bank financial products

No. of individual investors in stocks, mutual funds, and cryptocurrencies (in million)



Source: BAPPEBTI and KSEI

We also like to highlight that this venture towards non-bank investments products is dominated by tech-savvy millennials. Based on regulator publications, about 55% of stock investors are aged 30 years old or younger and 66% of crypto investors in Indonesia are younger than 35 years old.

According to our estimate, the stellar uptick in investors of stocks, mutual funds, and cryptocurrencies led their penetration rate to 1.7%, 3.3%, and 5.5% of the adult population respectively. These numbers are still way below China's and the US's stock investor penetration of 12% and 19% rate in 2020, respectively. Meaning Indonesia's fintech still has a long way to go.

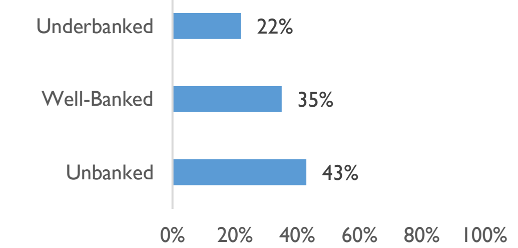
We provide a mapping of the most used investment platforms in the appendix.

2. Enter the digital banks to deepen the financial market

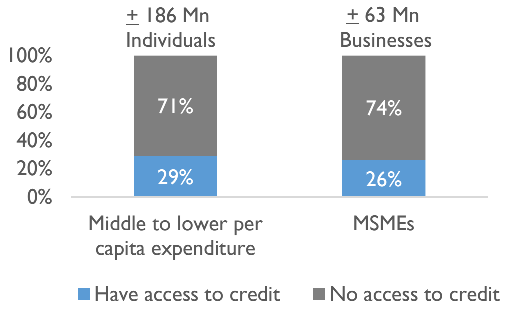
Fintech 1.0 made investment products within reach by many people. However, little had been done to improve the financial inclusion deepening in the country. This is where digital banks will play their role.

The majority part of Indonesia's economy is still unable to access basic financial services

Indonesia banking demographic 2021
% of 163 mn adult population



Access to credit for working age middle to lower individuals and MSMEs
By percentage, 2018



Source: Central Bureau of Statistics, Ministry of Cooperative and MSMEs, Central Bank of Indonesia, World Bank

We foresee Fintech 2.0 in form of digital banks potentially taking financial inclusion to another level. This new breed amplifies automation and integrates machine learning (ML) or artificial intelligence (AI) in the value creation process. As such, these companies will be more computing-power intensive with the people in fintech 2.0 companies focusing on building 'machines' that create values automatically and perpetually.

The technologies applied by Fintech 2.0 compliments the lacking capabilities of Fintech 1.0 to serve the long-tail part of the financial market in these areas:

1. the incompatibility of economics whereby the size of loan (and or the maturity) or asset tends to be too insignificant to be served in an economic manner; or
2. the inability to measure the risk profile of the creditor

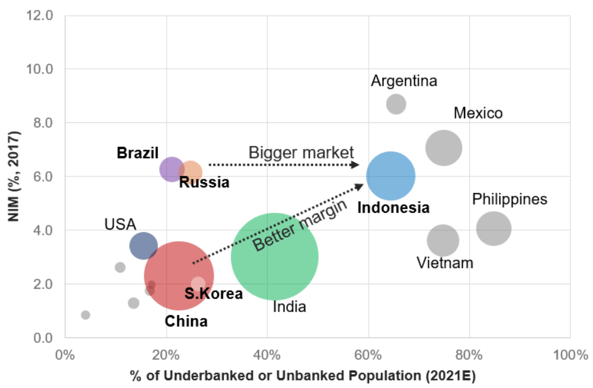
With the ability to serve customers at very low marginal cost through full-automation, asset-light operation, alongside a progressive approach of managing risk (leveraging on alternative data sets analytics), a truly digital bank is well-designed to improve financial service penetration by catering the long-tailed market.

In Indonesia, it is clear that the digital banking scene is heating up as the theme stole the spotlight last year.

There are about 14 digital banks either up and running or pending to be launched with tech ecosystem players, conglomerates, and incumbent banks developing their own version. Their participation affirms how solid and seductive the story of serving the underbanked or unbanked. The following graph illustrates how attractive Indonesia's unbanked story is:

Big market and thick margin make Indonesia's digital bank story attractive

Banks Net Interest Margin and Underbanked or Unbanked population

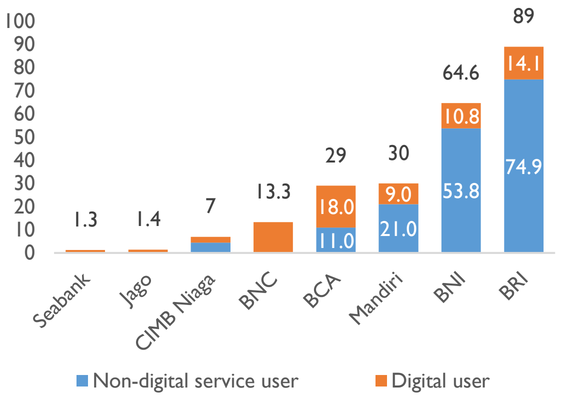


Source: World Bank, IMF

Such a force to change encourages aggressive penetration towards the apparent target for customer acquisitions, the unbanked as the general theme. This implies a positive contribution to domestic financial inclusion which we see as a crucial driver to uplift Indonesia.

Record-speed user acquisition

Indonesia digital banks and top traditional banks registered users as of December 2021



Note: Seabank's registered user is assumed 60% of December cumulative download

Source: Company filings and Heyokha estimate

Within one year, Bank Neo Commerce or BNC (BBYB IJ), Bank Jago (ARTO IJ), Seabank, and Blu by BCA can acquire customers that are worth decades of effort for the traditional banks. Among the leading digital banks, BNC is the most exceptional in acquiring users. BNC manages to surpass CIMB Niaga, Bank Negara Indonesia, and Bank Mandiri's digital user base despite their decades of a head start.

The following explains how digital banks products strung the right pitch in the consumer minds:

(1) Solid economic value proposition

The leading digital banks offer generous savings rates and deposit rates compared to the incumbent traditional banks'. They do not charge monthly fees and interbank transfer fees. This compares to about USD 1 monthly charge and about USD 0.2 interbank transfer fees by the incumbents.

On top of that, BNC and Seabank pay daily interest on customers' savings.

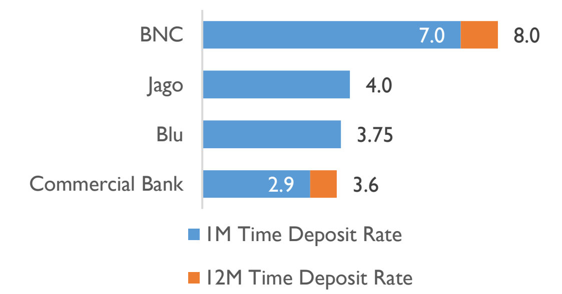
Digital banks pass on their cost advantage to their customers. For the grassroots and their small ticket size savings, the economics of digital banks allows them to enjoy a substantial return on their savings without worrying about their savings being diluted by fees. For existing bank users, this can be seen as a liberation from a banking system that charges steep fees, pays practically nothing for their savings, and archaic banking applications.

To afford such costs on third-party funds, most digital banks are targeting high yield clients with a 15% to 40% effective rate per annum. This has resulted in the gradual expansion of digital banks' net interest margin as they transform the legacy loan book.

Readers should note, Indonesian digital banks are taken over by small conventional banks transformed in 2021.

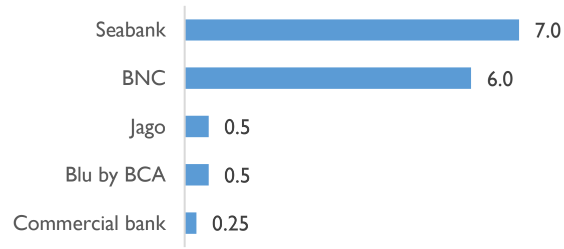
New shelter for lazy money

Deposit rate comparison (% gross, p.a.)

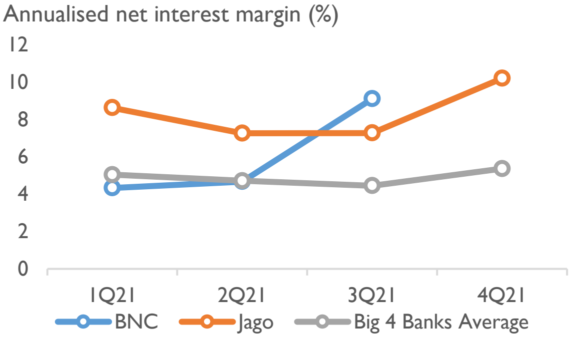


Note: BNC offers the shortest time deposit of 7 Days with 6.5% p.a., Jago's shortest time deposit rate is 14 days, and Blu's time deposit rate range from 3.5% to 4% p.a. depending on the size.

Savings rate comparison (% gross, p.a.)



Note: Seabank and BNC interests are paid daily. Commercial bank's saving rate is the average of Indonesia's big four commercial banks' rates for saving below IDR 50 mn.



Note: The numbers are according to their latest available figures, Indonesia big four bank: Bank Rakyat Indonesia (BBRI IJ), Bank Mandiri (BMRI IJ), Bank Central Asia (BBCA IJ), and Bank Negara Indonesia (BBNI IJ). Source: Bank Indonesia, Company filings, Bloomberg

(2) A more convenient and fun way to do banking

Besides offering a strong economic proposition, the challenger banks also offer a more convenient way to do banking. Based on our own experience, the user experience and user interface of challenger digital banks made the incumbents' banking apps archaic.

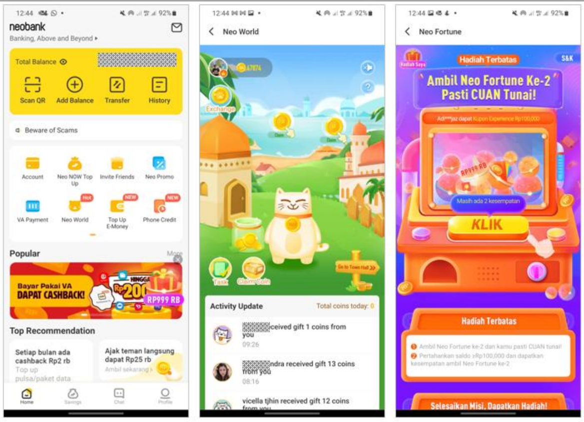
For instance, BNC was the first bank that introduce digital e-KYC (electronic Know-your-customer) by selfie and made the whole onboarding process take less than 5 minutes. Recently, other competitors who required video call KYC enabled their selfie e-KYC. This way is more convenient than having to come to the branch for account opening.

Combined with an intuitive user interface, smooth performance of the app, gamification, and USD 2 per user referral code, it is no wonder to see BNC becomes the leading digital bank in terms of user base.

We conclude that digital banks are successful in acquiring users because they give people what they want.

Our findings are in-line with Bernstein's survey in 2021. 72% of 630 respondents ranked zero fees or higher interest rates to be the first consideration for a digital bank account.

The study also suggested that the respondents had high interest toward digital banks. 71% of respondents were interested to open a digital bank account and 5.8% were willing to shift more than 50% of their money to digital bank account.



BNC's Neobank App reflects their digital capabilities

Based on our experience, BNC stands out among its competitors. It offers a fun and intuitive user interface with smooth performance. BNC is the only one using gamification for nurturing customer loyalty. This has resulted in the highest average daily time spent by users among digital banks of 7-10 minutes. The nearest competitor is only able to attain about 50% to 70% stickiness of BNC App according to App Annie data.

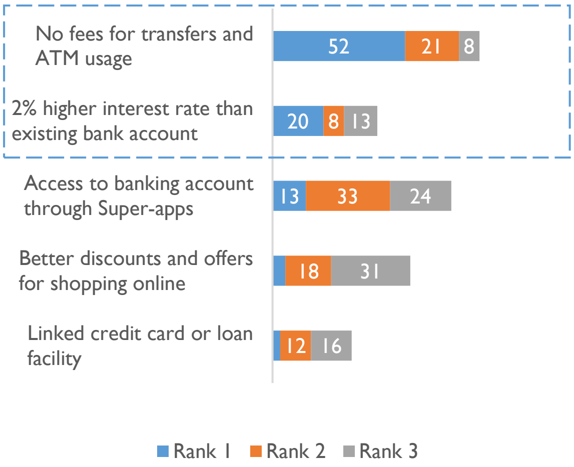
Furthermore, the app has built-in instant messaging, virtual-account products that bypass transaction costs, and other interesting features. BNC is also the first bank that offers digital lending. All of these reflect the management's digital mindset and capability.

Given their business model, digital capabilities and record-pace customer acquisitions, we think digital banks will deliver an ultimate blow to financial exclusivity in Indonesia.

We provide more elaboration on digital banks' potential and the early days of Indonesia Web 3.0 in our appendix.

No fees and higher interest rates are the offers one cannot refuse

Survey question: What features would you like in a digital bank account (Rank Top 3)? (% of respondents)



Note: this survey has over 630 respondents focused on the mass-market segments. 79.5% of the respondents have an income ranging from IDR 3 to 10 million with varieties of occupation. Most respondents come from the top 10 biggest cities in Indonesia, about 32% of which are from Jakarta.

Source: Bernstein (2021)

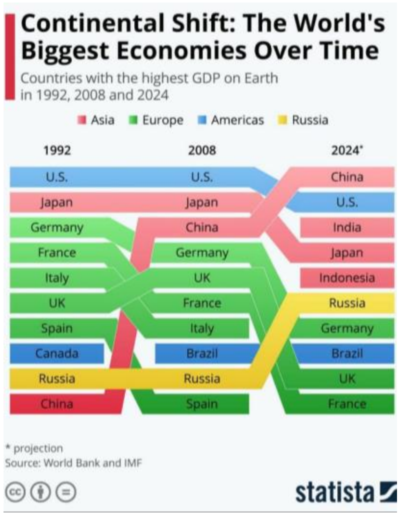
#4 Economic Output

Back in 2020, the IMF estimated that Indonesia will become the world's fifth-biggest economy alongside several Asian countries in 2024.

Expansion of labour force and the burgeoning middle class in Asia are among the main driver of this continental shift in GDP. The report also mentioned the Asian rise to dominance is also accompanied by the unfavourable aging demographic trends in the currently dominating economies.

Recently, the IMF estimated Indonesia's nominal GDP will swell by 30% to USD 1.48 Tn in 2024. This growth implies about 6% real GDP growth and a 3% inflation rate. This puts Indonesia's economy to be the 7th biggest in terms of GDP measured in current price purchasing power parity.

Indonesia is expected to be a global economic powerhouse in 2024

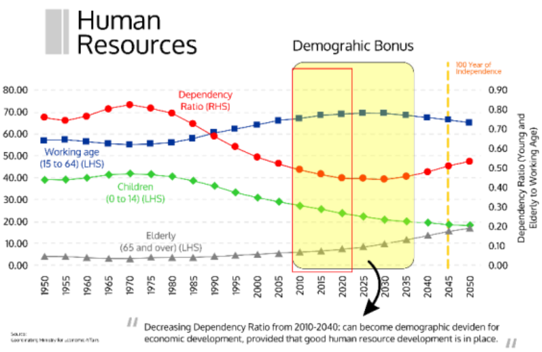


Source: Statista

We expect Indonesia's economic output to swell and its development to be more equal because of the following:

1. **Indonesia has a favourable demographic trend whereby the productive population is expanding and dominating the population. This will result in rising population productivity and strengthen household consumption**

Forecast of Indonesia demographic trend



Source: Coordinating ministry of economic affairs

Indonesia metals powerhouse

The map of smelters construction in Indonesia

Source: Ministry of Energy and Resources

2. **The government has been pushing for downstream industrialisation**

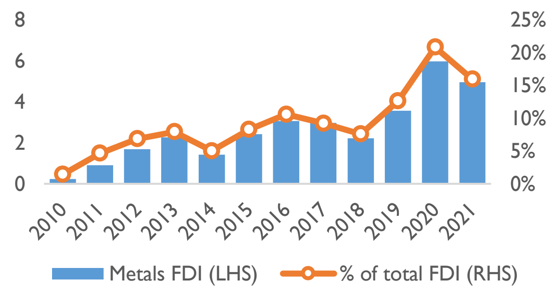
During the previous two commodity booms in the 1970s and 2000s, wealth creation was suboptimal for Indonesia because the industry was predominantly extractive in the sense that most products were raw materials or have minimum value-added. This feature is about to change as the government has pushed for downstream industrialisation, particularly in metals and minerals.

With this upgrade, Indonesia should be able to capture a broader scope in the value chain. Economic growth will be higher because of the higher value-added. More than that, these commodity downstream industrialisations are improving the income distribution as they are happening in the rural areas that have been less developed.

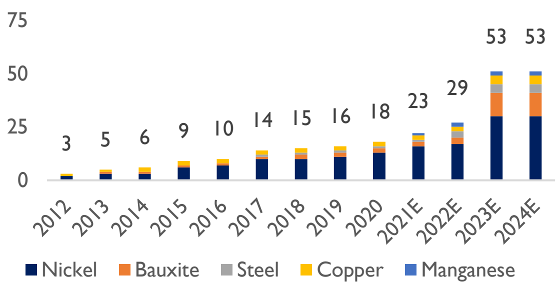
Starting with painful export control, investments and incentives regulation overhaul, and proactive efforts to attract investors, IMIP has evolved to be a prominent metal manufacturing powerhouse in Indonesia. Below are our findings in this matter:

- From 2014 to 2021, there was USD 26.5 Bn worth of FDI in the metals industry, equal to 11% of total FDI in the respective period. This capital flow has materialised into the expansion of metal smelters.

Indonesia metals industry FDI
(in USD bn)



Number of smelters existed and being built in Indonesia



Source: Ministry of Investment and Ministry of Energy

- The metal industry now contributes about 6.2% of total GDP from nothing in 2010, said the Deputy of Investment and Mining Coordination to the Coordinating Minister for Maritime Affairs and Investment of the Republic of Indonesia, Septian Hario Seto, during a discussion with the Heyokha team. Most of this result is attributed to the Morowali Industrial Estate (IMIP) which houses lots of nickel and stainless-steel projects.

- The value-added from this downstream industrialisation is amazing. Seto illustrates that selling bauxite after processing it into alumina (intermediate goods of aluminium) will enable the economy to extract five times the value out of the same amount of bauxite. Replicate these projects across the country then we will see remarkable results.

- Seto mentioned the government sees the downstream industry to enable Indonesia to achieve about USD 10k GDP per capita in the next decade, about 2.3 times of 2021 figures. However, he stated that this must be supported by improvements in labour productivity, R&D, infrastructure, tech, and favourable investment climate.

  Based on our back-calculation that assumes a 3% inflation rate and 1% population growth rate, that estimate implies a 7.15% real GDP growth CAGR for the next decade. ***This 1.15% higher economic growth than IMF's forecast can be seen as the marginal impact of the downstream industrialisation projects.***

3. IMIP and IWIP are proof-of-concepts where industrialisation improved local economies significantly

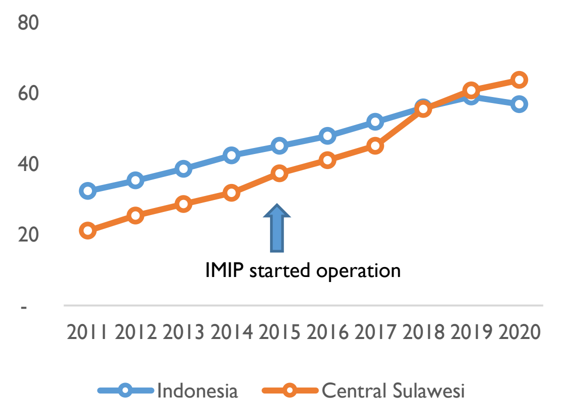
So far, Indonesia economic activities have been centralised in Java. Ministry of National Development Planning estimated that 56% of the population and 59% of Indonesia GDP resides in Java Island.

The industrialisation in rural and resource rich areas will substantially improve the equality of Indonesia economic development. This will be the case for Sulawesi and Kalimantan which host most of the metals industrialisation projects. The two regions contributed 14% of Indonesia's GDP in 2020.

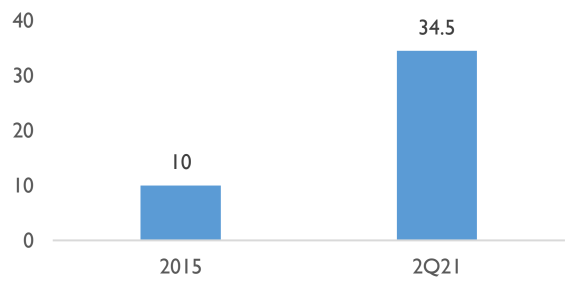
Central Sulawesi province where Indonesia Morowali Industrial Park (IMIP) and North Moluccas province where Weda Bay Industrial Park (IWIP) recently began its operation are showing major economic transformations as foreign direct investments flow to industrialise base metals processing, predominantly in nickel. Its replicability and scalability make industrialisation play to be a potential game changer for the country.

Central Sulawesi saw its GDP per capita surpass Indonesia's average three years after IMIP operates

GDP per capita at current prices, IDR mn



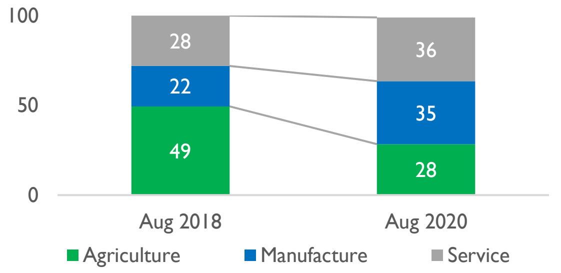
Manufacturing contribution to regional GDP (%)



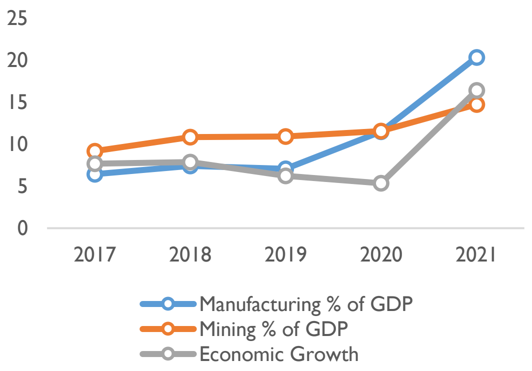
Source: Bureau of statistics

IWIP has started to transform North Moluccas economy after 4.4 Bn FDI from 2017 to 1H21 started operation in 2021

Labour shares based on industries in North Moluccas (%)



Regional GDP growth, Manufaturing and Mining contribution to local GDP (%)



Source: Ministry of Investment and Bureau of Statistics

4. **Even bigger projects are being built with investment potential five times of IMIP**

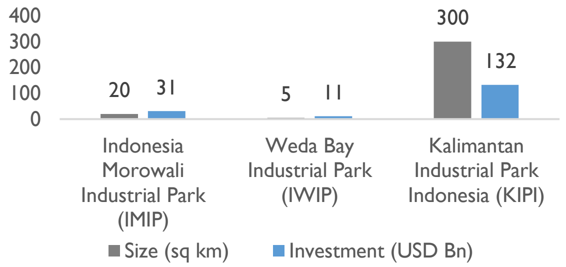
After numerous private investments in nickel pig iron, carbon steel, and stainless steel, the Government of Indonesia is expanding the industrialisation scope to other verticals. The EV battery industry is a case in point. Other related industries include petrochemicals, other metals refineries, and polysilicon in both existing industrial estates, and the new Kalimantan Industrial Park Indonesia (KIPI).

The sheer size of KIPI will turn the achievements of the existing commodity industrial estates of Morowali (Central Sulawesi), Weda Bay (North Moluccas) to be a mere proof of concept. The following describes the sheer size of KIPI.

KIPI will include renewables into the energy mix for supporting the green industry like EV batteries. The new and green industrial park will be built in two phases. The first phase will open a 16.4k ha area and expandable up to 30k ha in phase two. It will also house USD 132bn worth of investments. The project construction and operation are estimated to employ 100k and 60k people, respectively

Potential investments and size of KIPI will outsize its predecessors, big time

Comparison of IMIP, IWIP, and KIPI size (sq km) and investment capacity (USD Bn)



*) IMIP and IWIP investment figure is the last-known investment plan as of 2021

**) KIPI investment figure is the potential investment up to 2029F

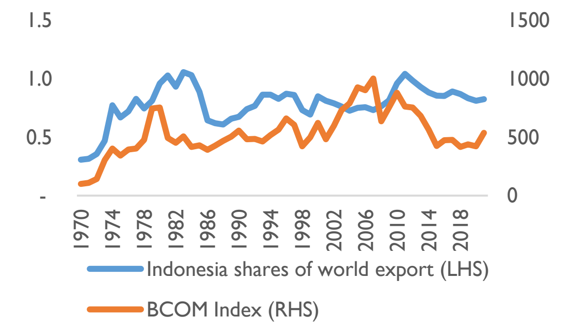
Source: Government of Indonesia, various sources

Provided with the government's solid track record in developing IMIP and other industrial parks, we believe that the KIPI project is likely to be successful.

#5 Shares of the world trade

From the historical perspective, Indonesia's shares of world trade are determined by commodity prices.

Indonesia shares of world export (%) versus Bloomberg Commodity Index (31/12/1970 = 100)

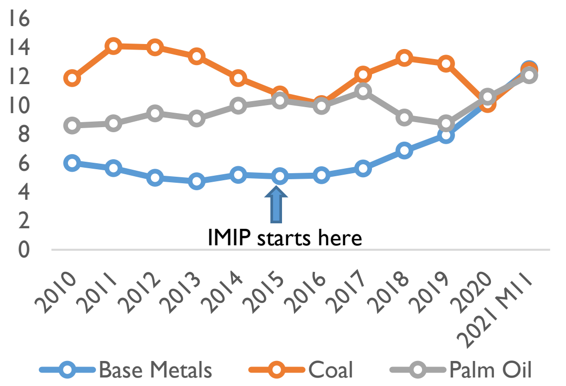


Source: Bloomberg

Industrialisation projects are going to improve Indonesia's share in global trade. For instance, base metals production expansion has made Indonesia among the world's largest metals exporters today. Other projects should deliver a similar impact.

Base metals are Indonesia's new export champions

Indonesia's top three commodities share of goods export (%)



Source: Bureau of Statistics

Global iron and steel top exporters ranks

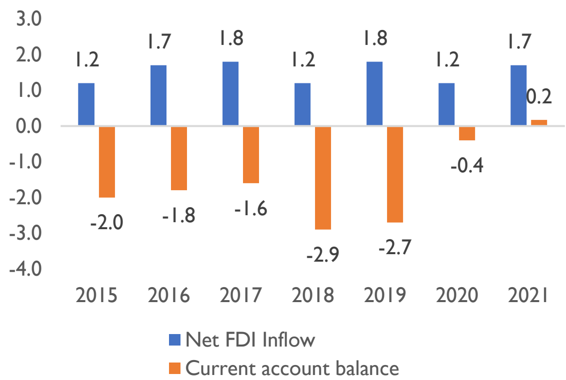
#	2018	2019	2020	2021M10
1	China	China	China	China
2	Japan	Japan	Japan	Japan
3	Germany	Germany	Germany	Germany
4	S. Korea	S. Korea	S. Korea	Russia
5	Russia	Russia	Russia	S. Korea
6	Belgium	Belgium	Belgium	Indonesia
7	USA	USA	USA	USA
8	France	France	Italy	Belgium
9	Italy	Italy	Indonesia	France
10	Netherlands	Netherlands	France	Italy
11	Brazil	Brazil	India	Turkey
12	Turkey	Turkey	Netherlands	Netherlands
13	Taiwan	India	Turkey	Brazil
14	India	Taiwan	Brazil	Taiwan
15	Ukraine	Ukraine	Ukraine	Spain
16	Spain	Spain	Taiwan	Canada
17	Austria	Indonesia	Spain	UK
18	Ukraine	Austria	Austria	Austria
19	Canada	UK	Sweden	Sweden
20	Sweden	Sweden	UK	Poland

Source: Government of Indonesia

Besides improving economic productivity, the advent of the metals industry in Indonesia makes the economic structure to be less reliant on raw commodities and strengthens the rupiah. The structural improvements in the current account may signal the increased competitiveness of Indonesia's economy.

Industrialisation projects have been stabilising the rupiah

Net FDI inflow and current account balance as % of GDP



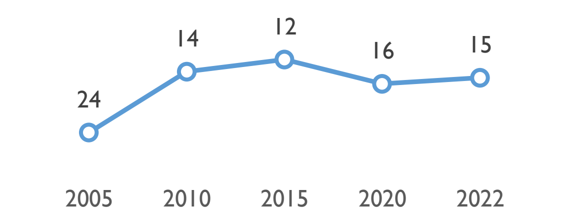
Source: Government of Indonesia and Bureau of Statistics

#6 Military Strength

Indonesia's military ranks as the 15th most powerful in the recently released Global Firepower annual defence review of 140 countries. To put it into context, this position outranked Germany, Australia, Israel, Spain, and Saudi Arabia who were placed in the next ranks after Indonesia.

Indonesia's military power has risen coincidentally with the commodity boom and is in line with its economic development trajectory. With political tension heating up among superpowers, this would help Indonesia maintain its sovereignty, neutral political stance, and secure a vast amount of valuable resources.

Indonesia's military strength ranking – out of 140 countries



Source: Global Firepower

Indonesia is resilient to face a food security risk

During the 13th National Committee of the Chinese People's Political Consultative Conference on 7 March 2022, China President Xi Jinping underscored the importance of food security and ordered greater self-reliance of its production. Below was his speech as quoted by South China Morning Post:

"Vigilance in food security must not slacken, we must not think that food ceases being an issue after industrialisation, and we cannot count on international supplies to solve the problem... We must plan ahead by adhering to the principles of domestic production and self-reliance while ensuring an appropriate level of imports and technology-backed development... the rice bowls of the Chinese people are filled with Chinese grain"

There is no smoke without fire. The mounting food security risk is visible with the spreading food protectionism measures. China, Russia, Ukraine, Algeria, Hungary, Moldova, Turkey, Egypt, Serbia, and Indonesia are growing list of countries that curbs food or fertiliser export.

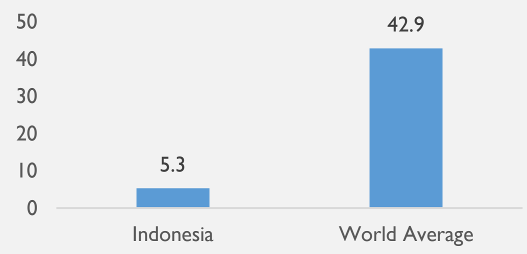
Indonesia has adequate resiliency in the mounting food insecurity globally. According to The Economist's research on the food security index 2021, Indonesia ranked 37th of 113 countries globally in terms of the availability of food supply. Ample land for production, low volatility of production, and strong food security policies and agency are reasons why Indonesia fared well on this matter.

Furthermore, Indonesia's food security is the world's 24th country with the highest improvement between 2012 to 2021. Based on our past on-the-ground observation, infrastructures development and strengthening of food security policies and agencies are the reasons for the improvement. We discussed more detail on the infrastructure development in our Q1 2019 report (link).

We think that Indonesia's resiliency in food security is pretty much reflected in the marginal food cost increase relative to the global average in 2010-2021.

Changes in average food cost

% of changes in Food CPI from 2010 to 2021



Source: Global Food Security Index (2021)

In the case of the world is prioritising its own food supply, Indonesia will be one of the least countries to be affected in our view.

Conclusion

We are optimistic with Indonesia by seeing how the stars are aligned for the country to outperform.

Indonesia is a natural beneficiary of the ongoing backdrop, namely: (1) commodity supercycle, (2) escalating cold tensions among global superpowers, (3) the rotation to value, and (4) investors pivoting to other markets after China's tech crackdown.

Seeing the reforms happening in the country that is our home-turf, made us believe that the economy is more ready this time to optimally seize the opportunity brought by those trends. Supportive regulatory reform, manufacturing capability upgrades through FDI in downstream projects, adoption of digital technology are the major upgrades in the economy.

This combination is expected to lead Indonesia to achieve strong and equitable economic growth ahead. We believe that the developments we see today only scratched the surface of what we foresee as evolutionary that will redefine Indonesia.

Enjoy reading our reports?

Checkout our website for more!

- The End-

------------- Appendix I -------------

ESG and vanishing fossil fuels

We find no best way to describe the movie "Don't Look Up" but to quote a meme: "(the movie) exposes the fact that power structures silence people who don't fit the mainstream narrative."

Image source: Netflix

In describing a contemporary event whereby there is clearly a huge gap between global oil demand and the level of capital spending by super-major oil companies, we opted to use an analogy from the movie "Don't Look Up" that was released in Dec 2021.

The film features a tale of two American astronomers who discovered that a humongous comet would hit and bring the end of planet earth in just 6 months. Unfortunately, their warnings met doubt and distrust from the media, general public, and politicians. This is despite the fact that the two astronomers manage to gain an audience with the US President, land on TV talk shows, and have their stories printed in the media. Everyone seems to have other priorities.

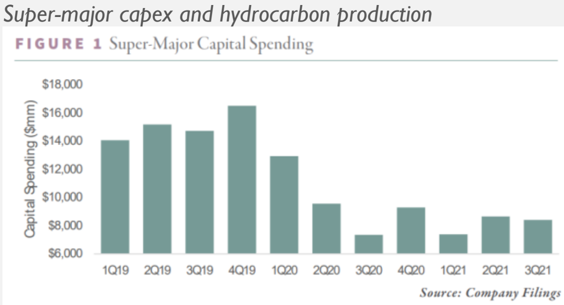
While this satire is a horrifying story of lies, oppression, and deceit, it is also delivered in a playful and even hilariously funny way. However, the message here is dead serious. That an event that is as consequential as a comet that will wipe out mankind in just 6 months can be met with indifference, thanks to the twisted priorities and agendas of the people who have the largest control over our lives.

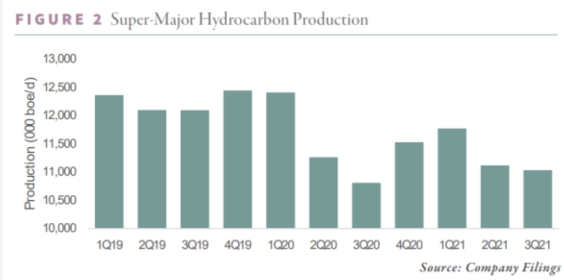
For the politicians, something that will increase their popularity could be more important than even saving mankind. The media cares more about finding something defamatory on a person, talk shows are often about sensationalism, and corporate CEOs about making money out of an event.

The same phenomenon is probably happening in the energy market at the moment. No one seems to care about the problem with the oil super-majors. While it is clear that they are unable to replace production with new reserves and also increasingly apparent that the production of oil and gas will significantly disappoint in the coming years, pressures by various ESG groups are increasing fast.

The vanishing fossil fuel

Super-major capex and hydrocarbon production





Source: Goehring & Rozencwajg

Meanwhile, it is worth noting that IEA has been consistently underestimating oil demand, especially in the Emerging Markets. The amount of underestimation over the past 15 years is a staggering 2.9bn barrels. To put it into context, this is equivalent to five times US Strategic Oil Reserves of 585mn barrels. IEA has also revised up its 2022 forecast by 0.9m to a record 100.6m b/d.

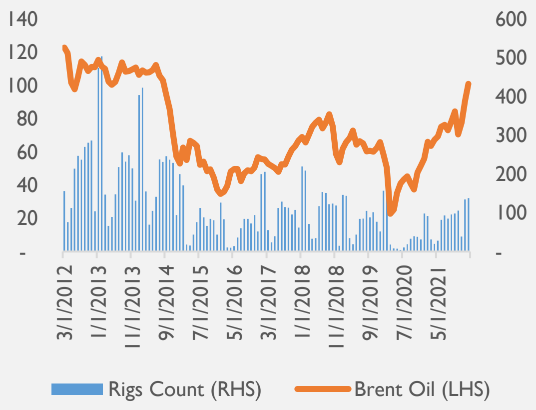
In terms of the exploration budget, even now with oil prices already rebounding, the energy upstream capital expenditure is still well below the pre-covid era. This has resulted in significant pressure on oil and gas production from the super-majors.

Talking about twisted priorities, *Don't Look Up*- style, it is also worth noting that even with the brutal reality of oil supply-demand imbalance, institutions from media to politicians to central bankers are jumping into the green bandwagon. After all, who could possibly oppose the drive to green the economy, save the planet from global warming, and reduce inequality?

A case in point is the commercial banking system. Since the Covid era of 2020, the role of broad money growth has been taken over by politicians, with the commercial banks now being directed to grow credit, money, and inflation. With green credentials being a strong winning ticket, there is a good chance that banks will be asked to fund the green revolution. This means even less money for fossil fuel exploration.

Even with soaring energy prices, rig counts remain lacklustre

Brent Oil price in USD/Bbl (LHS) versus Baker Hughes' rigs count



Source: Bloomberg

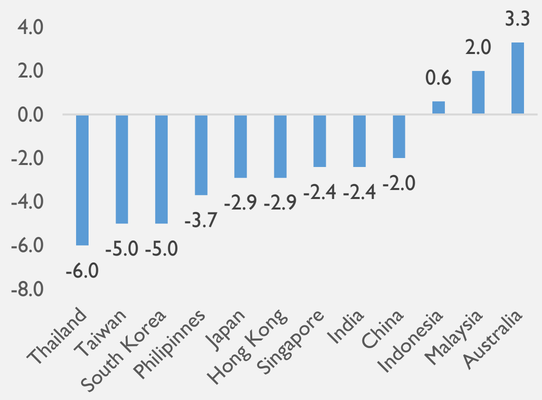
OK, understandable that skyrocketing energy prices and sticky rising prices are not similar to a humongous comet ending lives on our dear Planet Earth. Still, inflation is now a serious challenge to begin with. While greening the economy is no doubt good, the problem was that the world was vastly too optimistic on how quickly the transition from fossil to green energy would occur. As a consequence, there has been massive underinvestment in fossil fuels and this is adding to inflationary pressure.

Anyone who has lived under significant inflation knows the havoc it causes, destroying savers and earners, the most disciplined people in society. An indifferent attitude towards high energy prices could be very costly.

While Indonesia is an oil importer, overall, it is an energy exporter and the country stands to benefit from higher energy prices.

Indonesia, an energy exporter

Trade deficit/surplus in mineral fuels and lubricants in the last twelve months as % of GDP



Notes: Oil for Singapore, normally CY2021, 4qtrs to 3Q21 for Australia and Korea, estimated CY2021 GDP for India
Source: CLSA, CEIC

------------- Appendix 2 -------------

The ramifications of premature deindustrialisation in Indonesia

The prolonged periods of good fortune from the commodity boom in the 1970s and 2000s dislocated the capital allocation in Indonesia.

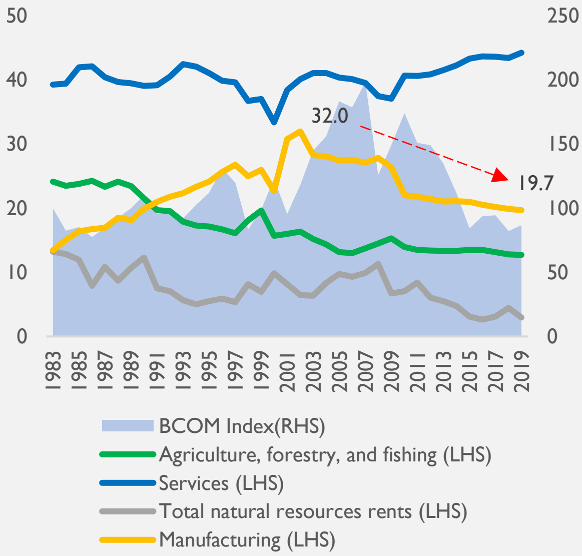
Years of bumper profits disincentivised investments to other sectors. The narrow focus was predominantly raw commodities that offered quick and easy bucks. This hollowed out investments in the manufacturing industry. As a result, Indonesia had premature deindustrialisation in the 2000s, the typical resource curse for the country.

Based on our analysis, the implications of premature deindustrialisation in Indonesia are as follow:

1. Non-competitive manufacturing industry

Indonesia's manufacturing sector peaked in 2002 due to the commodity boom

Sector value-added as % of GDP versus Bloomberg Commodity Index (BCOM) base = 1983



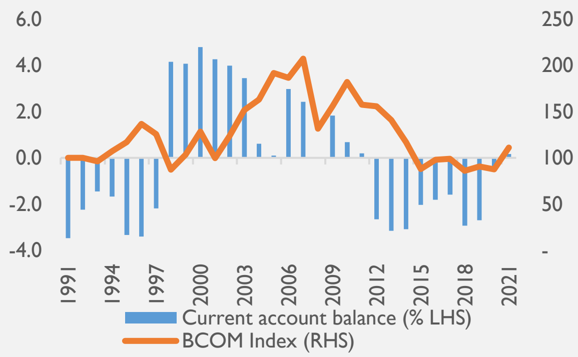
Source: World Bank, Bloomberg

As major capital diverted towards extractive commodities, the manufacturing industry became underinvested and unable to produce end products competitively, in terms of cost and/or quality leadership. A great deal of economic value was transferred abroad on the net basis as local manufacturers were only able to produce intermediate goods or simpler manufacturing products. The end result was a structurally-ratcheted growing dependency on imports of end products.

2. Commodity export and end-product import dependency weakens the current account structure

Commodity price dictates the direction of the current account balance

Indonesia's current account balance (% of GDP) versus rebased Bloomberg Commodity (BCOM) Index (December 1991=100)



Source: Bloomberg

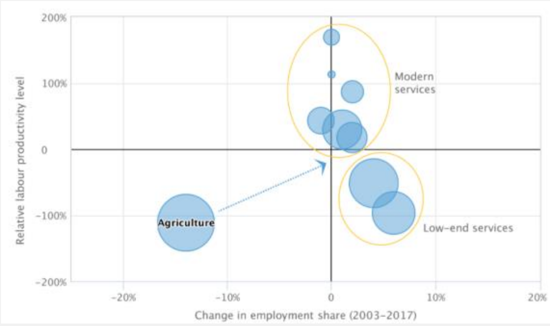
Given the stable and growing nature of end products import and volatile value of commodity-dominated export, Indonesia's trade balance is tilted to the downside and adversely affects the rupiah.

In the events of economic expansion, the higher imports of final goods will pressure the potential current account surplus. The decline of commodity prices, however, will turn into a vicious cycle as GDP, trade balance, and FX rate weaken altogether because exports value decline steeply while imports are relatively the same.

3. Unfortunate shifts in the labour market

The cost of premature deindustrialisation taking its toll on labour market

A major portion of low human capital workers are stuck in the low-end service sector after the commodity boom



Source: Roland Rajah (2018)

The fading favourable commodity prices unveil the inherently low productivity of Indonesian labours. According to Rajah (2018), the premature deindustrialisation in the post commodity boom era led to an adverse shift in the labour market.

The sour commodity prices triggered an exodus of the predominantly unskilled raw commodities labour into the low value-added service sector. This explains why Indonesia's standard of living as measured by GDP per capita remains low despite the 44% labour share in the service sector in 2019.

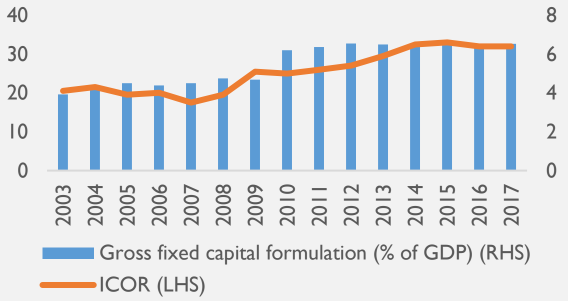
Labour productivity value also vaporised with the decline of commodity prices. These are captured with a steep increase in incremental capital-output ratio (ICOR). A higher ICOR means that it takes a larger amount of capital to raise one unit of GDP.

The resource curse upon Indonesia has created a glass ceiling for the economy to develop. Hence, the question is how to uplift the curse?

Essentially, education is the genuine solution to improve human capital and productivity. However, such a solution may take years and requires lots of resources to build the infrastructure in the first place, involving numerous political power transfers in the process and requires leaders who share a similar vision.

Pushing Indonesia's economic growth is capital-intensive

Gross fixed capital formation versus incremental capital to output ratio



Source: Roland Rajah, CEIC (2018)

Another alternative is to promote technology embodiment that can enhance labour productivity. Manufacturing is a classic example where machinery could enhance the productivity of labour. It is one of the quick-easy fixes for Indonesia's resource curse.

Since his first term in 2014, President Joko Widodo has put rejuvenation of the manufacturing industry to be his top priority.

This rejuvenation attempt is ambitious, challenging, and yet necessary for the economy to progress forward in our view.

Looking at the cards on hand, Indonesia has the strategic resources the new economy requires and the amount of labour but does not possess the know-how to process some raw materials to higher value-added products like metals and minerals or complex end products.

Thus, it is essential for the government to deploy a two-pronged approach by creating a favourable investment climate and controlling the outflow of its raw commodities in order to attract foreign direct investment (FDI) and enforce technological transfer.

Looking at the economic development progress, Indonesia's downstream industrialisation card has been played out well by good timing and leadership.

------------- Appendix 3 -------------

Expanding local names in new energy exposure

So far, China has been the biggest sponsor for Indonesia's downstream projects. China (including Hong Kong) had over USD 15bn direct investment into Indonesia's metals industry between 2014 to 2021, contributing more than half of the USD 26 bn total FDI into metals.

Today, we are beginning to see incumbent players partake in the game after being a bystander. Names of local conglomerates, metal miners, and coal miners are starting to allocate or increase their investment towards the related pipeline of the upcoming new industries.

Given the cash-rich and exception cash generation from the elevated commodity prices, we will not be surprised should mergers, acquisitions, or venture investments become more frequent in the space of renewables and metals industry in the country.

Our observation suggests that there are plenty of coal-related names who are ready to expand their business verticals to other commodities. Metals (both base and precious), renewables, or electric vehicle industries are among the frequently mentioned names.

Up for M&A?

Dry powders of commodity companies who are seeking exposure in the new economy

Companies	Free Cash Flow 2022E (USD mn)	Net Cash (USD mn)	Net Debt (Cash) to equity (%)
ADRO IJ	1,012	425	(9.5)
UNTR IJ	473	639	(53.2)
ITMG IJ	812	1,697	(33.6)
INCO IJ	109	(1,046)	120.6
INDY IJ	45	504	(23.4)
HRUM IJ	(90)	(145)	18.6
ANTM IJ	45	209	(45.9)
MDKA IJ	112	(271)	19.8

Estimates are based on Bloomberg analyst consensus and financial data as of the latest filings
Source: Heyokha, Bloomberg

We believe that it is just a matter of time for the emergence of a new public equity subsector on metals, electric vehicles, and other minerals. Such new entries might be a fine complimentary for Indonesia's public market investors who seek exposure to the country's commodities and its industrialisation.

------------- Appendix 4 -------------

Understanding the potential of a digital bank

Defining a digital bank

There are numerous definitions of digital banks. We define the term as those who possess the following tenets toward incumbent traditional banks:

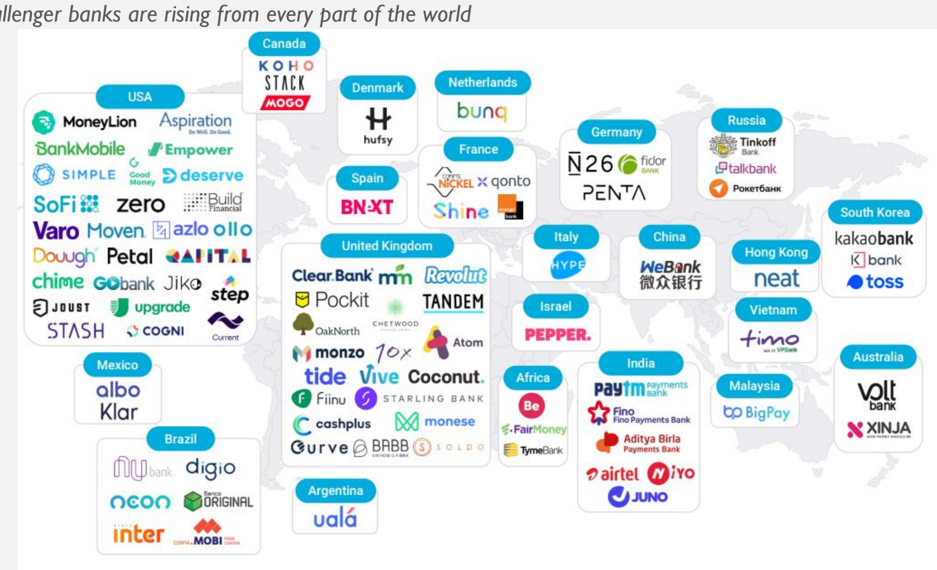
Compliment (e.g., digital arm) – a means to provide financial services in the digital channel.

Disrupt (e.g., neobank) – neobank uses financial technology, AI/ML in particular to redefine banking but with restricted services. Its primary innovations are having a full online presence and offering new experiences to the users. Like other fintech, neobank also focuses on growing customers.

Replace (e.g., licensed) – licensed banks that incorporate a digital strategy to onboard customers, manage credit risks, and remove transaction costs can replace most legacy incumbent banks. Similar to a normal bank, a digital bank also focuses on growing the balance sheet.

Digital bank is everywhere

The rising challenger banks are rising from every part of the world



Source: FT Partners

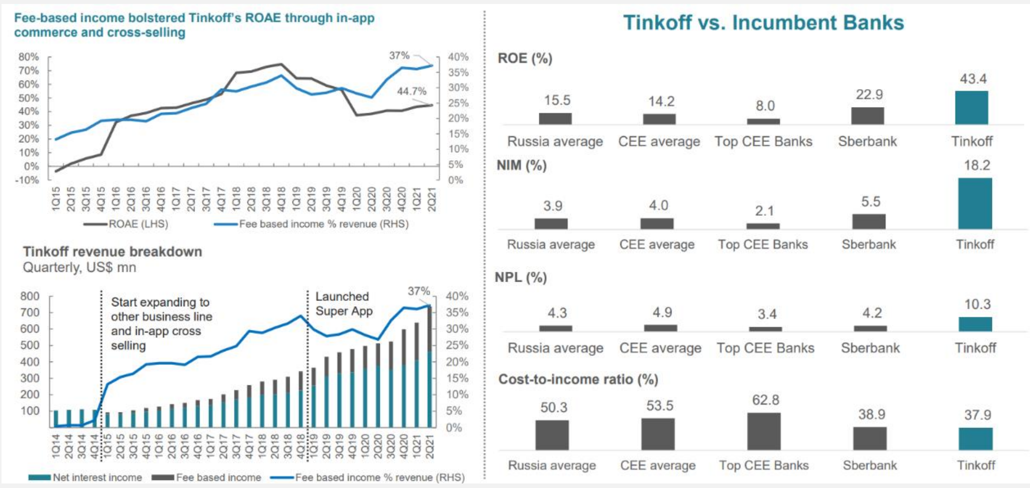
How digital banks be successful

Digital bank is not a new concept. It has existed almost as old as the internet and has been a well-proven business model. Starting almost as early as the internet boom, digital banks can be profitable in any country. From the existing digital banks globally, we counted it takes about 3 to 4 years on average for a digital bank to become profitable.

Based on our comparative study on global digital banks, those who: (1) serve the underbanked or unbanked, (2) execute it with high efficiency and asset-light approach, (3) possess superior risk management, and (4) able to set their application as a platform-based business for cross-selling have shown to be extremely profitable.

On its maturity, successful digital banks could be twice as profitable in terms of ROE compared to the incumbents. Perhaps, Tinkoff Bank (TCS LI) from Russia could serve as an excellent example:

Breaking down the profitability of Tinkoff Bank



All figures are based on 2Q21 data or the latest available figure
Source: Heyokha, Company Filings, Bloomberg

In China, a similar story rhymes with successful digital banks like Tencent-backed WeBank and Alibaba-backed MYBank, affirming our view that well-executed digital banks can outperform the incumbents by a thick margin in terms of profitability metrics.

WeBank and MYBank outleap the incumbent banks

Sources: Company filings, Bloomberg, CLSA
All financial data are as of December 2020

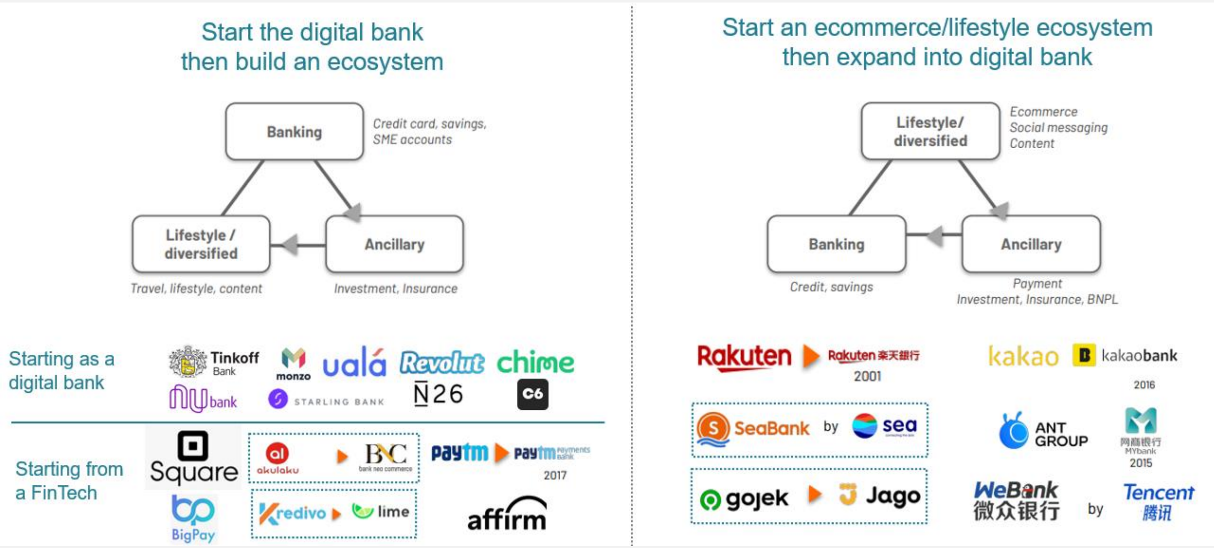
For digital banks to be able to develop such business, having digital-mindset management is paramount. Meaning that *the management team does not only need to be able to program a pleasant user experience application but be able to program the behaviour of their customers by tweaking the power of incentives.*

"I believe that if our mobile application is not opened 10 times a day, if it is not on the first screen of the phone, we are out of business… to be in business we have to be in the consumer mind… our fight is to be in the first screen and to be opened at least 10 times a day."

-Oleg Tinkov, Founder of Tinkoff Bank
In Hong Kong Fintech Week 2018

Digital bank pathways to success

The common development path of digital banks



Source: Momentum Works, Heyokha

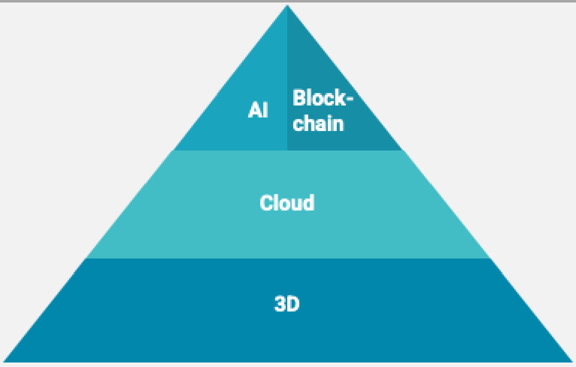
Our study also suggests that successful digital banks could emerge from a fintech company or an e-commerce or lifestyle ecosystem as each side has a considerable success example. While starting from an ecosystem may increase the odds of being successful, we find that it is not a sufficient condition. Management ability to execute has to be considered as well.

If we recall the *blitzscaling* stories of new-economy companies that are worth hundreds of billions or even trillions of dollars today, a major part of their success can be attributed to the management's attitude and character instead of just where the company comes from. It is the people who made the vision real.

------------- Appendix 5 -------------

A glimpse on Indonesia Web 3.0

Our readers might be familiar with the Web 3.0 idea that we introduced last year through our special report. Over the past few months, we further assimilated and structuralized a framework for our thesis which we called the ABCD pyramid:



The ABCDs of Web 3.0:
A: Artificial Intelligence (AI)
B: Blockchain
C: Cloud
D: 3D (Digitalisation, Decentralisation, Democratisation)

Since an in-depth discussion on web 3.0 would take a special report for its own, we will limit our discussion on its development in Indonesia.

It is safe to say that the days of web 3.0 in Indonesia are 'beta version' – regulatory frameworks, infrastructure both software-hardware, and market education still need to be developed further. Yet, we notice that the digital-savvy economy has taken up a high interest in the technology and local companies are starting to integrate the ABCDs into their business model.

Below are some of the ABCDs themes that started into play in Indonesia:

Banking the unbanked with AI

In our Q4 2019 report, we wrote about how AI and technology, despite cutting millions of routines, labour-intensive jobs, will eventually lift productivity and create more jobs. Home-grown digital technology startups and digital banks are pouring resources into AI and ML projects.

The integration of AI into fintech is a key to driving financial inclusion in Indonesia through a credit scoring engine that could take alternative datasets into the risk equation. The reason? Because the unserved customers in the financial market do not have a credit record in the first place, that does not make them not creditworthy.

Based on our knowledge, some of the tech-backed digital banks and fintech companies have been building and leveraging their proprietary AI/ML as a critical part of their risk management and daily operations. In addition to the credit scoring engine, AI/ML can also be applied for fraud deterrence and the e-KYC process.

Blockchain and the future of gaming

Unquestionably, 2021 was a wild year for crypto. It is estimated that the number of crypto holders reached 300 million worldwide. According to the Commodity Futures Trading Regulatory Agency (BAPPEPTI), Indonesian crypto investors reached 11 million in December 2021 with an annual accumulated transaction value over USD 59.8bn.

Opening a bank account may be difficult, but the barriers to crypto trading are low. With 13 officially registered cryptocurrency exchanges to choose from, all one needs to start buying and trading cryptocurrency assets are a smartphone and internet connection. This is probably the reason why there are more crypto investors than stock investors in

Indonesia – roughly 3.5 million after decades of existence in the market.

It is clear that the interest in blockchain and digital assets in the country is high. Regardless of the speculative motive that might drive such traction.

At the same time, being the biggest gaming market in Southeast Asia with 111 million gamers and with Esports being an official sport and championships hosted by state institutions, Indonesia is among the early adopters of the metaverse.

Axie Infinity, an NFT-based, play-to-earn game, developed by Vietnam-based Sky Mavis, identified Indonesia as one of its top six most playing countries. According to several news platforms, Axie infinity gamers in the Philippines can earn USD 5 to 20 on daily basis – comparable or even better than the country's minimum wage of USD 10.5 per day.

Although the play-to-earn gaming market is still in its infancy, imagine its size surpasses the current gaming market, the impacts are profound. Not only will it create an additional source of income for a significant portion of the population, but it will also be a promising sector to attract foreign investment to video game creation as well as infrastructure development.

Rising cloud demand fuel Indonesia's data centre boom

Such an expansion of data-intensive AI and blockchain applications relies heavily on the underlying cloud infrastructure, signaling a much-needed upgrade for data infrastructure in Indonesia. And not surprisingly, major cloud service providers, although may not be their full potential, have come to realize the huge opportunity awaiting in this Southeast Asian country.

With the government stating that there will be domestication of Indonesian citizens' data, investments in the country have started to pile in. Alibaba has built three data centres in Indonesia since 2018, followed by Google and Tencent with their first data centre launched in 2020 and 2021 respectively. Amazon and Microsoft will also be launching a new data centre region in Indonesia.

Data centres in Indonesia are one of the most underinvested and potentially high-growing spaces in our view. Currently, we only acknowledge one tier IV data centre in the country and only a few players have invested but telco and financial companies mainly for their in-house needs.

Having said that, Indonesia remains an attractive scene for the data centre market to skyrocket in the years to come. According to an analysis done by Cushman & Wakefield, Indonesia currently has 90MW of data centre capacity in operation, with 200MW currently under construction. In particular, Jakarta's data centre market is expected to triple in size in the next two years.

Taking Amazon Web Services (AWS) as an example, their economic impact study estimated that the company's spending on the construction and operation of the AWS Asia Pacific Region alone will create 24,700 direct and indirect jobs. They will also add an estimated $10.6 billion over the next 15 years to Indonesia's GDP. It is apparent that the growing interest from global cloud providers is creating a huge multiplier effect, stimulating the local economy even further.

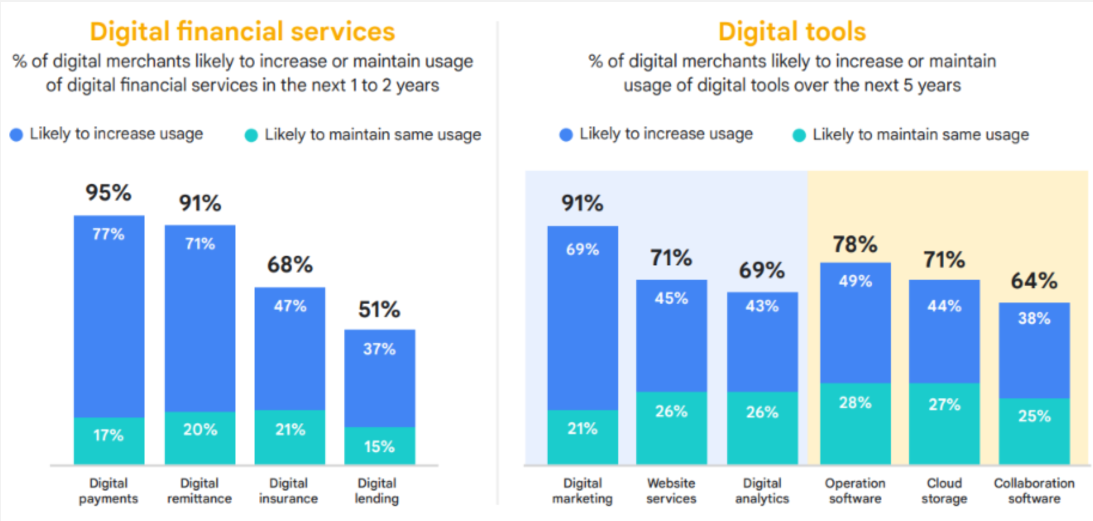
Recent developments in the Indonesian data centre market

Data Centre Providers	Development Updates
DCI Indonesia	DCI plans to build up to 15 data centre buildings with a total capacity of 300MW, equipped with internationally certified infrastructure.
ST Telemedia	Joint venture with Temasek and Triputra Group to develop a new data centre in Jarkata, which will support up to 72MW of critical IT capacity and is anticipated to be completed by Q1 2023.
PDG Indonesia	A new 22MW data centre JC2 is being built within the same 19,550m² campus that houses PDG's existing data centre JC1.
Pure Data Centres	Partnered with LOGOS for a 20MW, 20,000m² hyperscale data centre project which is expected to be completed by Q1 2022.

Source: Company websites

Talking about the potential investment in data centres, it is not fair without mentioning the potential cloud demand. The research from Google, Temasek, and Bain in 2021 also indicated that most digital merchants will escalate their digital services use case going forward.

Further adoption of digital services by tech-savvy merchants



Source: Google, Temasek, Bain, e-Conomy SEA 2021

Despite still in the nascent stage, the now digital-savvy Indonesia would allow the web 3.0 technology to be adopted faster and make further improvements in the country.

------------- Appendix 6 -------------

Mapping Indonesia online investment platform

The rising prominence of investment platforms

Monthly active users in mobile app as of February 2022 classified by products offered

Stocks and mutual funds marketplace	Cryptocurrency exchange	Futures, Contract-for-difference, Mutual funds marketplace
Stockbit MAUs: 1.2 Mn ajaib MAUs: 2.05 Mn bibit MAUs: 3.2 Mn	INDODAX INDONESIA BITCOIN AND CRYPTO EXCHANGE MAUs: 4.5 Mn PINTU MAUs: 1.02 Mn Tokocrypto MAUs: 2.1Mn Rekeningku.com MAUs: 381 k	pluang MAUs: 1.02 Mn
Total MAUs: 6.5 Mn	Total MAUs: 7.8 Mn	Total MAUs: 1.02 Mn

Source: AppAnnie and Heyokha

In the private market space, the rise of retail investors whets investors' appetite for online investment platforms. Based on their latest MAUs, the following names have managed to reach a substantial market share:

- **Stockbit & Bibit** – Started as a stock investment forum, Stockbit now offers an online low-cost brokerage service and online mutual fund platform. The company is leading investment social media and mutual fund platforms. The group platform's mobile app had over 4.4mn monthly active user base combined. This is equal to 54% of Indonesia's total capital market investors in February 2022.

- **Ajaib** –Online stockbroker and mutual fund platform, Ajaib is one of the fastest companies that become a unicorn. It recently acquired a 25% stake in Bank Bisnis (BBSI IJ) to transform it into a digital bank. Established in 2018, Ajaib mobile app has over 2.05 mn active users, equal to 25% of Indonesia's capital market investors.

- **Pluang** – Started as a contract-for-difference and futures investment platform, Pluang is available as a standalone or a mini-program within the Gojek app. It leverages asset-class niche to help ordinary investors to have exposure to foreign stocks, cryptocurrencies, mutual funds, and gold with low ticket sizes. Pluang has about 1.1 mn active users in February 2022 after being established in 2018.

- **Indodax, TokoCrypto, Pintu, and Rekeningku** – are four most used crypto exchanges in Indonesia. Their combined monthly active users in February 2022 represent almost 70% of Indonesia crypto investors recorded in December 2021.

The advents of online investment platforms improve the accessibility of financial investments by the general population by offering low transaction costs and convenience. It helps to deepen the financial market and strengthen the capital power of the middle class, especially the millenials. Generating passive income becomes a luxury for many people.

HEYÓKHA BROTHERS

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- **With Inflation Brewing, Value Stocks Might Outperform Growth Stocks** (link)
- **Another Gale of Creative Destruction** (link)
- **The Nascent Stage of Southeast Asia Tech Investment Era** (link)
- **The Tale of Two Restaurants: The Lurking Threat of Easy Treats** (link)

Our previous special reports

- **Q4 2017: Seeing Through Accelerating Challenge** (link)
- **Q4 2019: Narrow AI, Broad Opportunities** (link)
- **Q3 2020: The New Deal or 'Old** (link)
- **Q1 2021: Into the Matrix** (link)

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