

Nicolo G. Torre
Ph.D. CFA
Managing Director
Lloyd Tevis Investments

3658 Mt. Diablo Blvd
Suite # 201, Lafayette
CA 94549

Market Commentary

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International Politics

After a month of diplomacy, Putin has led the Russian Federation into invading Ukraine. This move has generated enormous perplexity and doubt among commentators, but surprisingly swift action among statesman. We think Putin is being quite transparent about his motives and goals. With a GDP of \$4T the Russian Federation finds itself squeezed between China (GDP \$15T) and the EU (GDP \$13T.) It is not in a position of long term viability.



It could accommodate itself to the EU, but that would require deep reform of the regime. Or it could accept the situation of a junior partner to China, but the Chinese are not known for generous treatment of vassals.

Putin has instead chosen the path of rebuilding greater Russia, more or less along the 1914 borders and based on the old ideology of Pan-Slavism. This is a direct threat to Finland, the Baltic States, Poland, Romania, Moldavia and Ukraine. The Baltic States (Estonia, Latvia and Lithuania) are already hemmed in by Russia's detached enclave of Kaliningrad on the Baltic and their military position is thought to be somewhat precarious. Less directly Putin's plan is a threat to Germany, Sweden and the states of Western Europe which are joined by the NATO alliance to the Baltic states, Poland and Romania. Finally the United States is the very core of the NATO alliance and much concerned by Putin's ambition to rebuild greater Russia. The NATO and EU states have come together in a determination to stop Putin. With a combined GDP of \$38T there is no doubt that they will prevail in a long struggle. Alone Putin's strategy is a sure loser and even in combination with China his strategy does not look winnable. Putin's decision to go ahead is probably based on a combination of calculation and wishful thinking. The calculation was that the US did not care enough about Ukraine to risk a nuclear confrontation. The wishful thinking was that the US and EU were too divided by internal quarrels to pull together in the face of a common threat and take effective action. Another miscalculation appears to have been the reaction of the Ukrainians, many of whom Putin probably expected to support his plans. Putin assuredly knows his plan is risky and that accounts for the evident strain diplomats report seeing in him. However he sees Russia as facing an existential choice and he has decided to move forward forcefully despite the risk.

The invasion is cloaked in the usual fog of war and accompanying deception. For instance, the Ukrainians claim 6,000 Russians killed in the first week while Russia admits to 490 dead and about 1500 injured. The Russian invasion began with special forces operations and armored thrusts, but it met determined resistance from the Ukrainian forces. The Russians apparently hoped to capture Ukraine's capital Kiev in the first advance. Those hopes were dashed by the Ukrainians who have risen as a people to resist invasion and whose military leadership has been adroit at exacting a price for every mile of Russian gains. The Russians are now consolidating their supply lines and preparing for the siege of the Ukraine's major cities. Onset of the spring thaw and the "mud

season" is in any event bringing a pause to movement warfare. The Russians will use this two month period to batter Ukraine's cities with artillery and tactical rocket fire. Once the civilian population has fled and the cities are rubble they will launch an assault which will be conducted with the ruthlessness of a cave clearing operation. When the mud season ends in May they will hope to be in a position to advance along the Kiev-Odessa axis. This advance will likely force the Ukrainian forces to withdraw from the eastern half of the country and regroup around Lviv. At this point the Russians will offer to accept the surrender of the Ukrainians and when it is refused they will have the summer to assault the western redoubt. They are also likely to move into Moldavia and to take formal control of their erstwhile ally Belarus which they already effectively occupy. At this point Putin will have accomplished much of his plan. Destabilizing or terrorizing the Baltic States and Finland into a vassal status can be left for a later mopping up operation.

Internally Putin is using the war to strengthen his autocracy and to shed the last vestiges of a democratic society. Inflamed by nationalist propaganda the immediate response of the populace is supportive of Putin, although a brave strand of dissent struggles to make itself heard against the police measures being taken. Putin is being compared by some to Hitler. There is this similarity. In 1920-30s Germany there was a section of society which refused to accept the verdict of World War I and was willing to refight the conflict. Similarly in Russia there is a section which refuses to accept the verdict of the Cold War and is willing to contest it. Hitler and Putin both tap this discontent with the results of the previous defeat. In Germany the most cogent and potent resistance to Hitler actually came from the senior professional military which had a clear eyed appreciation of what the results of Hitler's policies would be. The same is probably true of Russia. Putin is taking no chances – he is keeping a good distance from his general's briefcases. But then the generals also have learned from Stauffenberg's unsuccessful move on Hitler. Rather than attempt something so delicate as a personal assassination, they are more likely to pummel Putin's headquarters with missile fire if they decide to move against him.

The immediate response of NATO and the EU has been to launch an economic war on Russia. How deeply it will bite is as yet unclear. They are also pouring arms into Ukraine in the hopes that it will turn into a second Afghanistan and bleed the Russians to the point of retreat. However, the geography of Ukraine is less favorable to partisan warfare than Afghanistan and again it is unclear how much success this will bring. The Western Powers can do more. Once the weather warms they can stop purchases of Russian gas and oil which provide about half the Russian government's revenue. They could use the next two months to solidify NATO by incorporating Sweden, Finland and perhaps Moldavia. They could close the Denmark and Turkish straits to Russian commerce, thus nullifying much of the strategic rationale for the war. They could garrison the Baltic States and Poland with strong forces. Doing so would force Russia to leave major forces guarding St Petersburg and Minsk and thus unavailable for use in Ukraine. Some of these actions are technically acts of war, but with its forces already fully engaged, the Russians are unlikely to widen the war at this point. If Russia's campaign in Ukraine turns frankly genocidal the US would be under considerable pressure to intervene directly. There is little doubt that its air force can sweep the Russians from the sky and that Russia's massed armor formations are quickly liquidated once they lose air cover. However the risk that a desperate Putin "goes nuclear" in response will keep this move toward the back of the pack. A US intervention would more likely take the form of a NATO enforced no fly zone over a humanitarian refugee in the Western Ukraine or perhaps Moldavia. Putin's declared intent of "denazifying" the Ukraine is a definite warning that broad measures against the populace are planned – as for instance forced resettlement east of the Urals.

The US's preferred strategy is a slow military and economic suffocation of Russia which never quite drives Putin to the limit but which persuades the Russian generals that whatever tactical gains they may make, their strategic defeat is certain. At some point they will hopefully see that both Russia's best interest and their own careers would benefit from retiring Putin and making peace with NATO. Peace under these circumstances would free Moldavia, Ukraine and Belarus to join NATO and eventually the EU. Russia would be forced to cede Kaliningrad, which perhaps would become an independent city state within the EU. The Ukraine would likely regain the Crimea together with significant reparations from Russia. At this point the Russian Federation's position is too diminished for it to attempt threatening NATO again and it probably focuses on internal reform and on maintaining its position in Asia. This would be a preferred outcome rather than a long drawn out cold war that ends with the collapse of the Russian Federation and the acquisition of Russia east of the Urals by China.

In summary, we see Putin's war in the Ukraine as similar to France's war in Algeria (1954-1962.) Both wars are last gasps of declining global powers. In both wars the global power may gain tactical victories but its strategic position is hopeless from the start and that ultimately becomes clear to all but the most intransigent members of its leadership.

For the Ukrainians the situation is tragic. One million fled the country in the first week. The UN is expecting more than four million refugees ultimately. The war with Russia will be bitter and casualties high. Many families will be broken and cultural treasures destroyed.

Much concern has been evinced about China. Will it take advantage of the situation to move militarily against Taiwan or to take other aggressive action in Asia? Presently China's economy is in a growth recession and it is fully aware that Putin's gamble is both risky and – if successful – not particularly to China's advantage. We think China will remain detached and wait to see what plums fall in its lap.

Covid

By now the nature of the Covid epidemic is clear. The world is joined by a dense network of air routes and it is this mechanism which the virus uses to propagates. As a result, variants can arise in obscure corners of the world and rapidly be carried to the centers of wealth which are the most connected and thus most vulnerable population centers. The less connected parts of the world, such as the interior of Africa, are by contrast not heavy foci of infection. The emergence of the

pandemic now, rather than say 30 years ago, is probably due to the air network having passed some critical density in the intervening years. The air network is available for exploitation by other emergent infectious diseases besides Covid. Until we learn how to mitigate this consequence of air travel, we may be living in an era of continuing pandemics.

A second feature of the virus is fairly rapid evolution. This evolution has been in the direction of greater contagiousness



and to a degree away from immunity previously acquired by vaccination or infection. The result is surges of infection at approximately six month intervals. Although public health measures such as masks and social distancing are effective supplements to waning immunity the public appears either unwilling or unable to sustain these measures in the absence of a surge. This dropping of safeguards probably also contributes to the oscillatory nature of the epidemic.

For the virus to evolve rapidly it must have a large reservoir of susceptible persons to infect. In the 12 months since vaccines became widely available some 10 billion doses have been administered representing about 4 billion full courses. That number is to compare against a world population of 8 billion. Hopefully as the reservoirs of susceptibles are drained over the coming year the rate of new strains emerging will slow.

A third feature of the disease in the United States is the sharp split in vaccine uptake along partisan political lines. In the coastal states and metropolitan centers (i.e. in democrat majority areas) vaccine uptake is about 80%. In the old confederacy and in rural states (i.e. in the republican heartland) vaccination rates are about 55% (table 1.)

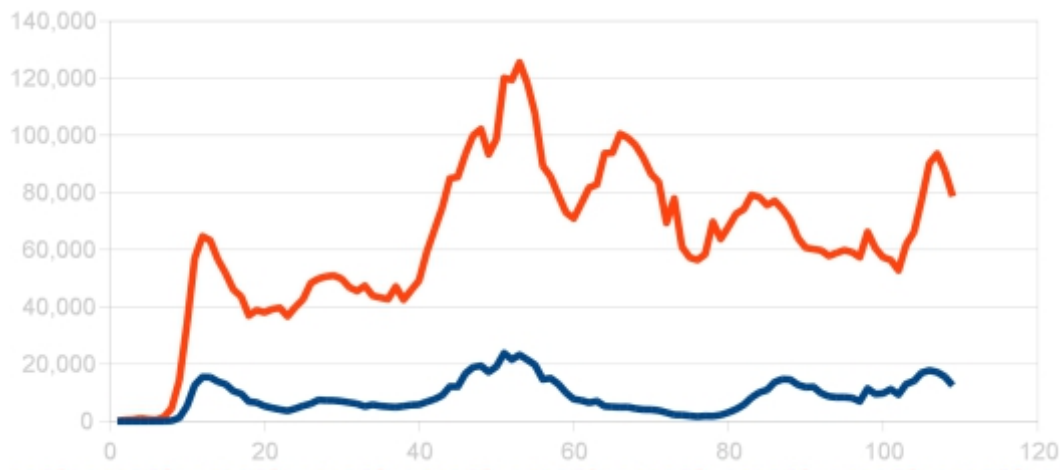
Table 1: US Regions With Highest and Lowest Vaccine Uptake

Region	Uptake %	Region	Uptake %
District of Columbia	93	Wyoming	51
Rhode Island	81	Alabama	51
Vermont	80	Mississippi	51
Puerto Rico	79	Louisiana	52
Maine	79	Arkansas	54
Massachusetts	78	Tennessee	55
Connecticut	78	North Dakota	55
Hawaii	77	Georgia	55
New Jersey	76	Indiana	55
New York	75	Idaho	55
Average	80	Average	53

This split is most unfortunate as it turns out vaccinations are quite effective at forestalling serious disease and death (table 2 in annex at end) Putting all these factors together, we have the curious current status of the epidemic. Although Covid is a disease of the rich world, within the United States it is becoming the disease of conservative backwaters. Coastal and metropolitan political and press elites are losing interest in a disease whose lethality is, for them, sharply diminished. Meanwhile the death rate is still elevated (figure 1) and the disease remains quite capable of evolving a new highly contagious and lethal strain in perhaps a 6-12 month time frame.

We advise readers to get vaccinated if possible, to maintain sensible personal precautions and to continue monitoring the situation. Covid is most likely not yet under control. Persons with early signs of Covid should seek testing and antiviral pills immediately. The pills are about 90% effective at preventing progression of the disease to the point where hospitalization is required.

Figure 1: Weekly Deaths From Confirmed Cases of Covid-19



US in blue, world (including US) in red. Week number labels horizontal axis. Total US dead currently 960,000 and world dead 6,000,000. US dead 289 per 100,000. World dead 76 per 100,000. US death rate is 3.8x the world average.

Source: John Hopkins Covid tracker

Domestic Politics

Biden continues to poll poorly. The progressives are disappointed by his failure to deliver a massive social program in the mold of FDR or LBJ. His enemies on the right do not fear him and those on the right who might cut deals with him remain self protectively circumspect in consequence. We see him as more resembling Truman or the senior Bush – a highly competent Washington insider who lacks the communication skills required to build mass popularity. Such presidents often face a carping press which undervalues their achievements at the time but their stature grows in retrospect. Beyond just press, however, there are real economic issues (as discussed below) which are undermining his popularity and that of the Democrats more broadly.



Biden's major rival Trump continues to see a deterioration of his legal and financial situation. His accountants have disavowed ten years of financial statements they prepared based on data he supplied. This action likely leaves him in breach of his loan covenants. It also leaves him highly vulnerable to the New York State Attorney General who is conducting an investigation under the Martin act. The Martin act is a century old law designed to keep fraud out of the New York financial market. It empowers the Attorney General to conduct investigations outside of a grand jury proceeding and thus without the use immunity that in New York attaches to grand jury testimony. The Attorney General has a right to question witnesses without benefit of counsel or the protections against self incrimination provided by the Federal constitution. It criminalizes the making of false statements without the need to show intent or benefit on the part of the defendant. The district court has ordered Trump and two of his children to provide testimony within the month. The State

Appellate court will probably take until summer to affirm that order. At that point the Trumps will need to provide their testimony. The attorney general is probably more interested in using this record to constrain any legal defense they might raise than in establishing the facts. It seems likely that Trump could be facing at least civil fraud charges by the fall.

Meanwhile the Justice Department has obtained its first guilty plea in a seditious conspiracy case. The plea, which could result in a nine year sentence, is the result of a plea bargain made by a field operative closely associated to Trump's political fixer Roger Stone. The House Select Committee may be moving towards a criminal referral of Trump for participation in the conspiracy. The Justice Department also was successful in its first jury trial in obtaining a conviction of a member of the Three Percent Militia on six counts. That defendant could face up to twenty years at sentencing.

The Supreme Court's reputation is sinking. A spotlight has been thrown on Justice Thomas. His wife is a radical right wing lobbyist whose stated concern is to protect America from the transsexual fascists of its deep state. Her lobbying firm has filed amicus briefs in a number of cases which her husband has not recused himself from. This is the worst scandal to hit the court since Abe Fortas. Fortas was a close friend and ally of President Johnson's. Johnson nominated Fortas to the court both as a reward and to have an ally on the bench. Fortas's sharing of the Court's internal discussions with the President was cause for considerable concern to his colleagues. Ultimately an impeachment case against Fortas was prepared based on his unseemly but not improper acceptance of a retainer from a man ultimately jailed for securities fraud. Fortas resigned to avoid the humiliation of a trial and resumed his high power Washington legal career. Clearly a bench in which one member is predisposed to a certain side and who may even be coaching a litigant in how to proceed cannot claim to be delivering even handed justice. Thomas's failure to recuse himself from litigation in which his wife is a party is a remarkable instance of placing outcomes ahead of institutional integrity.



The Winter Olympics

We conclude this review of world affairs with a light hearted comment on the Winter Olympics recently concluded in Beijing. A popular activity is to take medal hauls as measure of national strength. Let us see if we can bring a bit of insight to this bit of bar talk. We score medals as three points for gold, two for silver and one for

bronze. As each Olympic has a different number of medals to award, we track a country's success by the percentage of available medal points which it captures. Finally we summarize by cultural area rather than nation. The results are

Table 3:
Success in Winter Olympics

Percentage of Available Medal Points Won

Region	2018	2022	change
Western Europe	36%	30%	-6%
Scandinavia	20%	20%	0%
Asia	13%	13%	0%
Eastern Europe	7%	11%	4%
Commonwealth	12%	10%	-2%
Russia	4%	9%	4%

The major conclusions are 1. continued dominance by Western Europe 2. only modest changes 3. an incremental migration of athletic power from Western to Eastern Europe. We also note a modest rebound by Russia from a previous performance diminished by a doping scandal. Normally the Olympics are a strong boost to the performance of the host country. This effect is visible at the country level where China's share of medal points increased from 3% to 6%. But it is not visible at the regional level as the prior host also was Asian.

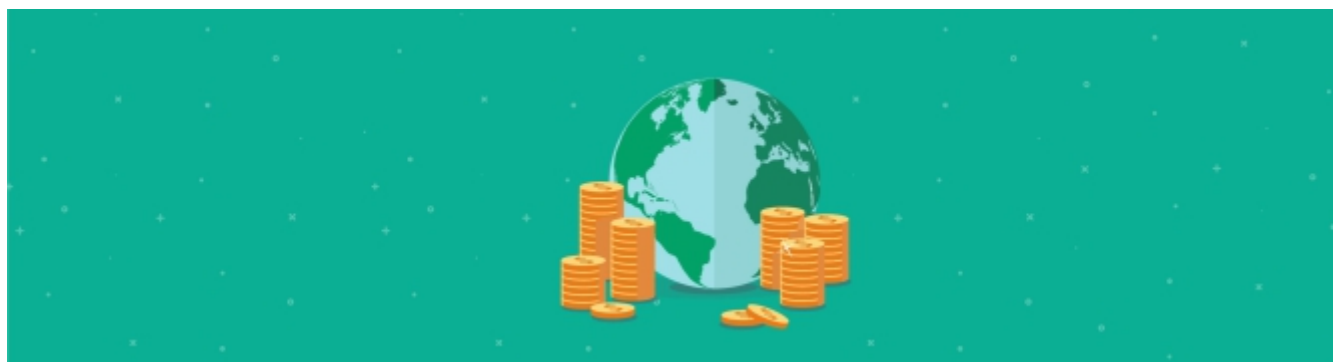
For what it is worth, the Olympics reveal a pretty stable world order.

The Economy

This month we take a look at growth, inflation, real growth and the impact of fiscal stimulus on 13 major economies (Table 4 next page). Seven of these are developed economies while six of the economies are transitioning from the emerging stage to the developed stage. The developed economies are providing a fiscal stimulus of about 5% of GDP. While this stimulus appears to be associated with inflation, it is not associated to nominal growth. As a result there is an 81% anticorrelation between fiscal stimulus and real growth. The United States, with the highest level of stimulus (7%) is turning in the worst performance on real growth (-2%.) The higher level of fiscal stimulus in the US is largely due to the cost of providing relief for the Covid epidemic, which the US handled more incompetently than its peers. This real growth recession is ultimately the price the US pays for its incompetence. It is also a root of the public dissatisfaction with the economy despite strong employment rates.

In the transitional economies, fiscal stimulus is associated to some degree of growth. As a result the anticorrelation of fiscal stimulus and real growth is weaker – only 45%. However the real growth in the transitional economies is quite weak – only 0.6% better than the developed economies. Investors might well find such a premium scanty reward for the exposure to higher risk from investing into such economies. In terms of Covid the transitional economies generally did a more competent job than the developed economies at managing the disease. They also had the benefit of a younger demographic profile, which as we have seen significantly reduces the hazard of Covid.

Brazil was the exception – having a massively incompetent Covid policy. Brazil is also turning in the worst real growth performance of all the economies surveyed here. We would not claim causation from a single datum, but it is certainly intuitive that allowing disease to disrupt your society is not the way to build real wealth.



**Table 4:
Growth, Inflation and Fiscal Stimulus**

Developed Economies

Country	Size	Growth	Inflation	Real Growth	Stimulus
USA	20.90	5.5	7.5	-2.0	7.4
Euro Area	13.00	4.6	5.1	-0.5	4.0
Japan	5.00	0.7	0.5	0.2	7.0
UK	2.76	6.5	5.5	1.0	5.4
Canada	1.64	4.0	5.1	-1.1	7.5
Australia	1.30	3.9	3.5	0.4	4.6
Switzerland	0.75	4.1	1.6	2.5	-0.5
Composite	45.35	4.2	4.1	0.1	5.1

Transitional Economies

Country	Size	Growth	Inflation	Real Growth	Stimulus
China	14.70	4.0	0.9	3.1	5.0
India	2.66	8.4	6.0	2.4	6.4
South Korea	1.63	4.0	3.6	0.4	2.9
Brazil	1.44	4.0	10.4	-6.4	7.7
Indonesia	1.05	5.0	2.2	2.8	4.9
Taiwan	0.73	4.9	2.8	2.1	-0.7
Composite	22.21	5.1	4.3	0.7	4.4

Source: Economist

Size is 2020 GDP in trillions of dollars

Growth is year over year percent change in GDP

Inflation is annualized % change in consumer price over most recent period

Real Growth is Growth minus Inflation

Stimulus is budget deficit as a percentage of GDP

Correlation of Real Growth and Stimulus is -0.81 for developed economies and -0.45 for transitional

Now comes the Ukrainian war to add another layer to this picture. The war has already pushed up the price of oil and wheat. This development is relatively favorable to the US and Canada which are major producers of both. Ukraine and Russia are also major fertilizer suppliers. Disruption of that supply could be damaging to certain transitional and emerging economies. Declining Covid relief may reduce fiscal stimulus worldwide, but this effect may be partially counterbalanced by increased defense spending in NATO countries. For instance, Germany has announced a doubling of its defense spending which, if not offset by other budget adjustments, would ultimately translate into a 1% increase in fiscal stimulus.

Currently the world is experiencing little or no real growth. Complex cross currents are at work, however, and results in individual countries may differ markedly from the composite picture.

Markets

Equities sold off 5% to 6% around the world on the eruption of the Ukraine war (Table 5). The sell off was somewhat stronger than average in the US Large Cap Growth sector which had been the leading group for most of the past two years. This continues the trend reversal which has been

underway for about six months. US Large cap value and mid/small cap companies were significantly less impacted by the war. They sold off about 3% on average. These companies tend to be more focused on the domestic economy and so are less exposed to turmoil in international trade and politics. Treasury bonds have been sliding for months, but they too rallied against trend. This is a clear flight to safety response and it was strongest in TIPS which offer protection against both inflation and equity volatility. Other bond markets are less seen as safe havens and they continued to slide. Real estate and the euro continued their recent behavior of range trading and gently falling respectively.



Gold had a good month – being the quintessential hedge against political risk and inflation. As Russia is shut out of the banking system it may need to pay for its war with gold and that could increase supply of the metal to market as Russian monetary reserves are drawn down. Oil continued its strong rising trend. Russia is, after the US, the second largest oil producing country. Although not formally sanctioned yet, traders and shippers are reluctant to deal in Russian oil and the result is to tighten the world oil market. We think the Arab producers will gradually expand production, however, to keep the market from spiking upwards for a prolonged period. Russia probably hopes China will absorb its production that the Europeans eschew, but we expect the Arabs will not readily concede their share of the growing China market. China will likely seek to maximize the advantages of its neutral status

Table 5 :

Recent Market Performance

Category	Asset Class	6 month trend	3 month return	1 month return
Equity	US Large Cap	rising	-6.33%	-5.43%
	US Large Cap Growth	slowing rise	-10.57%	-6.49%
	US Large Cap Value	rising	-4.22%	-3.57%
	Growth – Value	falling	-6.35%	-2.92%
	US Mid/Small Cap	flat	-7.85%	-2.89%
	Intl Developed	flat	-6.32%	-6.49%
	Intl Emerging	falling	-6.10%	-6.33%
	Fixed Income	3-7 Year Treasury	falling	-1.88%
7-10 Year Treasury		falling	-2.42%	0.73%
TIPS		falling	-0.91%	2.08%
Muni		falling	-3.11%	-0.66%
Investment Grade		falling	-3.33%	-0.71%
Medium Grade		falling	-2.31%	-1.57%
Preferred		falling	-5.25%	-3.33%
Commodity	REIT	flat	-0.15%	-0.68%
	Euro	falling	-1.49%	-0.61%
	Gold	flat/rising	10.41%	8.00%
	Oil	rising	56.68%	18.65%

Advice

Military conflict will continue in Ukraine for months and possibly years. Cold war between NATO and Russia will continue and deepen until the attempt to restore greater Russia is defeated. This is a lucrative development for US and European defense contractors. It is possible the world will spit into two economic blocks centered on the US and China, but we think this a less likely scenario than continuing as a basically unitary economy. The war is probably a modest economic benefit to China, but China's own domestic economy is in a cyclic downturn and its relationship with the US is on a deteriorating trend so we continue to think it an opportunity US investors should not be increasing exposure to. Gold, real estate, TIPS, short term Treasuries and domestically oriented equities are the relative beneficiaries of increased turmoil. Fundamentals of the Large Cap Growth sector remain favorable, however, and as this sector reprices in the market more favorable entry points than we have seen recently could emerge.



Annex

Table 2: Current Vaccine Efficacy By Age Group

Age Group	Unvaccinated			Vaccinated			Unvaccinated/Vaccinated			Hazard
	Infection Rate	Death Rate	Hazard	Infection Rate	Death Rate	Hazard	Infection Rate	Death Rate		
5-11	2.88%	0.00%	0.000%	0.43%	0.00%	0.000%	6.7	n/a	n/a	
12-17	4.55%	0.00%	0.000%	0.92%	0.00%	0.000%	4.9	n/a	n/a	
18-29	4.75%	0.08%	0.004%	1.53%	0.00%	0.000%	3.1	19.8	61.2	
30-49	6.17%	0.37%	0.023%	1.70%	0.06%	0.001%	3.6	5.8	21.2	
50-64	6.00%	2.12%	0.127%	1.40%	0.39%	0.005%	4.3	5.4	23.2	
65-79	7.43%	7.02%	0.521%	0.85%	2.50%	0.021%	8.8	2.8	24.6	
80-100	4.47%	16.38%	0.732%	0.92%	9.12%	0.084%	4.8	1.8	8.7	
Children	3.72%	0.00%	0.00%	0.68%	0.00%	0.00%	5.8	n/a	n/a	
Workers	5.64%	0.86%	0.05%	1.54%	0.15%	0.00%	3.7	10.3	35.2	
Seniors	5.95%	11.70%	0.63%	0.89%	5.81%	0.05%	6.8	2.3	16.6	
All	5.18%	3.71%	0.20%	1.11%	1.73%	0.02%	5.2	7.1	27.8	

Source: CDC December 2021 (based on about 50% of US population reporting)

Note: Vaccinated refers to those completing either a 2 or 3 dose regimen

The columns labeled Unvaccinated give the figures for the portion of the population with no vaccine protection. The infection rate is the annualized risk of being infected with Covid. The risk increases steadily with age up until the last age cohort (80-100.) Many persons of that age are relative shut-ins. Their reduced probability of infection probably reflects their lower social interaction with the community in which Covid is circulating. Otherwise the increased susceptibility with age probably reflects waning disease resistance with age. The column labeled Death Rate gives the probability of dying given that one has contracted Covid. Again there is a strong increase with age. Here two factors are probably at work. First declining disease resistance with age. Second greater probability of comorbidities with increased age. The hazard rate is the product of the infection rate and the death rate. It is the one year risk of dying faced by an initially healthy person. Integrating these numbers across an expected lifetime one arrives at the lifetime risk of dying of Covid faced by an initially healthy person. The lifetime risk is approximately 13% for workers and 10% for seniors. The next set of numbers gives the same information for fully vaccinated persons. Here the lifetime risk of dying of Covid is 1% or less for all age groups.

Finally the ratio of unvaccinated to vaccinated for each column gives a measure of how successfully the vaccine protects against an initial infection, against death from that infection and improvement in overall hazard rate. Thus a 50 year old unvaccinated person faces 4.3x the risk of falling sick than their vaccinated age peer and a 5.4x greater risk of dying from the infection so the one year death rate from Covid of the healthy unvaccinated person is 23.2x higher than that of their vaccinated age peer. For working age people as a whole the risk of dying of Covid among the unvaccinated is 35x that of the vaccinated. For seniors, despite their greater susceptibility to disease and death, the risks are still 16x better for the vaccinated. Across the population as a whole the unvaccinated bear 28x the risk faced by the vaccinated. Also the unvaccinated bear 10x to 13x the lifetime risk of dying of Covid compared to the vaccinated.

