



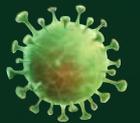
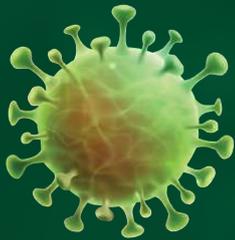
INSIGHTS

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MAY 2021 | EDITION III | WEEKLY

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THE PATENT PREDICAMENT

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IPR WAIVER: 'TO BE OR NOT TO BE'

A steady and unrelenting toll on human lives is forcing the hands of powers-that-be to consider the waiver of IP protection



Succumbing to the growing demand to lift Intellectual Property (IP) protections for vaccine manufacturers, the Biden administration has signalled that it will support a temporary waiver of provisions contained in the 1995 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). This represents a sharp turnaround from the U.S.'s historic stance at the World Trade Organisation (WTO), wherein multi-lateral frameworks for cross-border IP protection are deemed to be a prerequisite for member-states to enter the global trading circuit.

Washington has now recognised that it is critical to scale up vaccine production and accelerate global immunisation programmes, at a time when the emergence of vaccine-resistant strains cannot be ruled out. What remains hidden, however, is the immense resolve and 'behind-the-scene' efforts that went into overriding the objections of the pharmaceutical and biotech industries, which constitute influential lobbies in the country.

BRIDGING THE DIVIDE

Since October 2020, countries like India and South Africa have been spearheading negotiations at the WTO to suspend specific provisions of the TRIPS agreement that protect patents, copyrights, industrial designs, and other confidential information pertaining to the COVID-19 vaccines. According to them, these IP restrictions have created supply bottlenecks and impeded efforts to ramp up vaccine manufacturing, thereby undermining the large-scale inoculation of citi-



zens in lower and middle-income countries. Meanwhile, richer nations have secured most of the available vaccines by signing bilateral deals with leading manufacturers. Some of them have even hoarded stocks that far exceed their actual requirements. Concurrently, strong pharmaceutical lobbies have ensured that there is a strong pushback against the global advocacy campaign to exempt COVID-19 vaccines from IP protections. With countries like India and Brazil witnessing a steep rise in COVID-related deaths, however, many of them have been forced to revisit their positions. They cannot

through mass immunisation programmes in the Global South. This entails a provisional suspension of TRIPS rights, so that generic pharmaceutical companies can utilise their existing capacities and bolster vaccine production, without fear of impinging stringent IP standards and other legal obligations.

THE ETERNAL CONFLICT: HEALTH VS PROFIT

Extending monopoly rights to the production and distribution of lifesaving drugs has always been a vexatious issue. Historically, big

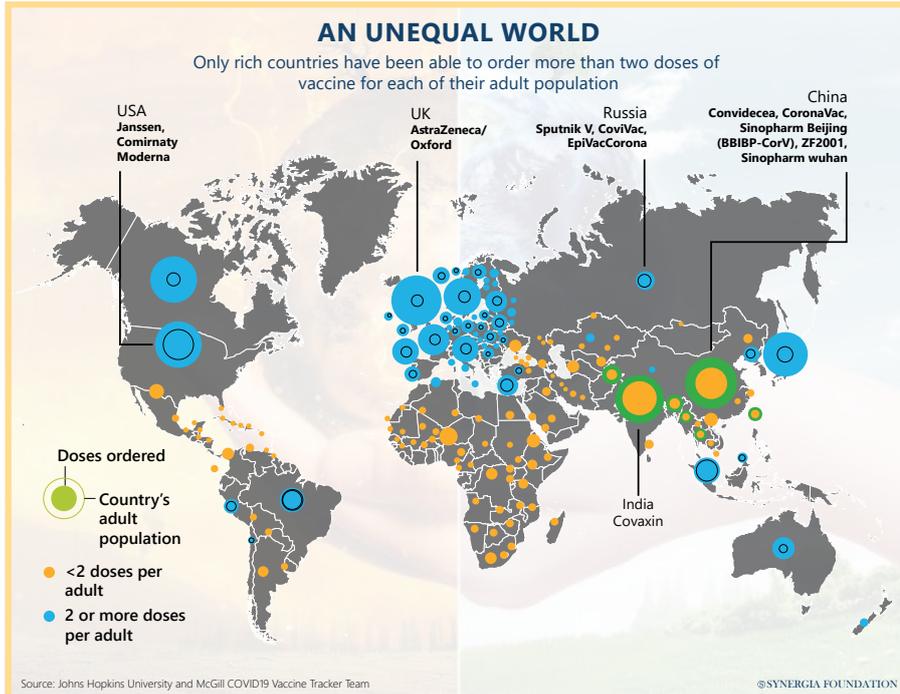
Prof K Srinath Reddy

President of the Public Health Foundation of India



“ The perennial argument, offered for defending patent protection, is that innovation and investment by industry need to be financially rewarded to incentivise them to develop new products. Even if compulsory licences are issued bypassing patent restrictions, royalties are paid to the original innovators and patent holders. They will continue to gain revenue, though not super profits. ”

Source: The Hindu



returns on private research and development costs, thereby allowing businesses to benefit from the 'fruits of their labour' and turn out even better products.

Critics, however, point out that there is no empirical evidence to prove a linear relationship between IP rights and innovation. Rather, developers may be deterred from researching and investing in cost-effective solutions, owing to the benefits of monopoly pricing. In other words, by restricting competition, IP laws can hinder legitimate innovation.

Furthermore, in the specific context of COVID-19 vaccines, private money has not been the sole source of vaccine development. For instance, the Moderna vaccine in the U.S. is a product of basic research conducted at the National Institutes of Health, a federal government agency. Similarly, the technology behind 'mRNA' vaccines (Moderna and Pfizer-BioNTech) that induces body cells to make protein and trigger an immune response has been developed through a publicly funded research institute.

the reach of poorer countries. For instance, IP law has deprived low-income countries of important medicines like antiretrovirals for HIV/AIDS in the past. Although the issuing of compulsory licenses had eventually addressed this problem, millions of people had already succumbed to the disease by then.

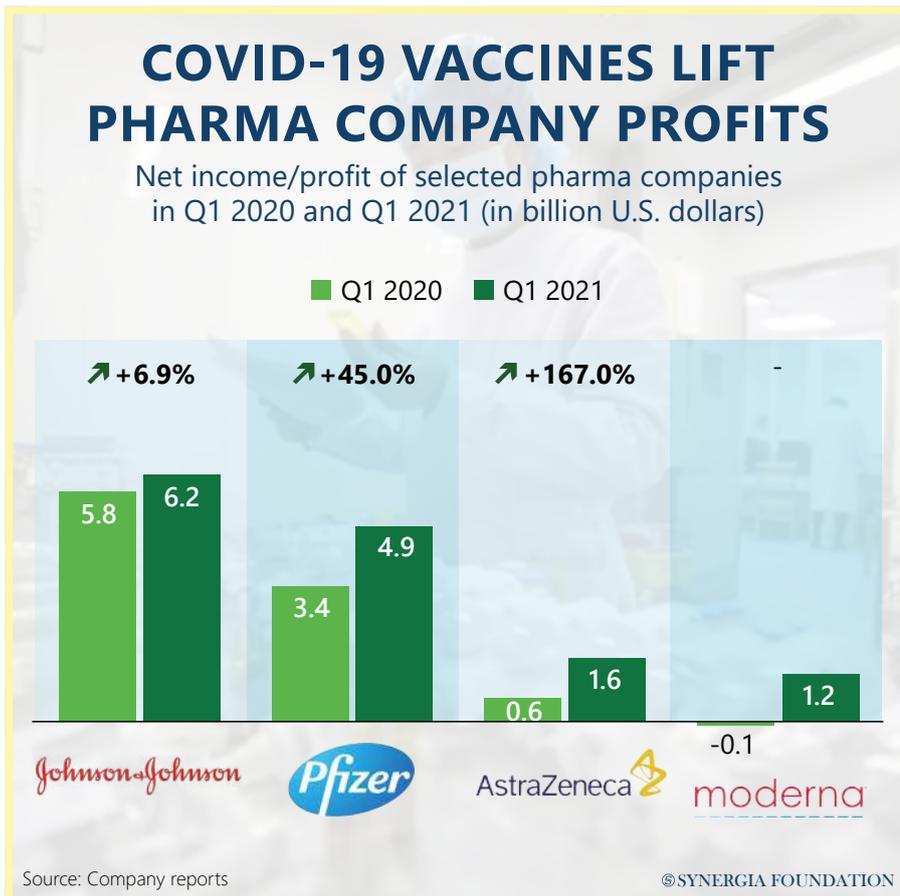
Pharmaceutical companies, on the other hand, maintain that a dilution of IP frameworks will disincentivise innovation and investment.

Without the right to monopolise production, they will have little incentive to undertake novel research. Moreover, only a 'first-mover' advantage can ensure good

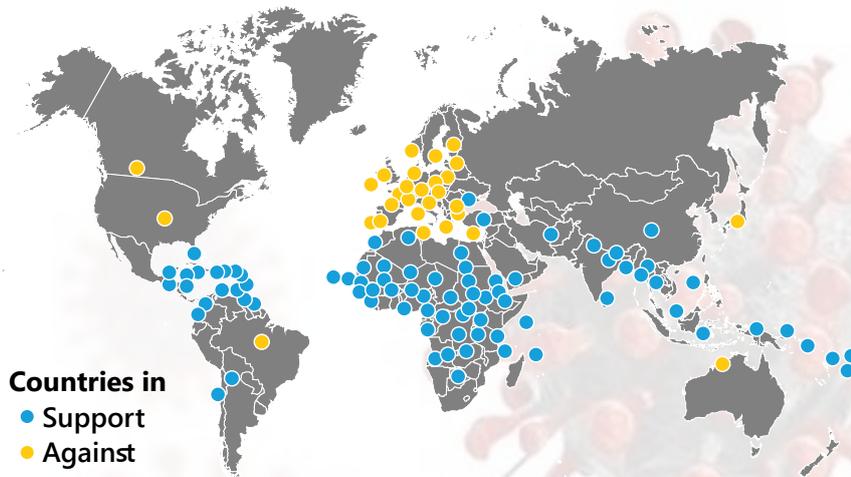
VOLUNTARY MECHANISMS

Even as the clamour for suspending TRIPS provisions builds up steam, observers like Bill Gates are cynical about granting IP exemptions to COVID-19 vaccines. They argue that the production processes are highly complex, with very few additional manufacturers positioned to enter this space.

Moreover, given the possibility of vaccine-resistant viruses emerging in the medium-term, many generic producers are bogged down by the commercial risks involved, which precludes them from investing up-front. While the TRIPS waiver can lift legal strictures regarding the manufacture of COVID-19 vaccines, it need not lead to a sharing of technical know-how between pharma companies. Therefore, emphasis has to be placed on facilitating technology transfer and knowledge-sharing between companies. In this regard, many producers point out that they are already cooperating widely with their competitors through voluntary



SHARP DIVIDE



- Those opposing the proposal include the **UK, US, Canada, Norway, EU, Japan and Australia**
- Proposal seeks waiver of four categories of IP rights – copyright, industrial designs, patents and undisclosed information under TRIPS
- About 100 low and middle income countries, including China which has five Covid vaccine candidates in late-stage trials, and the WHO, have welcomed the proposal
- Pharma has refused to engage with WHO's COVID-19 Technology Access Pool (C-TAP) initiative that encourages voluntary contribution of IP, technology and data to support global sharing and scale-up of manufacture and supply of COVID-19 medical products

Source: Times of India

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being required to comply with several regulatory checks. When there is an urgent demand for vaccines, many countries resorting to this procedure under Article 31 would only trigger further delays. Moreover, generic manufacturers are hesitant to actively seek compulsory licenses, fearing the possibility of litigation.

Granting an IP waiver, therefore, can provide much-needed legal clarity to generic manufacturers as they seek to contribute to the global vaccination drive.

Assessment

Since WTO decisions are consensus-based, it will not be easy for the 164-strong member states to break their impasse and concur on the IP waiver. The U.S., however, has made a good start, by indicating its support. Other developed nations like the UK, Canada, Japan, and the EU, must also join in without any further dithering, as it is important to ensure the administration of affordable vaccines to the global population within a faster time frame.

While the IP waiver is an important step in enhancing vaccine production, it cannot suffice by itself. It will have to be accompanied by risk-tolerant capital, specialised equipment, and robust infrastructure for generic producers.

In countries like India, the capacity of public sector undertakings (PSUs) can also be leveraged to improve productivity and reduce the shortage of vaccines. It is encouraging to note that the Union government has announced plans to include three PSUs in its vaccine-making process.

licenses and proactive technology transfer.

WTO Director-General Ngozi Okonjo-Iweala, has been a strong proponent of this 'third way', that promotes licensing agreements between companies and generic manufacturers to accelerate manufacturing. For example, the Serum Institute of India has been manufacturing the AstraZeneca COVID-19 vaccine through a voluntary license. However, such licenses have their own limitations. More often than not, they are shrouded in a veil of secrecy, with the patent holder controlling important decisions about the selection of third-party sellers or the identification of beneficiaries. The scale of the pandemic is such that the world cannot afford to pin all its immunisation hopes on such ad hoc mechanisms.

COMPULSORY LICENSES

Alternately, under Article 31 of TRIPS, countries have the option of issuing compulsory licenses for the production of vaccines without securing permission from the patent holder. This has been cited as an additional reason to shoot down the 'IP waiver' proposal tabled by India and South Africa. It is argued that the TRIPS Agreement has already incorporated flexibilities under Article 31, which allows a government to authorise the use of a patent if voluntary licenses are denied by inventor companies. In the current circumstances, however, no country has come forward to invoke the compulsory licensing provision for COVID-19 vaccines.

This is because the entire procedure is cumbersome and lengthy, with authorising countries

SHIFTING SANDS IN THE MIDDLE EAST

The recommencement of dialogue between arch-rivals Tehran and Riyadh can potentially quench the fires of regional brinkmanship



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RESEARCH TEAM

After several years of animosity, culminating with the termination of diplomatic ties in 2016, Iran and Saudi Arabia have reportedly held closed-door talks in Baghdad. Mediated by Iraq, the discussions are believed to have covered the war in Yemen, where a Riyadh-led military coalition is battling the Tehran-backed Houthi rebels. There are also indications that the political and financial crisis in Lebanon was touched upon, given the growing influence of the Iran-aligned Hezbollah, which is triggering alarm among several Arab states.

Although no major breakthroughs have been made, the talks pave

the way for mechanisms to de-escalate tensions in the region. It also makes for good optics, as world powers seek to revive the Iranian nuclear deal in Vienna and re-open diplomatic channels with Iran.

While no specific date has been set for the next meeting, media reports suggest that another round of talks will be held soon. However, it remains to be seen whether the two sides can set aside their historical differences amidst raging proxy wars and seething religious rivalry.

FRAYED TIES

Tracing its roots to a 1,389-year-old Sunni-Shia divide, relations between Riyadh and Tehran have been strained for a long time. In 1979, these tensions had acquired a new dimension when Ruhollah Khomeini overthrew the Shah of Iran in an Islamic Revolution. As can be

recalled, the subsequent creation of a religious theocracy in Iran had fuelled apprehensions in Saudi Arabia, whose monarchy wanted to maintain its status as the epicentre of the Muslim world and avoid the export of the Iranian model to other Islamic nations in the region.

Tehran, however, had little compunction in decrying the Saudi regime as western puppets, fuelling sentiments that posed an existential threat for the kingdom's religious authority. Eventually, this sowed the seeds for sectarian schisms, which is currently reflected in the strategic map of the Middle East.

The Arab Spring in 2011 proved to be yet another turning point. With popular uprisings against authoritarian regimes crafting a political vacuum in their wake, Iran and Saudi Arabia had hastened to occupy it, especially in Syria and Yemen. Through their respective

DISPUTES BETWEEN SAUDI ARABIA AND IRAN



- 1 1987:** Clashes in Muslim holy city of Mecca result in deaths of 275 Iranian pilgrims. Protesters in Tehran occupy Saudi embassy. Riyadh cuts diplomatic relations
- 2 2003:** U.S.-led invasion topples Saddam Hussein and empowers Iraq's Shia majority. Ousted Baath Party officers form alliance with Al Qaeda in Iraq which leads to rise of so called Islamic State (*Daesh*)
- 3 2011:** Saudi Arabia and UAE send 2,000 troops to Bahrain to crush mass pro-democracy protests by Shia majority during Arab Spring
- 4 2011:** Riyadh accuses its Shia minority, including figurehead cleric Sheikh Nimr al-Nimr of collaborating with Iran. Al-Nimr is charged with "instigating unrest"
- 5 2012:** Saudi Arabia backs rebels fighting to topple Iran's ally, Syrian President Bashar al-Assad
- 6 2015:** Saudi-led coalition launches bombing campaign in Yemen against Shia Houthi rebels
- 7 2016:** Execution of al-Nimr triggers attack on Saudi embassy in Iran. Saudi Arabia, Bahrain, Sudan, Kuwait and UAE cut diplomatic ties with Iran

Source: United States Institute of Peace, Pew Research Center

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attacking the kingdom's embassy, prompting Saudi Arabia to recall all its diplomats in the Iranian Republic. Bilateral relations have remained frozen since then.

Now, as signs emerge about the resumption of dialogue between the two countries, the international community is cautiously optimistic.

FACING UP TO GROUND REALITIES

Several factors have contributed to this apparent thawing of relations. For one, the winds of change in Washington have caused both parties to reconfigure their strategic calculus. As President Biden departs from his predecessor's heavy-handed approach and tones down the 'maximum pressure' campaign against Iran, there is a clear shift in regional dynamics. Unlike the Trump administration, which sought to counter Tehran's rise with a mix of sanctions and unfettered support for its arch rivals-Saudi Arabia and Israel, the Biden regime wants to engage with Tehran to encourage a more responsible international behaviour, perhaps in exchange for loosening of sanctions and progress in the nuclear deal.

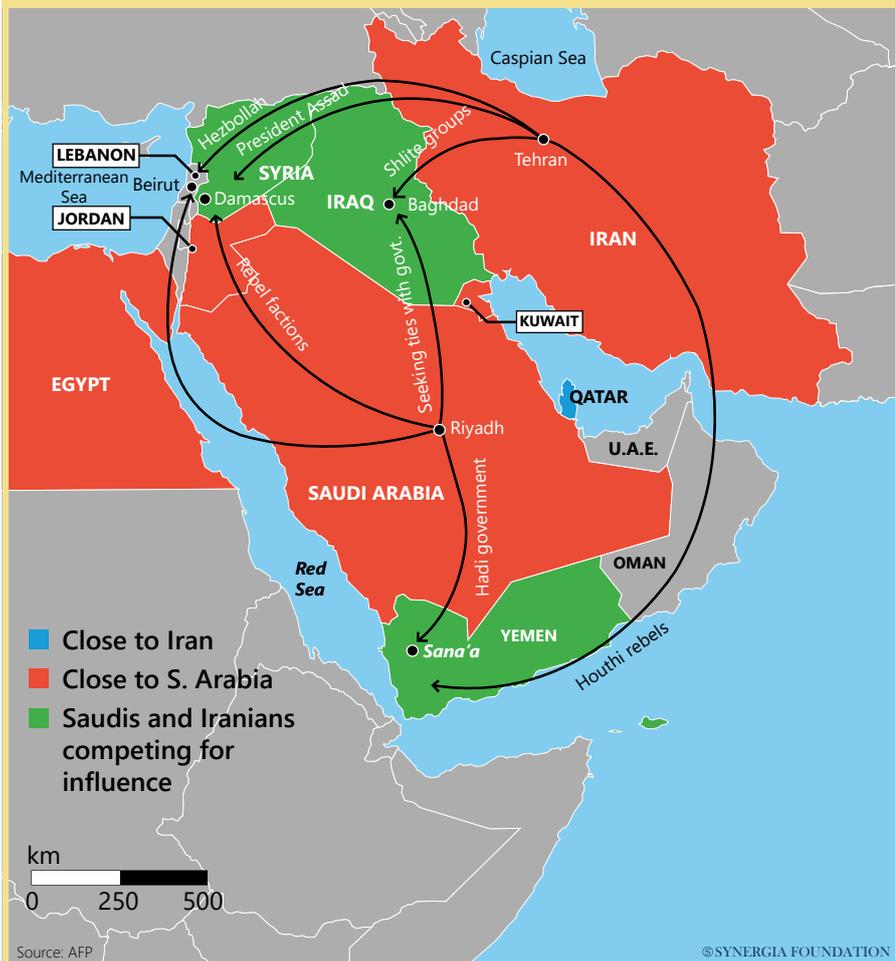
Meanwhile, Saudi Arabia can no longer expect unconditional diplomatic backing from the U.S. for all its foreign misadventures. This was clearly visible when President Biden declassified the CIA report on the killing of Jamal Khashoggi, a Washington Post columnist and prominent dissident of the Saudi royals. Behind the scenes, there seems to be immense American pressure on Saudi Arabia to end the six-year-old senseless bloodbath in Yemen. Apparently, the message has finally gotten across, with Riyadh reassessing its strategy in favour of a more pragmatic approach.

Iran is in an even more precarious situation. Together with crippling sanctions imposed by the U.S., the COVID-19 pandemic has battered its economy and cost the lives of thousands of Iranian citizens. With a national debt rising to 40 per cent of the GDP, the oil-rich Islamic Republic faces economic ruin unless it seeks a

proxies, by supporting rival militias, the two neighbours found themselves locked in a powerful struggle for regional dominance. Moreover, the

situation worsened considerably in 2016, when Riyadh executed the Shiite cleric Nimr al-Nimr. Enraged locals in Tehran had retaliated by

SAUDI ARABIAN VS. IRANIAN COMPETING INFLUENCE IN THE MIDDLE EAST



integral part of the 'Shiite Crescent' spanning Iraq, Syria, and Lebanon, it is the lynchpin of Iran's larger strategy for the region. The Saudis, along with their Arab allies, will fight tooth and nail to maintain a balance of power in this strategically critical Levant. However, even if both sides are willing to de-escalate, they alone cannot bring a cessation to the hostilities in battle-ravaged Syria. This is because external powers like Turkey, UAE, Russia, U.S, U.K. and even France remain deeply embroiled in the region.

As far as Israel is concerned, it remains wary of any rapprochement between the Arabs and Iran, because continued estrangement between the Shias and the Sunnis is in its long-term interests. Recognising that Palestine is no longer a cause that unites the Islamic world, it has assiduously invested in its budding relationship with Saudi Arabia and other rich Gulf States. Finding common cause over Tehran's nuclear programme, Riyadh has also fostered covert ties with Tel Aviv. Saudi Prince Mohammed Bin Salman, in particular, is believed to have played an active part in facilitating normalization agreements between Israel and other Arab states like Bahrain and the UAE.

Lebanon, the fast-failing state, has only the rigidity of Iran-supported Hezbollah to blame for its endless political and economic agony. As long as the "Party of God" pulls the strings in its political framework, there will be no systematic changes. It will remain a delicate minefield for both Iran and Saudi Arabia to negotiate safely.

Finally, questions pertaining to maritime trade and freedom of navigation in the Gulf waterways continue to be an irritant in Iran-Saudi ties. Tehran, in particular, has been accused of using oil shipping in the Gulf waterways as a trump card in its arsenal, orchestrating random attacks on Saudi Arabian tankers. Apart from playing havoc with insurance rates and market stability, such a shadow war in the shipping routes of the Middle East will not bode well for long-term peace and stability in the region.

way out of the morass. In this context, lessening tensions in the region by de-escalating its conflict with the Sunni neighbours could be one way to regain favour with the international community. Domestically, President Hassan Rouhani would be immensely benefited by any success on this account, when he faces elections later this year.

It is not surprising that Baghdad has played the role of an honest broker as it has borne the brunt of the Iran-Saudi geo-sectarian rivalry. Iraq's Shia-majority government is keen to balance its strong politico-military ties with Tehran, even while fostering better relations with political and economic powerhouse of Riyadh.

PROGNOSIS FOR SUCCESS

As Iran and Saudi Arabia attempt to bolster their engagement, both sides must guard against several

friction points, especially the proxy war in Yemen. An agreement to break the stalemate will require concessions as well as a long-term vision. If Tehran tries to leverage its presently stronger position in Yemen as a bargaining chip, then the talks are destined for failure.

Secondly, Iran's claim that it has pulled out all stops in its uranium enrichment programme will not go down well with the Sunni regimes. The Arab states have already suffered from the effect of the Iranian missile programme, and if these missiles are coupled with nuclear warheads, then the region would be rendered further unstable. In such an atmosphere of mutual distrust, any nuclear deal that is concluded in Vienna will have to incorporate substantive confidence-building measures. Otherwise, it can spark off a deteriorating nuclear arms race in the Middle East.

Syria is another flashpoint that cannot be ignored. Viewed as an

SCRIPTING RULES ON AI

As the first influential regulator to craft a comprehensive framework on AI, the EU has a head-start on setting ethical standards for intelligent machines



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RESEARCH TEAM

In a bid to cement its reputation as a global norm-setter for tech, the European Union (EU) has unveiled a regulatory framework for Artificial Intelligence (AI). Shortly titled the 'AI Act', it seeks to incorporate a system of compliance checks that boosts public confidence in AI, even while leveraging the socio-economic benefits of this technology. In other words, the proposed legislation has attempted to strike a balance between the fundamental rights of users and the innovative potential of AI-based solutions.

Spanning more than 100 pages, the provisions of the published document implicate issues like facial recognition, advertising algorithms,

deep fake content, and credit scoring. By prescribing an outright ban on some of these use-cases and mandating strict oversight over other applications, the rules have sought to mitigate the potential harm flowing from AI technologies. They have also placed emphasis on a 'human-centric' and 'trust-laden' approach that draws on key European values.

Although the current regulations represent the first-ever legal framework on AI, they are part of a much wider agenda on digital transformation, as envisioned by the European Commission. Together with other anticipated legislation such as the Digital Services Act or the Data Governance Act, they lay down standards for emerging technologies in a manner that rivals leading competitors like the U.S. and China. Over the coming days, all eyes will be on the European Parliament

and the Council of Ministers as they scrutinise the terms of the AI Act.

RISK-BASED APPROACH

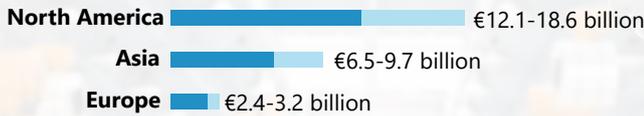
In determining the regulatory obligations of AI providers and users, the proposed framework has embraced a 'risk-based approach', which differentiates between applications that create (i) an unacceptable risk, (ii) a high risk, and (iii) a low or minimal risk. Depending on the extent of harm posed to the public good, therefore, the AI act has stipulated proportionate measures.

Any technology that manipulates human behaviour or thwarts the user's free will has been classified as an 'unacceptable risk', entailing a flat-out ban. This includes subliminal techniques beyond a person's consciousness that materially distort behaviour and cause physical or psychological harm. AI systems that

ARTIFICIAL INTELLIGENCE

Facts and figures

Investments in AI



€6,500 - €12,000 billion/year

economic impact of the automation of knowledge work, robots and autonomous vehicles by 2025

Source: European Commission (2019), IPOL (2020)

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studies have shown that hiring algorithms discriminate against a woman's professional profile based on intentional or unintentional biases that creep into the datasets.

As a result, the new framework requires providers and users of high-risk AI systems to undertake conformity assessments.

They measure their compliance with rules on data and data governance, transparency, human oversight, documentation as well as record-keeping. Apart from carrying out these assessments before the systems are sold or put into service, providers are obliged to implement a mechanism that facilitates post-market monitoring.

As far as 'low risk' applications are concerned, they mainly cover systems that interact with people, detect their emotions, and manipulate content. Interactive chatbots on websites or videogames featuring deep fakes is a case in point. Under the AI Act, such limited risk technologies can be subject to transparency obligations, which require users to be informed that they are engaging with a machine and not a human.

Finally, in order to give teeth to these provisions, the proposed legislation has envisaged a system of hefty penalties for companies, with some of the most serious breaches entailing a fine of €30 million or 6% of annual global turnover, whichever is higher.

exploit the vulnerabilities of specific groups such as children or persons with disabilities have also been prohibited under this legislation.

For example, toys that employ voice assistance to encourage a certain kind of behaviour among minors has been designated an unacceptable risk. Similarly, the use of 'real-time' biometric identification systems like facial recognition tools in public spaces has been subject to a general ban. Yet another category of prohibited activity is the utilisation of social scoring systems to monitor the trustworthiness of people. Widely employed by public authorities in China, this technology

has been dismissed by the bloc, not being in conformity with European values.

Meanwhile, 'high-risk' applications are those AI technologies that have an 'adverse impact' on EU fundamental rights, either as stand-alone products or as safety components within a particular product. These include systems that are employed in critical infrastructure, biometric systems, judicial matters, medical devices, and other machinery. Even algorithms that determine recruitment decisions or undertake 'surveillance advertising' can be deemed to be high-risk. For example, certain

AI patent applications



↑400%
increase of published AI patent applications in last decade

AI as part of the digital and green transition



60 million new jobs

could be created by AI and robotics worldwide by 2025

The EU helps create benefits for people and companies by funding AI projects through the Skills Agenda, the Just Transition Fund, Horizon etc.

Source: European Commission (2019), IPOL (2020)

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PLUGGING LOOPHOLES

Critics point out that the AI Act, in its current form, is riddled with gaps and omissions. For one, it does not apply to AI-based technologies that are specifically built for military operations. Drones and other automated weapons continue to be unregulated. Given Europe's apprehensions about Chinese supremacy in military AI, this status quo is unlikely to change soon.

Secondly, although there is a general prohibition on real-time biometric identification systems, an exception has been carved out for law-enforcement purposes. This means that facial recognition

FUNDAMENTAL RIGHTS IN AI: WHAT TO CONSIDER



Is it compliant?

- Design and use must comply with relevant laws
- Any data processing must respect data protection laws
- Considers the wider impact on other rights



Is it fair?

- Does not discriminate on grounds such as ethnicity, age, disability, sex and sexual orientation
- Respects the rights of children, older people and people with disabilities



Can it be challenged?

- People are aware AI is being used
- People can complain about AI decisions
- Decisions based on the system can be explained



Can it be checked?

- Assess and regularly review use of AI for fundamental rights issues
- People applying AI can describe the system, its aim and data used



Are external experts involved?

- Consult with experts and stakeholders
- Expert oversight

Source: European Union Agency For Fundamental Rights

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public will still have no legal route to access the documented results of such impact evaluations.

Therefore, the AI Act will have to be reviewed against a rights-based framework if it is to stake any claim to success in the future.

Assessment

Delineating a regulatory ecosystem for AI can have far-reaching implications not just in Europe but across the world. As was observed in the case of the General Data Protection Regulation (GDPR), any tech policy adopted by the EU has the potential to shape global standards, with companies and national jurisdictions scrambling to adopt the 'Brussels benchmark'.

In this era of disruptive technologies, the AI act serves as a timely reminder that the rights of citizens should be prioritised over commercial interests and the autonomy of tech companies. At the same time, it places emphasis on innovative entrepreneurship by facilitating 'regulatory sandboxes' that allow AI systems to be developed in real-world conditions, under strict oversight.

It remains to be seen whether the European 'big law' on AI forms a basis for transatlantic cooperation that offsets the 'digital authoritarianism' of Beijing. While the US' federal AI policy is focused on bolstering international competitiveness and national security capabilities, individual states like California have deliberated regulations that seek accountability for automated technologies and algorithmic biases. It will, however, not be easy to tide over existing differences in regulatory philosophies between the U.S. and EU. In dealing with Silicon Valley companies, America continues to favour a free-market approach. It would rather embrace a piece-meal approach that regulates specific aspects of AI, as opposed to enacting a comprehensive law that ties the hands of the industry.

mechanisms may be deployed in public spaces to combat threats like terrorism. While this might placate countries such as France that push for greater integration of AI into security apparatuses, it will not go down well with privacy-minded countries like Germany. As argued by digital rights activists, law enforcement exceptions can be grossly abused by governments and other partisan elements to carry out state surveillance or further vested interests.

The proposal to introduce conformity assessments is also not foolproof. Under the published framework, providers of AI can undertake self-assessments in certain circumstances without adhering to checks and inspections carried out by national authorities. This elimination of third-party assessment effectively puts compliance in the hands of service providers, thereby undermining the

entire rationale of regulatory review. While AI system providers need to prepare a 'declaration of conformity' and submit it to the concerned regulators, there is no simultaneous requirement of drawing up an audit report for the public.

Furthermore, there is uncertainty about the status of AI-driven algorithms. While algorithmic biases in social media, app stores, ad tracking, search engines or operating systems can indeed lead to manipulative or exploitative practices, the rules do not explicitly classify them as 'high risk'.

Apart from a cursory acknowledgement of the problem, they do not mandate disparate impact assessments that investigate biases against women, racial minorities, and other protected classes of society. Even if such a provision can be read into the 'conformity assessment clause' based on broad interpretations, the

CHINA'S DIGITAL COFFERS

As China test-launches its sovereign digital currency, countries around the world are scrambling to assess potential disruptions to the global financial system



SYNERGIA FOUNDATION
RESEARCH TEAM

Even as the crypto fever grips global markets, China has rolled out its virtual currency through live pilot programmes across the country. Officially known as the 'e-CNY', this digital renminbi is part of larger efforts to create a centralised digital payment system that supplements private electronic mechanisms like 'Alipay' and 'WeChat'.

Currently, this digital tender is issued by the People's Bank of China (PBOC) to an authorised group of state-owned commercial banks and other financial institutions, which then allocate it to the end-users. While the trials were initially carried out through randomly chosen participants in Shenzhen, Suzhou, Xiong'an and Chengdu, they have now been extended to bigger cities

like Beijing and Shanghai. Apart from being used in designated retail stores, the e-CNY can be employed towards the payment of utilities, transport, and government services.

If proven to be financially and technologically viable, reports indicate that China will officially launch the currency before the Winter Olympics in 2022. This will effectively secure its position as a global leader in the development of sovereign digital currencies.

FIRST-MOVER ADVANTAGE

As early as 2014, China's central bank had established a specialist research group to study the feasibility of state-backed digital currencies, with the aim of replacing some of the cash in circulation. Almost three years later, the State Council approved the development of this digital renminbi and tasked an institute with the creation of a developmental roadmap for the future.

As private stable coins rose in

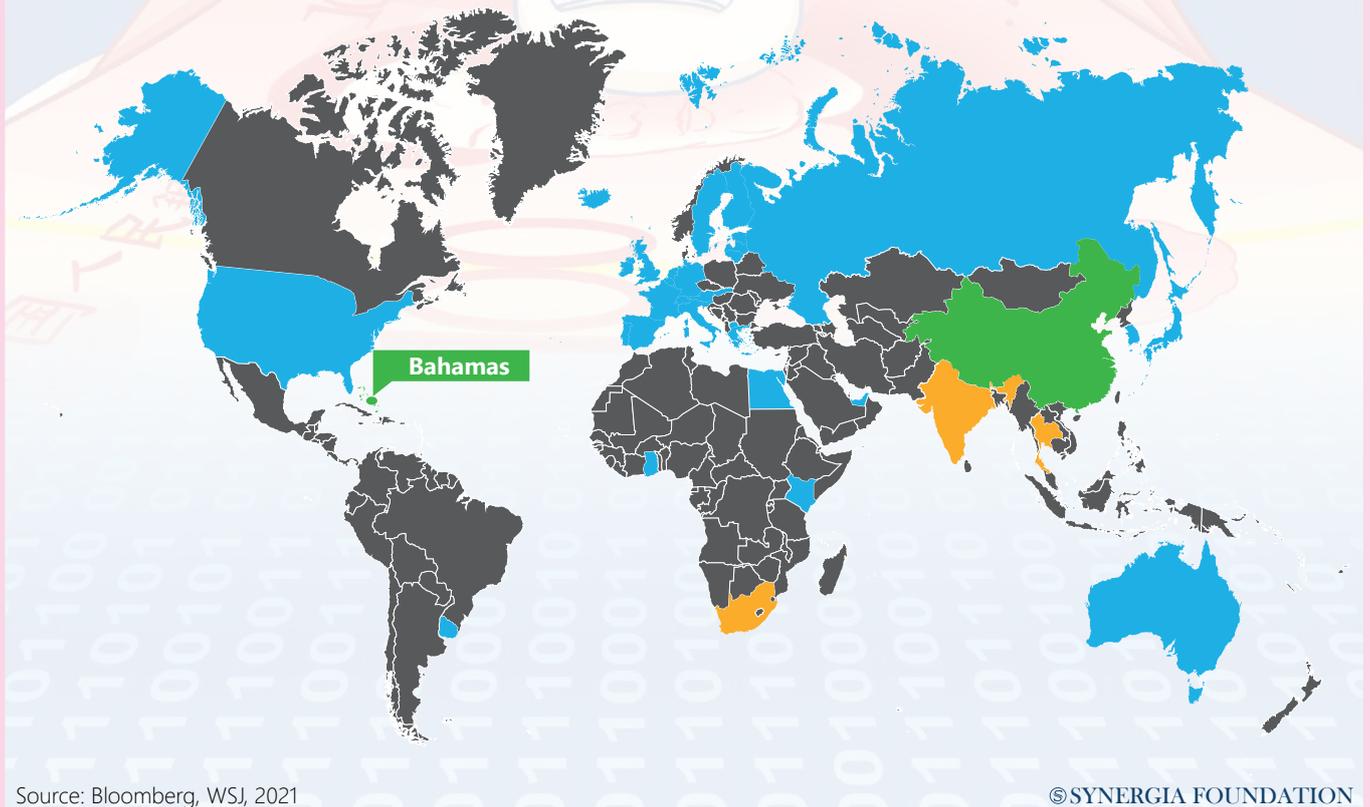
popularity, this push for a central bank digital currency (CBDC) was also accelerated. Eventually, pilot tests were launched in April 2020 to assess the strength of the digital payments' ecosystem. In doing so, the PBOC collaborated with local fintech companies like Tencent and the Ant group, which co-developed a technical platform for the national currency, including infrastructure and distribution channels. Even Huawei Technologies is believed to have been involved in the project by developing technical standards and incorporating a hardware-powered wallet for digital renminbi in one of its smartphones.

By pre-emptively positioning itself in the digital currency space, China could emerge as a global norm-setter. It has not only devised appropriate standards and legal frameworks for the e-CNY, but also carved out relevant use-cases. Given that it has widespread broadband coverage as well as flourishing e-commerce and digital payment platforms, the larger

CHINA FIRST MAJOR ECONOMY TO ISSUE DIGITAL CURRENCY

Central Bank digital currencies launched, under development or considered around the world

■ Currency issued ■ Plans to issue currency ■ Exploring digital currency



ecosystem is well suited for the roll-out of the CBDC.

Simply by making an effort to experiment with virtual currencies, the PBOC has acquired a head start. While smaller states like the Bahamas may have been the first-off-the-mark to issue such sovereign tenders, China is certainly the pioneer among 'major economies'.

IMPLICATIONS OF CBDCS

Backed by the sovereign national issuer, CBDCs turn the logic of cryptocurrencies on their head. As opposed to the decentralised distributed ledger technology enabled by blockchain solutions, government control is maintained over the monetary system. By reshaping the monetary policy and encouraging cashless payments, it

allows enhanced regulatory oversight over digital assets and prevents incidents of fraud or illicit financing. More importantly, it offsets risks associated with the accumulation of power in private fintech actors.

Currently, however, illegal transactions in China's underground economy cannot be wholly rooted out by the e-CNY. This is because criminals and money launderers retain the option to use alternate means like dollars, euro bills or gold to further their motives.

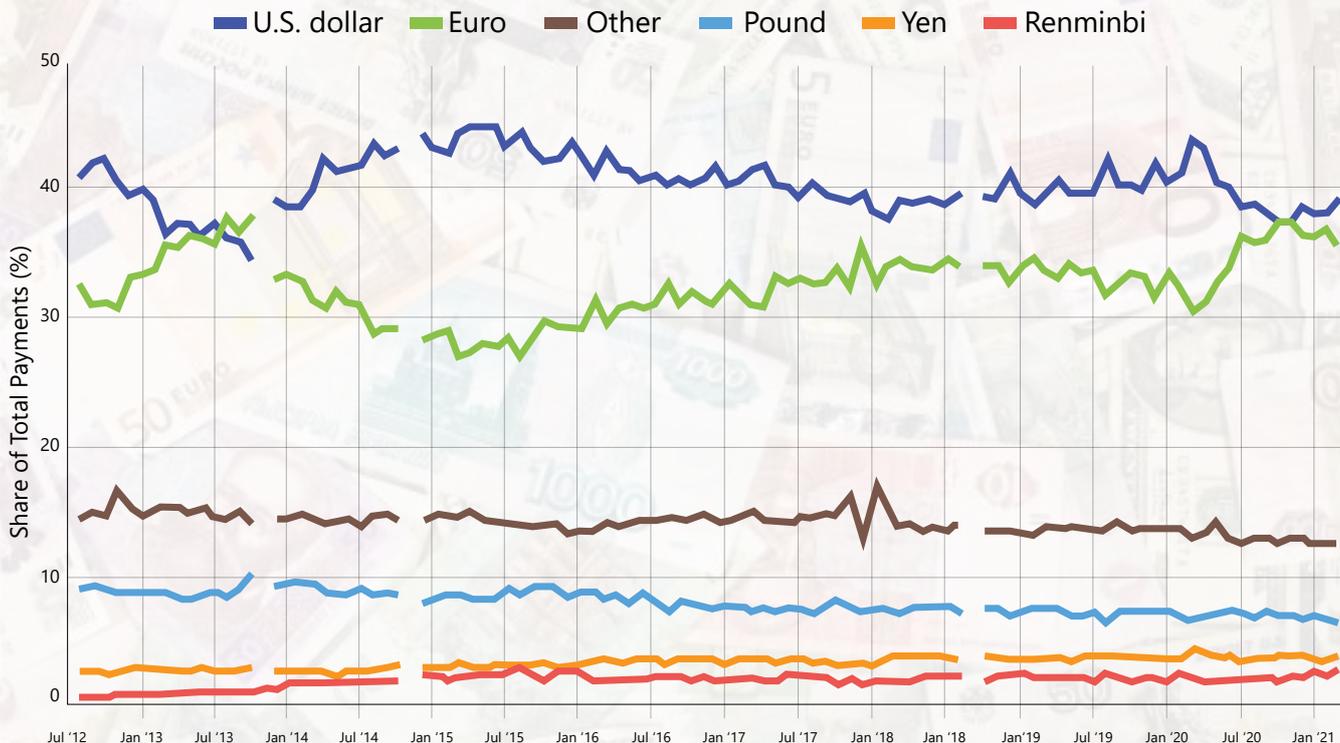
As far as big tech firms are concerned, they certainly stand to lose their market share to traditional banks. Up until now, private conglomerates like the Ant Group, Tencent, JD.com, and Baidu had exclusive access to troves of customer data, which allowed them to generate high-quality credit scores

and process loan applications. With the issue of a national digital currency, however, the PBOC will have the ability to monitor transaction histories and generate valuable insights about the customer behaviour/creditworthiness of borrowers. By sharing these details with state-backed banks, it can bridge the information gap with fintech giants and alter the balance of power between the two.

BIG BROTHER IS WATCHING

Unlike cryptocurrencies such as Bitcoin, the digital renminbi eliminates user anonymity so that the central bank can acquire control over payment channels and consumption data. Every transaction is tracked and recorded by the state, leaving a digital footprint in its wake.

BREAKDOWN OF INTERNATIONAL PAYMENTS BY CURRENCY



Source: SWIFT

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Liberal governments fear that this can further techno-authoritarianism by the Chinese state, wherein the e-CNY is deployed as a tool to monitor the economy and its people. Moreover, state surveillance of credit scores can promote an unhealthy involvement in the personal finances of a citizen. The public's access to money may be restricted by the government based on their spending patterns or vulnerability to debt.

However, it is common knowledge that the regulators in China have always had access to such information. All transactions on third-party platforms like Alipay or WeChat are required to pass through a central clearing platform called the NetsUnion, which is monitored by the PBOC. Transitioning to the e-CNY, therefore, does not necessarily provide additional oversight.

DEMISE OF THE DOLLAR?

At present, China has signalled that the digital money will be used for domestic retail payments, with international applications being prioritised for later. Nevertheless, the PBOC has been working with

central banks in Thailand, Hong Kong, and the United Arab Emirates to explore the use of e-CNY in cross-border trade. Reports also indicate that China may try to make it possible for foreign athletes and visitors to use the digital renminbi during the Winter Olympics in Beijing.

In certain quarters, there is a belief that the internationalisation of this virtual currency may hasten the decline of the U.S. dollar as the world's leading reserve currency. Currently, the latter's dominance in cross-border transactions affords power to the U.S. Treasury to cut off businesses or countries' access to the global financial system. Since most international transactions are routed through a dollar-denominated cross-border clearing system called SWIFT, any entity or individual that is placed on the U.S.' restricted list can effectively be frozen out of the global banking system.

However, if used to settle international financial transactions, then e-CNY can reduce Beijing's reliance on the U.S. dollar. It can also provide a mechanism for evading the existing sanctions regime. In other words, Beijing has much to gain from

a fully evolved fintech ecosystem that rivals SWIFT.

It is no surprise, therefore, that the Biden administration has stepped up its scrutiny of e-CNY. It remains to be seen whether it considers the creation of a 'digital dollar' to counter threats emanating from China's CBDC.

Assessment

In the short and middle term, it will not be easy for the digital renminbi to oust the dollar's status as a superior currency. As long as accusations of totalitarianism, surveillance, military adventurism or human rights violations plague China, markets will continue to repose confidence in the dollar.

To accelerate the internationalisation of the digital renminbi, China will have to accord equal importance to technical infrastructure and policy reorientations. Unless it loosens its tight grip over capital controls, there will be limited uptake of the currency.

DIGITISING THE ART MARKET

NFTs are the new buzzword in the world of art, where these digital artforms are setting a new record of millions of dollars apiece every other day



What started out as a trading mechanism for virtual crypto cats has now become an idea that is revolutionising traditional understandings of virtual finance and art. The recent Academy Awards immortalised the late Chadwick Boseman (from the fame of Black Panther) with an NFT of his portrait made by digital artist Andre Oshea.

Earlier this year, the respected auction house Christie's became the first to auction off NFT art for over \$69 million. Its rival, Sotheby's, has also made a tentative beginning by holding a "Fungible Collection", which reportedly netted over \$16 million in sales.

It is safe to say that NFTs or Non-Fungible Tokens have officially entered mainstream imagination as a new form of technology, akin to

cryptocurrency and the larger crypto world.

WHAT ARE NFTS?

Non-Fungible Tokens are digital assets that are unique and non-divisible. They constitute the next step in the crypto finance world, positioned just beside cryptocurrencies, security tokens, privacy tokens etc. They are used in a variety of virtual content such as digital art, collectibles, music, game tokens or even tweets.

Unlike fiat or cryptocurrency, NFTs are not interchangeable. You cannot exchange one NFT for another and hold the exact same value. Similarly, NFTs are individual units by themselves and cannot be broken into half. Bitcoins, for example, are made up of smaller units known as Satoshis and thus can be divisible. NFTs are traded on digital marketplaces like Open Bazaar or Decentraland.

The main aim of an NFT is to provide authenticity and ownership over digital content. This is achieved through smart contracts written into NFTs, which are stored on Ethereum blockchains. A blockchain works as a publicly distributed ledger where NFTs are stored and is, therefore, a decentralised database of all NFT transactions. This implies that one cannot interfere with one unit without changing the entire blockchain. Furthermore, there is no middleman or central entity overseeing or controlling the blockchain. The system runs itself, giving the user primary control and access.

NFTS IN ART: HOW DOES IT WORK?

While NFTs are being used for a wide variety of digital content, it is making a distinct impression in the art world. It all started in 2014 when Kevin McCoy and Anil Dash, the CEO

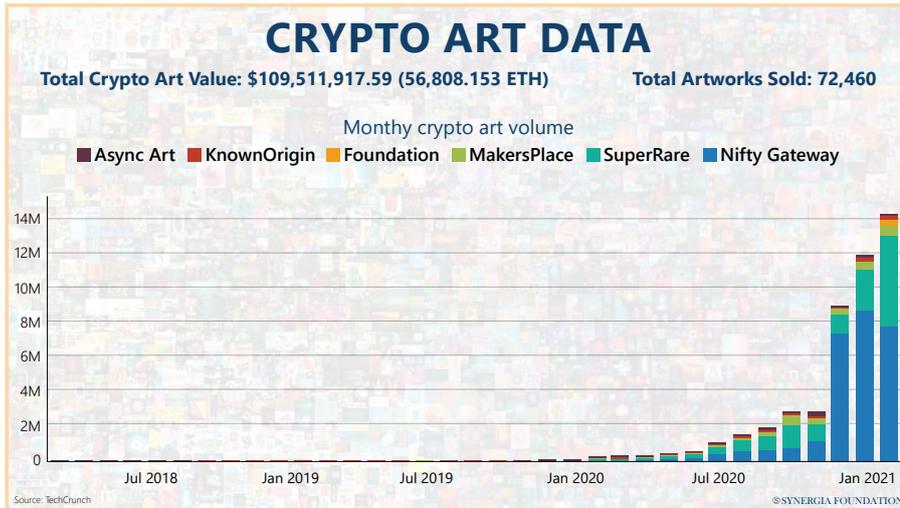
of Glitch teamed up for an art-tech exhibition to think and envision a technology to protect and support artists in a climate of Tumblr and other social media where works were shared, duplicated, and used by millions of users with no idea of its original creator or context. They introduced the concept of blockchain-backed system of owning artwork and called them Monetised Graphics. This idea of theirs which did not cause much sensation back then, is now headlining as 'NFTs with a million-dollar market.'

There are three main ways in which NFTs are changing traditional ideas of ownership, authenticity, and value.

Firstly, the blockchain-enabled NFTs, with the help of smart contracts (a piece of code that is designed to hold and carry out a certain set of instructions), essentially re-create tile registries that manage provenance and authenticity research of an artwork. This is currently done by museums, galleries, and independent Art foundations. While older artwork has a history, which needs to be vetted by a human entity before being entered into the block chain database, new artwork which is entering the market is authenticated as an NFT by the blockchain, thus removing the process of vetting by non-virtual entities.

Secondly, NFTs are capable of fractional ownership, which means that multiple people can own one NFT. This is mostly a method used by investors and collectors to mitigate risk. If the artist wishes to grant copyright privileges along with the artwork, this shared ownership can extend to re-selling royalties as shares and commodities in the stock exchange, thus making the profit off these art pieces two-fold.

Finally, NFT technology fundamentally enables the artist to have much larger control over their



run idly in the background of the computer, but now with the heavy network of finance blockchains created over the years, it needs immense amounts of electrical energy to run these computers. Professional miners now have entire warehouses and containers to generate power to make these computers work more efficiently and effectively.

The value that NFTs hold is from the energy that is spent making them. The environmental effects of such monumental energy consumption are alarming. Currently, NFT transactions use electrical power, which could light up the entire country of Argentina. There have been multiple solutions proposed, like introducing green technology, using carbon offsets or making lifestyle changes to mitigate the energy consumption elsewhere to balance NFTs. Carbon offsets are loopholes wherein you vow to plant one tree or fund an eco-charity for every NFT you make. This is frivolous, as it is not guaranteed that your tree will grow, and even if it does, it will be in a future which we are currently not sure if we will have.

artwork in terms of how and to whom it is sold. Physical pieces of art derive their value from the fact that they are unique and scarce. You can have as many prints as possible of the Mona Lisa, but at the end of the day, one knows that the original is hanging on the walls of the Louvre Museum. Digital art and content used to work primarily on the opposite principle. There is no original-duplicate binary. If one person develops a game, formats it, and uploads it for another user, both are using the 'original'. The experience is shared by both, which, if pleasurable, will be shared with other users and so on; same with digital art. There is a creator who might be getting credit (in some cases monetised), but mere ownership does not signify anything

unique in experience or otherwise. By applying the principle of scarcity over digital art, it becomes desirable and valuable. The very act of issuing an NFT is what makes it unique and scarce, thereby lending it value.

ARE NFTS A BIOHAZARD?

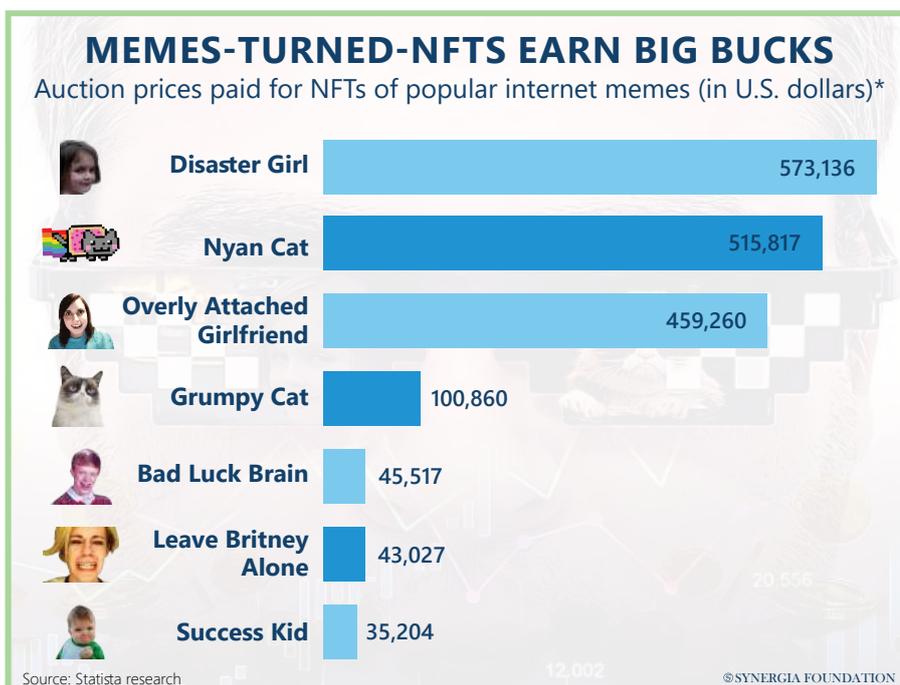
This value is created through mining. Mining is a process through which each transaction or block is vetted and added to the target block chain. The computer should solve competitive computational puzzles, after which you will be rewarded with the transaction. The greater number of blocks are added to the blockchain, the more 'work' (energy) the computer uses to solve these puzzles. At the beginning of crypto currency, it was a process that could

S Assessment

Environmental costs of any innovation are always considered as an afterthought. They are viewed as something that can eventually be taken care of. The same phenomenon has happened with NFTs.

There needs to be a robust undertaking to find new ways to generate power for NFTs or at list reduce consumption so that it can be effectively mitigated through other methods.

There is a genuine concern that the kind of hype that accompanies NFT, which pushes prices to unrealistic levels, could lead to wild speculations and the ultimate crash of these bubbles. This must be guarded against, while creating and regulations to prevent a speculative market.



GOOGLING A PROGRAMME FOR ORACLE!

The U.S. Supreme Court verdict, which resolved the decade-old legal case on the unrestricted use of Java as a programming language, came as a huge relief to software programmers and tech giants



The verdict of the U.S. Supreme Court on what has been dubbed as the 'copyright battle of the century' finally came out on April 5th in favour of Google LLC. The tech giant was locked in a legal face-off with Oracle America, Inc. over the use of Java programming codes and Application Programming Interface (API), which are the building blocks for the Android platform used in smartphones.

The verdict has set the ground for defining copyrights for the protection of codes and programming languages, like Java, in the development of applications.

THE GENESIS

Java, a widely-used programming language, was originally developed by Sun Microsystems as an open-source programming language with

most technologies licenced under a General Public Licence. The fact that it was open source and free created a strong community of software developers using Java, and it became one of the most sought-after programming languages. There are over 10 million Java users in the programming community, and one of the key reasons for its success is that codes written once on Java can be run on several different systems.

However, Oracle bought over Sun Microsystems in 2010 and decided to challenge the free use of the API. It argued that that it had rights over the codes and anyone copying it to build any platform or application was in violation of its copyright. This was the foundation of a legal battle against Google. While Oracle was not the original code writer, it had bought the company that originally devised the code. Similarly, Google was not the original user, but had bought Android Inc., which used Java to create a platform for smartphones in 2005. Android phones, since then, have flourished and become a household phenomenon, generating

massive revenues for Google.

The first legal salvo was fired by Oracle in 2010 at the San Francisco Federal court. The case threatened to make one of the most popular open and free source programming languages unavailable to programmers.

In fact, an appeals court had ruled in Oracle's favour before the issue was taken up in the Supreme Court. The tilting of the judicial scale towards Oracle sent shivers across the programmer community and tech giants as reusing and relying on already created APIs is a common practice in the industry.

'FAIR USE'

Google's defence was twofold – one that APIs were not copyrightable, and second, even if they were protected under copyright rules, the Java API used for Android was 'fair use'. That Google had copied a code was not the matter for contention, as it was obvious it did.

The lower courts were divided on whether the portion of the

A BRIEF HISTORY OF ORACLE V. GOOGLE

The Oracle v. Google case is ripe for Supreme Court review. Below is a brief history of the case.

1990

Oracle is part of ACIS which states in its by-laws: "Nothing in copyright law should prevent or discourage the development of interoperable products or systems."

2007

Sun supports Google's use of Java: "We've obviously done a ton of work to support developers on all Java based platforms, and we're pleased to add Google's Android to the 'list'."

2010

Oracle acquires Sun in January of 2010.

2012

District court finds that Google did not infringe Java interfaces. In 2013, Oracle files an appeal before the Federal Circuit.

2014

Google petitions for a writ of certiorari at SCOTUS to appeal Federal Circuit decisions. Cert is denied in July 2015.

2018

Oracle appeals and the Federal Circuit overturns the jury's decision.

1996

Sun releases Java as a free and open source programming language available for all to use without a license.

2008

Google releases Android using only Java API declarations suitable for the new smartphone platform.

2010

In August 2010, Oracle sues Google for allegedly infringing Java patents and copyrights.

2014

Federal Circuit finds Java APIs are protected by copyright - sending the dispute back to district court to be tried for fair use.

2016

District court jury finds that Google's use qualifies as fair use.

2019

Google again asks SCOTUS to hear the case.

Source: Disruptive Competition Project

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coded package being a book. Users can this public library to identify the right book and the specific chapter to get their work done.

The tech world considers this as a crucial judgment that will have long-lasting impact on the industry. It is essential for developers working in a different environment to have the freedom to use APIs. Many observers argue that interoperability of systems depends on the ability to use API freely, and a win for Oracle could have been a blow for developers. However, the court's judgement still leaves behind a grey area, and experts feel this may not be the last of copyright cases that we witness. The Supreme Court has not completely ruled against copyright protection for APIs and has only upheld Google's case as it fell under the ambit of fair use.

Assessment

While the judgement settles a closely watched lawsuit and gives a strong legal foundation for software developers, it seems to have ducked the larger issue of copyrighting an API itself. This leaves the door open for future disputes, although the silver lining is that the court did not indicate that programming tools are copyrightable. Monetising APIs will only cause additional burden for customers, with a concurrent increase in revenues for corporates that are already rich.

Original developers and companies like Oracle will be unhappy and have accused Google's market power and dominance. They may look at challenging other uses of their API, and that could create uncertainty.

The issue emphasises the need to define several structures in the internet and programming space where the creator is often not the only user or beneficiary of a creation. Clearly defining open source and free resources is important to bring clarity.

codes was under copyright, but the Supreme Court sidestepped that contentious issue. Instead, it focussed on whether it constituted fair use or not. Its view was that the first question became redundant if fair use was established. According to American laws, fair use allows even copyrighted content to be used for purposes such as criticism, teaching, news reporting, research etc. The criteria for fair use are the nature of the work, the purpose of use, how much the used portion matters in the whole content and the effect the content has on the market. From this framework, the Supreme Court deduced that the code that Google copied only

allowed programmers 'to call upon prewritten computing tasks for use in their own programmes'. The final view by the Supreme Court was that Android programmers only copied what was needed to allow programmers to work in a different environment.

Hence, it did not find that Google infringed on the copyrights of Oracle. This judgement was hailed by several leading tech giants, including Microsoft, which relies on the practice of using API.

THE IMPACT

Experts explain API with the analogy of a public library, with each



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