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Pierre BLANCHET,
Head of Investment Intelligence



Aurelien STRENTA,
Emerging Markets Analyst (V.I.E)

Covid could become endemic and remain a source of economic uncertainty over the medium term

Geopolitics of the vaccine: variance risks

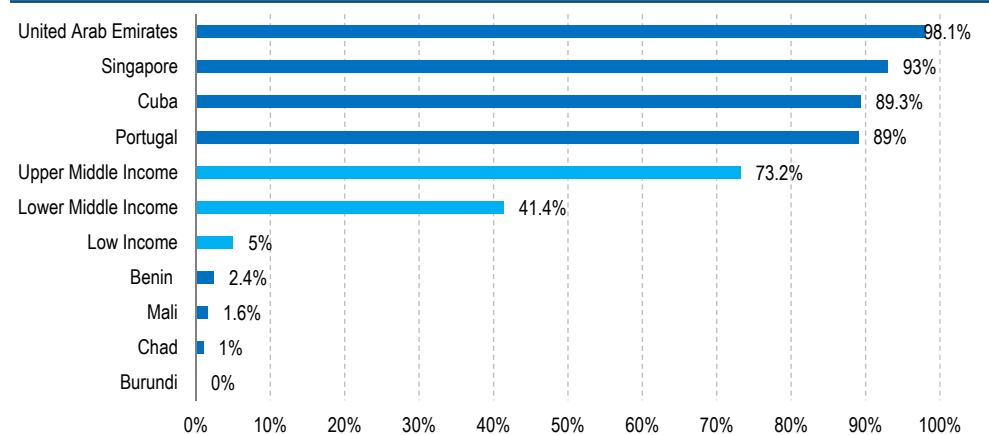
Covid-19 vaccines have been rolled out for a year now. Despite official commitments to provide access to effective jabs to all countries, production constraints and national priorities have resulted in uneven distribution, with some countries close to 100% vaccination rates while others are still below 5%. More than a dozen vaccines are now available, but with different efficacy levels and the variant Omicron will probably reduce the efficacy of existing jabs. As expected, the geopolitics of the vaccine have come into play. COVAX's inability to reach its targets shows that, on top of real constraints, vaccines are soft power weapons that are being used for geostrategic purposes.

Vaccines are unequally distributed

A year after the first Covid-19 vaccine approval, the global vaccination campaign is still underway. More than half of the world population has received at least one of the 7.5 billion doses of vaccine administered globally. Another 1 billion doses should be given by the end of the year at the current rate of 30 million doses a day. This could be considered as a success on this sole measure. Yet, **vaccination rates are very heterogeneous among countries and even social groups**, and are mainly explained by wealth disparities. In the most advanced countries, vaccination rates have already reached high levels (74% in the

UK, 70% in the EU and 67% in the US) with a direct positive impact on hospitalisation and fatality rates. In low-income countries (mainly Sub Saharan Africa), fewer than 5% of people have received at least one dose. The situation is uneven within developing countries as well, with some reaching high levels of vaccination (Figure 1) while others are still lagging behind. Vaccine shortage are not the only reason for the low vaccination rates, which also have internal causes such as lack of political will and fears over vaccines. The first consequence of this situation is that **global immunity is still far away.**

1/ Share of people that received at least one dose of Covid-19 vaccine



Source: ourworldindata.org, Amundi Research - Data as of 19 November 2021

As the wealthiest nations roll out boosters for at-risk population groups in order to fight the Delta variant, they produce or purchase more for themselves than expected and deliver less to the poorest nations. **COVAX's¹** initial goal was to donate 2 billion doses by the end of 2021. At the time of writing, only 500 million doses have actually been shipped and delivered. The US committed to 800 million doses but delivered only 108 million, and the EU only delivered 40 million out of the 350 million announced. More than 50 countries around the world have vaccinated less than a quarter of their population. For dozens of them, the 70% vaccination rate threshold will not be reached until the end of 2022 or maybe 2023. This is leading to subscale and

suboptimal allocation of vaccines. Therefore, the objective of global herd immunity looks less and less achievable. Moreover the Omicron variant includes a significant number of mutations and is spreading quickly which means that new vaccines will have to be used. Covid will probably become an endemic disease in low-income countries; in a worst case scenario virus mutations could maintain the pandemic for many more years (see Amundi Central and Alternative Scenario). As existing vaccines become less effective against new variants and/or as immunity fades after six months on average, multiple vaccines and boosters will be needed in wealthy countries, while middle-to-low-income nations will face a rising number of casualties.

¹ Covid-19 Vaccines Global Access, abbreviated as COVAX, is a worldwide initiative aimed at equitable access to Covid-19 vaccines directed by Gavi, the Vaccine Alliance, the Coalition for Epidemic Preparedness Innovations, and the World Health Organization

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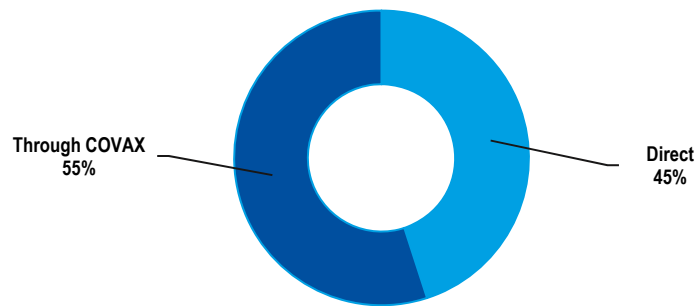
Geopolitical issues explain the uneven vaccination roll-out

There are several reasons behind COVAX’s underperformance. The first is that pharma companies have failed to supply jobs in line with their commitments. Or when they did, these vaccines have not been shipped to the targeted recipients Pfizer, J&J, Moderna, Sinovac, Novavax, for instance, have delivered few or no vaccines to the program². The second is that India, which is producing a significant volume of AstraZeneca’s vaccine, banned exports over the summer in order to meet its own vaccination targets. A third

reason is that **many countries would rather donate vaccines directly, in order to enhance bilateral relationships** or as diplomatic soft power rather than via COVAX, which is pooling donations. Australia, for instance, has built a partnership with Vietnam and delivered 1.7 million dose this year. 45% of US vaccine donations are made directly and 50% of all US donations are to five Asian countries – Pakistan, the Philippines, Bangladesh, Vietnam and Indonesia, which, incidentally, are important to Washington policy in the region.

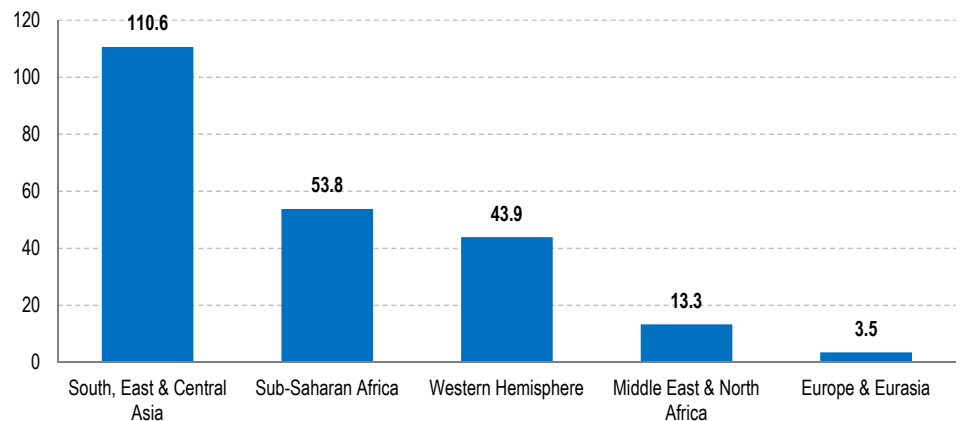
² See Moderna Chief Executive interview by the Financial Times 30th Nov 2021

2/ U.S. Covid-19 Vaccine Donation Doses Delivered by Delivery Mechanism



Source: U.S. State Department, COVAX, KFF - Amundi Research - Data as of 19 November 2021

3/ U.S. Covid-19 Vaccine Donation Deliveries by Region (in million doses)



Source: U.S. State Department, COVAX, KFF - Amundi Research - Data as of 19 November 2021

Many countries would rather donate vaccines directly rather than via COVAX

Therefore, as we were expecting in May (*Geopolitics of the vaccine*), the geopolitics of the vaccine have indeed come into play. Vaccines are not being distributed in accordance with population size or healthcare systems’ relative weaknesses, but other criteria, i.e. national and geopolitical

interest. Indeed, governments focus first on their own populations and national constraints rather than on global policies, despite their commitments. Vaccines are soft power weapons being used for geostrategic purposes.

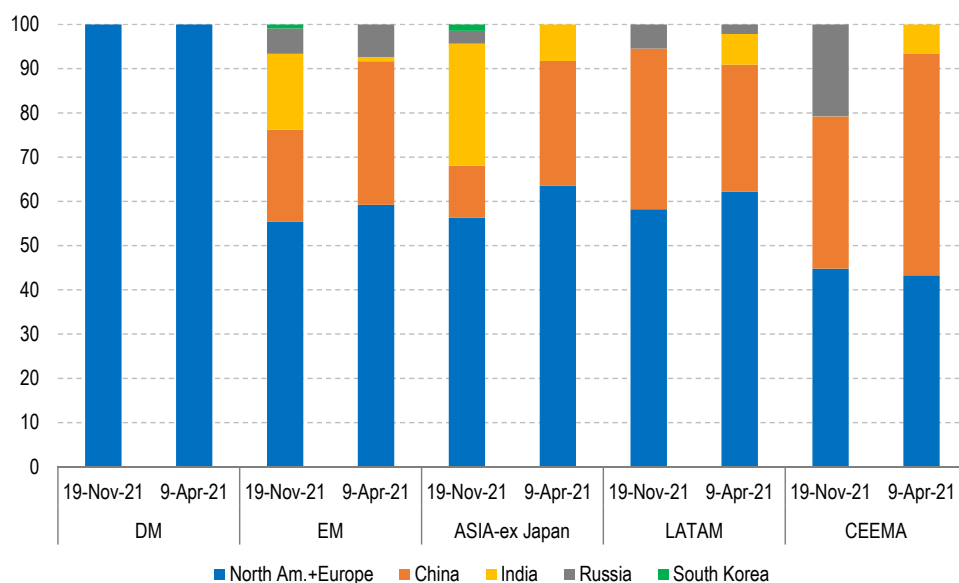
India becomes an alternative vaccine provider

Since our latest publication (on 5 May 2021), advanced economies have remained self-sufficient and now answer to more than half of emerging economies’ vaccine demand. The demand for US vaccines in particular is still very strong. However, a new player has fortified its contribution: India (see Figure 4). Among the emerging countries that have ordered vaccines to cover more than half of

their population (>15 years old), 21% are from China, 17% from India, and 5% from Russia. Moreover, India’s presence in Asia-ex Japan captures almost 30% of vaccine demand, exceeding China (12%). This breakthrough is due mainly to two factors: India provides itself 47% of its orders (see Figure 5) and accounts for 37% of EM vaccine demand.

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4/ Vaccine providers' country by region (%)



Source: Duke Global Health Innovation Center, Amundi Research - Data as of 19 November 2021

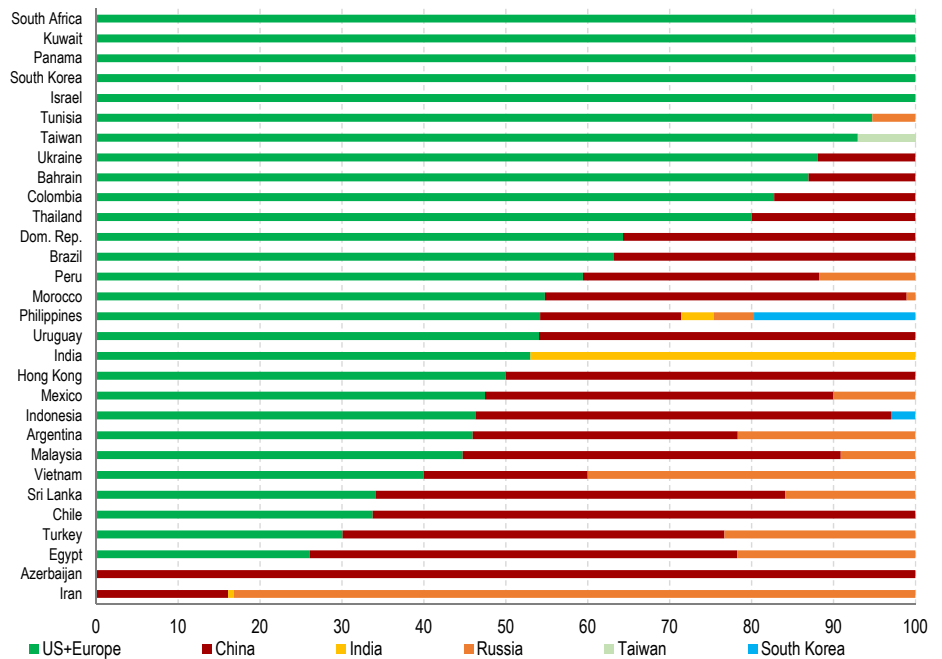
Vaccines' efficacy

Company	Pfizer-BioNTech	Moderna	AstraZeneca	J&J	Novavax	Sinopharm	Sinopharm-Wuhan	Sinovac	CanSino	Vector Institute	Bharat Biotech	Gamaleya
Country	US & Germany	US	UK & Sweden	US & Belgium	US	China	China	China	China	Russia	India	Russia
Efficacy rate	91%	>90%	74%	US: 72%, BRL: 68%, SAF: 64%	89.7%	78.1% 50.4% (Peruvian study among healthcare workers) and disappointing results in a Hungarian study	72.80%	BRL: 50.65%, TKY: 83.5%, CHL: 67%	63.7% but efficacy drops to 57.5% after 28 days according to a CanSino representative	Unknown no details published of Phase 3 trial and highly contested results of Phase 1/2	77.80%	91.6%, 88.1% (Argentine study)
Variant efficacy	Dominant variants	less effective but strong protection still	strong protection									
	Delta	88% (British study) Booster: 95.6% (Israel study)		67% (British study) 87% against hospitalization and death (Canadian study)	Mixed results	effective (early studies)	70% (Chinese study during the Guangdong outbreak but not yet peer-reviewed); same antibody responses (Sri Lanka study)	70% (Chinese study during the Guangdong outbreak but not yet peer-reviewed)			65.2% Still effective for Delta plus variant	neutralised variant but less effective
	Beta			52% (South-Africa)	51%	slightly less effective but no publication in a medical journal						

Source: NY Times, Reuters, Bloomberg, Amundi Research

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5/ Distribution of vaccines reserved per providers' country as of total (%)



Source: Duke Global Health Innovation Center, Amundi Research - Data as of 19 November 2021

Among emerging markets, Europe and the US remain the main source of vaccines. However, China, and now India are alternative, or even the main, providers in certain countries. Burundi received from China its first shipment of vaccine in October. Yet China's vaccines'

lower efficacy (see table 1) and supply chain constraints limit its ability to distribute Chinese jabs. Although few in number, we notice that a few countries have reserved vaccines from South Korea and Taiwan.

Investment consequences

We are now assuming in our central scenario that Covid will become an endemic disease with multiple waves adding to economic uncertainty. The Omicron variant fast propagation and threats confirms this approach is relevant. In our downside scenario, virus mutations could precipitate an economic downturn. As existing vaccines become less effective and/or as immunity disappears after an average of six months, multiple vaccines and boosters will probably be needed in wealthy countries. This will lead to public support and private investment in this space, which will underpin healthcare sector valuations. Lastly middle- to low-income nations and some emerging markets will face a rising number of casualties and diverging growth paths versus highly vaccinated nations.

Despite mass vaccination and newly approved drugs³, and unless it miraculously disappears, Covid-19 is here to stay but will eventually turn endemic. The fact that AstraZeneca is moving away from the non-profit model used so far confirms it. The world could then be split into three: high-income countries with efficient vaccines and treatments; middle-income countries with mildly efficient vaccines and fatality rates based on the weaknesses of their healthcare systems; and low-income countries with limited access to vaccines, suffering from uncontrolled variants and an endemic disease similar to malaria⁴. Like climate change, Covid is bringing us back again to the debate on our collective responsibilities.

Finalised on 30 November 2021

³ Pfizer antiviral Paxlovid and Merck Lagevrio

⁴ According to the WHO report for 2019, 229 million cases of malaria worldwide resulted in an estimated 409,000 deaths. Approximately 94% of the cases and deaths occurred in Sub-Saharan Africa

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Chief editor

BLANQUÉ Pascal, Group Chief Investment Officer

Editor

DEFEND Monica, Global Head of Research

Global Research contributors

AINOUZ Valentine, Deputy Head of Developed Markets Strategy Research, CFA

BELLAÏCHE Mickael, Fixed Income and Credit Research Strategist

BERARDI Alessia, Head of Emerging Macro and Strategy Research

BERTONCINI Sergio, Senior Fixed Income Research Strategist

BLANCHET Pierre, Head of Investment Intelligence

BOROWSKI Didier, Head of Global Views

CESARINI Federico, Head of DM FX, Cross Asset Research Strategist

DROZDZIK Patryk, Senior EM Macro Strategist

With the Amundi Insights Unit contribution

BERTINO Claudia, Head of Amundi Investment Insights Unit

CARULLA POL, Amundi Investment Insights Unit

FIOROT Laura, Deputy Head of Amundi Investment Insights Unit

Conception & production

BERGER Pia, Research

PONCET Benoit, Research

Deputy-Editors

BLANCHET Pierre, Head of Investment Intelligence

BOROWSKI Didier, Head of Global Views

GEORGES Delphine, Senior Fixed Income Research Strategist

HUANG Claire, Senior EM Macro Strategist

PORTELLI Lorenzo, Head of Cross Asset Research

STRENTA Aurelien, EM Research Analyst (V.I.E)

USARDI Annalisa, Cross Asset Research Senior Macro Strategist

VANIN Gregorio, Cross Asset Research Analyst

VARTANESYAN Sosi, Senior Sovereign Analyst

DHINGRA Ujjwal, Amundi Investment Insights Unit

PANELLI Francesca, Amundi Investment Insights Unit