Business Retreats and Sanctions Are Crippling the Russian Economy

Measures of Current Economic Activity and Economic Outlook Point to Devastating Impact on Russia

Jeffrey A. Sonnenfeld
Founder & President, Yale Chief Executive Leadership Institute
Senior Associate Dean, Lester Crown Professor of Management Practice, Yale School of Management

Steven Tian
Director of Research, Yale Chief Executive Leadership Institute
Yale University

Franek Sokolowski
Research Fellow in Business & Economics, Yale Chief Executive Leadership Institute
Yale University

Michal Wyrebkowski
Research Assistant in Energy, Yale Chief Executive Leadership Institute
University of Pennsylvania, Wharton Business School

Mateusz Kasprowicz
Research Assistant, Yale Chief Executive Leadership Institute
Warsaw School of Economics

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With Research Assistance from Yale Chief Executive Leadership Institute Researchers:

Wiktor Babinski; Yale Graduate School of Arts and Sciences and London School of Economics
Yash Bhansali; Goldman Sachs
Forrest Michael Bomann; Columbia University
Michal Boron; Humboldt University
Katie Burke; Johns Hopkins University
Dr. Adriana Coleska; MD Yale School of Medicine
Stephen Henriques; McKinsey & Co.
Georgia Hirsty; Frailty Myths and Yale School of Management
Andrew Kaiser; Publicis Sapient
Cate Littlefield; PepsiCo
Camillo Padulli; Yale University
Ryan Vakil; Yale University
Israel Yolou; Big Data Post-Bac, Yale University
Steven Zaslavsky; Moelis & Company

A visual data slide deck compliments this research paper. Individual slides are referenced in the sections below, but the full slide deck can be accessed by clicking here:

https://yale.box.com/s/7f6agg5ezscj234kahx35lil04udqgeo

The Yale CELI list of companies curtailing operations in Russia can be accessed by clicking here:

https://som.yale.edu/story/2022/over-1000-companies-have-curtailed-operations-russia-some-remain

Please contact jeffrey.sonnenfeld.celi@yale.edu and steven.tian@yale.edu with inquiries/feedback.

INTRO: Introduction

As the Russian invasion of Ukraine enters into its fifth month, a common narrative has emerged that the unity of the world in standing up to Russia has somehow devolved into a "war of economic attrition which is taking its toll on the west", given the supposed "resilience" and even "prosperity" of the Russian economy. This is simply untrue – and a reflection of widely held but factually incorrect misunderstandings over how the Russian economy is actually holding up amidst the exodus of over 1,000 global companies and international sanctions.

That these misunderstandings persist is not surprising. Since the invasion, the Kremlin's economic releases have become increasingly cherry-picked, selectively tossing out unfavorable metrics while releasing only those that are more favorable. These Putin-selected statistics are then carelessly trumpeted across media and used by reams of well-meaning but careless experts in building out forecasts which are excessively, unrealistically favorable to the Kremlin – which we explain further in Section I of this paper.

Our team of experts, using Russian language and unconventional data sources including high frequency consumer data, cross-channel checks, releases from Russia's international trade partners, and data mining of complex shipping data, have released one of the first comprehensive economic analyses measuring Russian current economic activity five months into the invasion, and assessing Russia's economic outlook.

From our analysis, it becomes clear: business retreats and sanctions are crippling the Russian economy, in the short-term, and the long-term. We tackle a wide range of common misperceptions – and shed light on what is actually going on inside Russia, including:

- Russia's strategic positioning as a commodities exporter has irrevocably deteriorated, as it now deals from a position of weakness with the loss of its erstwhile main markets, and faces steep challenges executing a "pivot to Asia" with non-fungible exports such as piped gas – as we explain further in Section II of this paper.

- Despite some lingering supply chain leakiness, Russian imports have largely collapsed, and the country faces stark challenges securing crucial inputs, parts, and technology from hesitant trade partners, leading to widespread supply shortages within its domestic economy – as we explain further in Section III of this paper.

- Despite Putin's delusions of self-sufficiency and import substitution, Russian domestic production has come to a complete standstill with no capacity to replace lost businesses, products and talent; the hollowing out of Russia's domestic innovation and production base has led to soaring prices and consumer angst – as we explain further in Section IV of this paper.

- As a result of the business retreat, Russia has lost companies representing ~40% of its GDP, reversing nearly all of three decades' worth of foreign investment and buttressing unprecedented simultaneous capital and population flight in a mass exodus of Russia's economic base – as we explain further in Section V of this paper.

- Putin is resorting to patently unsustainable, dramatic fiscal and monetary intervention to smooth over these structural economic weaknesses, which has already sent his government budget into deficit for the first time in years and drained his foreign reserves even with high energy prices – and Kremlin finances are in much, much more dire straits than conventionally understood – as we explain further in Section VI of this paper.

- Russian domestic financial markets, as an indicator of both present conditions and future outlook, are the worst performing markets in the entire world this year despite strict capital controls, and have priced in sustained, persistent weakness within the economy with liquidity and credit contracting – in addition to Russia being substantively cut off from international financial markets, limiting its ability to tap into pools of capital needed for the revitalization of its crippled economy – as we explain further in Section VII of this paper.

- Looking ahead, there is no path out of economic oblivion for Russia as long as the allied countries remain unified in maintaining and increasing sanctions pressure against Russia – as we explain further in Section VIII of this paper.

Looking ahead, there is no path out of economic oblivion for Russia as long as the allied countries remain unified in maintaining and increasing sanctions pressure against Russia, and The Kyiv School of Economics and McFaul-Yermak Working Group have led the way in proposing additional sanctions measures.

Defeatist headlines arguing that Russia's economy has bounced back are simply not factual - the facts are that, by any metric and on any level, the Russian economy is reeling, and now is not the time to step on the brakes.

I. Decoding Deceptive Official Russian Economic Statistics

Methodology, Process, and Statistical Integrity

Many of the excessively sanguine Russian economic analyses, forecasts, and projections which have proliferated in recent months share a crucial methodological flaw: these analyses draw most, if not all of their underlying evidence from periodic economic releases by the Russian government itself, without cross-checking or verification of data integrity. The most frequently cited Kremlin sources include the Russian Federal Service for State Statistics, more commonly known as Rosstat; the Bank of Russia, and data releases by the Ministries of Energy, Economy and Finance.

While numbers released by the Kremlin have long been held by the economic community to be largely if not always credible, there are three significant, underappreciated considerations which severely strain the integrity of the Kremlin's statistics since the outset of the invasion of this year. Economists and analysts must thus be extra careful about citing official Kremlin statistics and cross-verifying the integrity of these statistics wherever possible.

First, the Kremlin's economic releases are becoming increasingly cherry-picked; partial, and incomplete, selectively tossing out unfavorable statistics while keeping favorable statistics. The Russian government is no longer disclosing certain economic indicators which prior to the war were updated on a monthly basis, including all foreign trade data, including those relating to exports and imports, particularly with Europe; oil and gas monthly output data; commodity export quantities; capital inflows and outflows; financial statements of major companies, which used to be released on a mandatory basis by companies themselves; central bank monetary base data; foreign direct investment data; and lending and loan origination data, and other data related to the availability of credit. Even Rosaviatsiya, the federal air transport agency, abruptly ceased publishing data on airline and airport passenger volumes. As a measure of comparison, prior to the war, the only economic data which have historically been classified and quarantined by the Russian government are sensitive metrics related to the trade of military goods, aircraft, and nuclear materials.

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Decoding Russian Economic Statistics

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Source: Yale Chief Executive Leadership Institute

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Optimistic Forecasts Have It All Wrong with Cherry-Picked Statistics: Drinking From The Fountain of Russian Propaganda

Statistics Withheld By the Kremlin Post-Invasion
All Foreign Trade Data
All Export Data
All Import Data
Oil and Gas Monthly Output Data
Capital Inflows and Outflows
Financial Statements of Major Companies
Central Bank Monetary Base Data
Foreign Direct Investment Data
Airline and Airport Passenger Volumes
Lending and Loan Origination Data

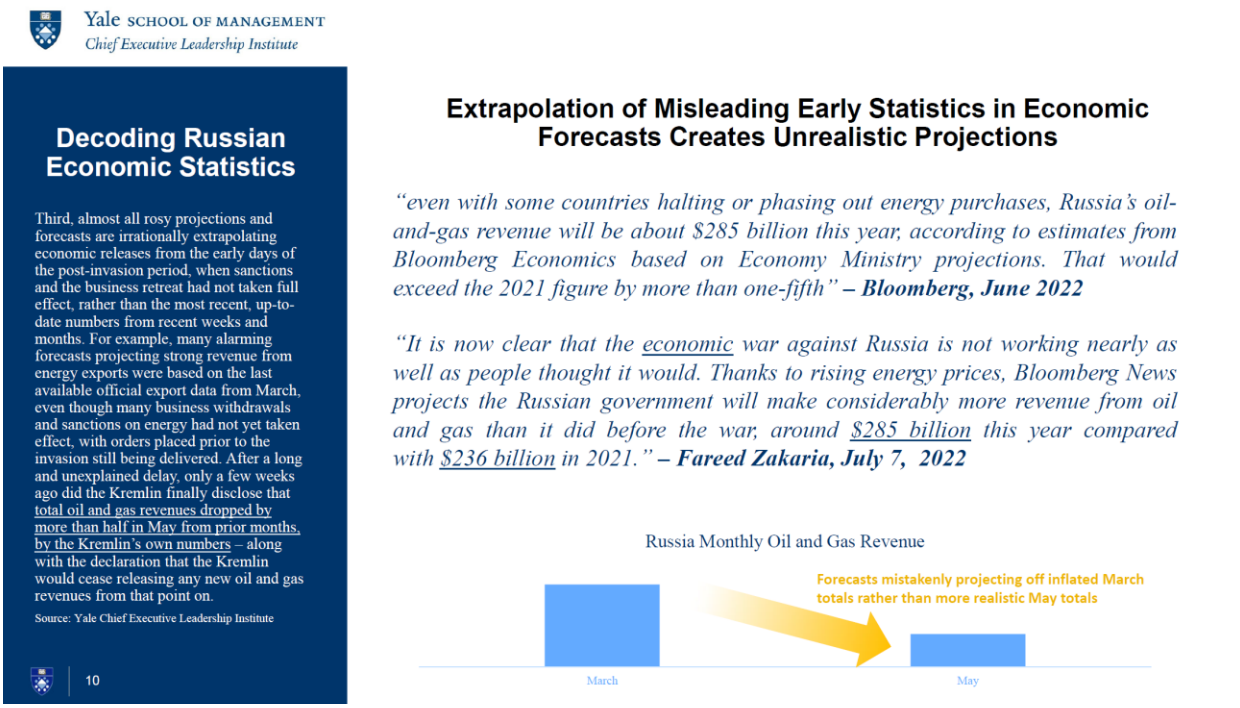
Although the Kremlin explains away its newfound desperate obfuscation of its revenue and spending data and other macroeconomic indicators of overall economic health under the guise of "minimizing the risk of the imposition of additional sanctions", what little data has trickled out from the Kremlin suggests the real reason may lie in the fact these statistics are unlikely to be positive for the Kremlin, and getting worse by the day. For example, total oil and gas revenues dropped by more than half in May from the month before, by the Kremlin's own numbers. As one economist wrote, "it's likely that the Kremlin is afraid of publishing data that reveal the full scale of the economy's collapse".

Second, even those favorable statistics which are released are questionable if not downright dubious when measured against cross-channel checks, verification against alternative benchmarks and given the political pressure the Kremlin has exerted to corrupt statistical integrity. Indeed, the Kremlin has a long history of fudging official economic statistics, even prior to the invasion. Putin has on several occasions shunted aside heads of Rosstat who produced economic statistics which were not to his liking, and he personally transferred control of the agency to political appointees at the Economic Ministry, depriving the agency of its prior status as an independent branch of government free from political influence. Outside observers ranging from international organizations to foreign investors regularly sound alarm bells over "concerns about the reliability and consistency" of the Kremlin's economic releases, especially given the propensity of Kremlin economists for "switching to new methodologies" with alarming frequency – many instances of which are not even disclosed. Concerns over meddlesome political interference must be given even more weight now that Putin appointed Sergei Galkin, the former Deputy Economic Minister and the most blatantly political pick in recent history as head of Rosstat in May.

Third, and as mentioned briefly previously, almost all rosy projections and forecasts are irrationally extrapolating economic releases from the early days of the post-invasion period, when sanctions and the business retreat had not taken full effect, rather than the most recent, up-to-date numbers from recent weeks and months – partially due to the fact the Kremlin stopped releasing updated numbers, constraining the availability of datasets for economic researchers to draw upon. For example, many alarming forecasts projecting strong revenue from energy exports were based on the last available official export data from March, even though many business withdrawals and sanctions on energy had not yet taken effect, with orders placed prior to the invasion still being delivered.

Take, as one instance of many, one widely cited study by Bloomberg decrying Russia's surge in revenue from energy exports. The authors wrote: "even with some countries halting or phasing out energy purchases, Russia's oil-and-gas revenue will be about $285 billion this year, according to estimates from Bloomberg Economics based on Economy Ministry projections. That would exceed the 2021 figure by more than one-fifth". No doubt, Russia has continued to draw significant revenue from energy exports – a complex topic which we analyze in-depth in the sections below.

But this specific Bloomberg analysis projected Russia's 2022 energy export revenues based on its revenue through March of 2022 as disclosed by the Kremlin, even though the Kremlin has belatedly acknowledged that energy export revenues in May and June have diminished significantly. In fact, only after a long and unexplained delay did the Kremlin finally disclose that total oil and gas revenues dropped by more than half in May from prior months, by the Kremlin's own numbers – along with the declaration that the Kremlin would cease releasing any new oil and gas revenues from that point on. Nevertheless, the misleading Bloomberg forecast carelessly extrapolating out initial energy export volumes into the rest of the year was then repeated by leading voices including Fareed Zakaria and others in proving the supposed "resilience" and even "prosperity" of the Russian economy.



This lack of current, reliable data poses a severe obstacle to accurate economic forecasting. It is almost certain that these oil and gas revenues have dropped even further since May and June for the reasons laid out in the "Commodity Exports" section, but the Kremlin's refusal to release data makes it impossible for forecasters to work off a current set of numbers. The economic projections that are done and released publicly, therefore, are unfortunately often based on historic, early-war period statistics which are already outdated and irrelevant.

Our methodology is thus different, avoiding these common pitfalls and errors. We draw from a wider variety and range of sources in our comprehensive analysis, not only taking Rosstat's word with a grain of salt but also pulling from original, proprietary, non-public outside analyses performed by global investment banks, consulting groups, multinational business leaders, and Russian macroeconomic experts which we have obtained through our wide network of acquaintances in global business and on the ground in Russia, with unique access to Russian language sources and documents. Furthermore, we draw from unconventional, innovative cross-channel checks including high frequency consumer data, online screening data, data from the shipping/container/port industry, data mining through complex big data sources, releases from Russia's international trade partners, and comprehensive aggregate data from international organizations such as the World Bank, IEA, OPEC, and multinational businesses in addition to anecdotal reports and observations from business acquaintances, partners, and our team on the ground in Russia in performing what we believe to be one of, if not the most, comprehensive and wide-ranging analyses of the overall state of the Russian economy in the months following the implementation of unprecedented sanctions. Our sourcing is done with material across various languages, including little-appreciated Russian, Chinese, Indian, and European primary source documents with no English translations available, drawing upon the collective fluency across twelve languages of our research team.

The findings of our comprehensive economic analysis of Russia are powerful and indisputable: not only have sanctions and the business retreat worked, they have thoroughly crippled the Russian economy at every level. Our analysis simultaneously highlights and reinforces the work of the McFaul-Yermak working group on sanctions in emphasizing some areas which require further policy and business action to further immobilize Russia's war-making and economic capabilities.

II. Re-Evaluating Russia as a Commodity Exporter: Rising Prices Mask Irreversible Deterioration in Long-Term Strategic Positioning

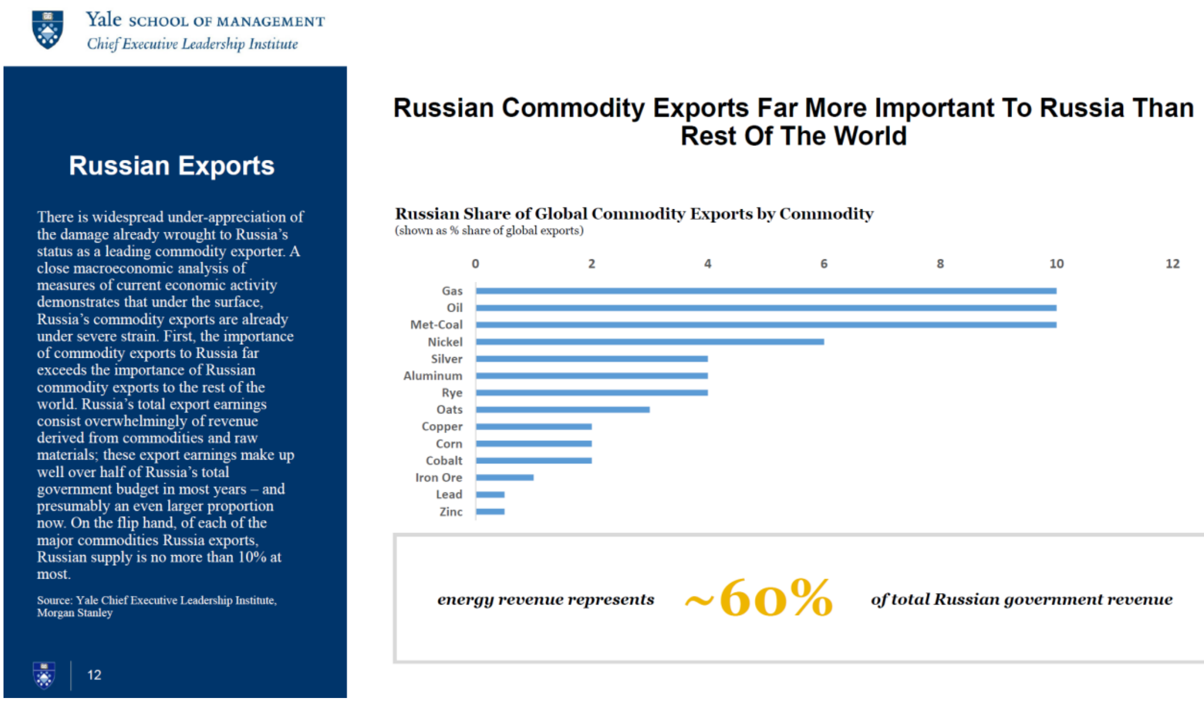
The lion's share of hand-wringing over the supposed resilience of the Russian economy has been focused, correctly, on Russian revenue from commodity exports. Many experts have long argued that Europe's inability to wean itself completely off Russian energy and other commodities dilutes the efficacy of sanctions and of voluntary business withdrawals, and one recent study estimated that at least in the initial days following the invasion, oil exports provided the Kremlin with $1 billion every day, buttressed by rising energy prices.

No doubt, certain European energy companies, such as TotalEnergies, can and must do more to ever all ties to Russia. Likewise, there is no doubt that significant gaps remain in sanctions policy across the US and EU, which need to be closed urgently to further choke the inflow of revenue from commodity exports into the Kremlin's coffers. Policymakers are currently working on an international coalition to cap the price of Russian oil at $40-$60 a barrel; while the McFaul-Yermak Expert Working Group on Sanctions has laid out several additional steps, such as restricting insurance and energy services which would be highly effective in limiting Russian export revenue while exerting minimal pressure on the global economy.

Although these are genuine, crucial challenges, which we further highlight in Section 8 of this working paper; there is simultaneously widespread under-appreciation of the damage already wrought to Russia's status as a leading commodity exporter. A close macroeconomic analysis of measures of current economic activity demonstrates that under the surface, Russia's commodity exports are already under severe strain – which has been far more devastating to Russia than to the west – across the entire commodity complex, including but not limited to energy revenues derived from oil and gas exports.

First, contrary to widespread alarmism over the adverse impact of the Russia-Ukraine war on global commodity prices, the importance of commodity exports to Russia far exceeds the importance of Russian commodity exports to the rest of the world. Russia's total export earnings consist overwhelmingly of revenue derived from commodities and raw materials; these export earnings make up well over half of Russia's total government budget in most years – and presumably, an even larger proportion now, though it is impossible to say for sure since the Kremlin has suspended publication of a range of unfavorable financial and economic data since the start of the invasion. This revenue includes not only direct revenue from oil & gas exports which makes its way into the Kremlin's coffers, but also indirect sources such as taxes paid by employees that work in commodities-related industries, taxes paid by companies in commodities-related industries and which provide services to commodities-related industries, and much more.

On the flip side, of each of the major commodities Russia exports, Russian supply is no more than 10% at most of the global market in the case of certain energy categories, and low single-digits in the case of most metals and foodstuffs as shown below, according to proprietary estimates by economic researchers at Morgan Stanley. While the impact is not evenly geographically distributed – given, for example, more heavy reliance by Europe on Russian energy flows (but less than conventionally appreciated, as explained below) – on the whole, this has allowed most major multinational companies to seamless pivot away from purchasing Russian exports without disrupting sourcing of supply. Even companies which previously relied heavily on Russian commodity supply, such as Boeing, which purchased nearly all its titanium from Russia, have been able to suspend Russian purchases and find alternative supplies without missing a beat. And across the entire commodity complex, prices have largely now fallen to below where they were prior to the invasion, including in wheat, oil, and metals markets.



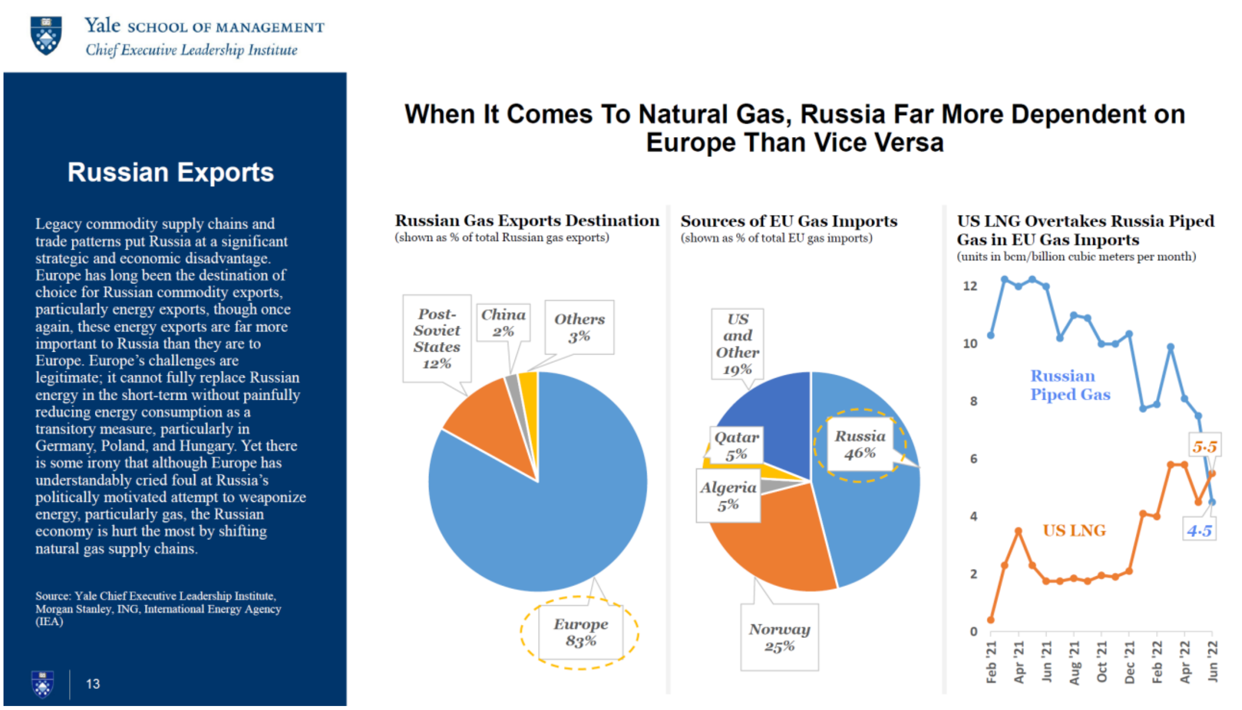
It follows naturally that the key characteristic of the export relationships that Russia has entered with its hitherto global partners, primarily European countries, is asymmetric interdependence. In short, Russia needs world markets as an outlet for its commodity exports far more than the world needs Russian commodity supplies. This is true not only across the entire commodity complex writ large, but on each specific commodity Russia exports as well. This is not to say that the transition away from Russian commodities has been painless for the west – far from it. As recent headlines bear out, the necessity of Europe cutting back on power usage while diversifying energy supply sources has created challenging political and economic ramifications. But the evidence clearly shows that the impact has been asymmetric: for every incremental pain inflicted on the west by pivoting away from Russian commodities, the damage wrought to Russia is far in excess.

This is a plain expression of a more complex academic framework often used by trade economists. In the framework of asymmetric interdependence – a framework invoked previously as a conceptualization of Russia's role in provoking the 2008 energy crisis – there are two key factors to consider – 1) each side's short-term sensitivity to price or supply shocks; and 2) overall strategic vulnerability reflective of the cost to switch the trade partner. The framework, when expanded to cover each of Russia's commodity exports individually, reveals that Russia is clearly at both a short-term and long-term strategic disadvantage vis-a-vis the rest of the world, and that Russia needs its trade partners far more than the rest of the world needs its commodities – with the caveat that fungibility and ease of transportation vary across different specific commodities.

In the sections below, we examine certain commodity classes as case studies of why Russia's strategic positioning as a commodity exporter has deteriorated far beyond what is conventionally appreciated.

Natural Gas

One crucial commodity where – contrary to misleading narratives – Russia is far more dependent on Europe than Europe is on Russia is natural gas. At the same time, natural gas captures the difficult trade-offs and short-term price pain that western countries must bear in the war against Russia – even as natural gas highlights the fact Russia's economic pain and suffering far outweighs that borne by the rest of the world.



To be sure, the complexities inherent to natural gas' role in the Russia-Ukraine conflict require some crucial background and historical context.

Historically, natural gas has lied on one end of the fungibility spectrum, as a highly non-fungible commodity. Russian gas has historically been transported primarily through a complex network of fixed pipelines which connects western Russia to Europe. Many of these pipelines flow through Ukraine, a relic of pre-1989 Soviet planning when Ukraine and Russia were both parts of the same country. In the 1990s, the occasional threat of cutting supplies to Ukraine was not seen to be seriously credible, as Moscow needed the transit route as much as Kyiv needed Russian gas given Russia's chronic budgetary problems, and the veritable lack of any other gas transport capacity than through Belarus and Ukraine.

Although the threat of Russian energy blackmail was initially seen as minimal, nonetheless, the countries were never on equal footing – in the early 1990s, Ukrainian President Leonid Kravchuk considered giving up naval bases in the Black Sea, some Ukrainian gas assets and all Ukrainian nuclear warheads to Russia in exchange for gas debt forgiveness. Furthermore, while Russia still depended substantially on Ukrainian gas transit capacities, Russia intentionally reduced its reliance over time over the course of the 1990s and 2000s, providing it with more leeway in leveraging gas to advance national interests – as explored below in further detail. Paired with the establishment of the Stabilization Fund of the Russian Federation in 2004 and its vast financial reserves (about $155 billion in 2008), these developments empowered Russia sufficiently to allow for its prolonged interventions in the Ukrainian gas market in the winter of 2008/2009, with Russia putting into practice a strategy devised as the Soviet Union was breaking apart – the famed Falin-Kvitsinky doctrine, which endeavored to substitute military influence in the former Warsaw Pact countries with economic pressure in the event of non-compliance, based on the oil and gas dependence of these countries on Russia.

However, following the scarring experience of the winter gas crisis of 2008/2009, the European Union purposefully took steps to decrease its potential vulnerability to future Russian energy interventions. In the Third Energy Package, the European Commission required unbundling of the transmission network from integrated energy companies, which blocked, inter alia, the kick-off of the Nord Stream 2 project. Furthermore, reverse-flow capabilities were added to the gas pipelines; new LNG terminals and interconnectors were built into the network. Added regasification capacity at LNG terminals in Klaidepa and Swinoujscie allowed countries such as Lithuania and Poland to diversify their energy sources while warding off Russian energy blackmail by carrying out a credible threat of importing natural gas from elsewhere.

Despite some progress, Europe's move to diversify away from Russian gas was painfully incomplete coming into this year, with several concurrent actions over the last decade undermining Europe's energy security goals – and providing Russia with some continued leverage, particularly against Ukraine.

One of the key factors decreasing Russian vulnerability in its asymmetric interdependence relationship with Europe – while lessening Russia's dependence on legacy pipelines flowing through Ukraine – was the construction of Nord Stream 1 (the first line in 2011, the second in 2012) with a total capacity of 55 bcm, which allowed Russia to directly supply Germany and other western European countries with Russian piped gas, bypassing Ukraine completely. The building of Nord Stream 2, which would have added 55bcm of gas transport capacity had it opened, combined with other routes of gas transport such as TurkStream (31.5 bcm) would have allowed Russia to further bypass the Ukrainian Gas Transport System (GTS) as an export route to the European Union. The maximum annual capacity of the Ukrainian GTS is 146 bcm, roughly equivalent to all other Russia-EU export routes combined. Gazprom's increased transmission of gas via Nord Stream 1 over the last decade provided a meaningful platform through which Russia could both hand out petrocarrots and petrosticks while decreasing its legacy reliance on Ukraine for ensuring the continuity of Russian gas exports.

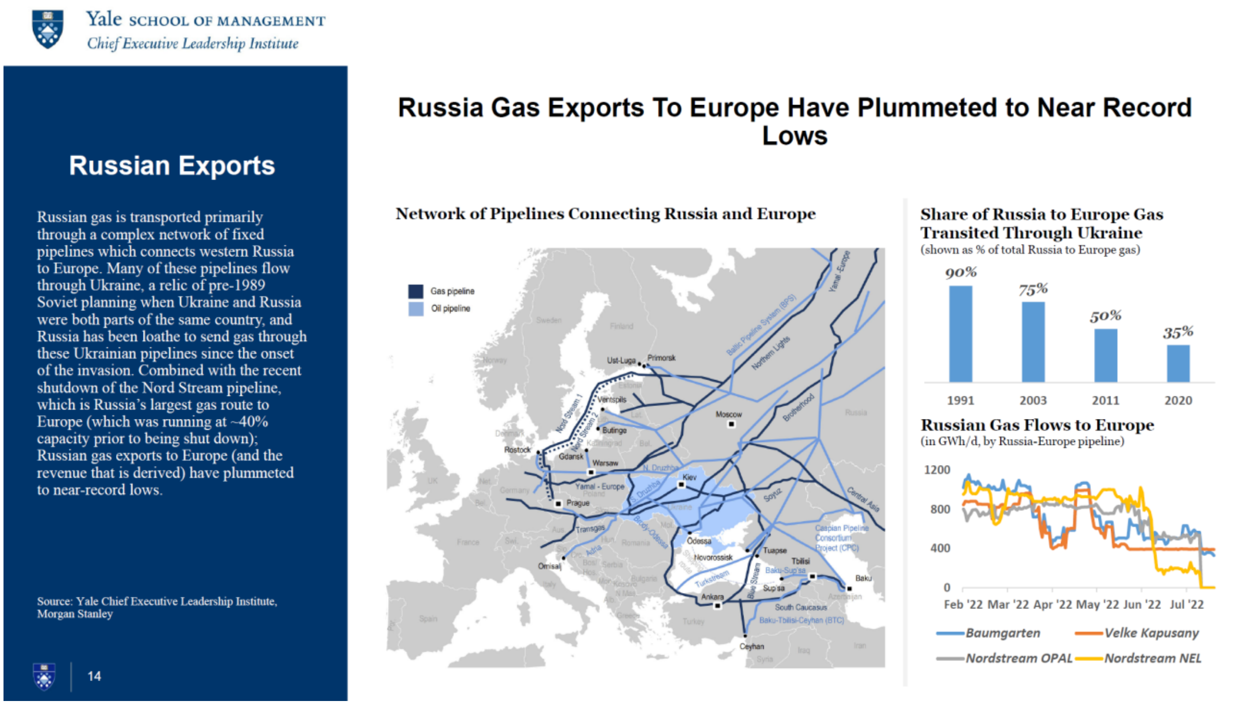
To be sure, the majority of European countries were not oblivious to the dangers of increasing Russian gas imports over the last decade through Nord Stream 1. Even though Russian gas was intended to be only a transitory, temporary bridge to a more energy-independent future, in a shorter-term time horizon, many experts took it as an excuse for inaction or lack of political will. Taking Germany as an example, this underlying "transitory" intention is illustrated by the core tenet of Germany's *Energiewende* – the idea that natural gas should serve as a bridge fuel and stabilizer of the inherently intermittent renewable-based energy grid – and a practical realization of the perennial German foreign policy principle of Wandel durch Handel – (political) change coming through trade. The German energy transition was built on the assumption of cheap Russian natural gas as a transitionary fuel, which together with lignite coal could fill the gap created by a nuclear phase-out and pave the way for the rising role of wind and solar power. Natural gas accounted for 15.3% of German electricity generation in 2021, and 32% of the total gas supply hailed from Russia.

Germany's situation, which was representative of an erroneous belief that Russian gas could provide stability and security of supply as a stopgap measure if nothing else, conveniently turned a blind eye to Russia's previous weaponization of energy to advance its national interests. But Germany is not necessarily representative of the rest of Europe – in short, countries have already significantly lessened their dependence on Russian energy, but incompletely and not quickly enough. Russia, on the other hand, remains almost completely dependent on Europe as its primary market for piped natural gas. The numbers reflect this reality: as of 2021, a whopping 83% of Russian natural gas exports were received by Europe, although Europe has a far more diversified supply base drawing 54% of its gas imports from non-Russian sources, including LNG from Norway, Qatar and Algeria in addition to significant domestic supply from sources such as the giant Groningen gas field in the Netherlands.

Despite this asymmetry, the throttling back of Russian gas to Europe post-invasion has not been painless for Europe. But the damage wrought by a rapid decoupling from Russian gas imports is more an issue of relative sensitivity of European countries to short-term, transitory supply and price shocks rather than their long-term strategic vulnerability as it is for Russia, as explained below. Furthermore, Europe's challenges are largely solvable and mitigatable through short-term political solutions, as explained below.

Despite Europe's long-term plans to move away from natural gas in favor of renewables, there is no disputing that the energy transition is not taking place at a pace fast enough for Europe to completely reduce natural gas consumption in the short-term, necessitating both onboarding of alternative natural gas supplies as well as the ramp-up of renewables efforts for Europe while simultaneously conserving power usage in the short-term. On the renewables front, shortening the certification period of wind projects from the current seven years and a building up of FSRU capacity could help prepare Europe for the next winter, in addition to adding battery storage capacity and restoring nuclear power as a grid stabilizer, and reverting to coal as a temporary stopgap. These measures draw from the 10-point action plan laid out by the International Energy Agency for reducing the European Union's reliance on Russian natural gas in the short-term, proposing a range of necessary solutions covering alternative gas supplies as well as power and end-use sectors, requiring increased coordination across countries and industries – lest Europe finds itself facing harsh gas rationing next winter.

A core tenet of the plan is replacing the lost Russian gas supply with a mix of EU natural gas production, piped imports from Azerbaijan and Norway and even more importantly LNG imports from Qatar, Algeria, and the United States. The latter has already been dubbed the "Berlin Gas Lift" by Baker Institute energy experts. Indeed, American LNG flows to Europe have already overtaken Russian piped gas imports - in June, Russia piped just 4.5bcm to Europe, a third of what it did in early 2021, while US LNG to Europe represented 5.5 bcm in the same period. A number of additional measures can increase LNG flows to Europe in the short-term, anchored around an international coalition of countries – including the leading LNG producers, the US, Qatar, Nigeria, and Australia – encouraging and providing flexibility in redirecting supplies to Europe and working with the largest LNG buyers to ensure European energy security.



Timely enhanced procurement of LNG can coincide with an introduction of minimum gas storage obligations. Based on IEA analysis, fill levels of about 90% would be required to provide enough leeway for the winter heating season, with some cushion to spare. Regional coordination of gas procurement and storage and a harmonized approach across EU member states to gas supply and inventory levels could ensure optimal capacity allocation across Europe and beyond and boost the resilience of the grid, which could be otherwise faced with local outages or worst case scenario – localized blackouts. Moreover, even considering the political difficulties inherent to the formation of a gas-buying cartel, the EU Commission could expedite its work on the newly announced joint purchasing mechanism – which, even if unlikely to be implemented in time for this winter, could buttress European gas supply for future winters.

Discontinuing long-term gas contracts with Gazprom as they expire would further lower the contractual minimum take-or-pay for Russian natural gas imports, and intensify Europe's diversification effort. This is, of course, recognizing that Gazprom itself is not a regular energy giant which plays by the rules – rather, it has been a device of the Kremlin's political influence and has shown a willingness to ignore contractual obligations with European countries already, with pipeline repairs serving as a smokescreen – *maskirovka* – for lowering gas volumes in pipelines. Gazprom has also openly cut gas supplies to countries such as Lithuania and Poland in retaliation for refusing to pay for gas in rubles, destroying its credibility as a trade partner and its rule-of-law contractual agreements.

In sum, the challenge to the European energy security and economy at large is real, but manageable. A complete implementation by Europe of the IEA's diversification plan could result in a total reduction of well over half of Russian gas imports (80 bcm) while still maintaining a comparable, if not lower, level of greenhouse gas emissions and preserving energy supply, hence not jeopardizing the EU climate targets while alleviating energy security concerns.

Russia's problems on the natural gas front, unlike Europe's, are deeply ingrained in long-term challenges within its economic and political structure, not transitory in nature, and are ultimately unsolvable. Russia is highly vulnerable in several domains related to its natural gas exports – the very structure of its commodity-based economy, supply chains, technology, and ultimately its reputation as a credible trade partner which fulfills its delivery contracts as a commodity supplier – all of which are not only framed by but exacerbated by Russia's deteriorating geopolitical positioning.

First, contrary to Putin's illusions that Russia can return to a Soviet-era state of economic self-sufficiency, the Russian economy has become highly globalized over the past three decades with significant reliance on western technology and international supply chains – and is thus more vulnerable to external shocks and disruptions. The economy of Russia during the Soviet era was largely and authentically autarkic – even though its trade grew from 10% of GDP in the 1950s to about 25% of GDP in the 1980s, this trade was largely done with its Comecon satellites through highly unequal, politicized trade deals designed to advance the interests of the Soviet Union rather than the Russian economy.

This stands in stark contrast to three decades' worth of economic development and opening to the west after the end of the Cold War. The post-Soviet Russian growth model relied heavily on raw commodity exports with low value added across value chains, but was dependent on western technology for extraction and on global supply chains for purchases – with the share of trade in goods and services in the GDP of Russia reaching approximately 46.1 percent in 2020.

Despite these differences, Putin is not entirely wrong – the present-day Russian economy does maintain some similarities to the Soviet-era economy, but in all the wrong ways. For example, one cannot help but draw parallels between the Soviet Union's frequent difficulties in obtaining hard currency to finance its purchases of industrial machinery and more complex consumer goods, and Putin's new delusional parallel import schemes. In desperation, Putin has effectively legalized black market and intellectual property infringement as it is unable to import and pay its former international partners. The difference between these two situations, however, is that the Soviet Union maintained control over an entire bloc of economies supporting the Soviet Union by providing industrial products and technology. On the flip side, modern Russia's economic allies in Belarus and Eritrea are unlikely to add as much value to the economy as the former Comecon, and Russia's current dependence on European markets and entry into the global economy has been dependent, to a much greater extent, on western technology and know-how.

Another similarity underlying the modern Russian economy and the Soviet era economy – and which further highlights the structural weakness and lack of depth of the Russian economy – is the fact that extractive institutions persist. The so-called power vertical is a top-down political system which naturally follows from a concentration of economic power in the oil and gas sector, which provides more than half of the Russian budget revenue each year – reflected by the sprawling oligarchic bureaucracy which tries to reap as much oil and gas rent as feasibly possible. Such a power arrangement highly discourages diversification of economic growth – contributing to Dutch disease for the past fifteen years; as windfall profits from oil and gas grew, the real exchange rate rose, and manufacturing competitiveness was reduced. Ultimately, the only two sectors that remain healthy and prolific in an economy struck by a Dutch disease are oil and gas, and to a lesser extent, servicers of those industries.

While a contributing factor, Russia's failure to develop an economy with more breadth across industries cannot be explained by a resource curse alone; and is closely related to the highly corrupt institutional arrangement in Russia. Nowhere is this more obvious than in the natural gas sector.

Within natural gas, the Russian political economy encouraged the creation of a highly corrupt and inefficient duopoly of Gazprom – the state-owned exporter of piped natural gas, derived from the legacy Soviet gas ministry; and Novatek – an oligarch-controlled nascent LNG exporter. The degree of bribery and value-extraction is legendary even by Russian standards, with Gazprom CEO Alexey Miller's son-in-law managing two trillion dollars' worth of government procurements and co-owning a penthouse worth about 800 million US dollars. The CEO himself got one of the largest bribes in Russian history – a rather dubious distinction – in the form of a palace built for him by one of the contractors of Gazprom. Gazprom's own role clearly veers toward buttressing the political interests of the Kremlin rather than operating as a profit-making business, considering its heavily-subsidized gas prices for the domestic Russian population, aimed at garnering support for the Kremlin and mobilizing support away from energy efficiency and renewable energy measures – seen as a threat by the Kremlin – which contributes to Russia being one of the most energy intensive economies in the world per unit of GDP. Gazprom's role as an appendage of the Kremlin is further reflected by its significant domestic obligations, as it only exports about a third of its 725 bcm of production capacity in 2018 – keeping the rest of the gas within Russia to sell at discounted rates for its own population, to the detriment of its profitability. Its societal responsibilities have long been a drag on profitability, and Gazprom has often used gas exports as a tool of the Kremlin's geopolitical agenda.

In short, the picture that emerges of the structure of the modern Russian economy is that of an internally corrupt, western technology-dependent resource behemoth, which provides both the revenue to sustain the Kremlin's foibles while also saddling the country with a natural resource curse accompanied by a self-serving oligarchic elite trying to reap as much economic value as possible from the oil and gas sectors. But this is only the tip of the iceberg when it comes to the insolvable, systemic problems facing the Russian economy.

Second, and relatedly, legacy commodity supply chains and trade patterns put Russia at a significant strategic and economic disadvantage – especially considering piped gas is one of the most non-fungible commodities. Europe has long been the destination of choice for Russian commodity exports, particularly energy exports, and once again, these energy exports are far more important to Russia than they are to Europe, with 83% of Russian natural gas exports received by Europe, although Europe has a far more diversified supply base drawing 54% of its gas imports from non-Russian sources, including LNG from Norway, Qatar and Algeria in addition to significant domestic supply from sources such as the giant Groningen gas field in the Netherlands as of 2021.[1] And while most recent headlines have focused on Russia's weaponization of gas in turning off the spigots to European pipelines such as Nord Stream 1, there is some irony that although Europe has understandably cried foul at these attempts to weaponize gas, the Russian economy is hurt the most by shifting natural gas supply chains away from Europe, its primary market. Piped gas exports are naturally sticky and require pipelines to transport – and relatively more fungible LNG comprises only a small fraction of overall natural gas production for Russia. Due to sanctions, the Kremlin is significantly decreasing its already minimal LNG export forecasts – predicting that by 2026, LNG exports will be below 30.7 million tonnes per year. The Russian Energy Ministry's September 2021 forecast had previously assumed that export volumes would

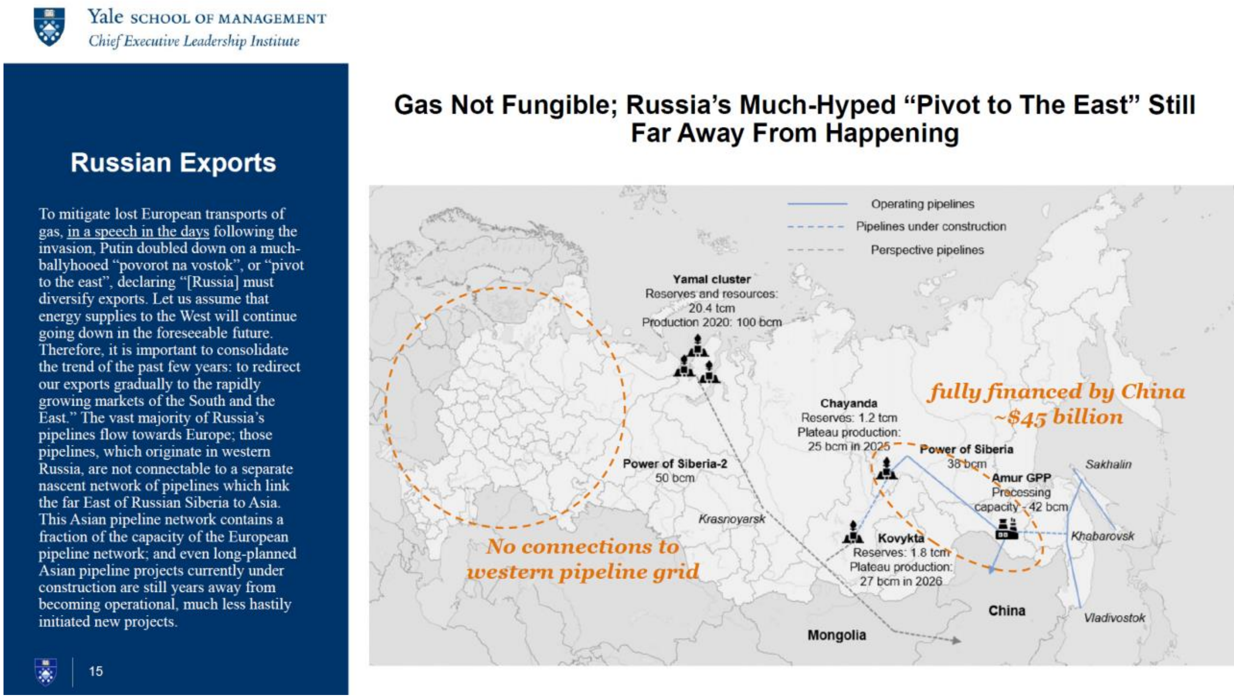
[1] One exception not shown on the chart is wheat – Russian exports represent ~20% of the global wheat market, but Russian wheat is primarily exported to EM countries such as Turkey and Egypt rather than to Europe.

rise to 38 million tonnes in 2023 and 50.7 million tonnes in 2024 – goals which even the Kremlin is now writing off as unattainable.

To mitigate lost European transports of gas, in a speech in the days following the invasion, Putin doubled down on a much-ballyhooed "povorot na vostok", or "pivot to the east", declaring "[Russia] must diversify exports. Let us assume that energy supplies to the West will continue going down in the foreseeable future. Therefore, it is important to consolidate the trend of the past few years: to redirect our exports gradually to the rapidly growing markets of the South and the East." This would be quite the drastic pivot, considering the 16.5 billion cubic meters of gas exported by Russia to China last year represented less than 10% of the 170 billion cubic meters of natural gas sent by Russia to the European market. When considering only piped gas, the share of natural gas sent by Russia to China drops to only 3.5%.

Recent history has shown that Russian predictions of a general economic "pivot to China" can reflect unrealistically sanguine assumptions. In 2014, when relatively moderate sanctions were implemented after the Russian annexation of Crimea, Russia similarly expected Chinese companies to buy Russian assets, support Russian companies financially, and share technology and know-how – though none of this panned out. As we will analyze in Section III, Russia represents a minor trade partner for China, whose #1 trade partner remains the United States, and most Chinese companies cannot risk running afoul of US sanctions by dealing with sanctioned Russian entities under the table. Furthermore, as a net oil and gas importer, Chinese energy companies lack many of the needed upstream technologies to service and maintain the Russian oil and gas sector from a technological standpoint.

From a logistical standpoint, the infrastructure challenges facing Russia's "pivot to the east" on natural gas are daunting on several fronts.

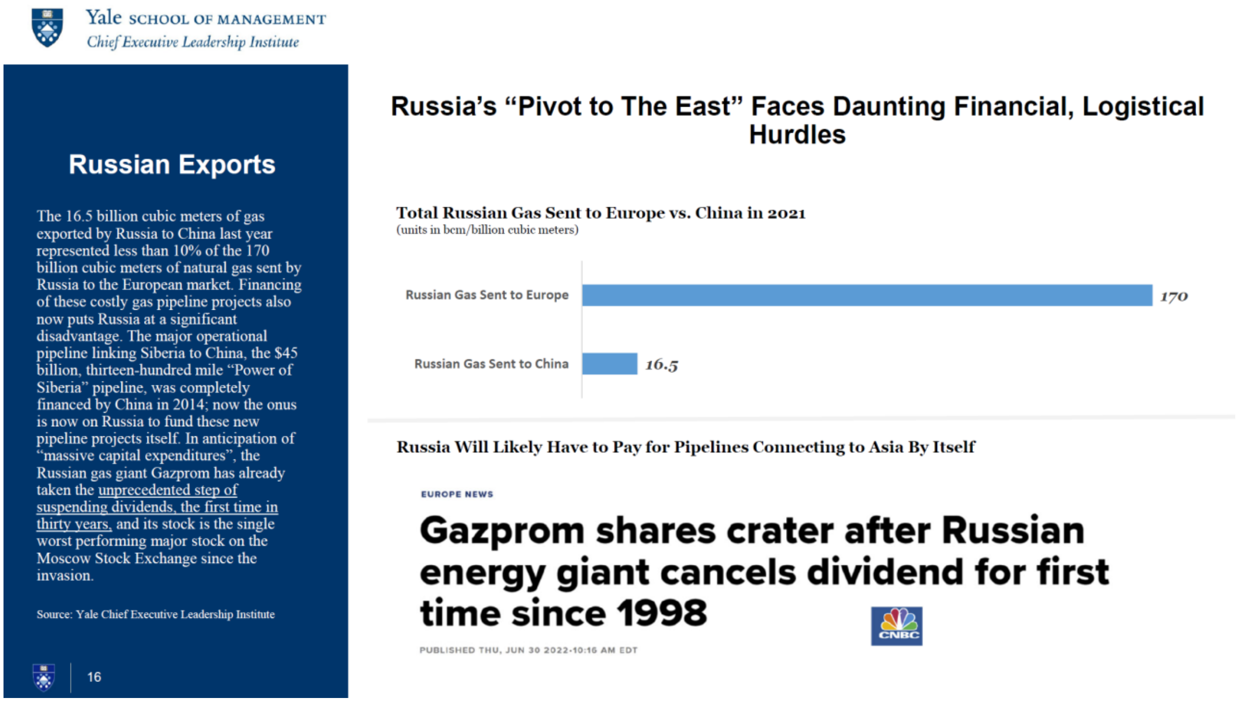


First, financing of these costly gas pipeline projects now puts Russia at a significant disadvantage. The major operational pipeline linking Siberia to China, the $45 billion, thirteen-hundred mile "Power of Siberia 1" pipeline, was completely financed by China in 2014; now the onus is now on Russia to fund these new pipeline projects itself. In anticipation of "massive capital expenditures", the Russian gas giant Gazprom has already taken the unprecedented step of suspending dividends, the first time in thirty years, and its stock is one of the worst performing major stocks on the Moscow Stock Exchange since the invasion. Adding to the daunting financial challenge is the fact that in their negotiations with China, Russia has long wanted prices commensurate with what it charged Europeans, while China has always wanted lower prices in line with domestic energy prices and competitive with coal. It is worth noting that the first gas pipeline to China – Power of Siberia 1 – is only operating at partial capacity as it was supposed to supply gas from Kovykta and Chayanda fields in Eastern Siberia, but only the latter has started production due to technological difficulties – a challenge which is certainly not made easier by the withdrawal of major western and Chinese companies from Russia post-invasion. Considering the Asian pipeline network contains only a fraction of the capacity of the European pipeline network, and even long-planned Asian pipeline projects are still years away from becoming operational, much less hastily-initiated new projects, the prospect of additional pipeline capacity connecting Russia to China is dubious if not downright questionable.

Second, and most importantly, there remains no interconnectivity, and thus no opportunity to redirect gas supplies or capitalize on price arbitrage, between Russia's Yamal and Western Siberian gas fields exporting to Europe and the Middle East; and Russia's Eastern Siberian fields sending gas to China. The proposed solution – Power of Siberia 2, otherwise known as the Altai Trans-Siberian gas pipeline, which was planned to connect the two, has been stalled by continual Chinese feet-dragging. This means Russia's western Siberia gas will largely have to remain in the ground – though efforts to connect Western Siberian gas to Eastern Siberian gas, a national priority of Russia's, have been a long-running source of China-Russia tension. On top of that, there is quite a staggering difference between Russia's LNG export capacity and its piped gas exports – two of the LNG facilities connected to the Western Siberian gas grid – Yamal and Vysotsk – can export an equivalent of about 25 bcm. Total Russian natural gas exports to Europe amounted to 170 bcm, with 15 bcm being delivered in the form of LNG. Thus, from a technical standpoint, it remains impossible to ship the remaining amount of gas to China or India without the costly and time-consuming construction of a Trans-Siberian interconnecting pipeline.

There have been prior attempts. The idea of a Trans-Siberian Pipeline was first blocked by China in the aftermath of the annexation of Crimea, given both Chinese reticence to pay higher European prices for gas as well as its doubts that Gazprom can fulfill the commitment to build the Altai pipeline quickly and on-cost from both a technical and financial perspective. The hurdles are many – after all, the Altai region, on both sides of the border, lacks the necessary basic infrastructure to stand up a project of this magnitude, and is faraway from major Chinese population centers, which means that CNPC would have to build an additional high-altitude pipeline at even greater cost in addition to the Altai pipeline itself. The project is of questionable benefit to China to begin with; not only can China exert greater leverage in negotiations with Russia when Russian supplies of piped gas are non-fungible, but China has no deficit of proven and suspected gas reserves in Xinjiang to develop for its own national benefit.

It is thus not surprising that even before the conflict in Ukraine started, Russian companies failed to receive large-scale debt financing for oil and gas projects from Chinese capital markets – in addition to western capital markets being largely off limits post-2014. The Chinese financial system is designed mostly to provide credit to domestic businesses, entrepreneurs, and state-owned companies, all of whom have little direct presence in the Russian oil and gas sectors. CCP and government-designed financing mechanisms such as BRI provide financing to international projects of national interest, but interestingly, very little BRI financing has flowed to Russia, and the disinterest is apparently mutual, rooted in a long-simmering historical rivalry between China and Russia.



Russia's "pivot to Asia", then, is much more complicated than meets the eye, particularly on natural gas. Not only is Russia stuck with only being able to supply China with Eastern Siberian gas, not Western Siberian gas, but it is arguable whether Russia represents a preferred supplier of gas from the Chinese vantage point. China has intentionally diversified its supply of LNG drawing across preferred and less-threatening Central Asian and Middle Eastern piped gas partners in addition to shipped LNG from the United States, Australia, and others. In the asymmetric interdependence relationship between China and Russia, it is Russia which is the far more vulnerable side, given that China can diversify away from Russian gas much more than Russia can diversify purchasers of its own gas away from China. And even as China phases out coal to meet its climate targets and reduce overall environmental pollution, it has an ever increasing cheap regasification capacity which exists as a credible threat to Russian piped gas, pulling the price of Russian piped gas down since China can now essentially source shipped LNG from all over the world at a cost roughly commensurate to, taking into account energy security premium, piped Russian gas.

Confrontation with the West has decreased Russia's leverage as a commodity exporter in its relationship not only with China, but with other relatively minor partners in the former Soviet bloc as well, such as the countries of Central Asia. Taking Kazakhstan as one example, there are already many indicators of minor but increasing tension as Kazakhstan pivots away from Russia, starting with symbolic gestures such as Kazakhstan's shift to Latin script in 2021, Kazakhstan's cancellation of the 2022 Victory Day Parade, and Kazakh President Tokayev's willingness to challenge Putin on his own stage at the St. Petersburg Economic Forum this year. Russia's retaliatory measures such as a temporary shutdown of the Russo-Kazakh Caspian Pipeline only raises the tension and encourages Kazakhstan to align more with China and Europe, with President Tokayev offering to increase Kazakh energy output in order to "stabilize the situation in the world and European markets" in direct contradiction of Putin's stated desires. Other traditional Russian partners in Central Asia are likewise pivoting away from Russia; in Uzbekistan, President Shavkat Mirziyoyev has reversed the Soviet-era economic policies of his barbaric predecessor Islam Karimov in opening up Uzbekistan to western investment while fostering increasingly close ties with China in lieu of Russia as the regional partner of choice.

Making matters worse for Russia, yet another hurdle to its pivot to Asia is the fact that from the onset of its oil and gas exports, Russia has heavily relied on western technology and know-how. The first natural gas deal with the Soviet Union in 1968 relied on the pipeline manufacturing capacities of German and Austrian companies. This reliance has continued well into the present – and Russia's technical incompetence and reliance on the west is illustrated by the recent Nord Stream 2 example, with western companies being the main builders of the controversial pipeline. Initially, it was envisaged as a Joint Venture of Gazprom and five EU companies – Shell, E.ON, OMV, Wintershall and ENGIE. The withdrawal of Dutch-Swiss company Allseas following the implementation of Protecting Europe's Energy Security Act (PEESA) put the entirety of the project on halt, reflecting Russia's technical incompetence: Russia lacked in highly complex pipelay vessels, and it took Russia over a year to adapt its Akademik Cherskiy and Fortuna to laying Nord Stream 2.

Similarly, the feasibility of Russian greenfield ventures in the Arctic has also been called into question without the continuity of western companies' support. Russia has to increasingly pivot towards new greenfield gas fields in the Arctic, as the yields from Western Siberian brownfields drop, which begets numerous technical challenges. Extreme temperatures and ice loads require specialized building techniques which can deal with the freezing temperature of cement, ice accretion, and stabilization of structures in the permafrost. The developmental process of an oil or gas field is no less difficult, particularly in these Arctic ventures, requiring drilling vessels that are capable of drilling in cold and withstanding the ice load, not to mention the challenges associated with attracting talented engineers to remote, inhospitable areas. Russia is already barred from using the latest innovations in the field, with the newest drilling vessels having automated drilling control systems and highest quality water purification systems which are now under sanction and practically un-usable.

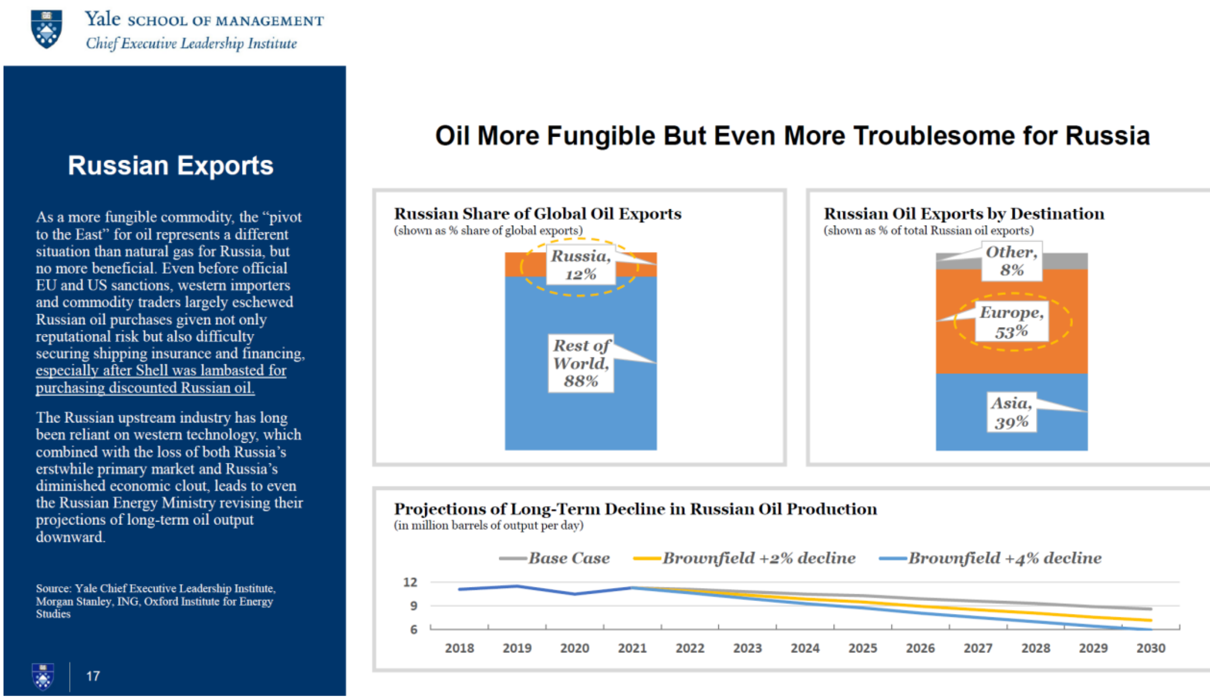
A further reflection on the deterioration of Russia's strategic position as a commodity exporter is the fact that any commodity exporter has to have a reputation for being a reliable provider of commodities – delivering what is promised and signed for, and following international contracts. The Soviet Union built its reputation as a reliable partner by supplying gas even during the most tense geopolitical clashes of the Cold War, a legacy largely continued by Russia in the decades following the end of the Cold War. This established a "come-what-may Russian gas must flow" attitude among its European partners, which directly contributed to the willingness to pursue projects such as Nord Stream 1 and then Nord Stream 2. However, each instance of energy weaponization, and every Kremlin-provoked gas crisis, tarnishes Russia's reputation beyond repair, with trade partners now clearly understanding that Russia cannot be relied upon as a stable commodity producer, but rather that Russian exports are a reflection of Kremlin whims and geopolitical priorities. The war in Ukraine proved irrevocably that for all its trade partners, dealing with Russia is not dissimilar from playing Russian roulette.

As such, when taken in totality, the outlook for Russia in lining up replacement buyers for its depleting natural gas production beyond this coming winter seems highly unfavorable. Beyond "the pivot to Asia" – which is troubled for the reasons laid out above – Russia retains few natural markets for its gas exports. It is likely that Russian gas exports will fall significantly in the months and years ahead not by Putin's choice, despite his efforts to spin it as selectively "holding back gas" to non-friendly countries, but because Putin will have no buyers for his gas. On the other hand, his erstwhile trade partners will be able to easily line up replacement sources much easier than Putin can line up replacement buyers for gas. Europe has already become an open playing field for other LNG producers such as Qatar, the United States and Australia which can come in and fill the void at great national profit, and they will essentially be guaranteed a stable place in the European market, as long as gas remains a bridge fuel in the European energy transition. Given the recent decision of the European Commission to label gas and nuclear (under some preconditions) as sustainable energy sources, the other players in the LNG market are set to benefit handsomely from Russia's self-inflicted destruction of its export-oriented gas sector.

This leaves perhaps only Russia's own domestic market for gas, but even the domestic Russian energy market contains major question marks. By its own account, Russia is completely unprepared for the energy transition. There exists an implicit premise in the narrative presented by the leading Russian politicians and C-level executives of oil and gas companies that the "cure" to climate change is potentially worse than the "disease" itself, mirroring Putin's favorite talking point lambasting the energy transition and climate efforts of other major nations, not only of the west but also that of China. The Kremlin argues that "climate alarmism" and energy transition are a means of attacking Russia's economic foundation. Russia's avowed stance is the assumption that it will be less costly for the regime to adapt to climate change, come-what-may, rather than to actively redirect the economy towards green energy sources. Thus, we find in the Russian Energy Strategy that until 2035, renewables will only reach 11% of the total electricity generation mix in even the most bullish scenario – a far cry from practically every major nation. And even this low 11% figure is highly doubtful given that all the top producers of wind turbines stopped new sales in Russia post-invasion, and other renewable energy development is just as reliant on now-sanctioned western technologies. The Russian Energy Strategy does not address how Russia – a petrostate – plans to compete in profoundly transformed global energy markets, increase competitiveness in renewables, and whether it wants to join the countries of the world in the green energy transition With Russia's invasion of Ukraine it becomes less and less likely that Russia will ever address this issue under its kleptocratic regime – despite the fact that even China is moving rapidly towards more diversified renewable sources of energy, despite Putin's anti-west propaganda.

Oil

Once more, the asymmetric relationship between Russia and its trade partners can be seen in the oil markets – with Russia needing the revenue from oil exports far greater than the world needs Russia's oil – but to appreciate the full deterioration of Russia's strategic oil positioning, some background and historical context are necessary.



Russia is the world's third largest oil producer, with its production amounting to 11.3 mb/d (million barrels per day) in January 2022, behind Saudi Arabia's maximum of 12 mb/d and the United States' 17.6 mb/d. About 88% of its oil production – or roughly 10 mb/d – consists of crude oil, out of which 7.8 mb/d was designated for exports. As one of the world's largest crude oil exporters with about 10% of the total market, approximately 50-60% of its oil exports goes to OECD Europe, while 20% goes to China.

Oil exports are the foundation of Russia's economy – much more so than gas. In 2021, revenue from oil exports totaled 45 percent of Russia's budget revenue, or about three times as much as the revenue from natural gas exports. Independent oil producers represent less than 10% of Russia's oil production, and the role of the state and state-owned companies has grown significantly over time from already high starting points, as Russia has aimed to switch away from the declining West Siberian brownfields towards new projects on the Yamal peninsula and in the Arctic. Of course, it is hardly surprising that the state would want to take an increasingly greater role in oil – not only is Putin rumored to follow oil markets very closely, but Russia produces only 3% of the world's GDP in total while being the third-largest producer of oil. In short it is oil and gas that make Russia relevant in the world economy.

Historically, Putin himself rode the commodity super-cycle of the 2000s, and rising oil prices, to increased power and prestige, on his way to establishing his grip over Russia more firmly. Oil prices rose from $30 US dollars a barrel in 2003 to $147.30 in July 2008. From 1999 until 2000, energy exports accounted for some 90% of Russia's total growth in GDP. Russia was able to increase its oil exports value eightfold from 2000 to 2012, and thanks to this oil windfall on the back of higher prices and higher export volumes, Russia was able to fill the coffers of its sovereign wealth fund while stashing aside over hundreds of billions in foreign exchange reserves.

While Russians prospered from this oil windfall, Putin was able to consolidate and steadily nationalize significant portions of the oil sector for his personal and political interest. He incrementally removed problematic oil and gas oligarchs and other threats to his power with a mix of hardball, extortions and assassinations. When Putin first took over, the state had lost significant control over the oil and gas industry after the infamous and corrupt privatization of the oil and gas sector under Boris Yeltsin in the 1990s, which minted a new wave of billionaire oligarchs. The infamous nationalization of dissident oligarch Mikhail Khodorkovsky's oil giant, Yukos, and his subsequent sham political trial firmly re-established Putin's grip over both the oil industry and over Russia, but these episodes did not sever the ties between the Western oil majors and Russia. The prospect of tapping into Russia's oil wealth was just too attractive to pass, political turbulence aside. ExxonMobil continued with its involvement in the Sakhalin-1 joint venture, similar to BP's joint venture with TNK; in 2005, Gazprom acquired Sibneft from Roman Abramovich, and in 2013 Rosneft acquired TNK-BP. In 2013, Rosneft had about 40% of the Russian oil market and together with state-controlled Gazprom Neft and Slavneft, the state-controlled share of the market totaled more than 50% - a quick recovery from the late 1990s, when state control over oil and gas had dwindled.

With this newfound control over the oil sector, Putin started to use oil supply as an energy weapon to reestablish its position in the so-called "near abroad", similar to his use of gas in the afore-mentioned 08-09 winter crisis with Ukraine. Oil, due to its fungibility and the degree to which it is globalized, is more difficult to weaponize, but this did not deter Putin: indeed, the Russians tried to leverage oil supply to gain sway over Latvia and Lithuania in the 2000s, in several little-remembered but prescient episodes.

In the early 2000s, the Latvian port of Ventspils, which was connected to Transneft's Russian pipelines through a northern branch of the Druzhba pipeline, had been the single port exporting the largest volumes of Russian oil and petroleum – 14.9 mln tons and 7 mln tons, respectively. In 2003, a delegation of the Russian Council of Businessmen and Entrepreneurs presented a de facto ultimatum – there would be no more Russian oil exports through Ventspils unless the Latvian government sells its share in the port which processed Russian oil. Despite rising oil prices and high margins on Russian oil exports, the Russian government decided to halt some of its exports through Ventspils as an energy weapon against Latvia. The goals of this shakedown were directly expressed by Gleb Pavlovskiy, the Chief of Staff of the Russian Presidential Administration, who presented the following aims in his memorandum: taking control over the Latvian oil transit complex, fostering and developing Latvian politicians loyal to the Kremlin, and advocating for the supposed Russian-speaking "non-citizens" of Latvia by handing them citizenship and granting them a right to vote. Ultimately, the Latvians did not agree on the Russian demands, and the situation remained largely unresolved – a minor but prescient precursor of things to come, albeit on a much larger and destructive scale. This instance showed the clear determination of the Kremlin to forgo short-term profits – and their willingness to weaponize oil exports – in order to achieve the goal of forming a "Russian Transnational Corporation". Similar threats based on oil, alongside industrial sabotage of oil facilities, were issued to Lithuania when the Polish oil major PKN Orlen S.A. acquired the only oil refinery in the Baltic States in Mazeikiai.

These early instances of Russian weaponization of oil reflected Putin's recklessness in engaging in geopolitical adventures which threatened the future of the oil industry, and namely Russia's ability to continue oil development. Sanctions on the oil technology transfer industry were introduced in 2014 in the aftermath of the Crimean incursion, severely inhibiting Russia's long term ability to develop its oil fields, particularly its unconventional oil reserves. Provisions of loans and equity capital with maturity over 90 days (then reduced to 60 days) were limited for Rosneft, Novatek, Transneft and Gazprom Neft by the United States, and similar measures were introduced by the EU. Moreover, the provision of equipment used for oil extraction on the shelf, in the arctic and in shale projects was banned. Sanctions also covered certain parts of drilling rigs, parts for horizontal drilling, and Arctic-capable marine equipment – practically every component used by the upstream exploration industry. Nevertheless, some international energy companies remained in Russia (Conoco was a major exception) and continued legal development outside of the sanctions' scope, albeit at a slow and impeded clip. Partially as a result of this imposed technological inferiority, Russia has no hydraulic fracking fleet, which means that it has to develop more costly greenfield ventures in the Arctic to stay relevant on the global market and maintain its oil production levels.

Even at a technologically inferior level, Russia continues on its oil development course, which has been dubbed by some analysts as Russia's Kodak moment, making only token efforts to diversify and innovate.

A long term forecast for Russian oil production assumes a severe decline in greenfield ventures in the new gas projects in the Arctic and – in the base scenario – a moderate rate for brownfield decline of 2-3 percent annually. However, as the fields move into their final years of production, and western energy companies are not substituted with Chinese or Indian partners, and the quality of servicing declines, it is highly possible if not probable that there will be a much steeper decline. A depletion rate of 6% falls within the commonly accepted range of a weighted decline of production from all existing world oil fields. The scenarios are quite conservative themselves, as even the Russian Ministry of Finance forecasts that Russia could see its oil production fall by between 9% and 17% in 2022 as western sanctions and departing international oil companies complicate extraction and reduce demand, a rate which could presumably be extrapolated annually as long as sanctions are in effect.

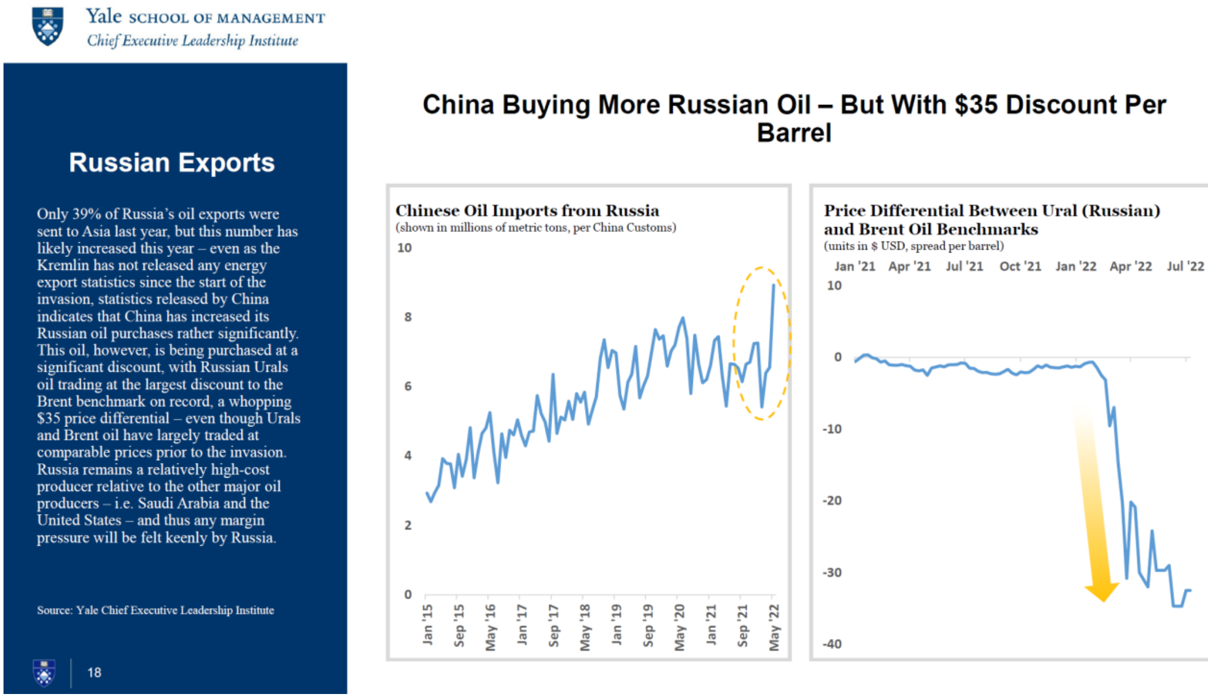
The consequences of the Russian oil fields' decline are key for the future of Russia as an energy, and specifically oil, superpower. Assuming the brownfield +4% decline scenario, which is highly likely given a confluence of factors: lack of foreign capital and know-how, mounting technological challenges when accessing Arctic deposits and the withdrawal of western energy companies, and increased costs of tapping into new deposits, Russia could see a long-term oil production capacity decrease to about 6 mb/d by the end of the decade. That is certainly a non-negligible amount, but a far cry from Russia's current production and former delusions of production growth. Russia's inability to grow oil production would prove crippling: not only would the country lose much of its global geopolitical sway, but as the purchasing power of oil buyers vis-à-vis Russia increases, and as its revenue plummets, as both the quantity produced and potentially the price of Ural crude drops, at least relatively to other crudes, the Russian budget would face perennial budget shortfalls and deficits each year – a surefire recipe for domestic discontent.

These long-term pessimistic forecasts for Russian oil production have largely been lost amidst overwhelming focus in western countries on the rising price of oil and a supposed supply/demand imbalance within oil markets in the short-term. No doubt, this is a crucial and important topic demanding the attention of western policymakers and their constituencies – but a close analysis reveals that conventional narratives surrounding a supply/demand imbalance in oil markets arising from the loss of Russian oil are simply not true.

All things being equal, there may very well be additional potential production capacity among the OPEC members, hitherto inhibited by political, security and technical reasons. If those obstacles can be surmounted, it is reasonable to expect OPEC member states could increase their production – in the short term to balance out the majority of the estimated 6 mb/d supply-demand gap, and in the medium to long term to substitute for the dropping of Russian oil production capacity. Indeed, despite the claims of the largest member of OPEC – Saudi Arabia – that they have little-to-no spare capacity remaining, Saudi reached maximum capacity of 12.3-13 mb/d in early 2020 but was pumping no more than 9 mb/d post February 2022 even amidst pleas from the US to increase production faster. Saudi has further been known to announce production hikes of up to 3 mb/d practically overnight in past instances, but claims significant difficulty in bumping up production by even a couple hundred thousand barrels more than previously scheduled now. And all of this only refers to current and future oil production: often overlooked is the fact that Saudi Arabia maintains its own vast crude storage and its own strategic petroleum reserve, which they apparently tapped into liberally in 2019 amidst pressure from the Trump Administration for lower oil prices, but not this year.

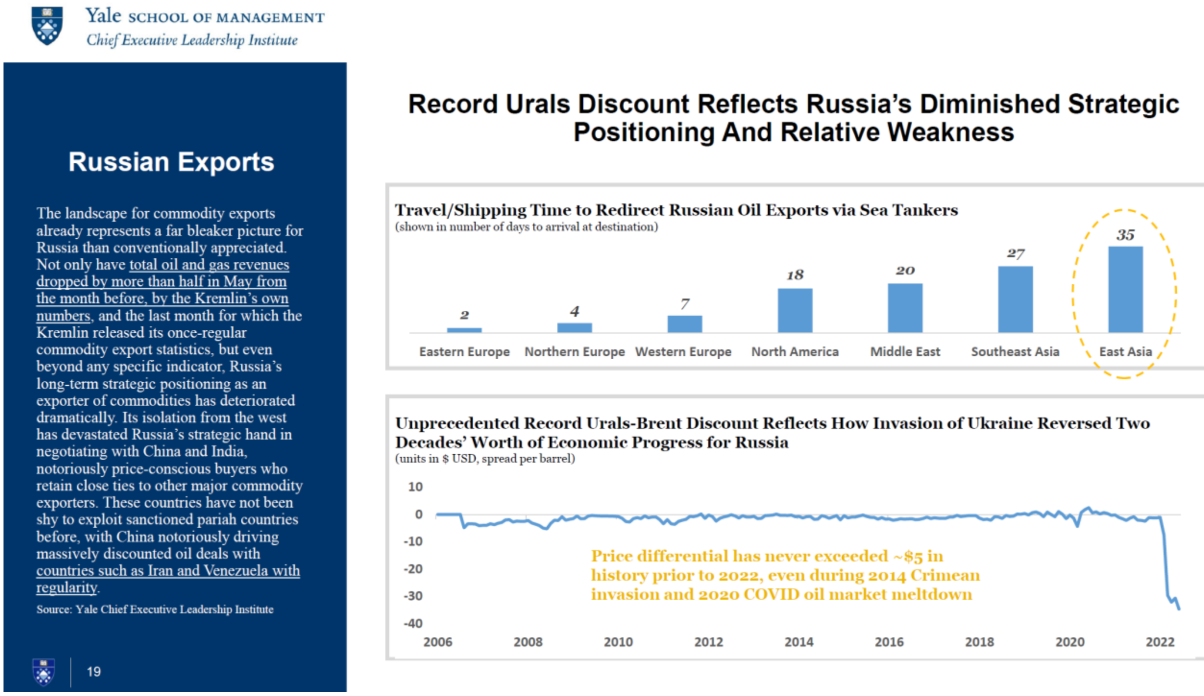
But the short-term price pressures faced by the west, regardless of the underlying facts of the supposed supply-demand imbalance in oil markets, pale in comparison to the scale of challenges faced by Russia in the near-term in oil markets.

As an answer to the sudden drop in oil demand in Europe, Russia aims to pivot to the East, as it does for gas. As a more fungible commodity, a pivot east for oil is less challenging logistically than for natural gas from Russia's point of view, but no more beneficial. Even before official EU and US sanctions, western importers and commodity traders largely eschewed Russian oil purchases given not only reputational risk but also difficulty securing shipping insurance and financing, especially after Shell was lambasted for purchasing discounted Russian oil.



Only 39% of Russia's oil exports were sent to Asia last year, but this number has likely increased this year – even as the Kremlin has not released any energy export statistics since the start of the invasion, statistics released by China indicate that China has increased its Russian oil purchases rather significantly. Even so, the threats that Russia will redirect the majority of its oil exports formerly sent to the West are largely hollow. Russia is more dependent on the West to accept its oil than the West is on the Russian oil shipments – as shown by the OPEC countries' production capacity and potential demand-reduction measures. It is virtually impossible that China and India together will be able to accept some 6 mb/d in the span of a year. Indeed, early reports based on data from July 2022 suggest that China and India are already having difficulty absorbing the newfound surplus of Russian oil, with new July purchases falling meaningfully from peaks established in April and May. The asymmetric interdependence of Russia vis-à-vis its trading partners gives significant bargaining leverage to the EU and the US.

Furthermore, the marginally higher quantities of Russian oil being purchased by China and India are being purchased at a significant discount, with Russian Urals oil trading at the largest discount to the Brent benchmark on record, a whopping $35 price differential – even though Urals and Brent oil have largely traded at comparable prices prior to the invasion. Russia remains a relatively high-cost producer relative to the other major oil producers – i.e. Saudi Arabia and the United States – and thus any margin pressure will be felt keenly by Russia. The Urals-Brent price differential would certainly widen even further if western allies successfully implement a potential price cap in the [$40-$60 range as recently reported], as China and India would likely drive an even harder bargain given the low floor.



In sum, the landscape for commodity exports already represents a far bleaker picture for Russia than conventionally appreciated. Not only have [total oil and gas revenues dropped by more than half in May from the month before, by the Kremlin's own numbers], and the last month for which the Kremlin released its once-regular commodity export statistics, but even beyond any specific indicator or any single count, Russia's long-term strategic positioning as an exporter of commodities has deteriorated dramatically. In spite of the cries of "Russian economic resilience" or Putin propaganda over how the Russian oil and gas industries have been able to conquer the challenge of western sanctions, the truth of the matter is Russia faces existential challenges in its oil markets – with a rapidly dwindling set of global purchasers. Its isolation from the west has devastated Russia's strategic hand in negotiating with China and India, notoriously price-conscious buyers who retain close ties to other major commodity exporters. These countries have not been shy to exploit sanctioned pariah countries before, with China notoriously driving massively discounted oil deals with [countries such as Iran and Venezuela with regularity]. Even more importantly, in order to execute the "pivot to the East", Putin must leverage technology ranging from shale to pipeline construction to Arctic development. With the withdrawal of Rosneft and Gazprom's international partners, Russia's own energy giants have nary a hope of leveraging Russia's tremendous oil and gas reserves, particularly in Siberia and the Arctic, and actually getting these supplies to the market. What all this means in the short-term is that Russia is losing out on crucial tax revenue and losing its global credibility and reliability as a member of the OPEC+ alliance – reduced to begging for Chinese and Indian purchases at a heavily discounted rate. In the medium-to-long term, Russia's technological disadvantage and inability to access global markets will almost certainly lead to a dramatic decline in oil production – in some scenarios to about 6 million barrels a day within a few years – hamstrung by a lack of international investment, technology, and know-how. The crippling of Russia's oil industry, which represents the single largest share of Russia's revenue, would in turn reduce the Russian economy to a shadow of its former self.

Copper

As we have seen in the two previous sections, Russia is losing out as the world's energy markets rewire with Russia's strategic position deteriorating rapidly. Russia's strategic weakness as a fading commodity exporter is further exacerbated by the fact that Russia remains a marginal exporter, at best, of most industrial metals, most prominently copper, which is widely seen as a gauge of global economic health as "Dr. Copper". Copper is especially important to the energy transition, and Russia's failure both to tap into its copper reserves and its lack of renewable development has not positioned it well in copper markets in the years ahead.

The copper value chain is highly concentrated, to the detriment of Russia. There are 2 countries responsible for around 38% of the mine production: Peru and Chile. The latter is known to possess the world's largest reserve base accounting for about 23% of global reserves. According to the US Geological Survey (USGS), Russian copper reserves are estimated at only 7% of global reserves. Mine production, which generally aligns with the size of reserves, places Russia in 8th place with about 4% of global mine production, meaning that Russia's already minor share of global reserves is dramatically under-tapped – partially a result of the significant capital investment and technological capital required to successfully operate a copper mine, both of which have been lacking in Russia. Copper processing has a different geographical composition, with China leading the way in both smelting and refining.

Demand for copper is expected to strongly accelerate in the coming years, to the detriment of Russia – on several fronts. The main drivers for copper demand growth over the past two decades have been industrial production in developed countries as well as the commodity supercycle associated with China's (and other BRICS countries) economic growth, rapid urbanization, and construction and development. In particular, copper is used in building construction, appliances, electrical equipment, brass hardware and cell phones, as well as expanding applications in communications, data processing, and storage.

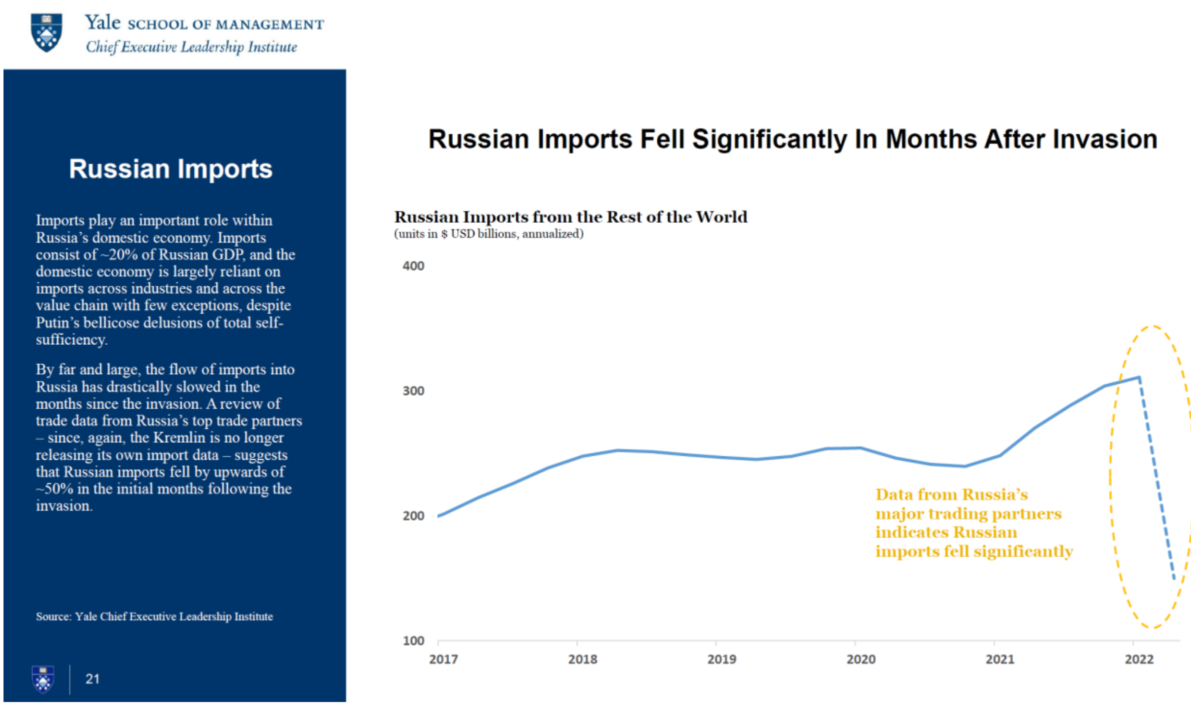
Moving forward, however, copper is poised to become even more important to the energy supply chain, specifically. Access to copper among other critical rare-earth minerals is crucial to the success of the energy transition and meeting zero-emission goals, and copper will be essential in the production of electric cars, batteries, green energy generation (including photovoltaic panels and wind turbines), as well as power transmission and distribution. An increase in copper demand related to the energy complex does not bode well for Russia.

Russia is not central to the copper value chain – and copper has never represented a meaningful proportion of Russia's revenue from energy exports. Not only does Russia not possess any significant share of global copper reserves, but what reserves it does possess are already under-tapped and operating under-potential as is. This is unlikely to change, even if prices were to rise, as many expect.

Given the massive retreat of MNCs from Russia, including mining machinery and equipment suppliers, a significant slowdown in the Russia's production capacity growth can be anticipated regardless of what copper prices do. The expected opening of the Ak-Sug and Malmyzhskoye mining projects, which would add 120,000 and 250,000 metric tons of annual capacity by 2026, respectively, have already been cast in doubt. Although it is difficult to estimate the long-term effects at this point, it is very likely that Russia, despite its reserves, will not benefit significantly from the incoming unprecedented increase in demand for copper and other critical metals. The opening of new copper mines takes upwards of a decade by even the most optimistic estimates, and such long-cycle, capital intensive investments require not only cutting-edge western technology but also a stable political environment for financial backers to be able to invest with patience. Even if Russia were to prepare to ramp up copper production today – which it is not, since electrification does not align with Putin's political narrative vilifying the energy transition – Russia would not have any meaningful increase in capacity for at least a decade if not more. Furthermore, without access to MNCs and innovative mining technology, it is unlikely that Russia could increase the capacity utilization rate in existing projects or increase the recycling rate, thus precluding an increase in both primary as well as secondary production. Leading copper consuming countries, namely China, are already sourcing new copper supplies from African and Central Asian partners without even considering Russia as a potential source of new copper production.

III. Drop In Russian Imports Illustrates Asymmetric Weakness of Russia's Global Economic Relationships

The principle of asymmetric interdependence – and Russia's deteriorating strategic positioning – applies to all facets of Russia's global trade relationships. Section 2 focused on exploring Russia's role as a commodity exporter in depth – given the importance of commodity exports to funding the Russian government budget and thus funding Russia's war-making capabilities – but less appreciated is the important role played by imports within Russia's domestic economy. Imports consist of ~20% of Russian GDP, and the domestic economy is largely reliant on imports across industries and across the value chain with few exceptions, despite Putin's bellicose delusions of total self-sufficiency.



Imports have not received much coverage outside of Russia for several reasons. First, while they are crucial to Russian domestic consumption and production, and thus to the lives of everyday Russians, they are not crucial as a source of revenue to the Russian state. Tariffs collected from imports represent a miniscule portion of the Russian budget, and most economists, policymakers and analysts have been focused on the main source of Russian revenue – commodity exports – rather than Russian imports, despite their domestic importance.

Second, researchers are constrained by a lack of available data once more. Rosstat has ceased the release of timely import data, and Russia no longer releases any subcomponents of trade data as well. Thus, any estimate of actual imports into Russia must be done by using the trade data of Russia's trade partners rather than with Russian data sources.

Third, what little attention has been given to imports has disproportionately focused on the leakages that remain. No doubt, imports into Russia have not been choked to zero. Our own Yale CELI List of Companies that have curtailed operations in Russia still features several hundred companies rated "F" – meaning they are essentially doing business-as-usual in Russia, completely undeterred by the withdrawal of over 1,000 of their global peers. When the subject of Russian imports draws any attention at all, it is usually calling attention to companies that continue to do business in Russia and which provide imports into Russia. While this is obviously important, selective anecdotal examples of companies that continue to ship products into Russia do not capture the whole picture.

By far and large, the flow of imports into Russia has drastically slowed in the months since the invasion. A review of trade data from Russia's top trade partners – since, again, the Kremlin is no longer releasing its own import data – suggests that Russian imports fell by upwards of ~50% in the initial months following the invasion. Despite the Kremlin's secrecy, even the Central Bank of Russia acknowledges as much. In a speech given by Bank of Russia Governor Elvira Nabiullina two months ago, Nabiullina conceded:

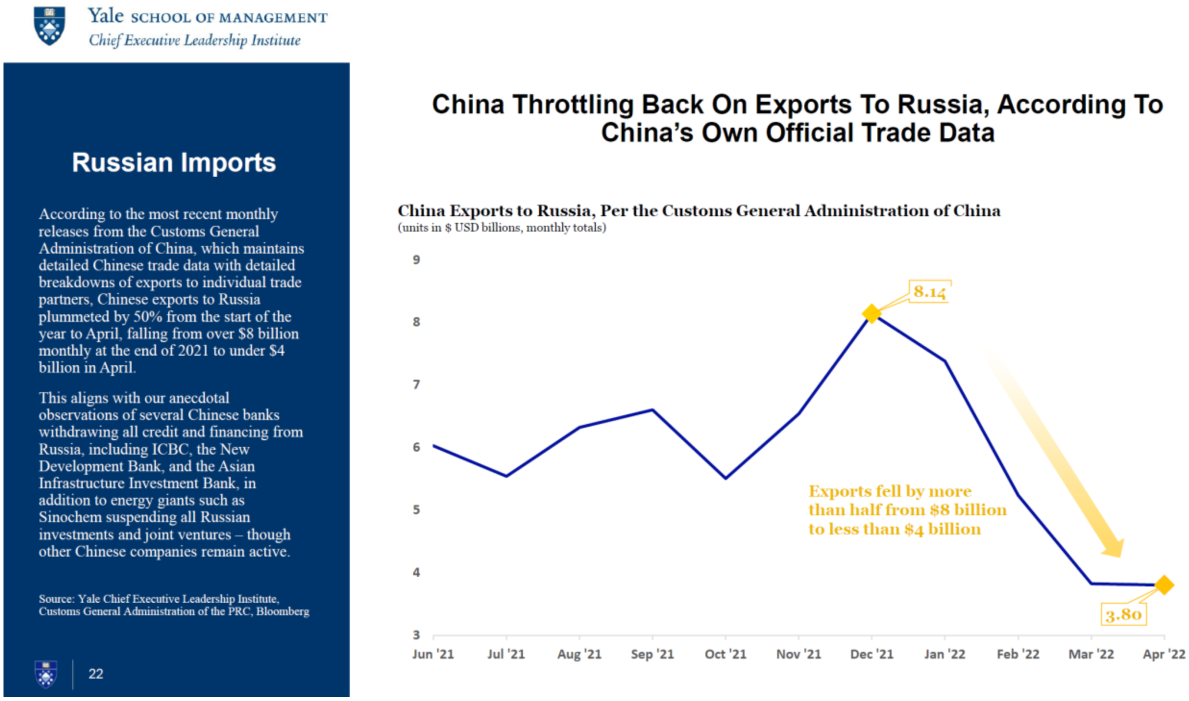
"Today, almost all companies are experiencing disruptions in production and logistics chains and in their settlements with foreign counterparties. We receive this information from our regional branches. That said, domestic demand is still active, the need for goods remains. Due to the contraction of imports and the closure of some foreign markets, this demand will shift increasingly more towards domestic goods. It is critical in the current situation to restore supply as soon as possible. Companies have already started to search new opportunities, including new target markets and new suppliers of equipment, technologies, and components for manufacture. Previously, it was unprofitable to produce certain goods inside the country, whereas now this is becoming more interesting for businesses. This is how the economy is adjusting to the changing conditions, which unavoidably involves changes in relative prices in the economy and a temporary rise in inflation.....foreign trade conditions are the key uncertainty amid the increasing pressure of sanctions. The restrictions imposed affect a considerable part of exports and imports. In addition to the official sanctions, foreign companies' decisions to suspend their operation

in the Russian market may also have a significant adverse impact on the situation."

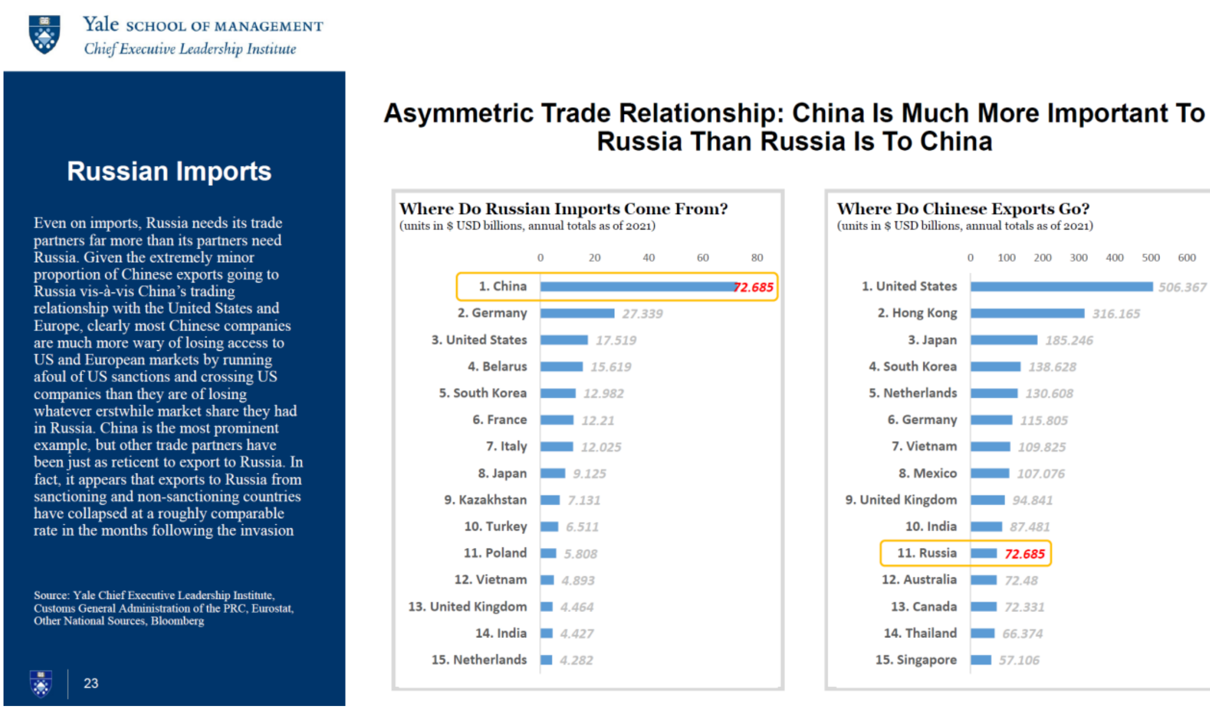
As Nebiullina highlighted, Russian manufacturing across sectors relies extensively on imported components; and while Russian companies largely still maintain the funds to pay for imports, it faces significant impediments in actually sourcing imports, given a lack of willing trade partners – including from erstwhile Chinese trade partners.

In the initial days of the Russian Business Retreat, when hundreds of western businesses rushed to exit Russia, the authors – who were deluged with media inquiries given the prominence of the Yale CELI List of Companies curtailing operations in Russia – were frequently asked whether Chinese companies would rush to fill the spots vacated by western businesses. Many naïve observers cynically remarked that the Business Retreat would be futile, as Chinese companies would relish the opportunity to do more business in Russia, and the Russian economy would barely miss a beat. This is not at all what has played out – and quite to the contrary.

In fact, according to recent monthly releases from the Customs General Administration of China, which maintains detailed Chinese trade data with detailed breakdowns of exports to individual trade partners, Chinese exports to Russia plummeted by 50% from the start of the year to April, falling from over $8 billion monthly at the end of 2021 to under $4 billion in April. This aligns with our anecdotal observations of several Chinese banks withdrawing all credit and financing from Russia following the start of the invasion, including ICBC, the New Development Bank, and the Asian Infrastructure Investment Bank, in addition to energy giants such as Sinochem suspending all Russian investments and joint ventures.



The explanation for China's reticence, once again, lies in the asymmetric nature of Russia's relationships with its trading partners. Even on imports, it is clear that Russia needs its trade partners far more than its trade partners need Russia – and the power dynamic is not even close to being balanced.



This imbalance is put into stark relief when the proportion of imports Russia draws from China is compared to the proportion of exports China sends to Russia. Russia is not even in the top ten destinations for Chinese exports; in 2021 alone, China exported over $500 billion in goods and services to its largest trade partner, the United States, representing ten times the amount of goods it sent to Russia ($72 billion). On the other hand, China represents Russia's largest source of imports by far; in fact, the $72 billion in imports Russia draws from China is nearly three times the amount of imports Russia draws from its second largest partner, Germany ($27 billion), and five times the amount of imports Russia draws from its third largest partner, the United States.

Given the extremely minor proportion of Chinese exports going to Russia vis-à-vis China's trading relationship with the United States and Europe, clearly most Chinese companies are much more wary of losing access to US and European markets by running afoul of US sanctions and crossing US companies than they are of losing whatever erstwhile market share they had in Russia. The dangers of losing access to US technology are already readily apparent from China's point of view. When the US imposed export restrictions on Chinese telecom companies Huawei and ZTE in 2020, they were unable to source advanced microchips and saw a massive reduction in their chip-dependent smartphone businesses – a fate which no Chinese company wants to suffer by running afoul of US sanctions related to Russia.

China is the most prominent example, but other trade partners have been just as reticent to export to Russia. In fact, it appears that exports to Russia from sanctioning and non-sanctioning countries have collapsed at a roughly comparable rate in the months following the invasion. One analysis found that non-sanctioning countries saw exports to Russia fall by an average of 40%, while sanctioning countries saw exports fall an average of 60%, reflecting the disadvantaged economic position Russia finds itself vis-à-vis practically all its trade partners regardless of political rhetoric.

Many Russian economists cite the necessity of finding new trade partners and broadening the range of countries from which Russia imports manufactured products, but the reality is there are few potential partners eager to engage in an economic relationship with Russia, and those that are inclined to help simply do not have the technological prowess or economic scale to replace Russia's lost imports. Case in point, Belarus has offered to "help Russia obtain substitutes for Western and Asia microchips", but Belarus – not known for being a tech hub – simply does not have the technological capabilities to step into the shoes of Russia's erstwhile western partners. And unfortunately for Belarus, it cannot simply import western technology and relabel it as Belarusian to send off to Russia, as Belarus is also under sanction by the US and EU with strict export controls choking the flow of goods into Belarus as well. The fact that in eyeing new import partners, Putin is largely constrained to countries which are allied with him politically – and much weaker economically – reflects the reality that by weaponizing trade, Putin has irrevocably destroyed his credibility as a trade partner in the eyes of many of his erstwhile trade partners. The refusal to provide contracted-for deliveries, as a producer, undermines the entire contractual system on which global trade is built.

The steep drop-off in Russian imports, unsurprisingly, has caused increasing hardship on the domestic consumption and production fronts. One survey done by the Central Bank of Russia found that well over two-thirds of surveyed companies experienced import problems, and manufacturers, in particular, reported a shortage of raw materials, parts, and components. Unsurprisingly, the focus has shifted towards import substitution – a topic analyzed in closer detail in Section IV. But in short, this has not been fruitful. Despite Russian companies' desperate efforts to find alternative production and re-orient supply chains towards domestic substitutes, according to a survey by Russia's Gaidar Institute for Economic Policy, a whopping 81% of manufacturers said they could not find any Russian versions of imported products they need, and more than half were "highly dissatisfied" with the quality of homegrown production even when domestic substitutes could be sourced.

In short, the drop-off in Russian imports has severely impeded the domestic Russian economy with devastating consequences for domestic consumption and production, as explained in more depth in Section IV. While outsiders are often more focused on Russian exports than Russian imports, the importance of Russian imports cannot be understated: after all, not only do imports represent ~20% of the Russian GDP, compared to only 16% in China and even less in other comparable economies such as India and Brazil; but in addition, in 2021, imports accounted for 75% of nonfood consumer goods in the Russian retail market; and in some sectors the share was even higher, rising to 86% in telecommunications equipment as one example. The fact that the flow of Russian imports has been throttled back severely – even if not choked off completely – is reflective of Russia's diminished global positioning and weakening economic leverage – further reinforcing the asymmetric nature of Russia's trade relationships across both exports and imports. In short, Russia needs global markets far more than the rest of the world needs Russian markets.

No doubt, more work remains to be done: after all, there remain too many "F" companies that are continuing business-as-usual, sending supplies of manufactured products, inputs, parts, and other goods into Russia, even though most credible international companies want nothing to do with running afoul of sanctions by supplying parts and goods to Russia. But it is simultaneously clear that Russian imports have already contracted meaningfully, with ripples across the domestic economy. The impact of this drop-off in Russian imports can be seen even more clearly with an analysis of Russian domestic consumption and production.

IV. Weak Russian Domestic Consumption & Production Data Shows Import Substitution Not Feasible

The Russian domestic economy, in many ways, remains somewhat of a black box for many outside observers. Many western analyses of domestic consumption and production are overly reliant on official Rosstat releases, which are, as described in Section I, whitewashed and cherry-picked to select for the most favorable statistics while obscuring those which do not advance the propaganda of the Kremlin.

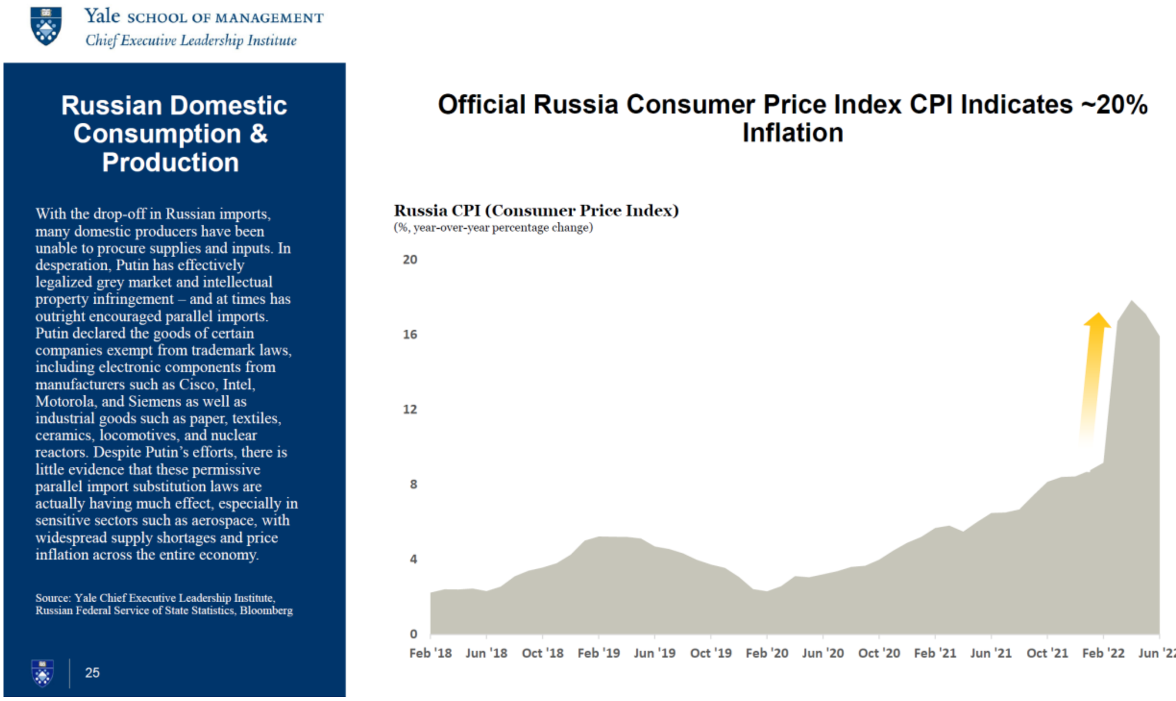
The question of how Russian domestic consumption and production are holding up in the face of business retreats and sanctions is of crucial importance. While measures of national accounts and macroeconomic strength, such as assessments of Russian export revenues, are of crucial importance to Putin and the Kremlin – and by extension, Russia's war-fighting capabilities – many average Russian citizens interface most directly with the economic impact of the war through everyday domestic consumption and production. Thus, to the extent that Russian citizens are an important stakeholder to the Russian government, the strength (or more aptly, weakness) of domestic consumption and production may hold outsized influence in determining the degree to which Russia can continue to withstand the economic devastation inflicted by business retreats and sanctions.

Domestic consumption and production are especially important given the widespread difficulties faced by Russian companies in obtaining Russian imports, as discussed in Section III. The level of desperation of Russian producers who are unable to procure supplies and inputs is reflected by many anecdotal reports coming out of Russia. As Commerce Secretary Gina Raimondo testified in a recent Senate hearing, "we have reports from Ukrainians that when they find Russian military equipment on the ground, it's filled with semiconductors that they took out of dishwashers and refrigerators", reflecting the degree to which Russian manufacturers are having to cannibalize and recycle parts in the absence of foreign supply.

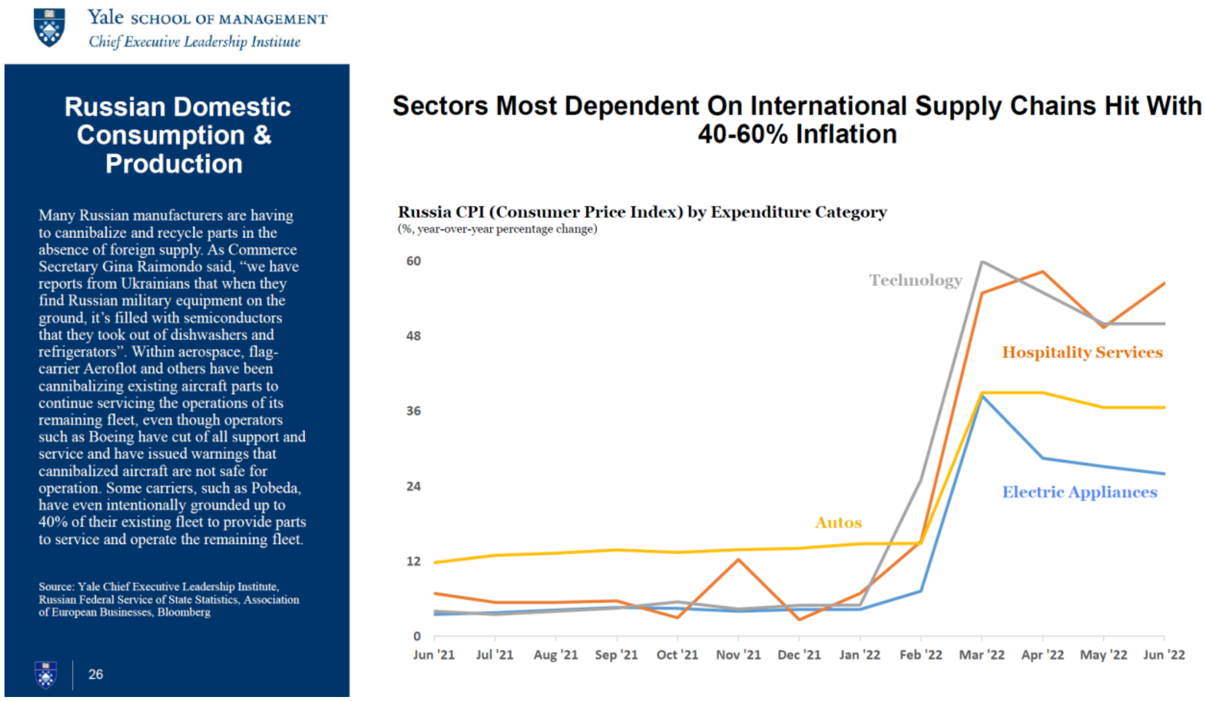
Another prominent example of cannibalization of parts to sustain fledgling levels of domestic production is in the Russian aerospace industry. Russian carriers, including flag-carrier Aeroflot, have been documented to be cannibalizing existing aircraft parts to continue servicing the operating its remaining fleet, even though operators such as Boeing have cut of all support and service and have issued warnings that cannibalized aircraft are not safe for operation. Some carriers, such as Pobeda, have even intentionally grounded up to 40% of their existing fleet to provide parts to service and operate the remaining fleet.

In desperation, Putin has effectively legalized grey market and intellectual property infringement – and at times has outright encouraged parallel imports. Putin declared the goods of certain companies exempt from trademark laws, including electronic components from manufacturers such as Cisco, Intel, Motorola, and Siemens as well as industrial goods such as paper, textiles, ceramics, locomotives, and nuclear reactors.

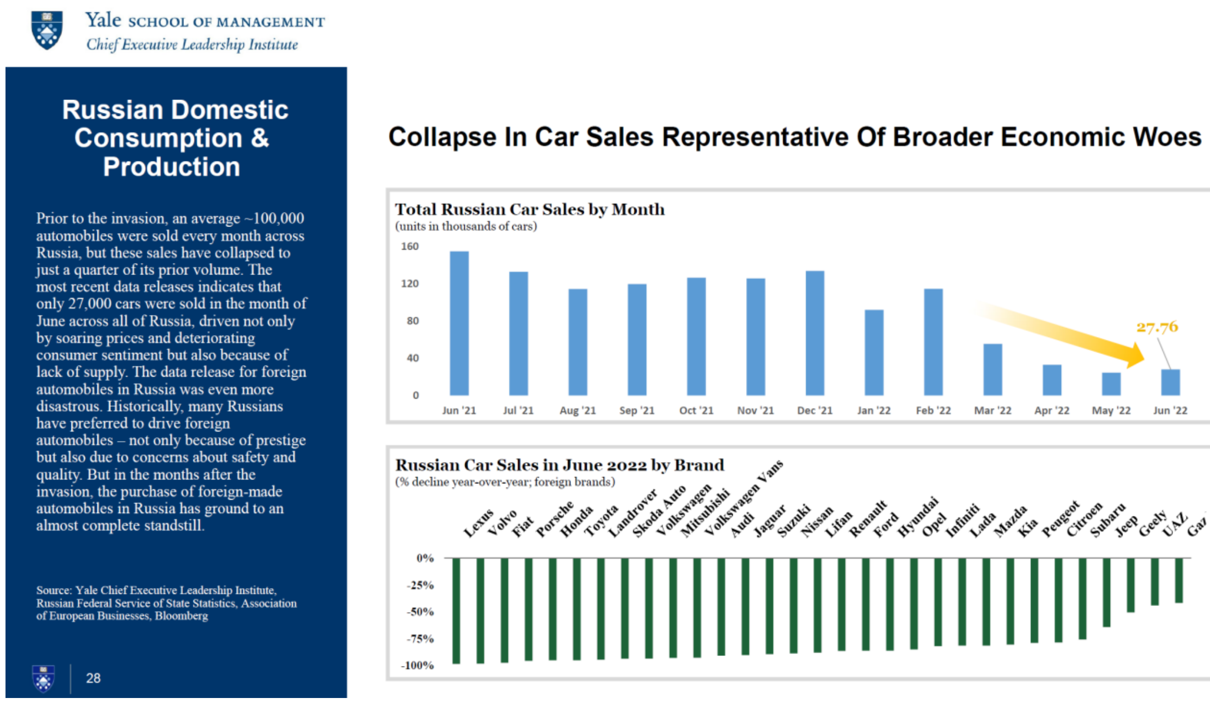
Despite Putin's efforts, there is little evidence that these permissive parallel import substitution laws are actually having much effect, especially in sensitive sectors such as aerospace. Scattered, unconfirmed reports of rogue companies leveraging Putin's permissive parallel import substitution law to import grey-market parts have not improved material shortages within Russian supply. And for the reasons described in Sections II and III, most countries such as China are extremely hesitant to risk running afoul of US sanctions, despite Putin's hopes of re-routing trade and supply chains through developing nations and direct, personal appeals to the leaders of those developing nations. This is especially true in cases where companies may face lawsuits for trademark or copyright infringement in their host nations, which precludes greater foreign cooperation with Putin's parallel import schemes.



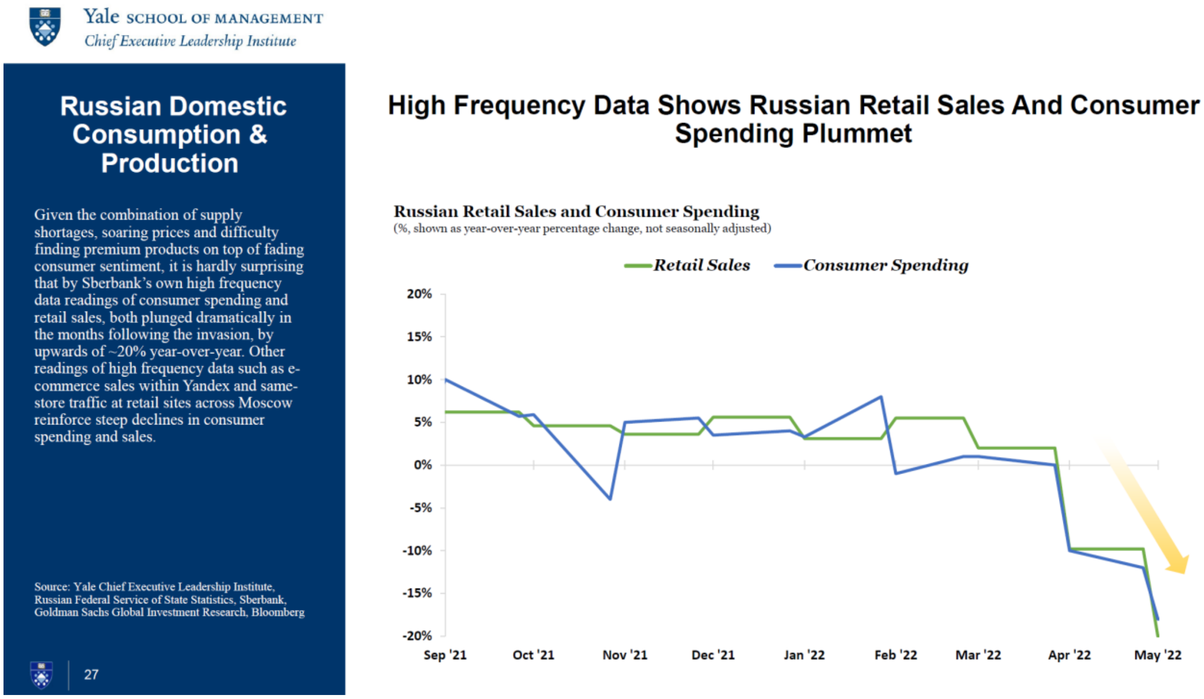
The challenges facing the Russian domestic economy can be captured even via the selective official statistics still released by Rosstat, particularly via its monthly releases of consumer price data. Not only has the official Russian CPI reached ~20% inflation in the months after the invasion – soaring to the highest levels seen in Russia since the financial crisis of the late 1990s – but a sector by sector breakdown of the CPI index indicates the situation is even worse than conventionally understood. The sectors most dependent on the international supply chain have been hit with unprecedented inflation of upwards of ~40-60% - including technology, hospitality services, electric appliances, and western automobiles.



It is not only soaring price inflation, however. Many of these goods reliant on the international supply chain have been effectively impossible to purchase since the invasion began. Prior to the invasion, an average of ~100,000 automobiles were sold every month across Russia, but these sales have collapsed to just a quarter of their prior volume. The most recent data releases indicates that only 27,000 cars were sold in the month of June across all of Russia, driven not only by soaring prices and deteriorating consumer sentiment but also because of lack of supply.



The data release for foreign automobiles in Russia was even more disastrous. Historically, many Russians have preferred to drive foreign automobiles – not only because of prestigious branding but also due to concerns about safety and quality, with foreign automobile sales often surpassing domestic auto sales. But in the months after the invasion, the purchase of foreign-made automobiles in Russia has ground to an almost complete standstill. The list of foreign automobile companies whose sales have plummeted by more than 90% on a year-over-year basis in June 2022 is long and startling: Lexus, Volvo, Fiat, Porsche, Toyota, Land Rover, Skoda Auto, Volkswagen, Mitsubishi, Volkswagen Vans, Audi, Jaguar, Suzuki, Nissan, Lifan, Renault, Ford, Hyundai, Opeli, Infiniti, Lada, Mazda, Kia, Peugeot, Citroen, Subaru, Jeep, Geely, UAZ. These foreign companies represent a variety of price points, targets and geographic origins, with companies from Japan and China represented as amply as companies domiciled in Europe – pointing to how essential portions of the Russian economy have come to a complete halt, affecting low-income consumers as much as high-income consumers. No segment of the Russian population is spared from domestic economic chaos. The auto sector is just one example of many where consumption has ground to a standstill: in several high-tech sectors such as smartphones, an initial rush to clear out remaining inventory in the days following the invasion has given way to the impossibility of finding supply, with most international smartphone manufacturers no longer sending product to the country and with inventories having been depleted by panicked consumers in the initial frenzy.



Given both supply shortages, soaring prices and difficulty finding products on top of fading consumer sentiment, it is hardly surprising that by Sberbank's own high frequency data readings of consumer spending and retail sales, both plunged dramatically in the months following the invasion, by upwards of ~20% year-over-year. Other readings of high frequency data such as e-commerce sales within Yandex and same-store traffic at retail sites across Moscow reinforce steep declines in consumer spending and sales.

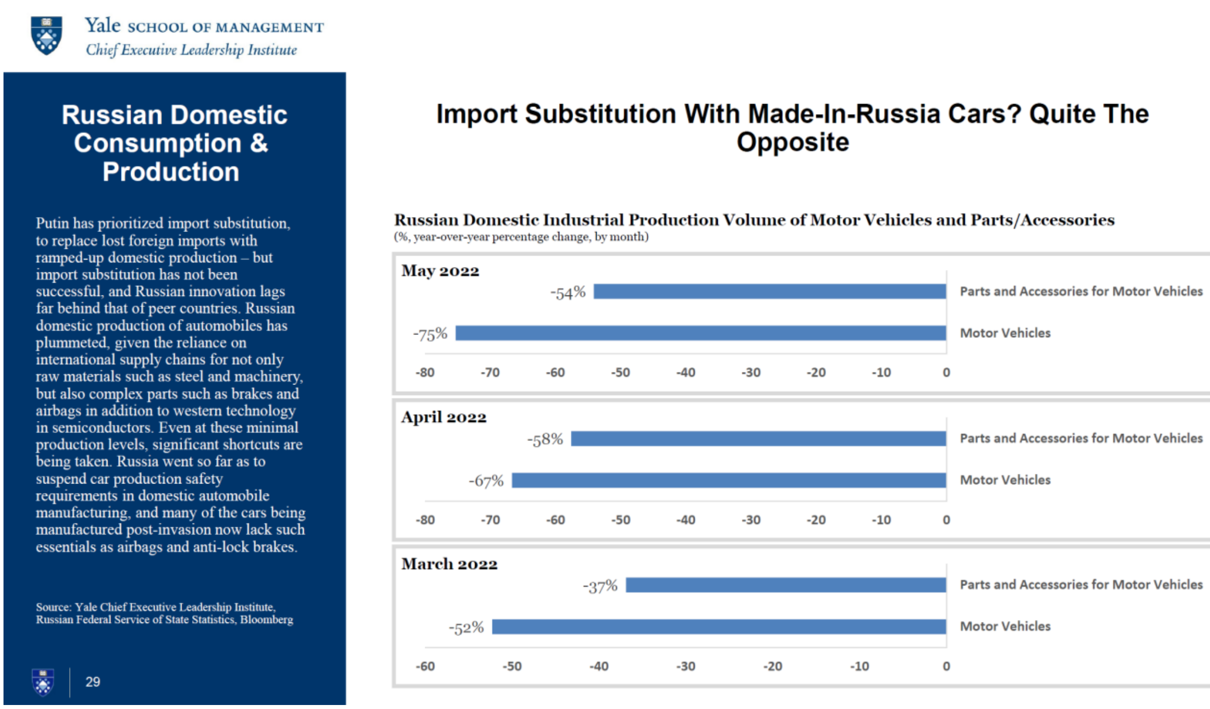
In response to deteriorating domestic conditions, Putin has prioritized import substitution, to replace lost foreign imports with ramped-up domestic production. This is not a new area of focus for Putin – ever since the Crimean crisis of 2014 and the implementation of western sanctions then, Putin has long focused on building up the capabilities of domestic industry – with little success, as even he acknowledges. In his recent plenary address at the much-diminished St. Petersburg Economic Forum, Putin laid out his revamped vision for import substitution moving forward, learning from the lessons of the past eight years:

"In the past years, we have focused a lot of attention on import substitution, succeeding in a range of industries.....we need to possess critical technologies in order to be able to move swiftly should we need to start our own production of any product. This is what we did when we quickly started making coronavirus vaccines, and most recently launched the production of many other products and services. Russia possesses the professional, scientific and technological potential to develop products that enjoy high demand, including household

appliances and construction equipment, as well as industrial and service equipment."

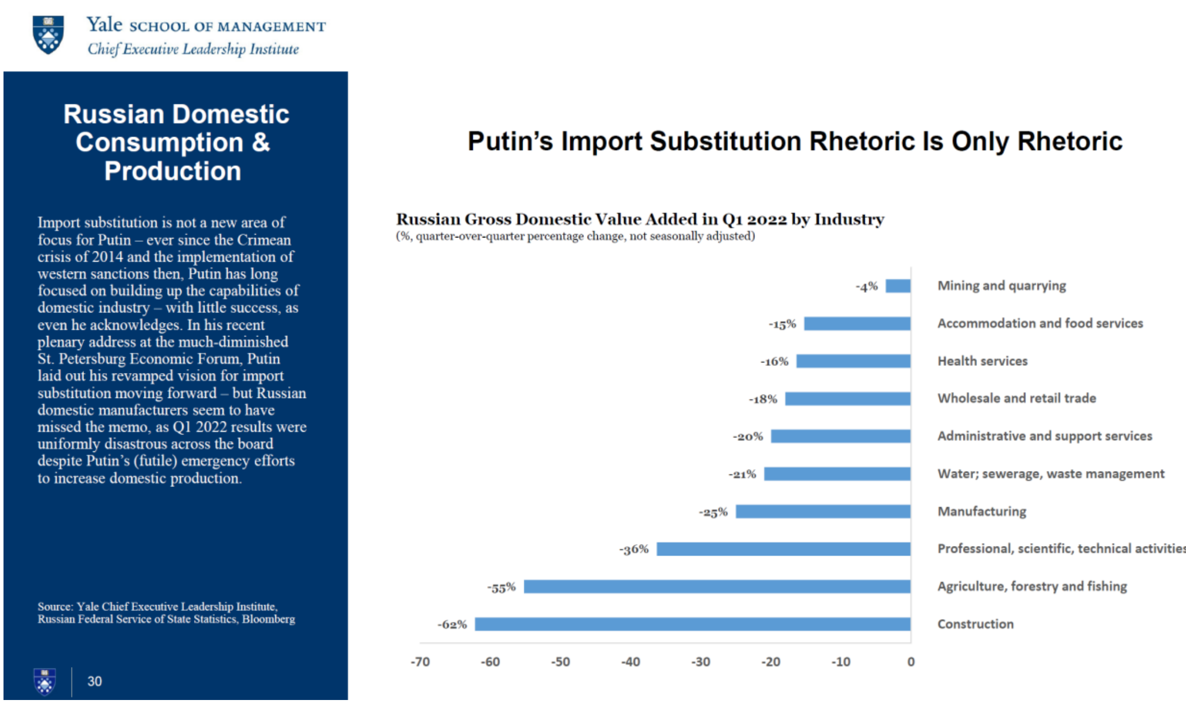
And in a sign of how important import substitution is to Putin personally, Putin's youngest daughter, Katerina Tikhonova, [was made co-chair of the] Russian Union of Industrialists and Entrepreneurs' RSPP Import Substitution Coordination Council, a highly influential business group within Russia.

Despite Putin's bravado and personal conviction, the fact remains that import substitution has not been successful thus far – and Russian innovation lags far behind that of peer countries. Taking the automobile sector as an example, despite the fact that foreign-made automobile sales have come to a complete halt as referenced above, there has not been any compensatory increase in domestic auto production within Russia – and quite to the contrary. Russian domestic production of automobiles has actually plummeted, as the production of automobiles within Russia has long been reliant on international supply chains for not only raw materials such as steel and machinery, but also complex parts such as brakes and airbags in addition to western technology in semiconductors. While Russia is continuing to salvage and cannibalize parts while snatching [parallel imports] of microchips to continue some production, these obstacles impede scaling up production to the levels envisioned by Putin lest Russia be able to design and produce their own technology – a highly unlikely proposition.



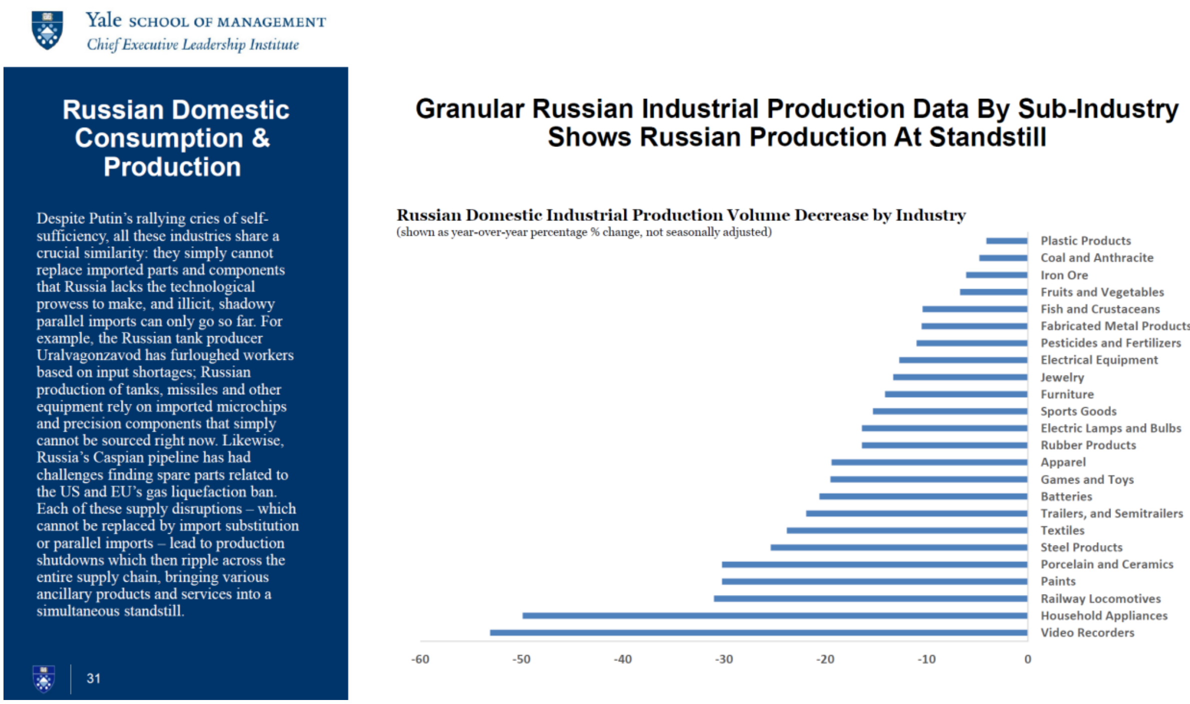
Indeed, an analysis of Russian domestic industrial production volumes of motor vehicles and motor parts and accessories suggests a significant slowdown in domestic manufacturing coinciding with the drop-off in foreign auto imports into Russia. In March 2022, domestic motor vehicle production slowed by 52% year-over-year while motor parts and accessories production slowed by 37% YoY. This slowdown accelerated by April, with motor vehicle production slowing by 67% YoY and parts production slowing by 58% YoY – and even more dramatically in May, with motor vehicle manufacturing falling 75% YoY and parts manufacturing falling 54%.

Even at these minimal production levels, significant shortcuts are being taken. Russia went so far as to suspend car production safety requirements in domestic automobile manufacturing, and many of the cars being manufactured post-invasion now lack such essentials as airbags and anti-lock brakes. Likewise, within aerospace, even though the state aviation authority Rosaviatsia issued production certificates to five Russian companies authorizing them to make bootleg parts for aircraft, the manufacturers are apparently struggling to produce anything beyond minor cabin items such as seats and galley equipment, with sensitive flight-critical components still far off.



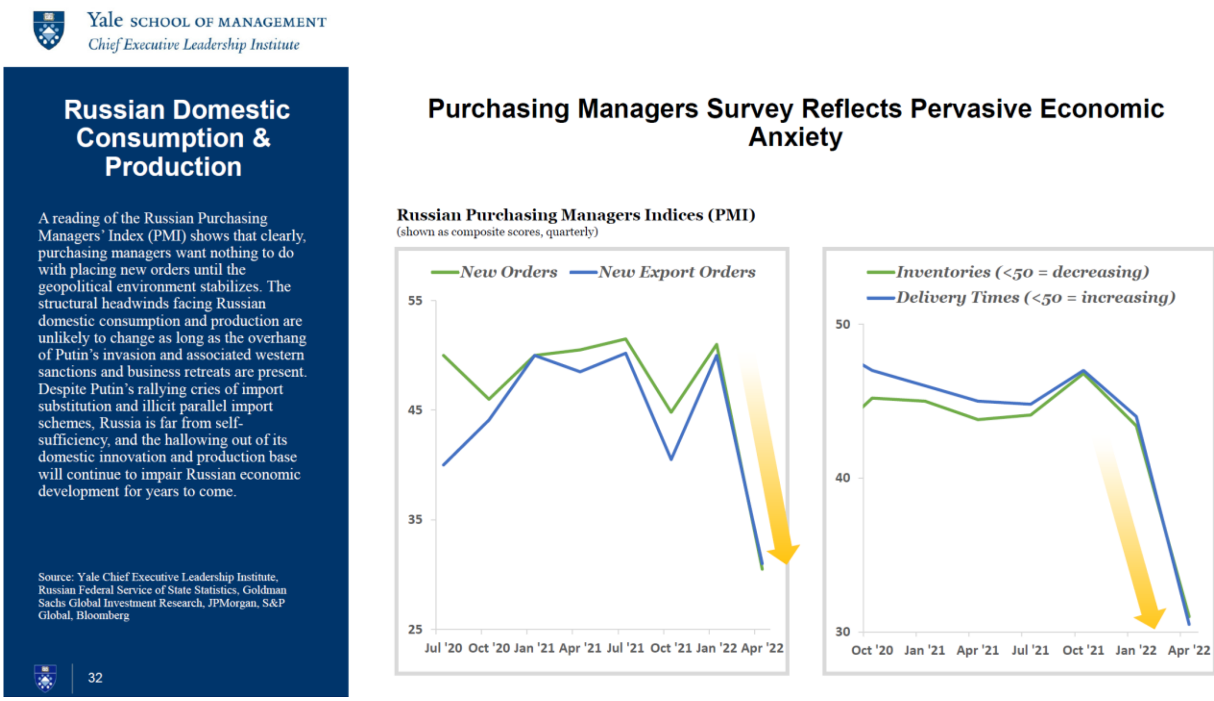
The auto and aviation sectors are far from the only sectors where despite Putin's rallying cries of import substitution, domestic manufacturing is struggling to produce. In fact, a more systemic and comprehensive analysis reveals that these patterns are inherent across the entire

Russian industrial complex, with few industries emerging unscathed. Based on Rosstat's own data releases, Russian gross domestic value added in Q1 2022 fell dramatically across industries, with certain crucial industries such as construction and agriculture value added falling upwards of 50% on a quarter-over-quarter basis. Services, manufacturing, and essential services all saw domestic value added drop by over 20%, while other crucial sectors such as retail, health, and hospitality fell by upwards of 15%. Even mining, one of the few key sectors to maintain prolific production through the invasion, saw a 4% drop in quarter-over-quarter value added – despite soaring commodity prices which should have presumably provided a nice boost to Q1 results, suggesting a steep fall-off in volume.



When domestic industrial production is measured by volume rather than value added, cross-filtered against a more granular breakdown by sub-industry, the picture becomes even bleaker suggesting large-scale shutdowns of the Russian industrial base, which is evidently operating at a fraction of its usual capacity. Industrial production volume in crucial industries such as appliances, railways, steel, textiles, batteries, apparel, and rubber fell by well over 20%, while other sub-industries such as electronics, sports, furniture, jewelry, fertilizers, and fishing fell in excess of 10%.

And despite Putin's rallying cries of self-sufficiency, all of these industries share a crucial similarity: they simply cannot replace imported parts and components that Russia lacks the technological prowess to make, and illicit, shadowy parallel imports can only go so far. For example, the Russian tank producer Uralvagonzavod has furloughed workers based on input shortages; Russian production of tanks, missiles and other equipment relies on imported microchips and precision components that simply cannot be sourced right now. Likewise, Russia's Caspian pipeline has had challenges finding spare parts related to the US and EU's ban on exports related to gas liquefaction. Each of these supply disruptions – which cannot be replaced by import substitution or parallel imports – leads to production shutdowns which then ripple across the entire supply chain, bringing various ancillary products and services into a simultaneous standstill.



The breadth of this industrial production slowdown across the Russian economy is further worsened by a rapidly deteriorating outlook for new purchases and orders. A reading of the Russian Purchasing Managers' Index (PMI) - which captures how purchasing managers are viewing the economy – shows that new orders have plunged across the board, both in terms of domestic Russian orders as well as Russian orders for foreign products and foreign orders of Russian products. Clearly, purchasing managers want nothing to do with placing new orders until the geopolitical environment stabilizes. Likewise, PMIs highlight that inventories have dropped and delivery times have increased in the context of widespread supply-chain problems, so even if new orders were to be placed, the fulfillment of those orders would continue to pose steep challenges to Russian domestic production.

Added together, these structural headwinds facing Russian domestic consumption and production are unlikely to change as long as the overhang of Putin's invasion and associated western sanctions and business retreats are present. Despite Putin's rallying cries of import substitution and illicit parallel import schemes, Russia is far from self-sufficiency, and the hallowing out of its domestic innovation and production base will continue to impair Russian economic development for years to come. For the average Russian citizen, these massive disruptions to the Russian domestic economy will remain their most direct and visible daily reminder of the consequences of Putin's invasion for years to come.

V. Business, Capital, and Talent Flight From Russia

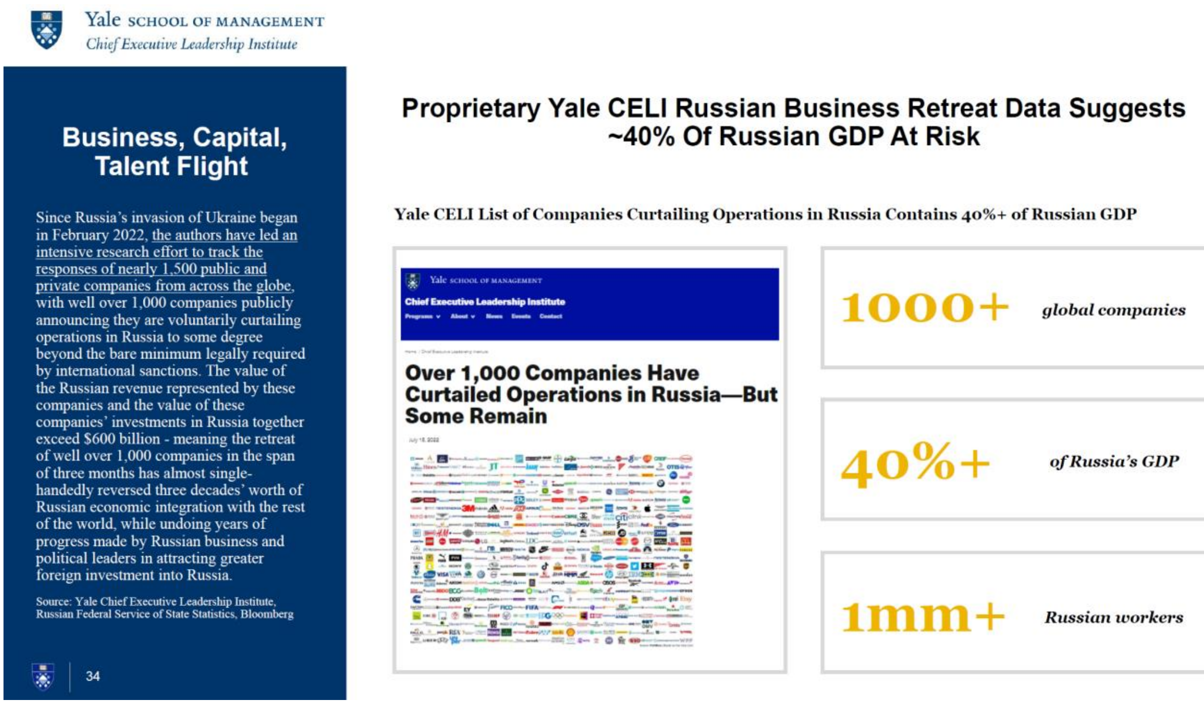
Beyond Russia's deteriorating trade position and its struggling domestic economy, Russia's long-term economic outlook is suffering under the weight of 1) business flight from Russia; 2) capital flight from Russia; and 3) population flight from Russia. Needless to say, most prosperous economies seek to attract rather than repel all three in the forms of, inter alia, 1) MNCs; 2) foreign direct investment and capital inflows; and 3) talented and educated workforces and immigration. Russia's inability to retain 1) businesses; 2) capital and 3) talent – while not captured in Rosstat's official statistics and thus not reflected in some conventional analyses of the Russian economy – degrade the Russian economy's future productivity base and ability to rebound from current lows.

The authors of this paper are most intimately familiar with the business flight from Russia – and are in a unique position to assess and quantify the impact of these business retreats on the Russian economy. Since Russia's invasion of Ukraine began in February 2022, the authors have led an intensive research effort to track the responses of nearly 1,500 public and private companies from across the globe, with well over 1,000 companies publicly announcing they are voluntarily curtailing operations in Russia to some degree beyond the bare minimum legally required by international sanctions.

The list has been continually updated over the last 4 months with new additions by a team of Yale researchers led by the authors, including two dozen experts with diverse backgrounds in financial analysis, economics, accounting, strategy, governance, geopolitics, and Eurasian affairs, with collective fluency in twelve languages. This proprietary dataset, which contains detailed Russian revenue information across well over 1,000 companies, was compiled not only using public sources such as government regulatory filings, tax documents, company statements, financial analyst reports, earnings calls, Bloomberg, FactSet, MSCI, S&P Capital

IQ, Thomson Reuters, and business media from 156 countries; but also non-public sources, including a sui generis global wiki-style network of 250+ company insiders, whistleblowers, and executive contacts.

When the list was first published the week of February 28, only several dozen companies had announced their departure from Russia. In the two months since, this list of companies staying/leaving Russia has already garnered significant attention for its role in helping catalyze the mass corporate exodus from Russia, with widespread media coverage and circulation across company boardrooms, policymaker circles, and other communities of concerned citizens across the world.

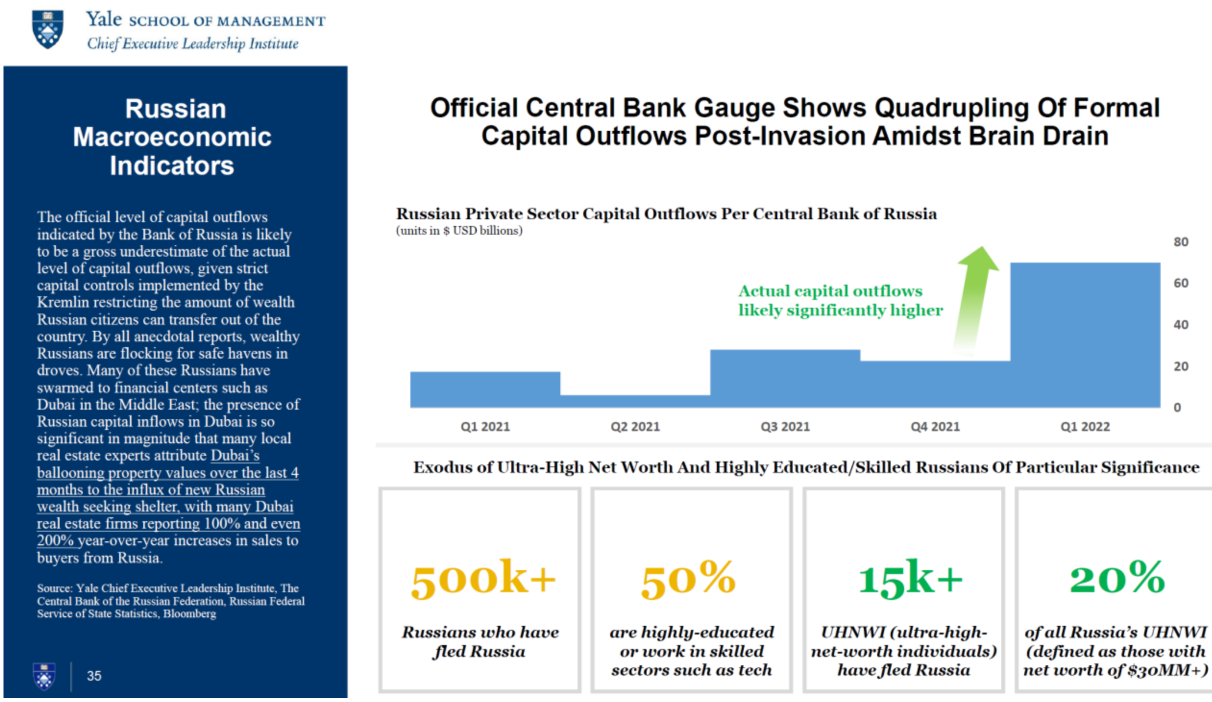


Based on the authors' proprietary database tracking the retreats of over 1,000 companies, our researchers found that across all these 1,000 companies aggregated together, the value of the Russian revenue represented by these companies and the value of these companies' investments in Russia together exceed $600 billion – a startling figure representing approximately 40% of Russia's GDP. We further found that these companies, in total, employ Russian local staff of well over 1 million individuals. The value of these companies' investment in Russia represents the lion's share of all accumulated, active foreign investment in Russia since the fall of the Soviet Union – meaning the retreat of well over 1,000 companies in the span of three months has almost single-handedly reversed three decades' worth of Russian economic integration with the rest of the world, while undoing years of progress made by Russian business and political leaders in attracting greater foreign investment into Russia.

To be sure, this is not to say that the GDP of Russia will contract 40% overnight. Many of the 1,000+ businesses who have curtailed operations in Russia are still in the process of winding down their operation, meaning it will take months if not even years to feel the full impact of their withdrawal. Other companies from this list of 1,000+ have already divested or sold their Russian businesses to local Russian operators, which means that even though these businesses will lack western technical and financial support and know-how and deteriorate in the long-run, in the short-term, they will still continue to operate to some extent and thus cannot be written off from Russian GDP immediately. There are also some companies which continue some operations in Russia while pulling out of other operations, so any hit to Russian GDP from these companies would be partial rather than total. It is impossible to capture the full economic impact of the Russian business retreat as many of the most devastating consequences will be felt years from now -with long-term structural losses to the Russian economy beyond any single dollar figure of lost revenue or lost investment. Nevertheless, the fact that the 1,000+ companies that have curtailed operations represent such a high proportion of Russia's GDP – 40% - signifies the importance of these economies to the Russian economy prior to the war, and how the Russian economy must now undergo dramatic, forced transformations with these companies pulling out, as amplified throughout this paper.

Some might argue that the companies that curtailed operations in Russia were forced to incur a short-term loss in Russian revenue and investment – despite the fact the impact on Russia is more painful in both the short-term and the long-term – but it is not even true to say that the companies leaving Russia incurred any losses. In fact, rather than penalizing companies for leaving Russia, in a separate study, we found that foreign investors by far and large rewarded companies for removing the risk overhang associated with exposure to Russia – that the value of aggregate stock market gained since the start of the invasion for companies that have left Russia far outweigh the value of Russian asset divestitures and lost Russian revenue, which for most multinational corporations, represented a small fraction of total revenue to start with – no more than 1-2% in most cases. Thus, clearly the loss of 1,000+ companies has been borne solely by Russia – in both the short-term and the long-term – while leaving Russia actually benefitted companies.

The findings of our research team proving the devastating impact of business retreats and self-sanctioning on the Russian economy align closely with the findings of trusted, credible partners such as those of the Kyiv School of Economics, whose economic experts have been tracking the impact of businesses leaving Russia in a parallel project, drawing from proprietary Ukrainian data sources and other non-public material. It is clear that the magnitude of the impact of these business retreats on the Russian economy cannot be overstated.



Unsurprisingly, the Russian business retreat has coincided with rapid "brain-drain" as talented, educated Russians flee the country in droves. It is impossible to assess the exact number of Russians who have left Russia permanently since the outset of the invasion, but most estimates peg the number as no less than five hundred thousand – with the vast majority being highly-educated and highly-skilled workers in competitive industries such as technology. The mass exodus of skilled Russian natives is further amplified by the forcible expulsion of a not-insignificant population of western expatriates working in Russia. These workers – who understand the structural challenges facing the Russian economy and technical hurdles obstructing Putin's vows of self-sufficiency and import substitution – are joined by many of Russia's few remaining high-net-worth and ultra-high-net-worth individuals, who understand that capital controls, taxes, the business and investment climate, and government restrictions are only likely to become worse in the years ahead, particularly for those holding financial capital. By one measure, 15,000 ultra-high-net-worth individuals have fled Russia since the invasion began, which would represent 20% of the population of Russia's ultra-high-net-worth individuals at the outset of the war. These Russians, as the holders of significant capital, seek the safety, security, and stability of western financial markets, especially as Russia's access to those markets shrinks.

These high net worth individuals are bringing their wealth with them when they flee, contributing to soaring private capital outflows, even by the Central Bank of Russia's own admission. The official level of capital outflows indicated by the Bank of Russia in Q1, nearly $70 billion USD, is likely to be a gross underestimate of the actual level of capital outflows, given strict capital controls implemented by the Kremlin restricting the amount of wealth Russian citizens can transfer out of the country, particularly foreign-currency denominated wealth. Any additional capital outflows which have skirted these capital controls are unlikely to have been captured by the Central Bank of Russia's gauge, and indeed, by all anecdotal reports, wealthy Russians are flocking for safe havens in droves. Many of these Russians have swarmed to financial centers such as Dubai in the Middle East; the presence of Russian capital inflows in Dubai is so significant in magnitude that many local real estate experts attribute Dubai's ballooning property values over the last 4 months to the influx of new Russian wealth seeking shelter, with many Dubai real estate firms reporting 100% and even 200% year-over-year increases in sales to buyers from Russia.

VI. Unsustainable Fiscal and Monetary Stimulus And Kremlin Interventions Conceal Structural Economic Weaknesses

As global businesses swarmed for the exits and after the implementation of devastating sanctions by the US and EU in the early weeks following the invasion, many western economists and policymakers had unrealistic expectations that the Russian economy may collapse or that a financial crisis might take hold. Sanction regimes very rarely cause instantaneous financial crises or economic collapses; rather, they tend to be longer-duration tools designed to structurally weaken a nation's economy while isolating it from global markets. Indeed, as this paper has shown, the impact of business retreats and sanctions on the Russian economy has been nothing short of catastrophic, eroding the Russian economy's competitiveness while exacerbating internal structural weaknesses.

But for those who expected a more rapid collapse in the Russian economy, and who were shocked this did not occur – much of the reason the Russian economy proved marginally more resilient than initially expected has to do with the unprecedented and unsustainable fiscal and monetary response initiated by the Kremlin. A little-understood but critically important component of Russia's economic journey since the outset of the invasion, the Kremlin's fiscal and monetary response has largely averted a credit/liquidity squeeze, which could have induced a financial panic, while propping up the economic livelihoods of many core constituencies of the Putin regime, ranging from state owned enterprises to pensioners and retirees – rescuing them from sudden economic catastrophe.

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Unsustainable Kremlin Policies

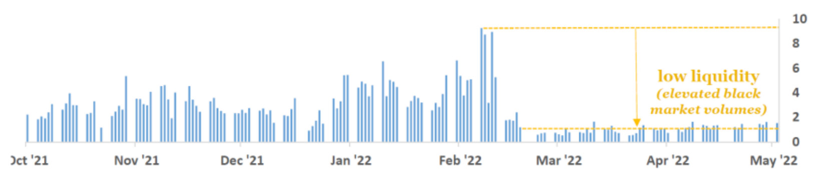
The official exchange rate of the ruble given the presence of such draconian capital controls can be misleading – as the ruble is, unsurprisingly, trading at dramatically diminished volumes compared to pre-invasion on low liquidity. By many reports, much of this erstwhile trading has migrated to unofficial ruble black markets, where the spread between the official exchange rate and the actual exchange rate are equally dramatic – upwards of 20% to 100% higher than the official exchange rate, in some cases, given a shortage of obtainable, liquid dollars within Russia. Even the Bank of Russia has admitted that the exchange rate is a reflection more of government policies and a blunt expression of the country's trade balance rather than freely tradeable liquid FX markets.

Source: Yale Chief Executive Leadership Institute, Bloomberg

37

Russian Ruble Exchange Rate Reflects Stringent Capital Controls, Low Liquidity, And Artificial Value

Russian Ruble Spot Daily Trading Volumes Across All Official Markets
(units in $ USD billions)



Capital Controls on the Ruble Post-Invasion
Banned Citizens from Sending Money to Bank Accounts Abroad
Suspending Cash Withdrawals from Dollar Banking Accounts Beyond $10,000
Force Exporters to Exchange 80% of Earnings for Rubles
Suspend Direct Dollar Conversions for Individuals With Ruble Banking Accounts
Suspend Lending in Dollars
Suspend Dollar Sales Across Russian Banks
Encourage Individuals to Redeem Dollars for Rubles
Companies Must Pay Foreign Dollar Debt in Rubles

One of the best case studies for how, through massive and unsustainable government intervention, the Kremlin has been able to temporarily prop up the Russian economy also happens to be one of Putin's favorite propaganda talking points: the appreciation of the ruble, which is now the strongest-performing currency this year by some measures. Overnight, as soon as the invasion commenced, the exchange rate for the ruble relative to the dollar jumped from ~75 to ~110 – but the Kremlin immediately announced a rigorous set of capital controls on the ruble including a blanket ban on citizens sending money to bank accounts abroad and foreign money transfers; a suspension on cash withdrawals from dollar banking accounts beyond $10,000 per person; a mandate for all exporters to exchange 80% of foreign currency earnings for rubles; a suspension of direct dollar conversions for individuals with ruble-denominated banking accounts; a suspension of domestic lending in foreign currencies; a suspension of dollar sales across domestic banks; a mandate that companies pay foreign-denominated debt in rubles; and encouragement of individuals to redeem dollars for rubles out of patriotic duty. These restrictive capital controls – which rank amongst the most restrictive of any government in the world – immediately made it effectively impossible for domestic Russians to purchase dollars legally or even access a majority of their dollar deposits, while artificially inflating demand for rubles through forced purchases by major exporters. These capital controls, which have only weakened slightly in the four months since the outset of the invasion, continue to prop up the ruble's official exchange rate with artificial strength across onshore and offshore markets.

However, the official exchange rate given the presence of such draconian capital controls can be misleading – as the ruble is, unsurprisingly, trading at dramatically diminished volumes compared to pre-invasion on low liquidity. By many reports, much of this erstwhile trading has migrated to unofficial ruble black markets, where the spread between the official exchange rate and the actual exchange rate is equally dramatic – upwards of 20% to 100% higher than the official exchange rate, in some cases, given a shortage of obtainable, liquid dollars within Russia. Even the Bank of Russia has admitted that the exchange rate is a reflection more of government policies and a blunt expression of the country's trade balance rather than freely tradeable liquid FX markets.

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Unsustainable Kremlin Policies

It is impossible to quantify the magnitude of Putin's spending – and where the money goes – with any greater degree of precision, considering that the largest expenditure category within the Russian budget is "Presidential spending" – an intentionally ambiguous catch-all which obscures the already byzantine Russian federal ledger. All of this enhanced fiscal stimulus is on top of presumably vast military spending, further straining the Russian budget.

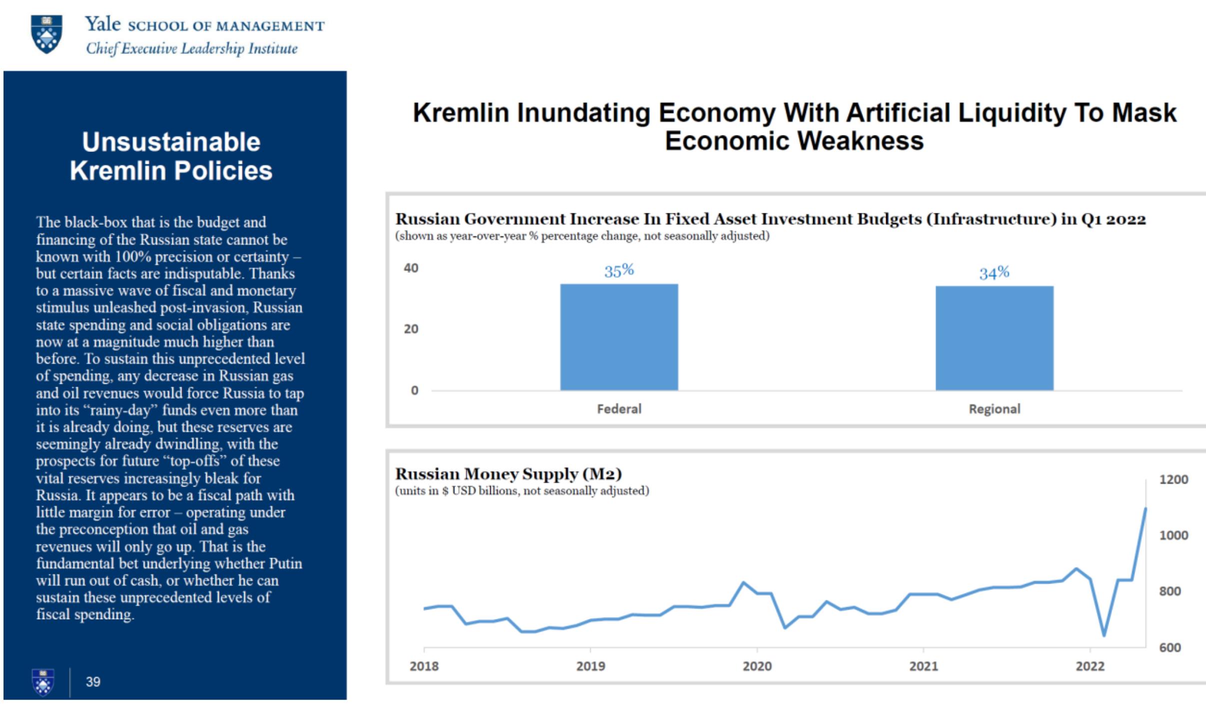
Source: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, Bloomberg

38

Massive, Unsustainable Fiscal Stimulus From Kremlin Masking Structural Economic Weakness

Post-Invasion Fiscal Stimulus from Kremlin
Subsidized Loans and Loan Payment Assistance to Companies
Transfer Payments to Affected Industries
Subsidized Mortgages and Mortgage Payment Assistance
Increase in Direct Payments to Individuals, Including Families, Pregnant Women, Government Employees, Pensioners, Military, Low-Income
Recapitalization of Companies by National Wealth Fund
Nationalization and Recapitalization of Certain Companies
Subsidized Credit Forgiveness/Debt Jubilee
Subsidized Protection from Bankruptcy and Foreclosure
Drawdowns from National Wealth Fund for State Expenditures
Subsidized Infrastructure Development

The Kremlin's implementation of capital controls pales in comparison to the unsustainable full-scale fiscal and monetary stimulus launched over the last few months, stretching to every corner of the Russian economy. That the Kremlin would flood the Russian economy with such a deluge of Kremlin-initiated spending was far from certain in the initial days of the war. Initial attempts by the Kremlin to intervene in the economy when the invasion started were marked by relative restraint, defined by measures such as shutting down trading on the Moscow Stock Exchange and suspending measures intended to be largely transitory in nature. But when it became apparent that western sanctions were not being lifted and that the Russian economy would not go back to "normal" anytime soon, Putin announced escalating waves of fiscal and monetary stimulus targeted at easing the economic pain faced by individuals and companies. These measures included subsidized loans and loan payment assistance to companies; transfer payments to affected industries; subsidized mortgages and mortgage payment assistance; increases in direct payments to individuals including families, pregnant women, government employees, pensioners, military, low-income; recapitalization of companies by the National Wealth Fund, the sovereign wealth fund of Russia; nationalization and recapitalization of certain companies and assets; subsidized credit forgiveness approaching a debt jubilee; subsidized protection from bankruptcy and foreclosure; drawdowns from the National Wealth Fund for state expenditures; and subsidized infrastructure development – to name only a few.



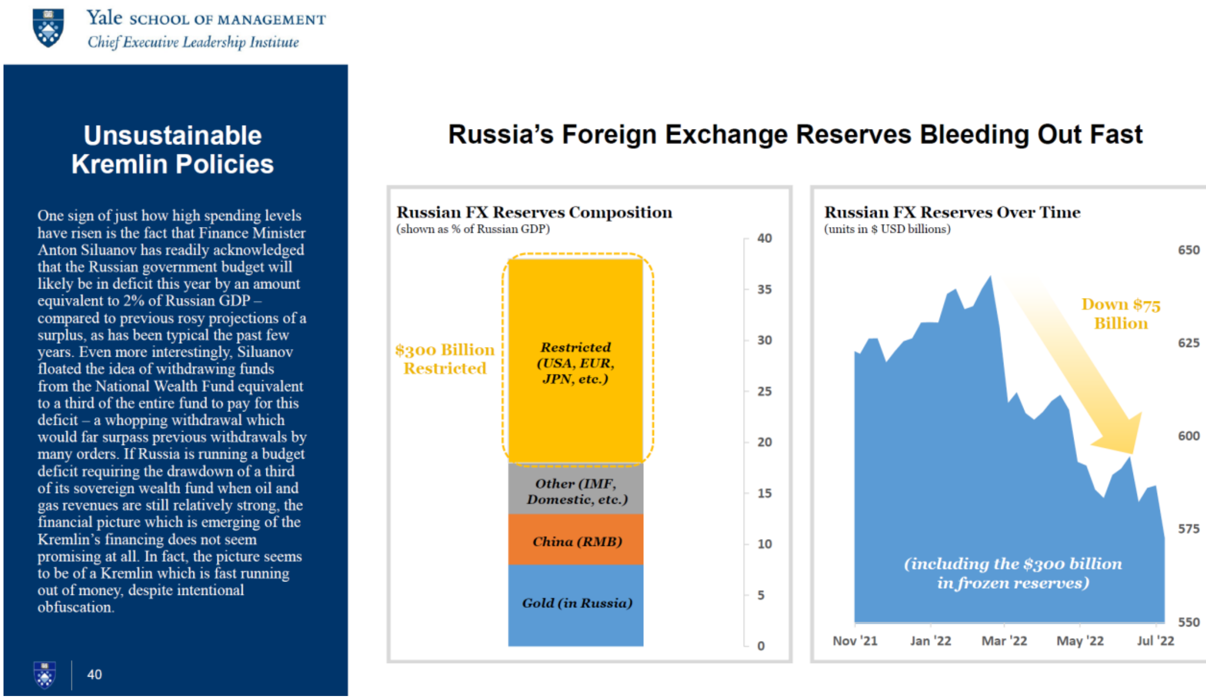
The ultimate scale of these relief expenditures is still unclear as they are currently ongoing, but initial signs point towards a massive, unprecedented magnitude of spending. By the

Central Bank of Russia's own data releases, the Russian money supply – M2, which includes cash, checking deposits, and cash-convertible proxies of store-holders of value – ballooned by nearly two times from the start of the year through June. And even though the infrastructure spending program has just begun, the Russian government has already increased its fixed-asset (infrastructure) investment budget by 35% in Q1 alone, and 34% at the regional level as well. It is impossible to quantify the magnitude of Putin's spending – and where the money goes – with any greater degree of precision, considering the Russian budget has been intentionally obfuscated since the invasion under the guise of preventing against sanctions. The spending on enhanced fiscal stimulus is on top of presumably vast military spending, further straining the Russian budget.

It may be impossible to determine just how much Putin is spending and where the money is going, but this much is certain: this inflated level of spending, put simply, is unsustainable for the Kremlin. The Kremlin is largely financing its current social program the same way other Petrostates such as Saudi Arabia finance massive social expenditures – through oil and gas revenues. As explained in Section II, while there are increasing degrees of sanctions that need to be levered on Russia in order to more efficiently throttle back Russian oil and gas revenue, Russia is already at a strategic disadvantage and facing a secular decline in oil and gas revenue for years to come. Any decrease in oil and gas revenues or oil and gas export volumes would immediately put a strain on the Kremlin's budget – especially as much of the Kremlin's fiscal stimulus projects such as infrastructure appear to be long-duration, requiring years' worth of fixed capital investment which is not easily reversible. Given the challenges faced by the Kremlin with a $35 Ural-Brent price differential, difficulties re-orienting piped gas supplies toward Asia and facing potential oil and gas embargoes by the west, the dangers of Putin's bet are readily apparent.

Should oil and gas revenue decline, then Putin's financing conundrum for his new program of enhanced spending would become much more interesting. In past instances when oil and gas revenue contracted, Putin was able to draw upon a variety of opaque "rainy-day" funds ranging across Russia's formidable $600 billion foreign exchange reserves and National Wealth Fund, but there are signs that even these resources are coming under strain.

The most obvious challenge facing Putin's rainy-day funds is the fact that of his $600 billion in foreign exchange reserves, accumulated from years' worth of oil and gas revenues, $300 billion is frozen and out of reach with allied countries across the US, Europe and Japan restricting access. There have been some calls to seize this $300 billion to finance the reconstruction of Ukraine, calls which are seemingly louder in European policy circles than in the US – for now, at least.



Putin's remaining FX reserves are decreasing at an alarming pace, as Russian FX reserves have declined by $75 billion since the start of the war – a rate which, if annualized, suggests these reserves may be spent down within a few years' time. Critics point out that official FX reserves of the central bank technically can only decrease, not increase, due to international sanctions placed on the central bank, and suggest that non-sanctioned financial institutions such as Gazprombank can still accumulate FX reserves in place of the central bank. While this may be true technically, there is simultaneously no evidence to suggest that Gazprombank is actually accumulating any sizable reserves, considering the distress facing its own loan book, pressure to fund increasing amounts of infrastructure loans and the fact that Gazprombank has been accused of being the conduit through which the Kremlin indirectly transfers the regular military pay and combat bonuses of Russian soldiers fighting in Ukraine. These signs point toward Gazprombank simply channeling massive government expenditures outward with the government spending down immediately rather than stashing away government revenues for later.

Another sign that Putin may be spending down his rainy-day funds faster than conventionally realized is in his recent executive orders related to priority spending areas. Although the finance ministry had planned to reinstate a long-standing Russian budgetary rule that surplus revenue from oil and gas sales should be channeled into the sovereign wealth fund, Russia's National Wealth Fund, Putin axed this proposal as well as accompanying guidelines directing how and where the National Wealth Fund can be spent. These hardly seem like the actions of a leader swimming in surplus funds, but rather of a leader who is becoming increasingly stretched for funding to pay for grandiose, unsustainable and massive fiscal stimulus.

One sign of just how high spending levels have risen – and the challenge facing the National Wealth Fund – is the fact that Finance Minister Anton Siluanov has readily acknowledged that the Russian government budget will likely be in deficit this year by an amount equivalent to 2% of Russian GDP – compared to previous rosy projections of a surplus, as has been typical the past few years. Even more interestingly, Siluanov floated the idea of withdrawing funds from the National Wealth Fund equivalent to a third of the entire fund to pay for this deficit – a whopping withdrawal which would far surpass previous withdrawals by many orders. If Russia is running a budget deficit requiring the drawdown of a third of its sovereign wealth fund when oil and gas revenues are still relatively strong, the financial picture which is emerging of the Kremlin's financing does not seem promising at all. In fact, the picture seems to be of a Kremlin which is fast running out of money, despite intentional obfuscation.

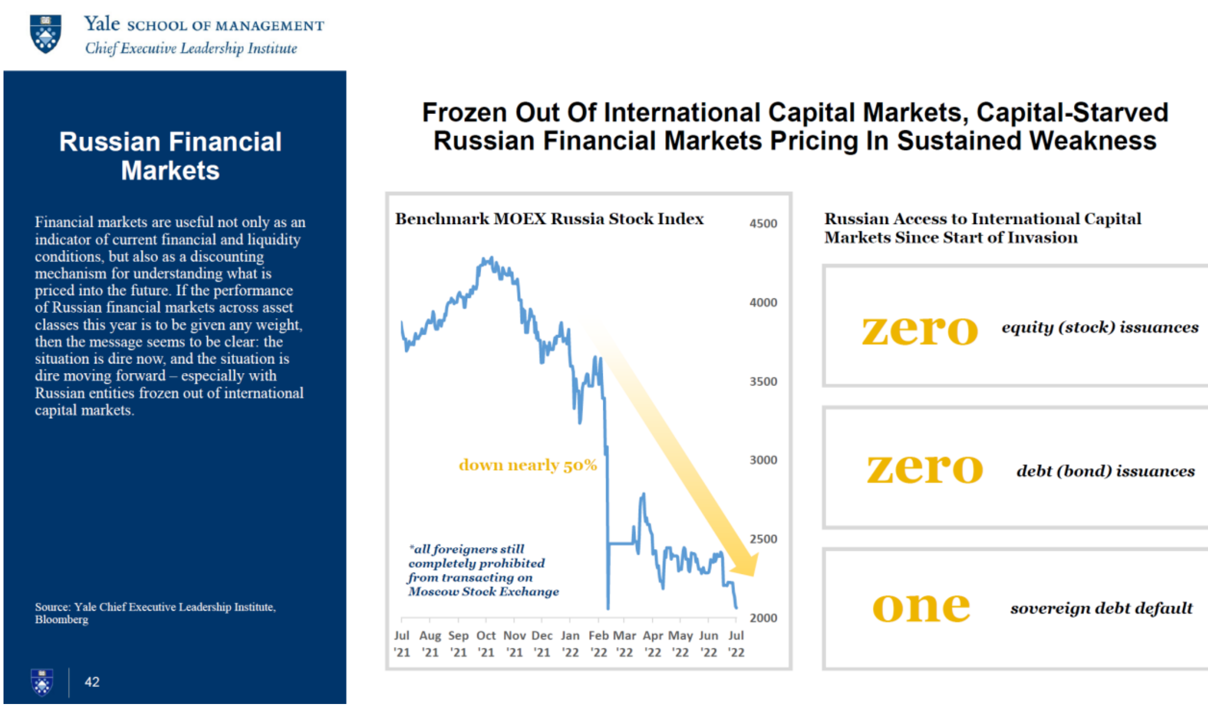
The challenges facing Russia's sovereign financing are exacerbated by Russia's newfound lack of access to international capital markets. With Russia's first default since 1917 on its sovereign debt, Russia is now frozen out of international debt issuances for years to come and unable to tap into traditional sovereign financing across international capital pools. Russia can continue to issue its version of domestic bonds, known as OFZs, but the total capital pool available within Russia domestically is a fraction of the financing needed to sustain these levels of spending by the Russian government over an entire economic cycle. And indeed, the Finance Minister has confirmed that Russia is not raising debt to pay for its fiscal program and has no plans to do so in the near-term.

At the end of the day, despite these signals and clues, the black-box that is the budget and financing of the Russian state cannot be known with 100% precision or certainty – and especially now that Putin is going out of his way to obscure the sources and use of state spending. But certain facts are indisputable. Thanks to a massive wave of fiscal and monetary stimulus unleashed post-invasion, Russian state spending and social obligations are now at a magnitude much higher than before. To sustain this unprecedented level of spending, any decrease in Russian gas and oil revenues would force Russia to tap into its "rainy-day" funds even more than it is already doing, but these reserves are seemingly already dwindling, with the prospects for future "top-offs" of these vital reserves increasingly bleak for Russia. It appears to be a fiscal path with little margin for error – operating under the preconception that oil and gas revenues will only go up. That is the fundamental bet underlying whether Putin will run out of cash, or whether he can sustain these unprecedented levels of fiscal spending.

Whether oil and gas revenue does go up from here, of course, is largely in the hands of the allied countries of the world.

VII. Financial Markets Pricing In Sustained Weakness In Real Economy with Liquidity and Credit Contracting

Financial markets are useful not only as an indicator of current financial and liquidity conditions, but also as a discounting mechanism for understanding what is priced into the future. If the performance of Russian financial markets across asset classes this year is to be given any weight, then the message seems to be clear: the situation is dire now, and the situation is dire moving forward.

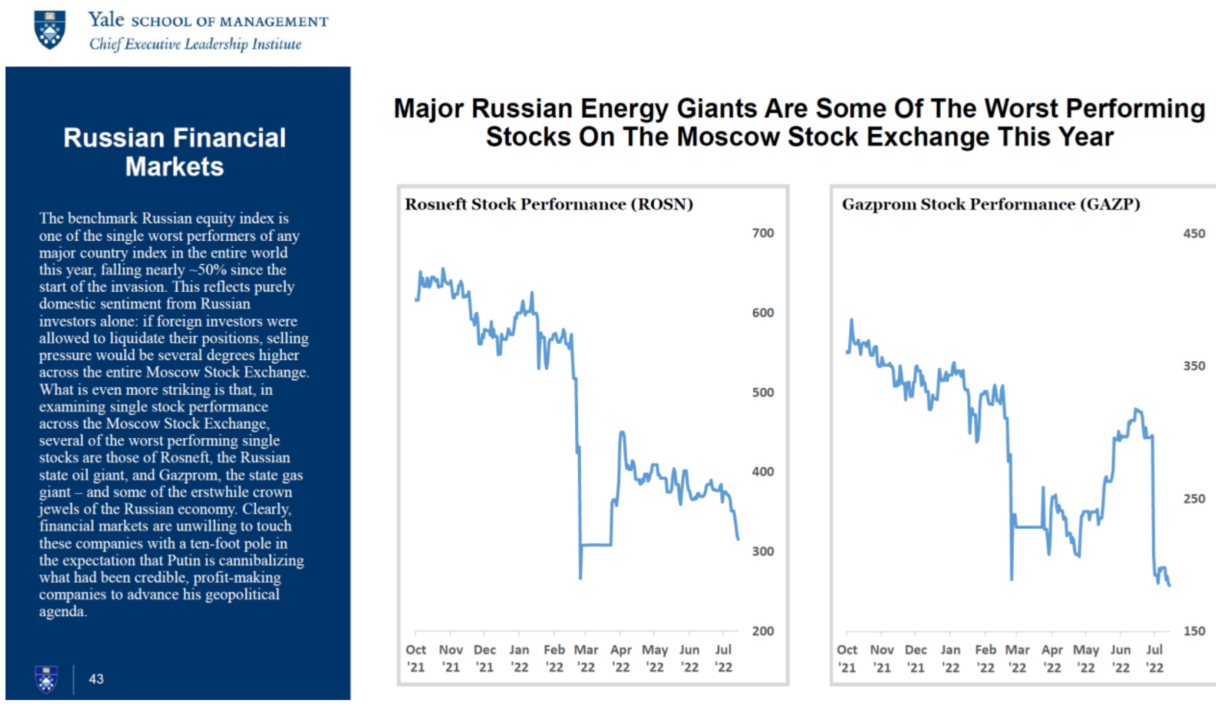


Since the start of the war, Russia has become essentially frozen out of all international capital markets. Russian companies have no way to tap into deep international capital pools to finance their existing operations or engage in new investments: after all, there have been zero new equity issuances by any Russian entity; and no new debt issuances by any Russian entity as well since February 2022. New issuances of sovereign debt are off the table for the foreseeable future now that Russia had its first sovereign default since 1917. And with every major global investment bank having suspended operations in Russia, even if Russian companies found investors willing to purchase new equity or debt issuances – highly unlikely – there would be no investment bank willing to underwrite the issuance. In short, Russia no longer enjoys any access to international capital markets at all, and access is unlikely to be restored as long as the war in Ukraine continues.

Given these debilitating financing constraints, the Kremlin has stepped into a position as the de facto lender of last resort to prop up the Russian economy and prevent a devastating liquidity squeeze, as described in Section VI, saturating the economy with fiscal stimulus and government-subsidized credit if not outright direct payments. The availability of the Kremlin's subsidized financing has prevented a bank run at the very least if not more debilitating financial contagion, and perhaps even prevented an outright financial crisis.

The Kremlin's propping up of financial stability, however precarious, through the injection of easy ruble-denominated liquidity and credit does not change the fact that even without an outright financial crisis, Russian financial markets are reflecting current doom and gloom, and discounting future doom and gloom for some time to come.

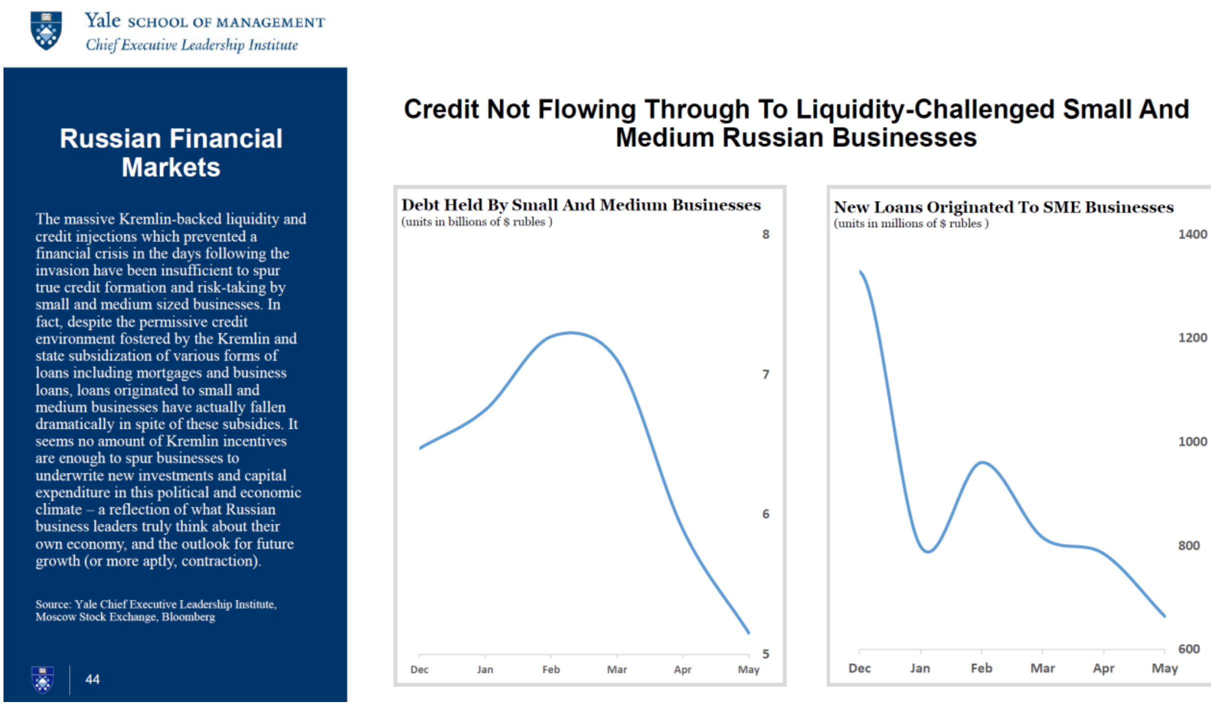
Nowhere are these pessimistic projections more obvious than in domestic Russian equity markets. The Moscow Stock Exchange was shut down for all trading for days following the invasion of Ukraine. Only when enough Kremlin-pumped liquidity made its way into the financial system did the stock market finally re-open, and even then, it was a partial reopening: foreign investors were completely prohibited from transacting on the Moscow Stock Exchange, meaning foreign investors could not even liquidate their existing Russian stock positions. Amazingly, these restrictions remain in place, unchanged, even today – so Russian equity markets reflect purely domestic Russian sentiment, with only Russians being allowed to transact, and trading volumes thus remain extremely depressed.



One would think that if any group of investors might be bullish about owning Russian equities right now, it might be Russians themselves – but this is not the case. The benchmark Russian equity index, the MOEX Russia Index (formerly known as the MICEX Russia Index), is one of the single worst performers of any major country index in the entire world this year, falling nearly ~50% since the start of the invasion. This reflects, again, purely domestic sentiment from Russian investors alone: if foreign investors were allowed to liquidate their positions, selling pressure would be several degrees higher across the entire Moscow Stock Exchange. It is thus surprising that even amongst Russian individuals and institutions, sentiment remains so depressed and downtrodden. One expert economist, Timothy Ash, estimated that total Russian financial market losses on assets held by locals come out to $200-$300 billion amidst this financial carnage.

What is even more striking is that, in examining single stock performance across the Moscow Stock Exchange, several of the worst performing single stocks are those of Rosneft, the Russian state oil giant, and Gazprom, the state gas giant – and some of the erstwhile crown jewels of the Russian economy. Clearly, financial markets are unwilling to touch these companies with a ten-foot pole in the expectation that Putin is cannibalizing what had been credible, profit-making companies to advance his geopolitical agenda. But this depressed performance also reflects the fact that Russians seem to recognize the deterioration in Russia's positioning as an oil & gas exporter, as explained in Section II of this paper, with

Rosneft and Gazprom facing increasingly challenging global trade patterns from increasingly diminished positions of internal and external weakness. Furthermore, investors seem to realize that, given the lack of fungibility of piped gas, Gazprom will likely have to cannibalize all its profits towards building out a new and expensive pipeline system connecting Russia to new markets in China and the rest of Asia – pipelines which were previously financed by China (in the case of the $45 billion Power of Siberia pipeline), but not anymore, given Russia's newfound position of weakness relative to its Asian trade partners. Indeed, when Gazprom canceled its dividend for the first time since 1998, presumably faced with lower profits from lower gas volumes and higher capital spending requirements, the stock crashed nearly 33% instantaneously as domestic Russian investors flocked for the exits, preferring to cut their losses no matter how heavy rather than buying into Putin's much-hyped "pivot to the east" agenda for energy exports.



Russian credit markets are somewhat more difficult to analyze than Russian equity markets, given a lack of traditional financial infrastructure and availability of data. What is clear, however, is that the ruble-denominated, Kremlin-backed liquidity and credit injections which prevented a financial crisis in the days following the invasion have been insufficient to spur true credit formation and risk-taking by small and medium sized businesses – and that the Kremlin's liquidity injections into companies seem to have been confined to large SOE's without that liquidity making its way into the broader economy. In fact, despite the permissive credit environment fostered by the Kremlin and state subsidization of various forms of loans including mortgages and business loans, loans originated to small and medium businesses have actually fallen dramatically in spite of these subsidies. It seems no amount of Kremlin incentives is enough to spur businesses to underwrite new investments and capital expenditure in this political and economic climate – a reflection of what Russian business leaders truly think about their own economy, and the outlook for the future growth (or more aptly, contraction).

VIII. Conclusions

In the previous sections, it has been established that:

- Russia's strategic positioning as a commodities exporter has irrevocably deteriorated, as it now deals from a position of weakness with the loss of its erstwhile main markets, and faces steep challenges executing a "pivot to Asia" with non-fungible exports such as piped gas – as we explain further in Section II of this paper.

- Despite some lingering leakiness, Russian imports have largely collapsed, and the country faces stark challenges securing crucial inputs, parts, and technology from hesitant trade partners, leading to widespread supply shortages within its domestic economy – as we explain further in Section III of this paper.

- Despite Putin's delusions of self-sufficiency and import substitution, Russian domestic production has come to a complete standstill with no capacity to replace lost businesses, products and talent; the hollowing out of Russia's domestic innovation and production base has led to soaring prices and consumer angst – as we explain further in Section IV of this paper.

- As a result of the business retreat, Russia has lost companies representing ~40% of its GDP, reversing nearly all of three decades' worth of foreign investment and buttressing unprecedented simultaneous capital and population flight in a mass exodus of Russia's economic base – as we explain further in Section V of this paper.

- Putin is resorting to patently unsustainable, dramatic fiscal and monetary intervention to smooth over these structural economic weaknesses, which has already sent his government budget into deficit for the first time in years and drained his foreign reserves even with high energy prices – and Kremlin finances are in much, much more dire straits than conventionally understood – as we explain further in Section VI of this paper.

- Russian domestic financial markets, as an indicator of both present conditions and future outlook, are the worst performing markets in the entire world this year despite strict capital controls, and have priced in sustained, persistent weakness within the economy with liquidity and credit contracting – in addition to Russia being substantively cut off from international financial markets, limiting its ability to tap into pools of capital needed for the revitalization of its crippled economy – as we explain further in Section VII of this paper.

- Looking ahead, there is no path out of economic oblivion for Russia as long as the allied countries remain unified in maintaining and increasing sanctions pressure against Russia.

Looking ahead, there is no path out of economic oblivion for Russia as long as the allied countries remain unified in maintaining and increasing sanctions pressure against Russia, and The Kyiv School of Economics and McFaul-Yermak Working Group have led the way in proposing additional sanctions measures across individual sanctions, energy sanctions and financial sanctions, led by Ambassador Michael McFaul, Tymofiy Mylovanov, Nataliia Shapoval, and Andriy Boytsun.

Defeatist headlines arguing that Russia's economy has bounced back are simply not factual - the facts are that, by any metric and on any level, the Russian economy is reeling, and now is not the time to step on the brakes.

A visual data slide deck compliments this research paper. Individual slides are referenced in the sections below, but the full slide deck can be accessed by clicking here:

https://yale.box.com/s/7f6agg5ezscj234kahx35lil04udqgeo

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Business Retreats and Sanctions Are Crippling the Russian Economy

Measures of Current Economic Activity and Economic Outlook Point to Devastating Impact on Russia

July 2022

Yale Chief Executive Leadership Institute

Jeffrey Sonnenfeld

Presentation Co-Authors

Jeffrey A. Sonnenfeld, President of the Yale Chief Executive Leadership Institute; Senior Associate Dean and Lester Crown Professor in Management Practice at Yale School of Management

Steven Tian, Director of Research at the Yale Chief Executive Leadership Institute, Yale University

Franek Sokolowski, Research Fellow in Business & Economics at the Yale Chief Executive Leadership Institute, Yale University

Michal Wyrebkowski, Research Assistant in Energy at the Yale Chief Executive Leadership Institute and University of Pennsylvania, Wharton Business School

Mateusz Kasprowicz, Research Assistant at the Yale Chief Executive Leadership Institute and Warsaw School of Economics

Introduction

- **Our team of experts, using private Russian language and direct data sources including high frequency consumer data, cross-channel checks, releases from Russia's international trade partners, and data mining of complex shipping data, have released one of the first comprehensive economic analyses measuring Russian current economic activity five months into the invasion. From our analysis, it becomes clear: business retreats and sanctions are catastrophically crippling the Russian economy.**

Introduction

- **This visual slide deck accompanies the working paper "Business Retreats and Sanctions Are Crippling the Russian Economy" by Jeffrey Sonnenfeld et al.**

- **The paper can be found here:**

  https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4167193

- **Inquiries/feedback should be directed towards jeffrey.sonnenfeld.celi@yale.edu and steven.tian@yale.edu**

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Working Paper

The full working paper can be accessed by clicking on the below link:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4167193

Business Retreats and Sanctions Are Crippling the Russian Economy

Measures of Current Economic Activity and Economic Outlook Point to Devastating Impact on Russia

Jeffrey A. Sonnenfeld
Founder & President, Yale Chief Executive Leadership Institute
Senior Associate Dean, Lester Crown Professor of Management Practice, Yale School of Management

Steven Tian
Director of Research, Yale Chief Executive Leadership Institute
Yale University

Franek Sokolowski
Research Fellow in Business & Economics, Yale Chief Executive Leadership Institute
Yale University

Michal Wyrebkowski
Research Assistant in Energy, Yale Chief Executive Leadership Institute
University of Pennsylvania, Wharton Business School

Mateusz Kasprowicz
Research Assistant, Yale Chief Executive Leadership Institute
Warsaw School of Economics

July 2022

With Research Assistance from Yale Chief Executive Leadership Institute Researchers:

Wiktor Babinski; Yale Graduate School of Arts and Sciences and London School of Economics
Yash Bhansali; Goldman Sachs
Forrest Michal Bomann; Columbia University
Michal Boron; Humboldt University
Katie Burke; Johns Hopkins University
Dr. Adriana Coleska; MD Yale School of Medicine
Stephen Henriques; McKinsey & Co.
Georgia Hirsty; Frailty Myths and Yale School of Management
Andrew Kaiser; Publicis Sapient
Cate Littlefield; PepsiCo
Camillo Padulli; Yale University
Ryan Vakil; Yale University
Israel Yolou; Big Data Post-Bac, Yale University
Steven Zaslavsky; Moelis & Company

Source: Yale Chief Executive Leadership Institute

Under The Hood: Russian Economy In Crisis - Table of Contents

Russian Economy In Crisis Theme #1: Decoding Russian Economic Statistics

Decoding Russian Economic Statistics

Many of the optimistic economic analyses, forecasts, and projections which have proliferated in recent months share a crucial methodological flaw: these analyses draw most, if not all of their underlying evidence from periodic economic releases by the Russian government itself. There are three significant, underappreciated considerations which severely strain the integrity of the Kremlin's statistics since the outset of the invasion. First, the Kremlin's economic releases are becoming increasingly cherry-picked; partial, and incomplete, selectively tossing out unfavorable statistics while keeping favorable statistics.

Sources: Yale Chief Executive Leadership Institute, Bloomberg, Atlantic Council, Russian Federal Service of State Statistics

Optimistic Forecasts Have It All Wrong with Cherry-Picked Statistics: Drinking From The Fountain of Russian Propaganda

Statistics Withheld By the Kremlin Post-Invasion
All Foreign Trade Data
All Export Data
All Import Data
Oil and Gas Monthly Output Data
Capital Inflows and Outflows
Financial Statements of Major Companies
Central Bank Monetary Base Data
Foreign Direct Investment Data
Airline and Airport Passenger Volumes
Lending and Loan Origination Data

Decoding Russian Economic Statistics

Second, even those favorable statistics which are released are questionable if not downright dubious when measured against cross-channel checks and given the political pressure the Kremlin has exerted to corrupt statistical integrity. Indeed, the Kremlin has a long history of fudging official economic statistics, even prior to the invasion.

Sources: Yale Chief Executive Leadership Institute, Bloomberg, Reuters, International Monetary Fund, Interfax

Fudging the Numbers: Putin Has Long and Shameful Track Record of Political Interference with Rosstat

Instances of Political Interference with Rosstat
Putin personally transferred Rosttat to political officials at the Economic Ministry
Putin sacked multiple Rosstat heads
Putin appointed a political pick (former Deputy Minister) as head in May 2022
Alarming propensity of Kremlin economists for “switching to new methodologies”
IMF sounding alarms over “concerns about the reliability and consistency” of data

REUTERS

Investors see bias as Russian statistics agency revises figures

By Andrey Ostroukh, Alexander Winning

7 MIN READ

Decoding Russian Economic Statistics

Third, almost all rosy projections and forecasts are irrationally extrapolating economic releases from the early days of the post-invasion period, when sanctions and the business retreat had not taken full effect, rather than the most recent, up-to-date numbers from recent weeks and months. For example, many alarming forecasts projecting strong revenue from energy exports were based on the last available official export data from March, even though many business withdrawals and sanctions on energy had not yet taken effect, with orders placed prior to the invasion still being delivered. After a long and unexplained delay, only a few weeks ago did the Kremlin finally disclose that total oil and gas revenues dropped by more than half in May from prior months, by the Kremlin's own numbers – along with the declaration that the Kremlin would cease releasing any new oil and gas revenues from that point on.

Sources: Yale Chief Executive Leadership Institute, Bloomberg, The Washington Post, Business Insider, Russian Federal Service of State Statistics

Extrapolation of Misleading Early Statistics in Economic Forecasts Creates Unrealistic Projections

"even with some countries halting or phasing out energy purchases, Russia's oil-and-gas revenue will be about $285 billion this year, according to estimates from Bloomberg Economics based on Economy Ministry projections. That would exceed the 2021 figure by more than one-fifth" – ***Bloomberg, June 2022***

"It is now clear that the economic war against Russia is not working nearly as well as people thought it would. Thanks to rising energy prices, Bloomberg News projects the Russian government will make considerably more revenue from oil and gas than it did before the war, around $285 billion this year compared with $236 billion in 2021." – ***Fareed Zakaria, July 7, 2022***

Russia Monthly Oil and Gas Revenue

Russian Economy In Crisis Theme #2: Commodity Exports

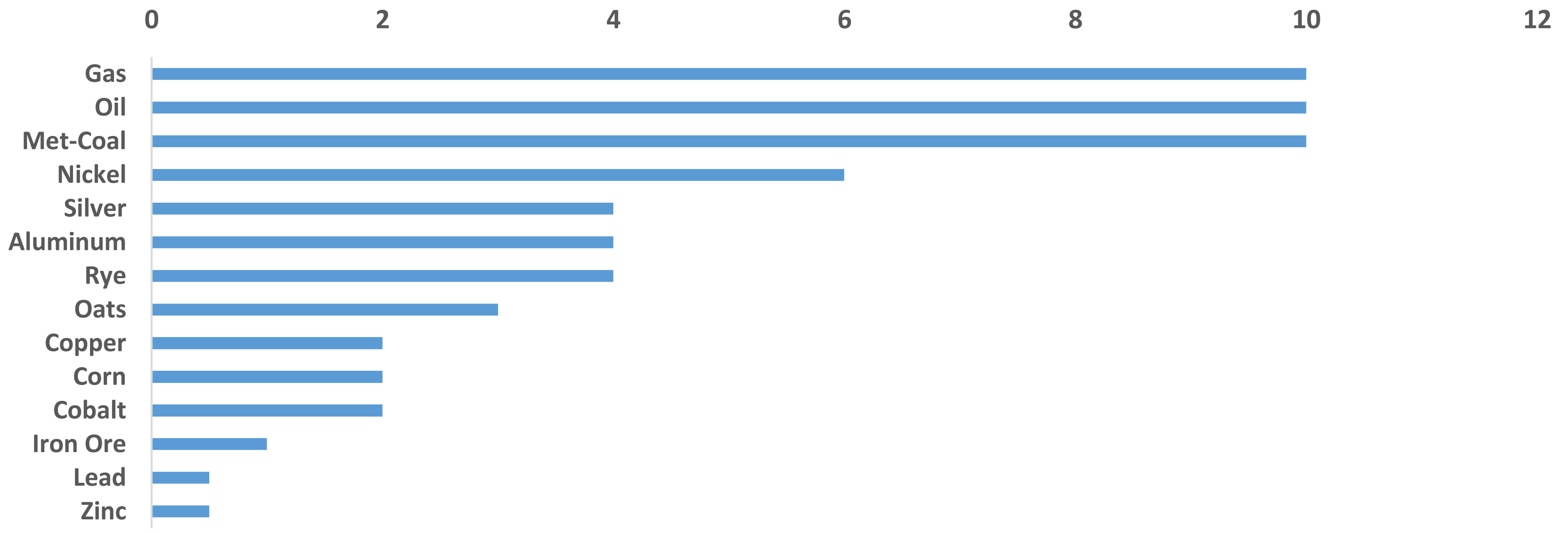
Russian Exports

There is widespread under-appreciation of the damage already wrought to Russia's status as a leading commodity exporter. A close macroeconomic analysis of measures of current economic activity demonstrates that under the surface, Russia's commodity exports are already under severe strain. First, the importance of commodity exports to Russia far exceeds the importance of Russian commodity exports to the rest of the world. Russia's total export earnings consist overwhelmingly of revenue derived from commodities and raw materials; these export earnings make up well over half of Russia's total government budget in most years – and presumably an even larger proportion now. On the flip hand, of each of the major commodities Russia exports, Russian supply is no more than 10% at most.

Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

Russian Commodity Exports Far More Important To Russia Than Rest Of The World

Russian Share of Global Commodity Exports by Commodity
(shown as % share of global exports)



energy revenue represents **~60%** ***of total Russian government revenue***

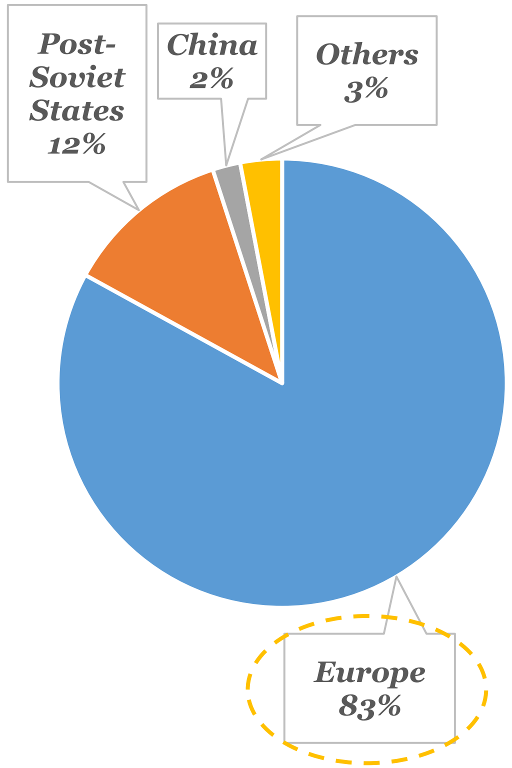
When It Comes To Natural Gas, Russia Far More Dependent on Europe Than Vice Versa

Russian Exports

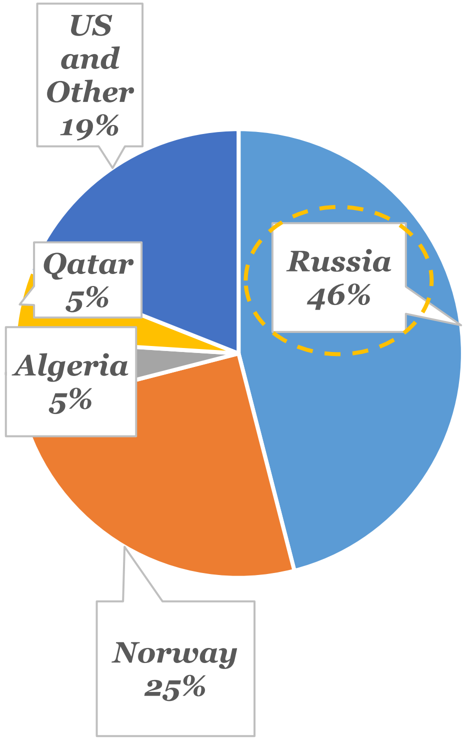
Legacy commodity supply chains and trade patterns put Russia at a significant strategic and economic disadvantage. Europe has long been the destination of choice for Russian commodity exports, particularly energy exports, though once again, these energy exports are far more important to Russia than they are to Europe. Europe's challenges are legitimate; it cannot fully replace Russian energy in the short-term without painfully reducing energy consumption as a transitory measure, particularly in Germany, Poland, and Hungary. Yet there is some irony that although Europe has understandably cried foul at Russia's politically motivated attempt to weaponize energy, particularly gas, the Russian economy is hurt the most by shifting natural gas supply chains.

Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, ING, International Energy Agency (IEA), Russian Federal Service of State Statistics, Bank of America Global Research, Deutsche Bank, JPMorgan, UBS, Bloomberg

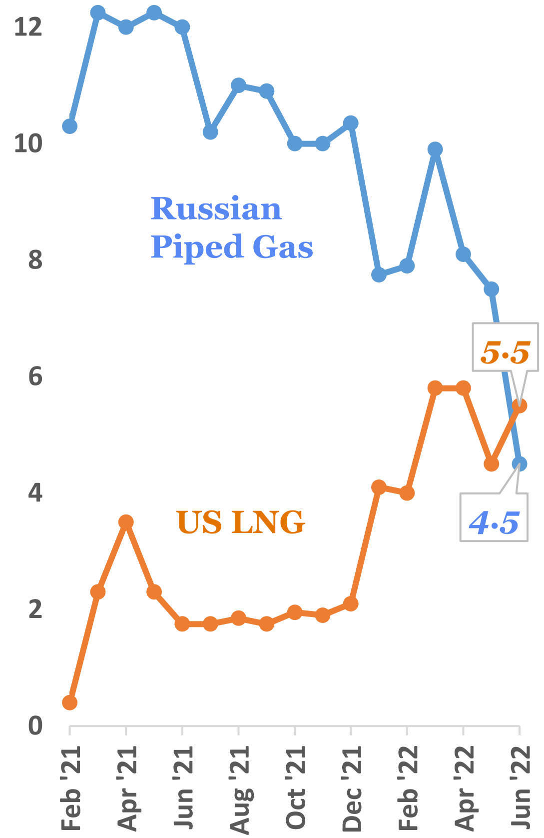
Russian Gas Exports Destination
(shown as % of total Russian gas exports)



Sources of EU Gas Imports
(shown as % of total EU gas imports)



US LNG Overtakes Russia Piped Gas in EU Gas Imports
(units in bcm/billion cubic meters per month)



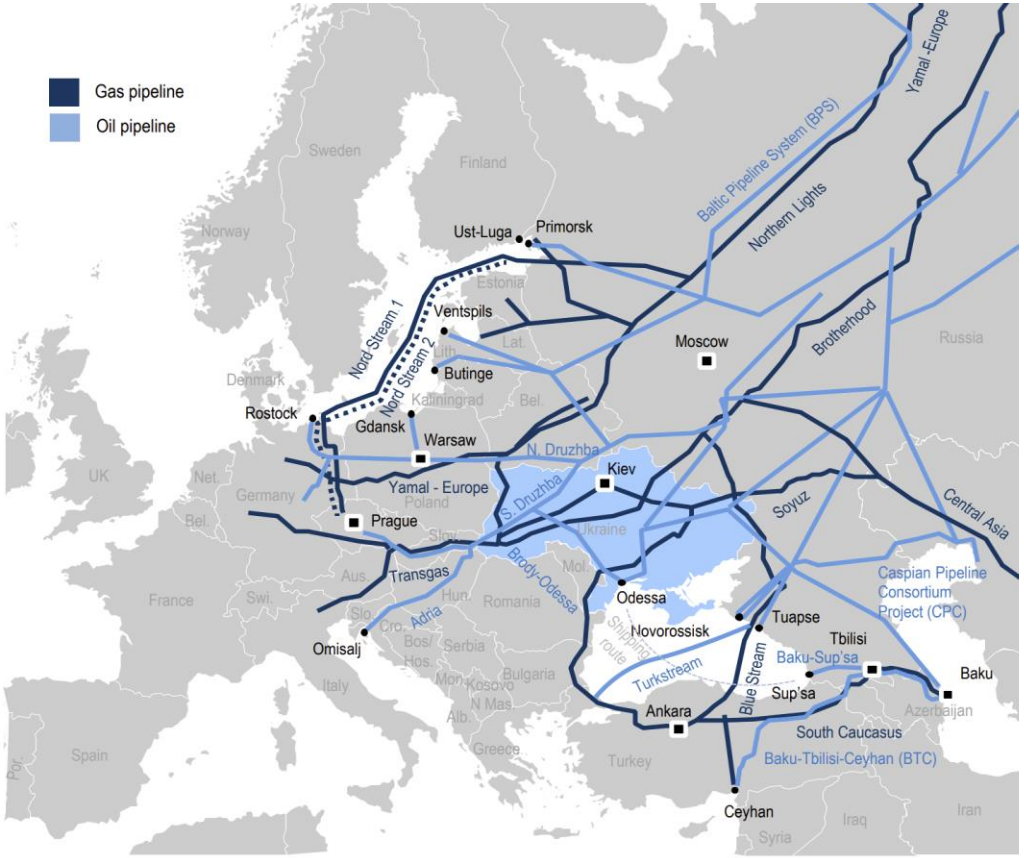
Russian Exports

Russian gas is transported primarily through a complex network of fixed pipelines which connects western Russia to Europe. Many of these pipelines flow through Ukraine, a relic of pre-1989 Soviet planning when Ukraine and Russia were both parts of the same country, and Russia has been loath to send gas through these Ukrainian pipelines since the onset of the invasion. Combined with the recent shutdown of the Nord Stream pipeline, which is Russia's largest gas route to Europe (which was running at ~40% capacity prior to being shut down); Russian gas exports to Europe (and the revenue that is derived) have plummeted to near-record lows.

Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

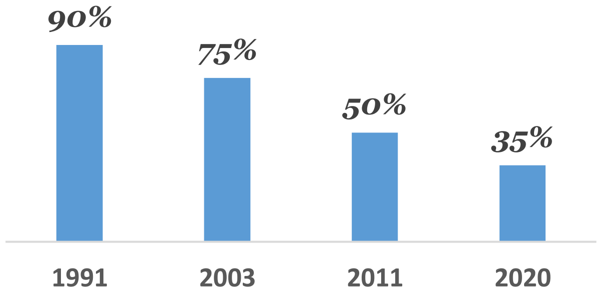
Russia Gas Exports To Europe Have Plummeted to Near Record Lows

Network of Pipelines Connecting Russia and Europe



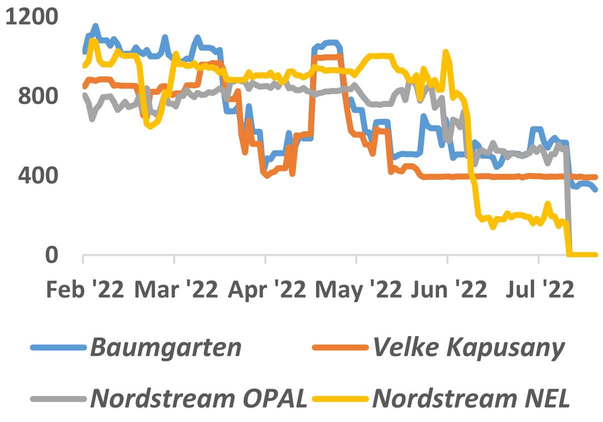
Share of Russia to Europe Gas Transited Through Ukraine

(shown as % of total Russia to Europe gas)



Russian Gas Flows to Europe

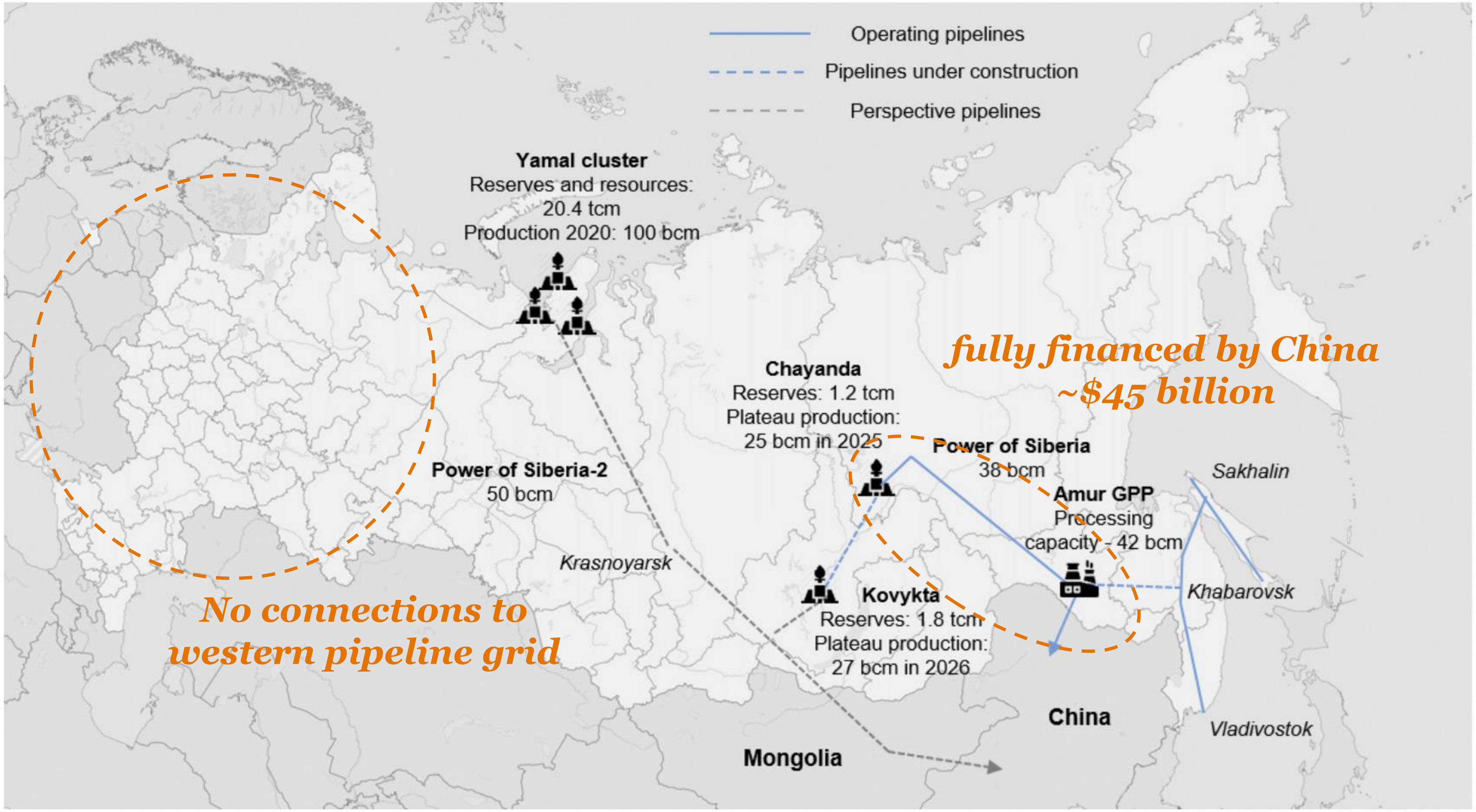
(in GWh/d, by Russia-Europe pipeline)



Gas Not Fungible; Russia's Much-Hyped "Pivot to The East" Still Far Away From Happening

Russian Exports

To mitigate lost European transports of gas, in a speech in the days following the invasion, Putin doubled down on a much-ballyhooed "povorot na vostok", or "pivot to the east", declaring "[Russia] must diversify exports. Let us assume that energy supplies to the West will continue going down in the foreseeable future. Therefore, it is important to consolidate the trend of the past few years: to redirect our exports gradually to the rapidly growing markets of the South and the East." The vast majority of Russia's pipelines flow towards Europe; those pipelines, which originate in western Russia, are not connectable to a separate nascent network of pipelines which link the far East of Russian Siberia to Asia. This Asian pipeline network contains a fraction of the capacity of the European pipeline network; and even long-planned Asian pipeline projects currently under construction are still years away from becoming operational, much less hastily initiated new projects.



Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

Russian Exports

The 16.5 billion cubic meters of gas exported by Russia to China last year represented less than 10% of the 170 billion cubic meters of natural gas sent by Russia to the European market. Financing of these costly gas pipeline projects also now puts Russia at a significant disadvantage. The major operational pipeline linking Siberia to China, the $45 billion, thirteen-hundred mile "Power of Siberia" pipeline, was completely financed by China in 2014; now the onus is now on Russia to fund these new pipeline projects itself. In anticipation of "massive capital expenditures", the Russian gas giant Gazprom has already taken the unprecedented step of suspending dividends, the first time in thirty years, and its stock is the single worst performing major stock on the Moscow Stock Exchange since the invasion.

Sources: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, CNBC, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

Russia's "Pivot to The East" Faces Daunting Financial, Logistical Hurdles

Total Russian Gas Sent to Europe vs. China in 2021
(units in bcm/billion cubic meters)

Russia Will Likely Have to Pay for Pipelines Connecting to Asia By Itself


EUROPE NEWS

Gazprom shares crater after Russian energy giant cancels dividend for first time since 1998

CNBC

PUBLISHED THU, JUN 30 2022•10:16 AM EDT

Oil More Fungible But Even More Troublesome for Russia

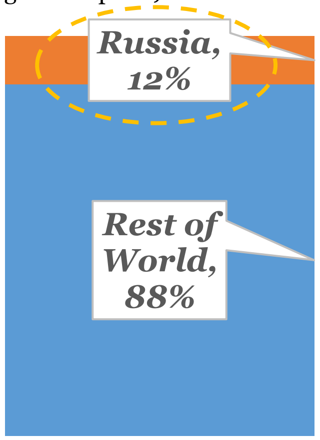
Russian Exports

As a more fungible commodity, the "pivot to the East" for oil represents a different situation than natural gas for Russia, but no more beneficial. Even before official EU and US sanctions, western importers and commodity traders largely eschewed Russian oil purchases given not only reputational risk but also difficulty securing shipping insurance and financing, especially after Shell was lambasted for purchasing discounted Russian oil.

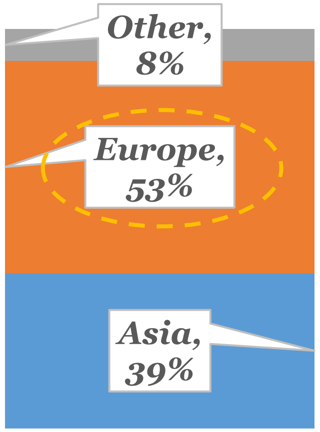
The Russian upstream industry has long been reliant on western technology, which combined with the loss of both Russia's erstwhile primary market and Russia's diminished economic clout, leads to even the Russian Energy Ministry revising their projections of long-term oil output downward.

Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, ING, Oxford Institute for Energy Studies, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

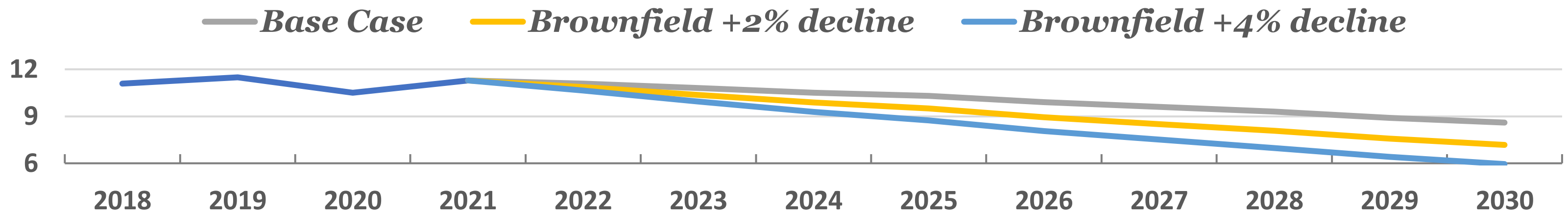
Russian Share of Global Oil Exports
(shown as % share of global exports)



Russian Oil Exports by Destination
(shown as % of total Russian oil exports)



Projections of Long-Term Decline in Russian Oil Production
(in million barrels of output per day)



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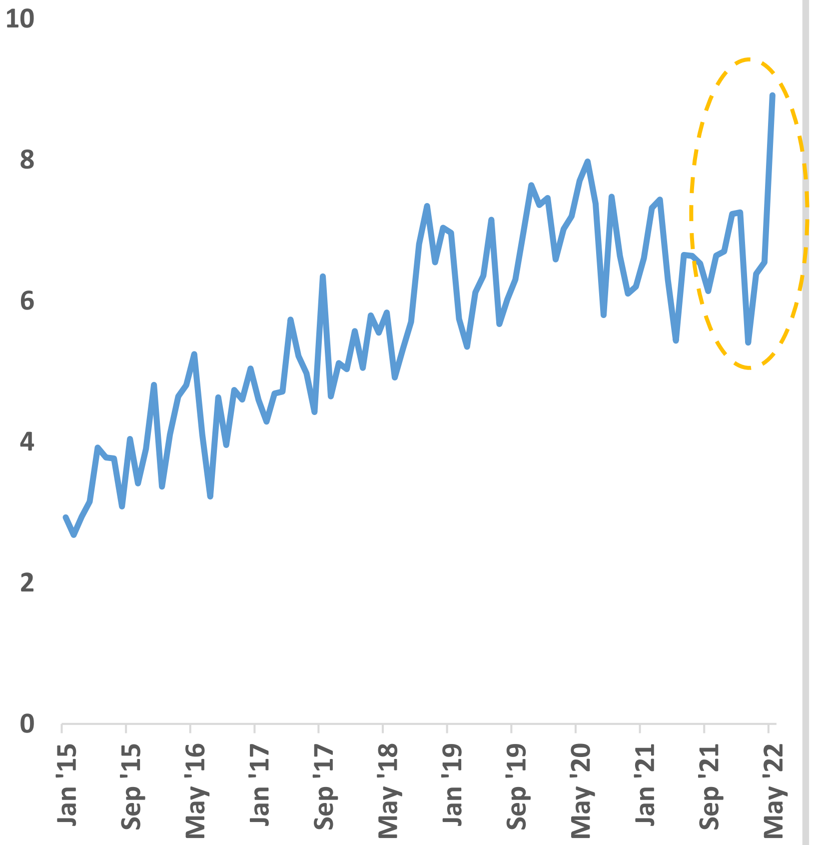
China Buying More Russian Oil – But With $35 Discount Per Barrel

Russian Exports

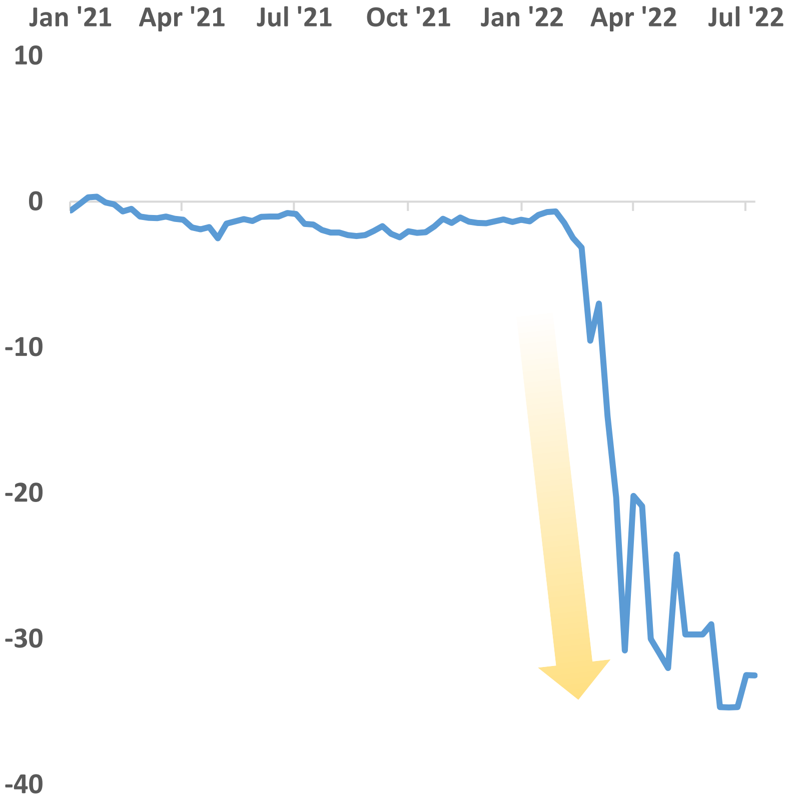
Only 39% of Russia's oil exports were sent to Asia last year, but this number has likely increased this year – even as the Kremlin has not released any energy export statistics since the start of the invasion, statistics released by China indicate that China has increased its Russian oil purchases rather significantly. This oil, however, is being purchased at a significant discount, with Russian Urals oil trading at the largest discount to the Brent benchmark on record, a whopping $35 price differential – even though Urals and Brent oil have largely traded at comparable prices prior to the invasion. Russia remains a relatively high-cost producer relative to the other major oil producers – i.e. Saudi Arabia and the United States – and thus any margin pressure will be felt keenly by Russia.

Sources: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

Chinese Oil Imports from Russia
(shown in millions of metric tons, per China Customs)



Price Differential Between Ural (Russian) and Brent Oil Benchmarks
(units in $ USD, spread per barrel)



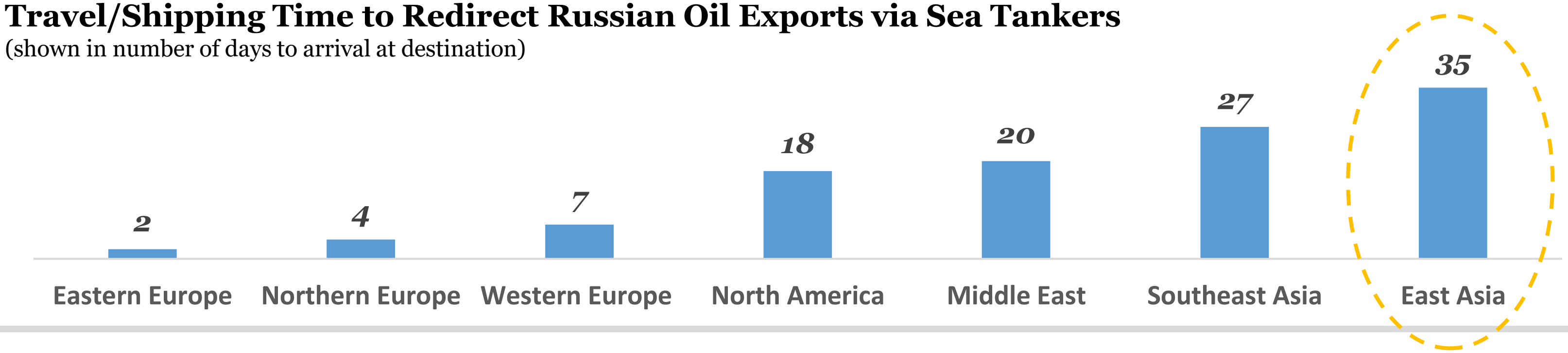
Russian Exports

The landscape for commodity exports already represents a far bleaker picture for Russia than conventionally appreciated. Not only have total oil and gas revenues dropped by more than half in May from the month before, by the Kremlin's own numbers, and the last month for which the Kremlin released its once-regular commodity export statistics, but even beyond any specific indicator, Russia's long-term strategic positioning as an exporter of commodities has deteriorated dramatically. Its isolation from the west has devastated Russia's strategic hand in negotiating with China and India, notoriously price-conscious buyers who retain close ties to other major commodity exporters. These countries have not been shy to exploit sanctioned pariah countries before, with China notoriously driving massively discounted oil deals with countries such as Iran and Venezuela with regularity.

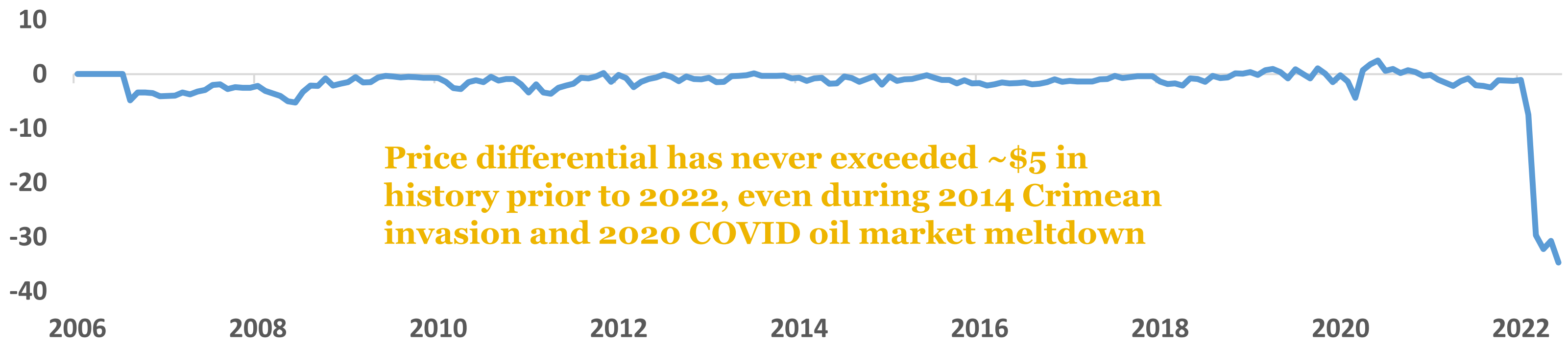
Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, UBS,

Record Urals Discount Reflects Russia's Diminished Strategic Positioning And Relative Weakness

Travel/Shipping Time to Redirect Russian Oil Exports via Sea Tankers
(shown in number of days to arrival at destination)



Unprecedented Record Urals-Brent Discount Reflects How Invasion of Ukraine Reversed Two Decades' Worth of Economic Progress for Russia
(units in $ USD, spread per barrel)



Russian Economy In Crisis Theme #3: Russian Imports

Russian Imports

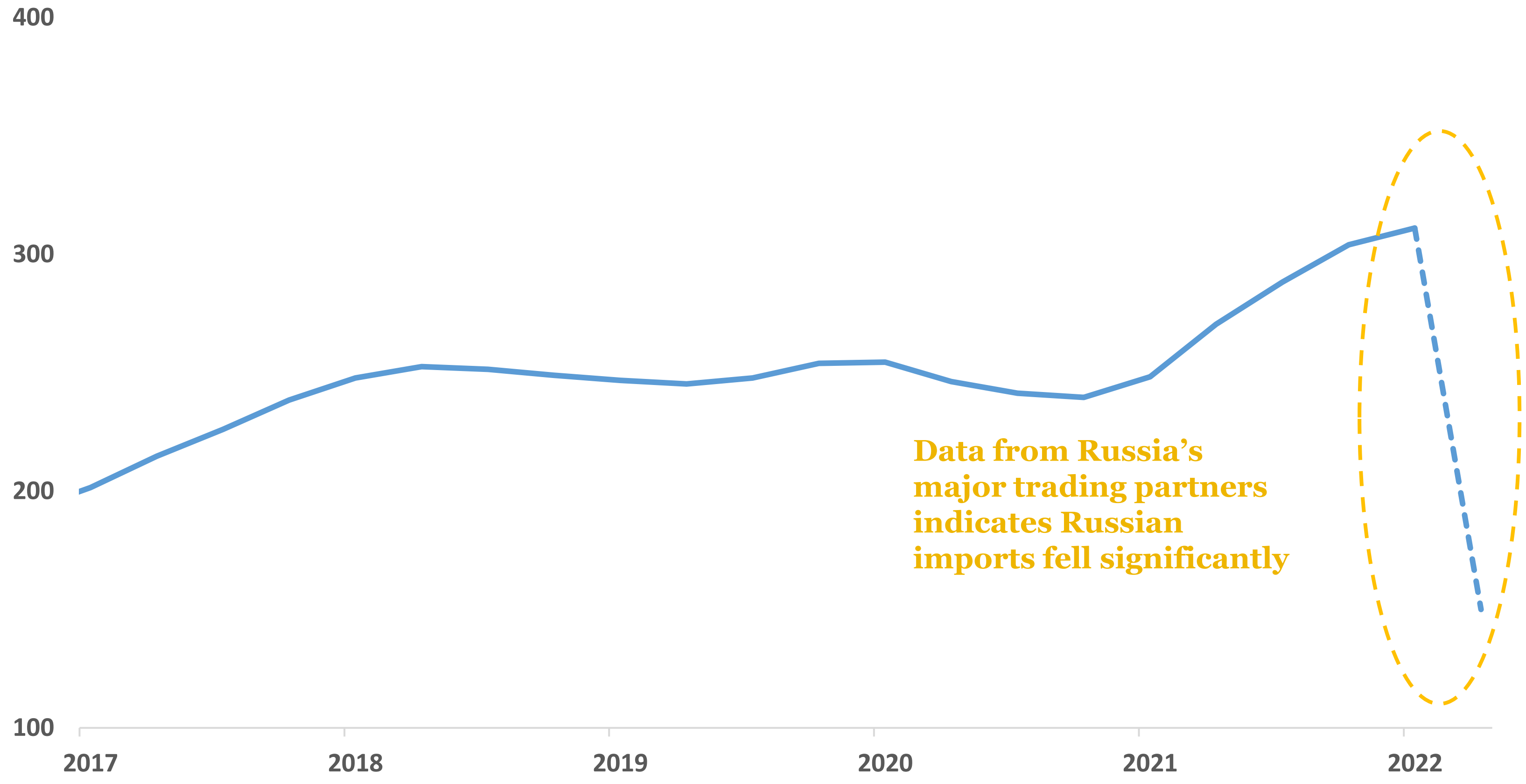
Imports play an important role within Russia’s domestic economy. Imports consist of ~20% of Russian GDP, and the domestic economy is largely reliant on imports across industries and across the value chain with few exceptions, despite Putin’s bellicose delusions of total self-sufficiency.

By far and large, the flow of imports into Russia has drastically slowed in the months since the invasion. A review of trade data from Russia’s top trade partners – since, again, the Kremlin is no longer releasing its own import data – suggests that Russian imports fell by upwards of ~50% in the initial months following the invasion.

Sources: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS, Bloomberg

Russian Imports Fell Significantly In Months After Invasion

Russian Imports from the Rest of the World
(units in $ USD billions, annualized)



Russian Imports

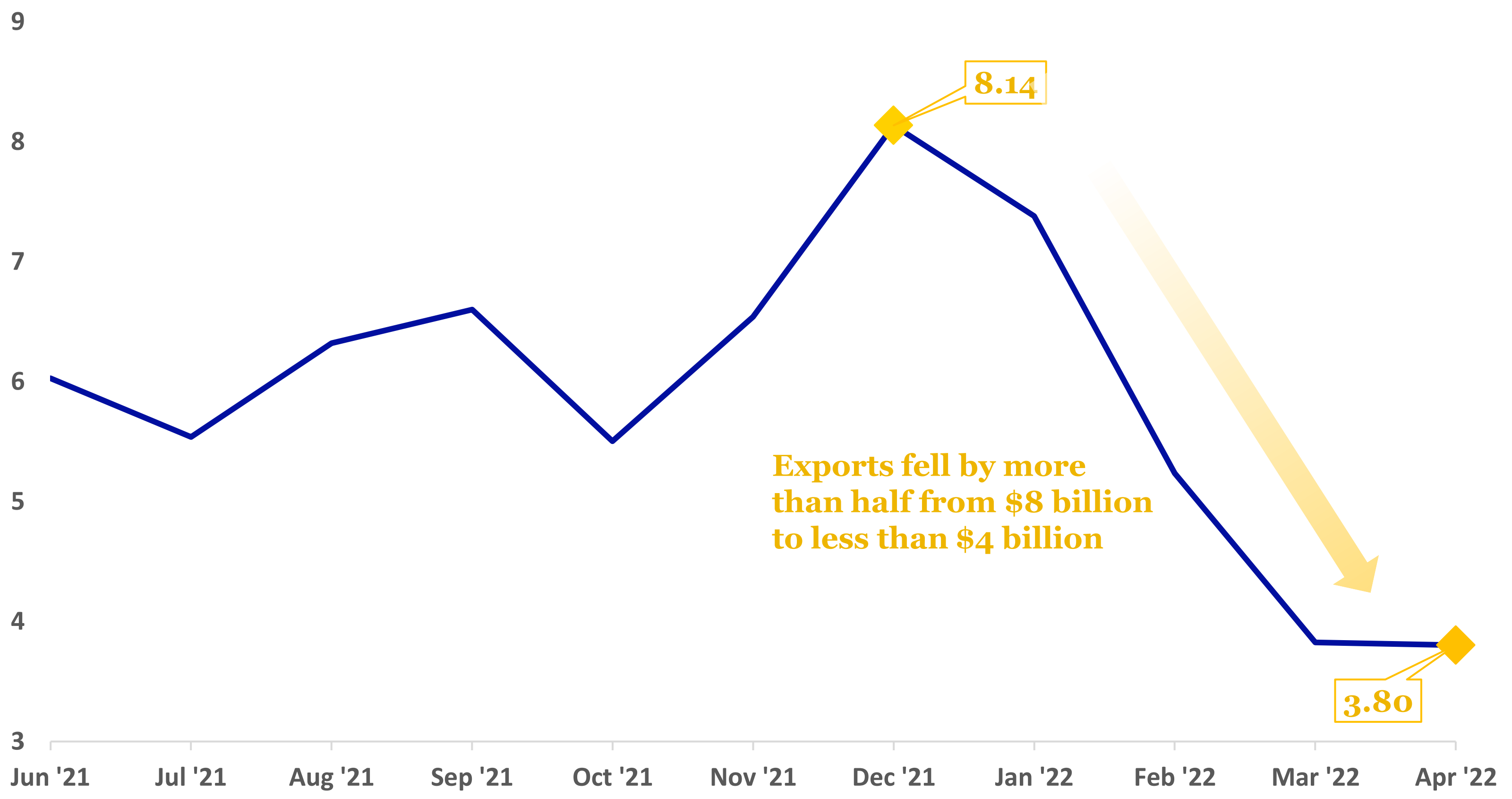
According to the most recent monthly releases from the Customs General Administration of China, which maintains detailed Chinese trade data with detailed breakdowns of exports to individual trade partners, Chinese exports to Russia plummeted by 50% from the start of the year to April, falling from over $8 billion monthly at the end of 2021 to under $4 billion in April.

This aligns with our anecdotal observations of several Chinese banks withdrawing all credit and financing from Russia, including ICBC, the New Development Bank, and the Asian Infrastructure Investment Bank, in addition to energy giants such as Sinochem suspending all Russian investments and joint ventures – though other Chinese companies remain active.

Sources: Yale Chief Executive Leadership Institute, Customs General Administration of the PRC, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

China Throttling Back On Exports To Russia, According To China's Own Official Trade Data

China Exports to Russia, Per the Customs General Administration of China
(units in $ USD billions, monthly totals)



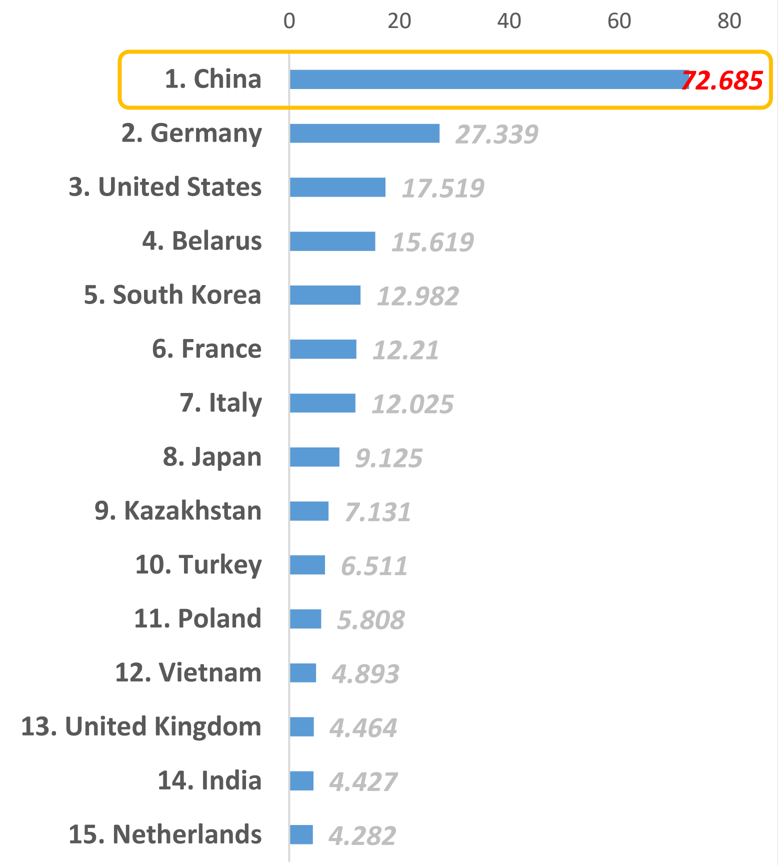
Asymmetric Trade Relationship: China Is Much More Important To Russia Than Russia Is To China

Russian Imports

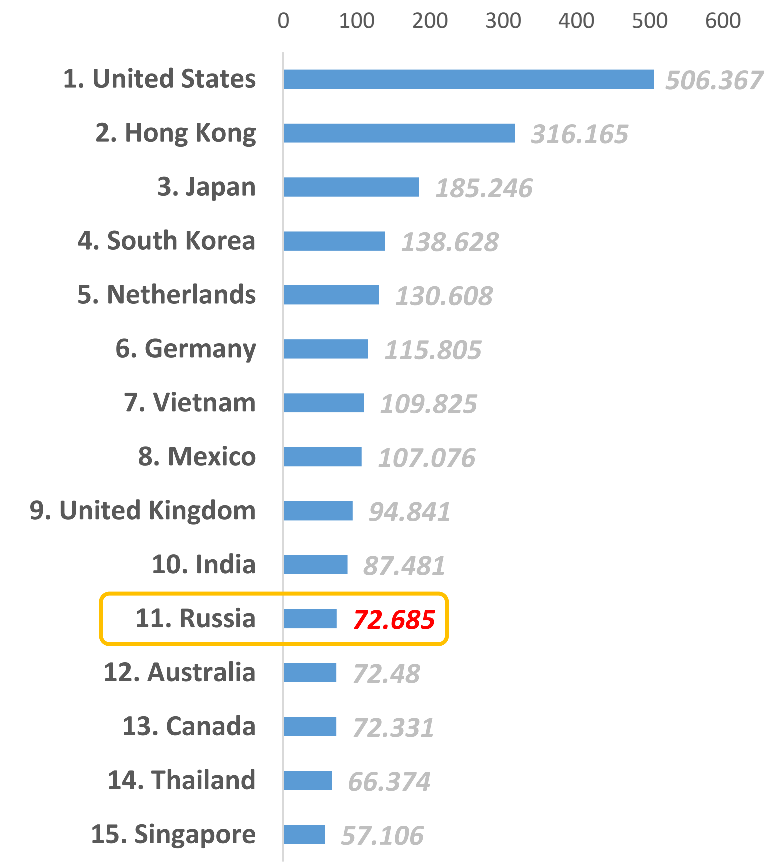
Even on imports, Russia needs its trade partners far more than its partners need Russia. Given the extremely minor proportion of Chinese exports going to Russia vis-à-vis China's trading relationship with the United States and Europe, clearly most Chinese companies are much more wary of losing access to US and European markets by running afoul of US sanctions and crossing US companies than they are of losing whatever erstwhile market share they had in Russia. China is the most prominent example, but other trade partners have been just as reticent to export to Russia. In fact, it appears that exports to Russia from sanctioning and non-sanctioning countries have collapsed at a roughly comparable rate in the months following the invasion

Sources: Yale Chief Executive Leadership Institute, Customs General Administration of the PRC, Eurostat, Other National Sources, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Where Do Russian Imports Come From?
(units in $ USD billions, annual totals as of 2021)



Where Do Chinese Exports Go?
(units in $ USD billions, annual totals as of 2021)



Russian Economy In Crisis Theme #4: Russian Domestic Consumption & Production

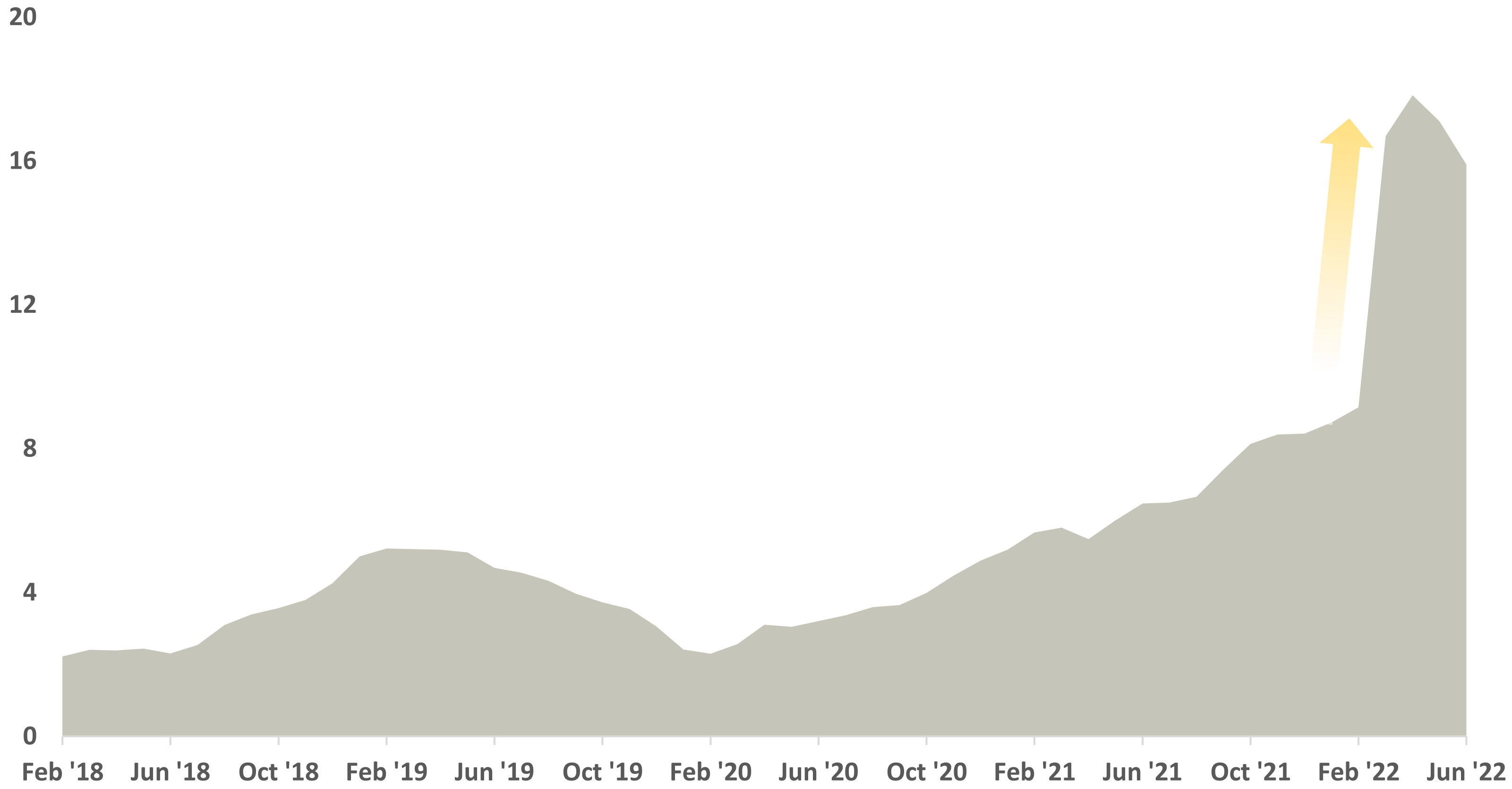
Russian Domestic Consumption & Production

With the drop-off in Russian imports, many domestic producers have been unable to procure supplies and inputs. In desperation, Putin has effectively legalized grey market and intellectual property infringement – and at times has outright encouraged parallel imports. Putin declared the goods of certain companies exempt from trademark laws, including electronic components from manufacturers such as Cisco, Intel, Motorola, and Siemens as well as industrial goods such as paper, textiles, ceramics, locomotives, and nuclear reactors. Despite Putin's efforts, there is little evidence that these permissive parallel import substitution laws are actually having much effect, especially in sensitive sectors such as aerospace, with widespread supply shortages and price inflation across the entire economy.

Sources: Yale Chief Executive Leadership Institute, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Official Russia Consumer Price Index CPI Indicates ~20% Inflation

Russia CPI (Consumer Price Index)
(%, year-over-year percentage change)



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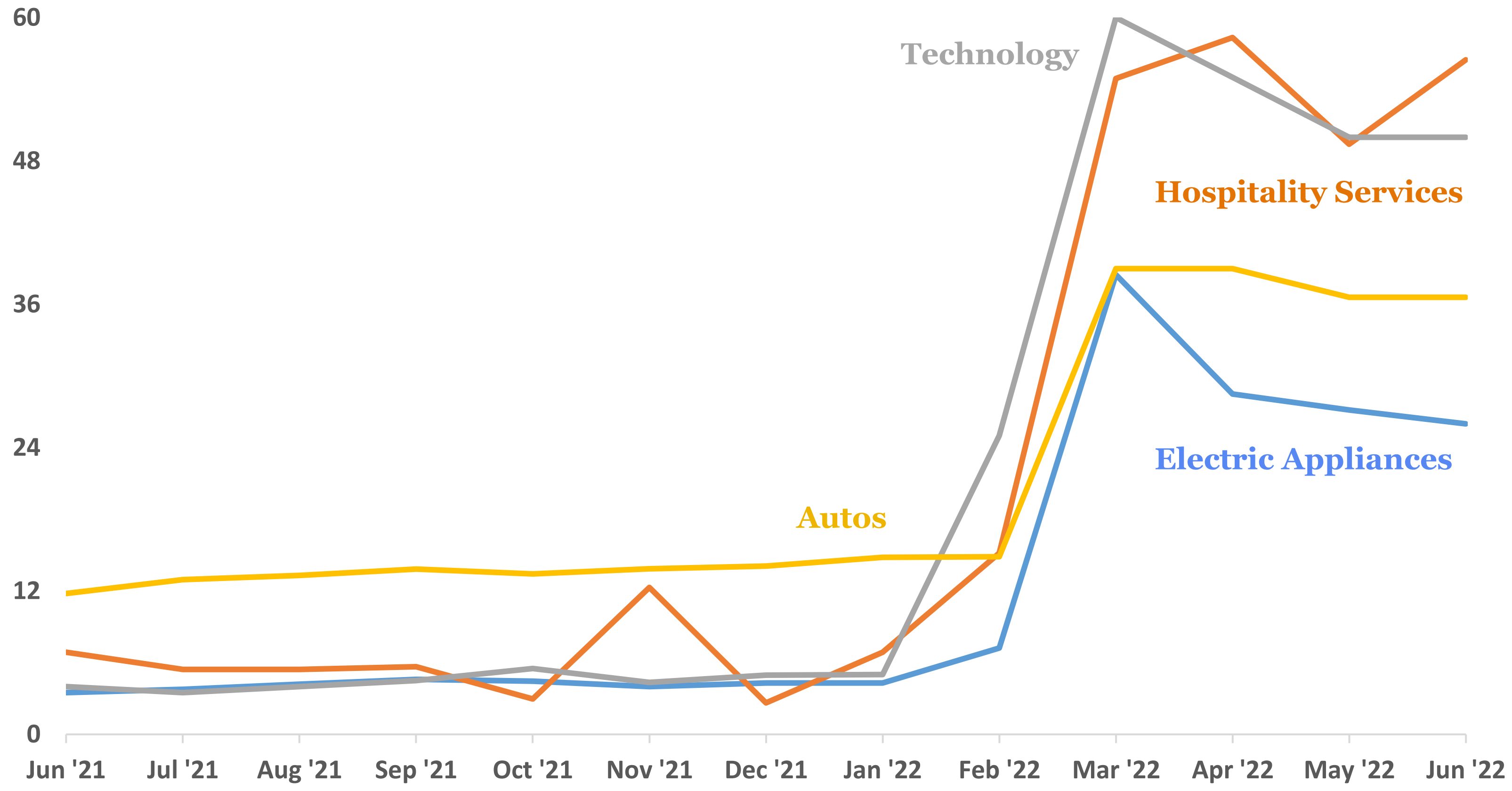
Russian Domestic Consumption & Production

Many Russian manufacturers are having to cannibalize and recycle parts in the absence of foreign supply. As Commerce Secretary Gina Raimondo said, "we have reports from Ukrainians that when they find Russian military equipment on the ground, it's filled with semiconductors that they took out of dishwashers and refrigerators". Within aerospace, flag-carrier Aeroflot and others have been cannibalizing existing aircraft parts to continue servicing the operations of its remaining fleet, even though operators such as Boeing have cut off all support and service and have issued warnings that cannibalized aircraft are not safe for operation. Some carriers, such as Pobeda, have even intentionally grounded up to 40% of their existing fleet to provide parts to service and operate the remaining fleet.

Sources: Yale Chief Executive Leadership Institute, Association of European Businesses, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Sectors Most Dependent On International Supply Chains Hit With 40-60% Inflation

Russia CPI (Consumer Price Index) by Expenditure Category
(%, year-over-year percentage change)



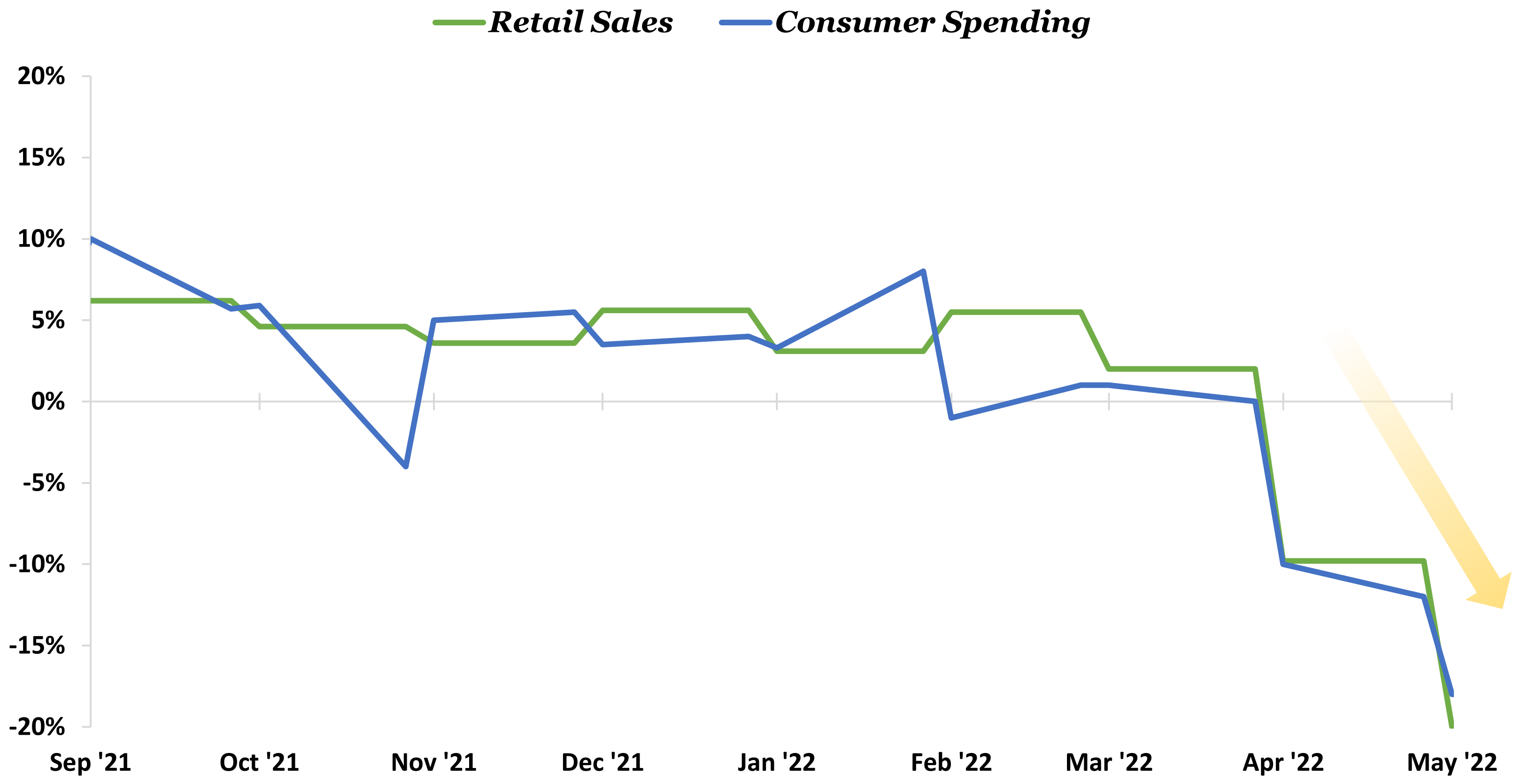
Russian Domestic Consumption & Production

Given the combination of supply shortages, soaring prices and difficulty finding premium products on top of fading consumer sentiment, it is hardly surprising that by Sberbank's own high frequency data readings of consumer spending and retail sales, both plunged dramatically in the months following the invasion, by upwards of ~20% year-over-year. Other readings of high frequency data such as e-commerce sales within Yandex and same-store traffic at retail sites across Moscow reinforce steep declines in consumer spending and sales.

Sources: Yale Chief Executive Leadership Institute, Morgan Stanley, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

High Frequency Data Shows Russian Retail Sales And Consumer Spending Plummet

Russian Retail Sales and Consumer Spending
(%, shown as year-over-year percentage change, not seasonally adjusted)



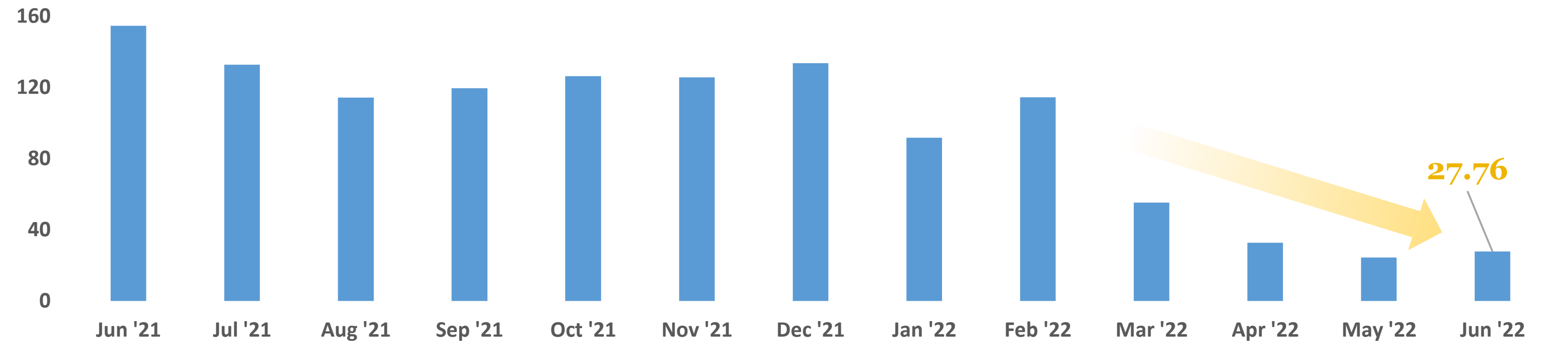
Russian Domestic Consumption & Production

Prior to the invasion, an average of ~100,000 automobiles were sold every month across Russia, but these sales have collapsed to just a quarter of their prior volume. The most recent data releases indicate that only 27,000 cars were sold in the month of June across all of Russia, driven not only by soaring prices and deteriorating consumer sentiment but also because of lack of supply. The data release for foreign automobiles in Russia was even more disastrous. Historically, many Russians have preferred to drive foreign automobiles – not only because of prestige but also due to concerns about safety and quality. But in the months after the invasion, the purchase of foreign-made automobiles in Russia has ground to an almost complete standstill.

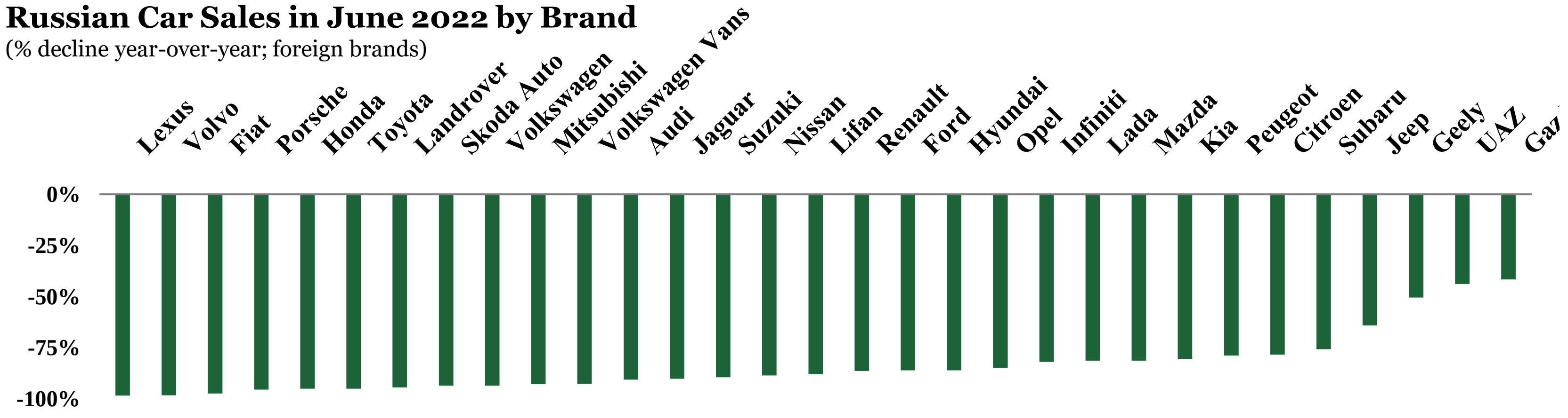
Sources: Yale Chief Executive Leadership Institute, Association of European Businesses, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Collapse In Car Sales Representative Of Broader Economic Woes

Total Russian Car Sales by Month
(units in thousands of cars)



Russian Car Sales in June 2022 by Brand
(% decline year-over-year; foreign brands)



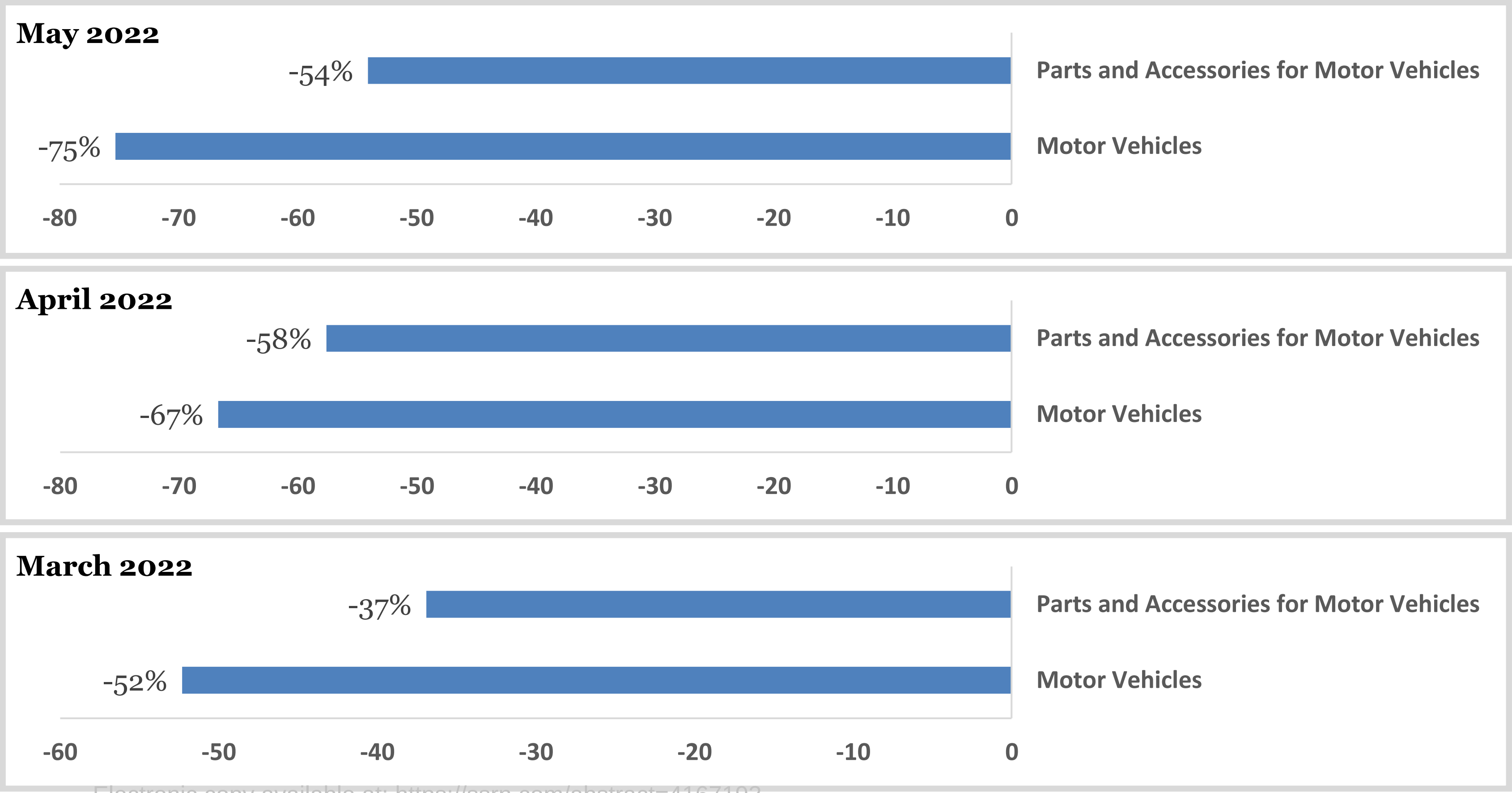
Russian Domestic Consumption & Production

Putin has prioritized import substitution, to replace lost foreign imports with ramped-up domestic production – but import substitution has not been successful, and Russian innovation lags far behind that of peer countries. Russian domestic production of automobiles has plummeted, given the reliance on international supply chains for not only raw materials such as steel and machinery, but also complex parts such as brakes and airbags in addition to western technology in semiconductors. Even at these minimal production levels, significant shortcuts are being taken. Russia went so far as to suspend car production safety requirements in domestic automobile manufacturing, and many of the cars being manufactured post-invasion now lack such essentials as airbags and anti-lock brakes.

Source: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, Bloomberg, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Import Substitution With Made-In-Russia Cars? Quite The Opposite

Russian Domestic Industrial Production Volume of Motor Vehicles and Parts/Accessories
(%, year-over-year percentage change, by month)



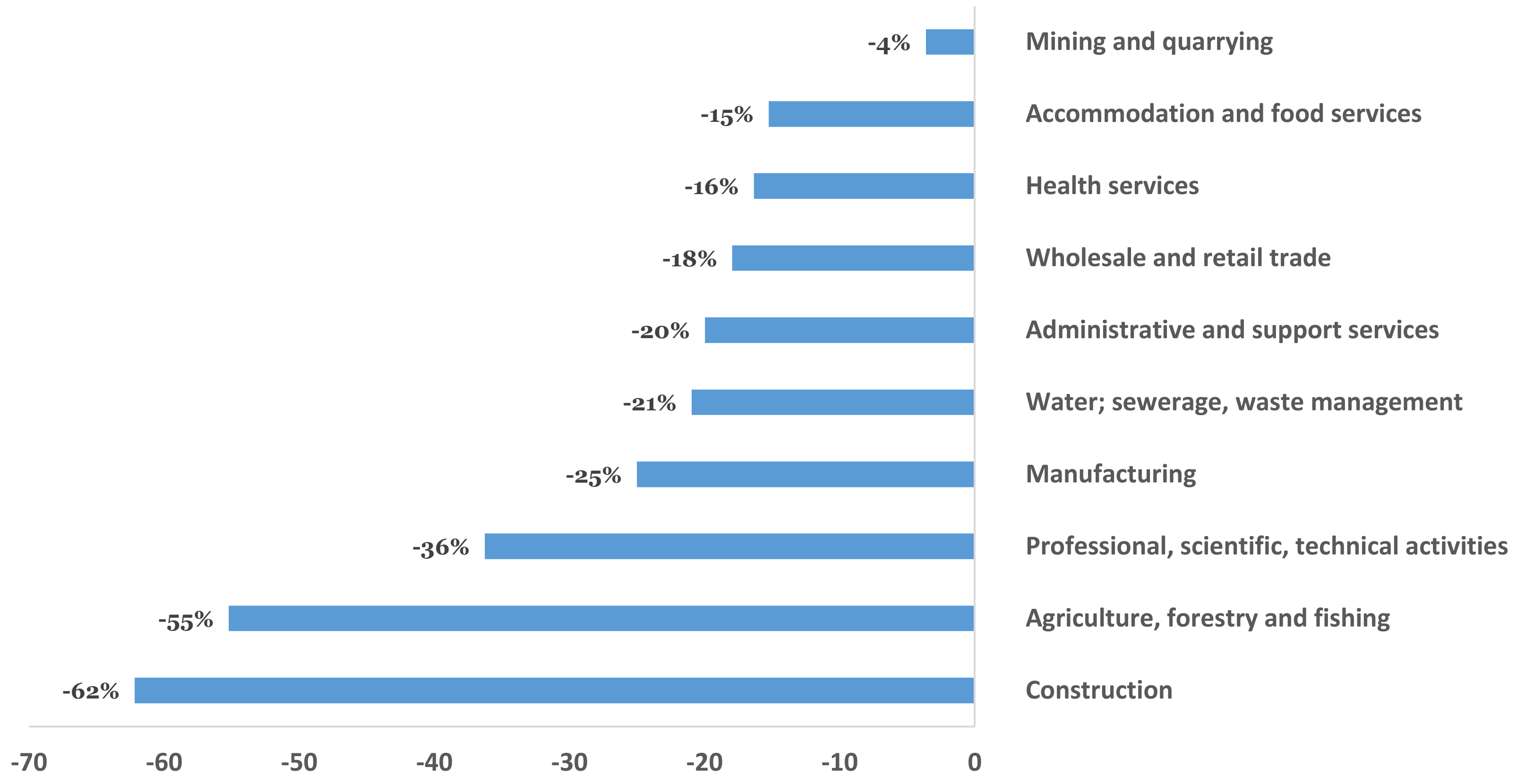
Russian Domestic Consumption & Production

Import substitution is not a new area of focus for Putin – ever since the Crimean crisis of 2014 and the implementation of western sanctions then, Putin has long focused on building up the capabilities of domestic industry – with little success, as even he acknowledges. In his recent plenary address at the much-diminished St. Petersburg Economic Forum, Putin laid out his revamped vision for import substitution moving forward – but Russian domestic manufacturers seem to have missed the memo, as Q1 2022 results were uniformly disastrous across the board despite Putin's (futile) emergency efforts to increase domestic production.

Source: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, Bloomberg, Bank of America Global Research, Deutsche Bank, UBS

Putin's Import Substitution Rhetoric Is Only Rhetoric

Russian Gross Domestic Value Added in Q1 2022 by Industry
(%, quarter-over-quarter percentage change, not seasonally adjusted)



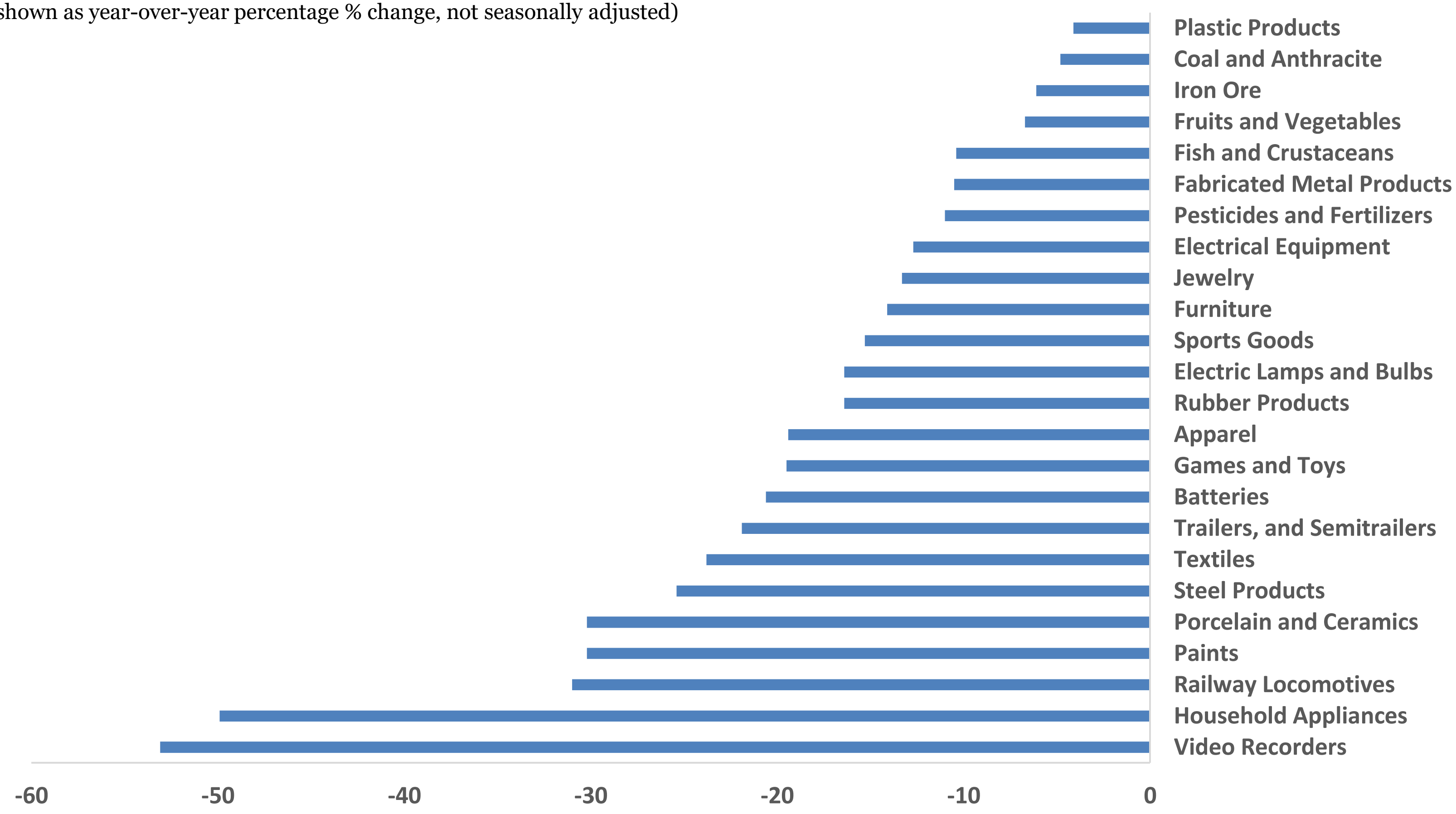
Russian Domestic Consumption & Production

Despite Putin's rallying cries of self-sufficiency, all these industries share a crucial similarity: they simply cannot replace imported parts and components that Russia lacks the technological prowess to make, and illicit, shadowy parallel imports can only go so far. For example, the Russian tank producer Uralvagonzavod has furloughed workers based on input shortages; Russian production of tanks, missiles and other equipment relies on imported microchips and precision components that simply cannot be sourced right now. Likewise, Russia's Caspian pipeline has had challenges finding spare parts related to the US and EU's gas liquefaction ban. Each of these supply disruptions – which cannot be replaced by import substitution or parallel imports – leads to production shutdowns which then ripple across the entire supply chain, bringing various ancillary products and services into a simultaneous standstill.

Granular Russian Industrial Production Data By Sub-Industry Shows Russian Production At Standstill

Russian Domestic Industrial Production Volume Decrease by Industry

(shown as year-over-year percentage % change, not seasonally adjusted)



Source: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, Bloomberg, Morgan Stanley, Bank of America Global Research, UBS

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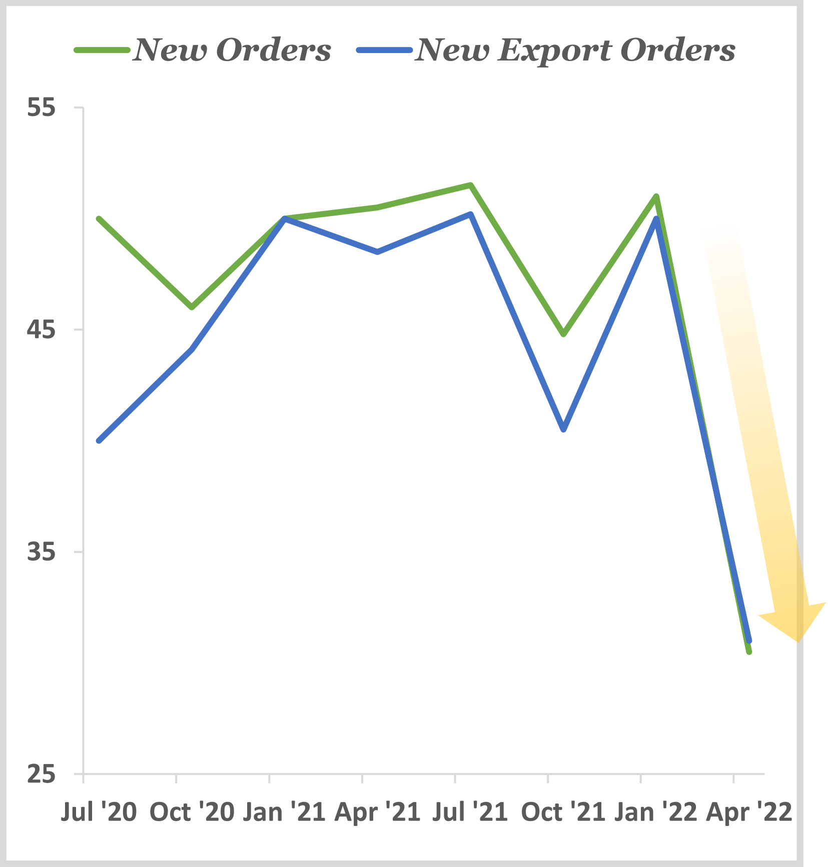
Russian Domestic Consumption & Production

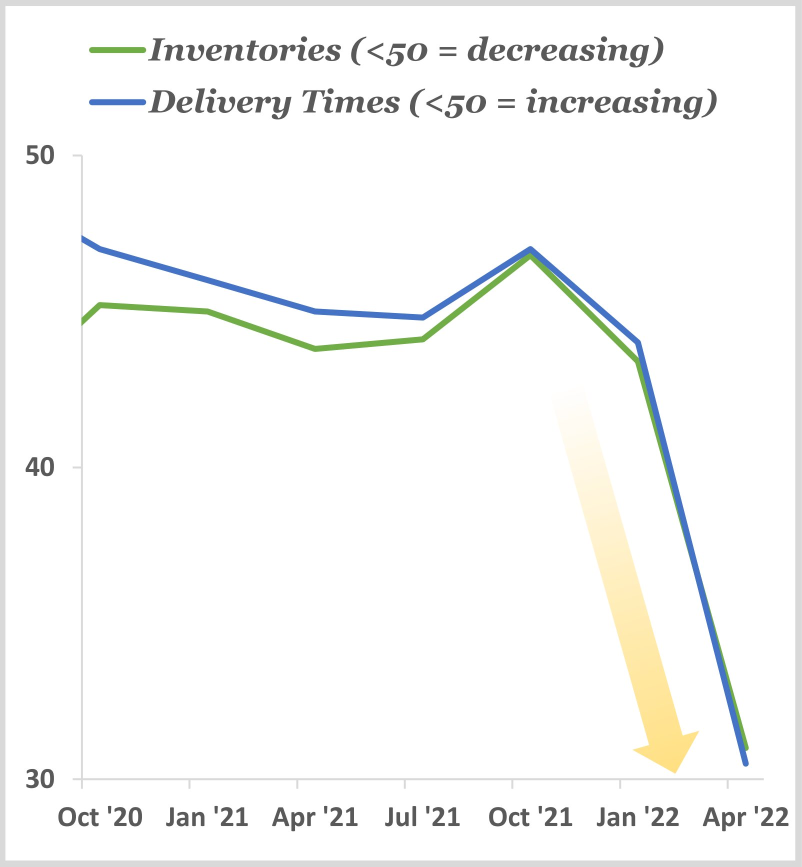
A reading of the Russian Purchasing Managers' Index (PMI) shows that clearly, purchasing managers want nothing to do with placing new orders until the geopolitical environment stabilizes. The structural headwinds facing Russian domestic consumption and production are unlikely to change as long as the overhang of Putin's invasion and associated western sanctions and business retreats are present. Despite Putin's rallying cries of import substitution and illicit parallel import schemes, Russia is far from self-sufficiency, and the hallowing out of its domestic innovation and production base will continue to impair Russian economic development for years to come.

Source: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, Morgan Stanley, S&P Global, Bloomberg, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Purchasing Managers Survey Reflects Pervasive Economic Anxiety

Russian Purchasing Managers Indices (PMI)
(shown as composite scores, quarterly)





Russian Economy In Crisis Theme #5: Business, Capital, and Talent Flight

Business, Capital, Talent Flight

Since Russia's invasion of Ukraine began in February 2022, the authors have led an intensive research effort to track the responses of nearly 1,500 public and private companies from across the globe, with well over 1,000 companies publicly announcing they are voluntarily curtailing operations in Russia. The value of the Russian revenue represented by these companies and the value of these companies' investments in Russia together exceed $600 billion - meaning the retreat of well over 1,000 companies in the span of three months has almost single-handedly reversed three decades' worth of Russian economic integration with the rest of the world, while undoing years of foreign investment into Russia. In total, these companies, and the Russian companies which provide services to them, employ over 5 million Russians, and the Mayor of Moscow has already expressed concern over unemployment.

Source: Yale Chief Executive Leadership Institute, Russian Federal Service of State Statistics, Bloomberg, Bank of America Global Research, UBS, Associated Press

Proprietary Yale CELI Russian Business Retreat Data Suggests ~40% Of Russian GDP At Risk

Yale CELI List of Companies Curtailing Operations in Russia Contains 40%+ of Russian GDP

1000+ *global companies*

40%+ *of Russia's GDP*

5mm+ *Russian jobs dependent on foreign investment*

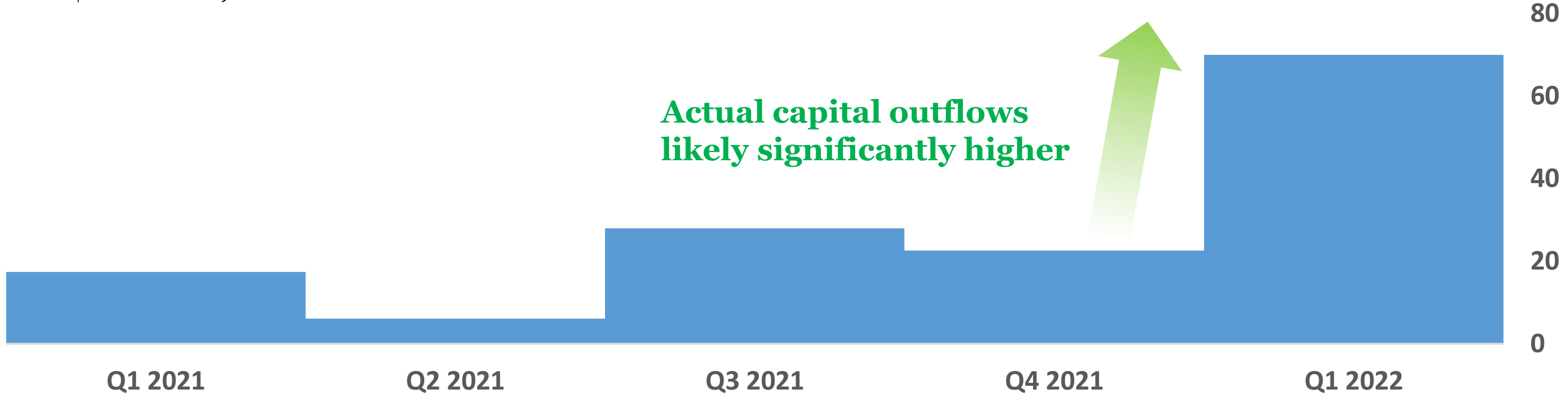
Russian Macroeconomic Indicators

The official level of capital outflows indicated by the Bank of Russia is likely to be a gross underestimate of the actual level of capital outflows, given strict capital controls implemented by the Kremlin restricting the amount of wealth Russian citizens can transfer out of the country. By all anecdotal reports, wealthy Russians are flocking to safe havens in droves. Many of these Russians have swarmed to financial centers such as Dubai in the Middle East; the presence of Russian capital inflows in Dubai is so significant in magnitude that many local real estate experts attribute Dubai's ballooning property values over the last 4 months to the influx of new Russian wealth seeking shelter, with many Dubai real estate firms reporting 100% and even 200% year-over-year increases in sales to buyers from Russia.

Source: Yale Chief Executive Leadership Institute, The Central Bank of the Russian Federation, Russian Federal Service of State Statistics, Bloomberg, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Official Central Bank Gauge Shows Quadrupling Of Formal Capital Outflows Post-Invasion Amidst Brain Drain

Russian Private Sector Capital Outflows Per Central Bank of Russia
(units in $ USD billions)



Exodus of Ultra-High Net Worth And Highly Educated/Skilled Russians Of Particular Significance

500k+
Russians who have fled Russia

50%
are highly-educated or work in skilled sectors such as tech

15k+
UHNWI (ultra-high-net-worth individuals) have fled Russia

20%
of all Russia's UHNWI (defined as those with net worth of $30MM+)

Russian Economy In Crisis Theme #6: Unsustainable Kremlin Policies

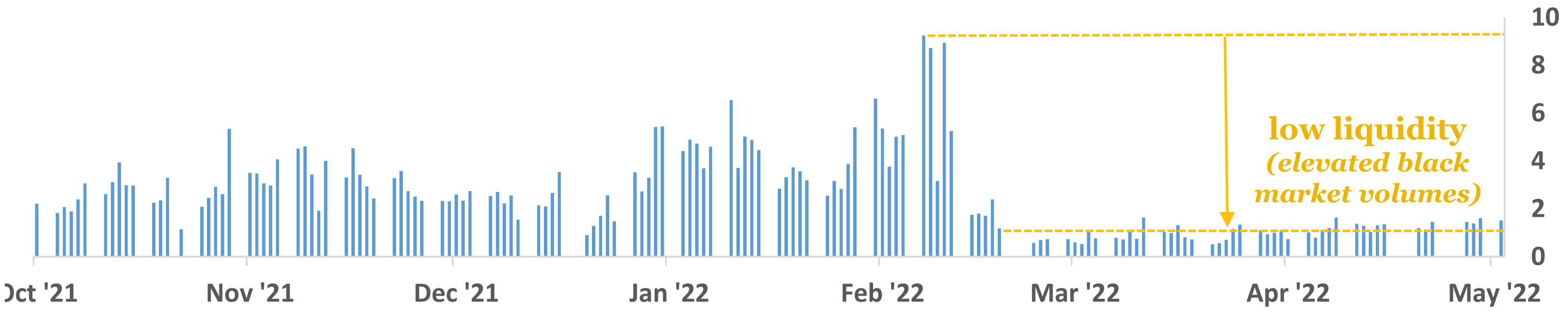
Unsustainable Kremlin Policies

The official exchange rate of the ruble given the presence of such draconian capital controls can be misleading – as the ruble is, unsurprisingly, trading at dramatically diminished volumes compared to pre-invasion on low liquidity. By many reports, much of this erstwhile trading has migrated to unofficial ruble black markets, where the spread between the official exchange rate and the actual exchange rate is equally dramatic – upwards of 20% to 100% higher than the official exchange rate, in some cases, given a shortage of obtainable, liquid dollars within Russia. Even the Bank of Russia has admitted that the exchange rate is a reflection more of government policies and a blunt expression of the country's trade balance rather than freely tradeable liquid FX markets.

Source: Yale Chief Executive Leadership Institute, Morgan Stanley, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Russian Ruble Exchange Rate Reflects Stringent Capital Controls, Low Liquidity, And Artificial Value

Russian Ruble Spot Daily Trading Volumes Across All Official Markets
(units in $ USD billions)



Capital Controls on the Ruble Post-Invasion
Banned Citizens from Sending Money to Bank Accounts Abroad
Suspending Cash Withdrawals from Dollar Banking Accounts Beyond $10,000
Force Exporters to Exchange 80% of Earnings for Rubles
Suspend Direct Dollar Conversions for Individuals With Ruble Banking Accounts
Suspend Lending in Dollars
Suspend Dollar Sales Across Russian Banks
Encourage Individuals to Redeem Dollars for Rubles
Companies Must Pay Foreign Dollar Debt in Rubles

Unsustainable Kremlin Policies

It is impossible to quantify the exact magnitude of Putin's spending – and where the money goes – with any great degree of precision, considering, since the invasion started, the Russian government has intentionally obfuscated budget items under the guise of guarding against international sanctions. Nevertheless, Putin's announcements of fiscal measures provide some sense of the unprecedented magnitude of Kremlin intervention in helping to prop up the flagging Russian economy. All of this enhanced fiscal stimulus is on top of presumably vast military spending, further straining the Russian budget.

Source: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, Bloomberg, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Massive, Unsustainable Fiscal Stimulus From Kremlin Masking Structural Economic Weakness

Post-Invasion Fiscal Stimulus from Kremlin
Subsidized Loans and Loan Payment Assistance to Companies
Transfer Payments to Affected Industries
Subsidized Mortgages and Mortgage Payment Assistance
Increase in Direct Payments to Individuals, Including Families, Pregnant Women, Government Employees, Pensioners, Military, Low-Income
Recapitalization of Companies by National Wealth Fund
Nationalization and Recapitalization of Certain Companies
Subsidized Credit Forgiveness/Debt Jubilee
Subsidized Protection from Bankruptcy and Foreclosure
Drawdowns from National Wealth Fund for State Expenditures
Subsidized Infrastructure Development

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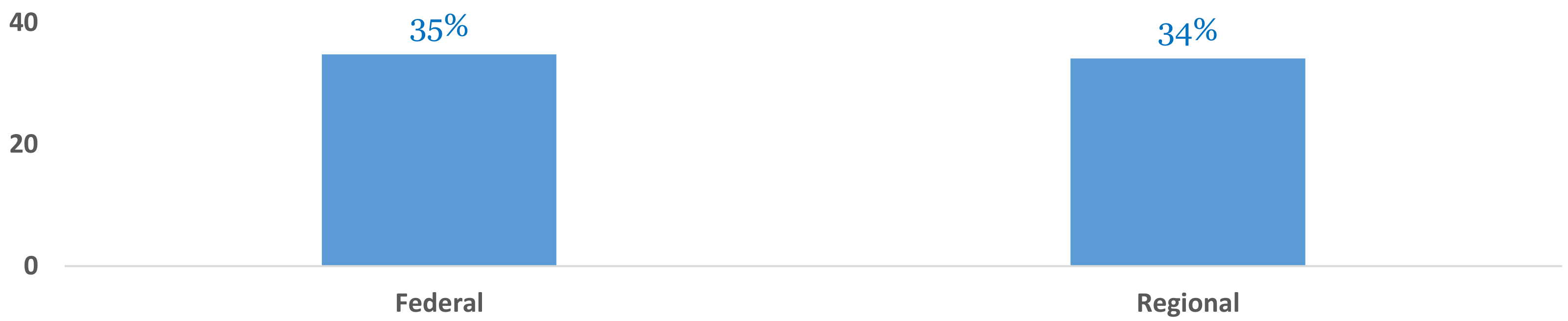
Unsustainable Kremlin Policies

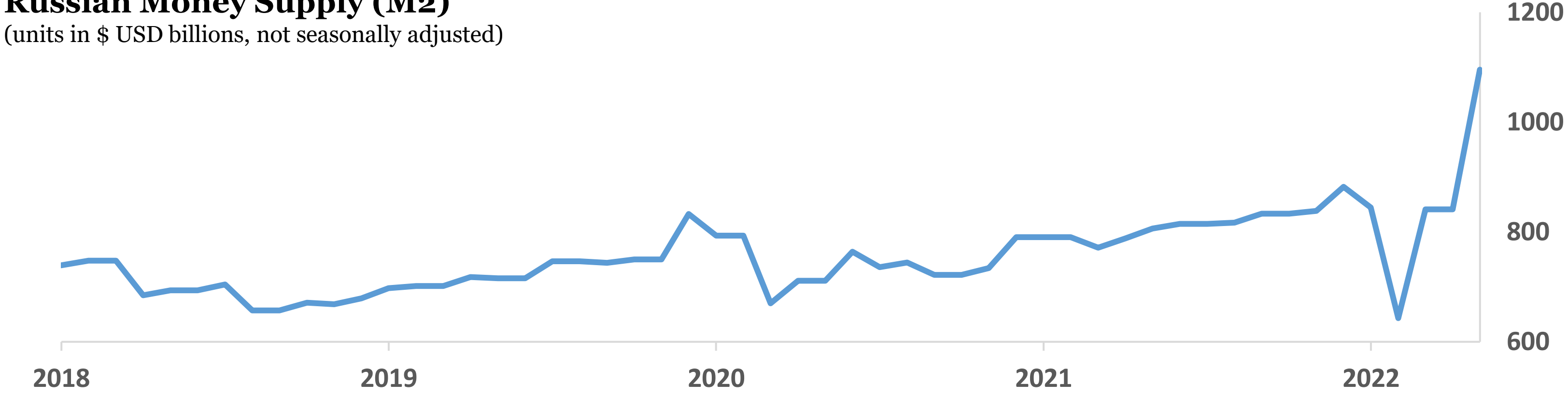
The black-box that is the budget and financing of the Russian state cannot be known with 100% precision or certainty – but certain facts are indisputable. Thanks to a massive wave of fiscal and monetary stimulus unleashed post-invasion, Russian state spending and social obligations are now at a magnitude much higher than before. To sustain this unprecedented level of spending, any decrease in Russian gas and oil revenues would force Russia to tap into its "rainy-day" funds even more than it is already doing, but these reserves are seemingly already dwindling, with the prospects for future "top-offs" of these vital reserves increasingly bleak for Russia. It appears to be a fiscal path with little margin for error – operating under the preconception that oil and gas revenues will only go up. That is the fundamental bet underlying whether Putin will run out of cash, or whether he can sustain these unprecedented levels of fiscal spending.

Kremlin Inundating Economy With Artificial Liquidity To Mask Economic Weakness

Russian Government Increase In Fixed Asset Investment Budgets (Infrastructure) in Q1 2022
(shown as year-over-year % percentage change, not seasonally adjusted)



Russian Money Supply (M2)
(units in $ USD billions, not seasonally adjusted)

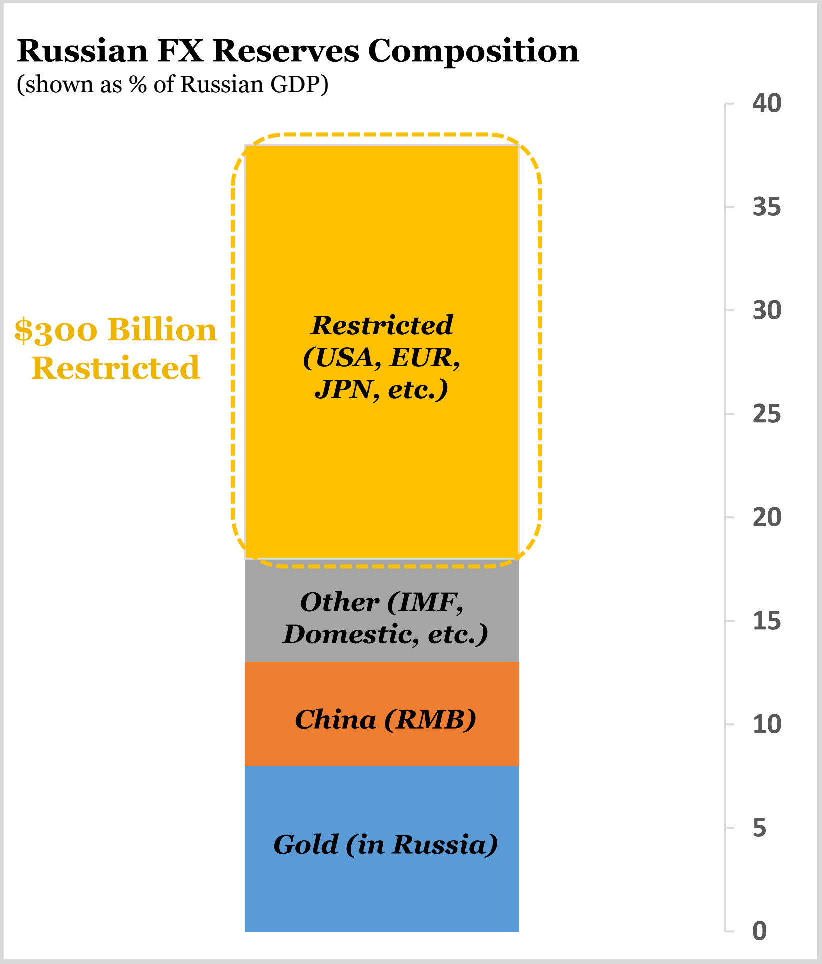


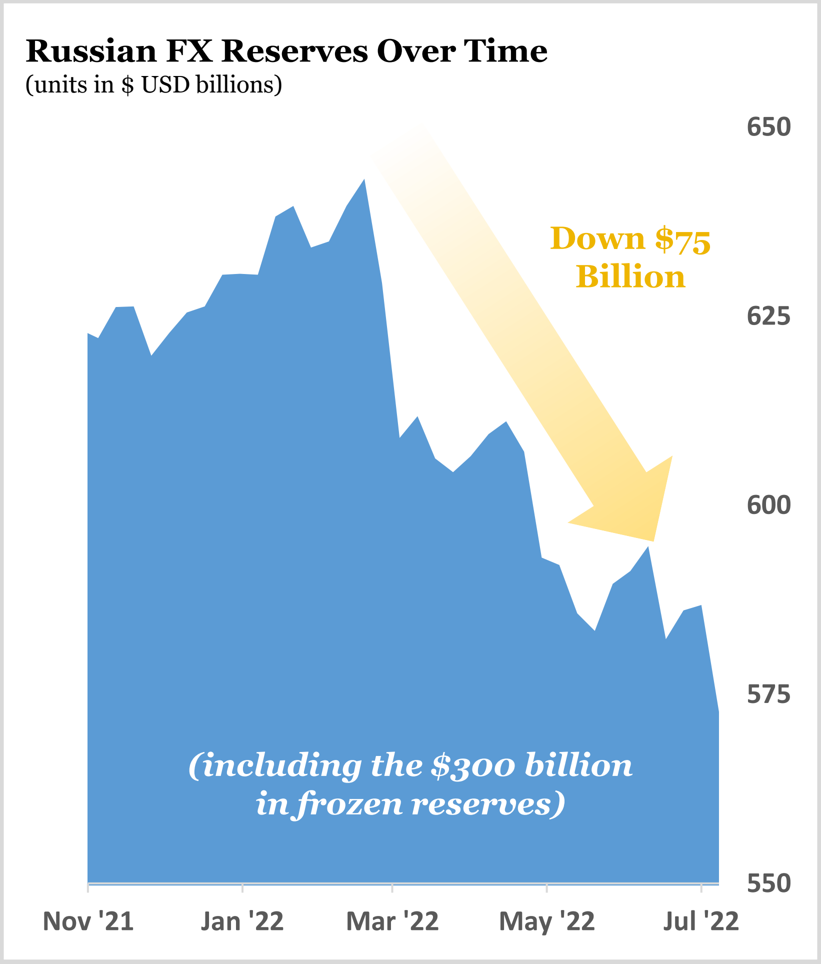
Source: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, Bloomberg, JPMorgan, Bank of America Global Research, UBS

Unsustainable Kremlin Policies

The most obvious challenge facing Putin's rainy-day funds is the fact that of his $600 billion in foreign exchange reserves, accumulated from years' worth of oil and gas revenues, $300 billion is frozen and out of reach with allied countries across the US, Europe and Japan restricting access. There have been some calls to seize this $300 billion to finance the reconstruction of Ukraine, calls which are seemingly louder in European policy circles than in the US – for now, at least. Putin's remaining FX reserves are decreasing at an alarming pace, as Russian FX reserves have declined by $75 billion since the start of the war – a rate which, if annualized, suggests these reserves may be spent down within a few years' time.

Russia's Foreign Exchange Reserves Bleeding Out Fast





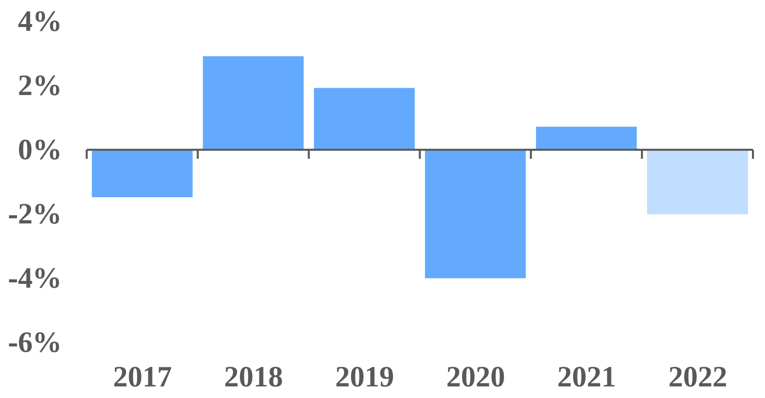
Source: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, Bloomberg, JPMorgan, Bank of America Global Research, UBS

Unsustainable Kremlin Policies

One sign of just how high spending levels have risen is the fact that Finance Minister Anton Siluanov has readily acknowledged that the Russian government budget will likely be in deficit this year by an amount equivalent to 2% of Russian GDP – compared to previous rosy projections of a surplus, as has been typical the past few years. Even more interestingly, Siluanov floated the idea of withdrawing funds from the National Wealth Fund equivalent to a third of the entire fund to pay for this deficit – a whopping withdrawal which would far surpass previous withdrawals by many orders. If Russia is running a budget deficit requiring the drawdown of a third of its sovereign wealth fund when oil and gas revenues are still relatively strong, the financial picture which is emerging of the Kremlin's financing does not seem promising at all. In fact, the picture seems to be of a Kremlin which is fast running out of money, despite intentional obfuscation.

Kremlin Drawing Down Rainy Day Funds To Cover Steep Budget Deficit Despite High Oil Prices

Russian Budget Deficit
(shown as % of Russian GDP)



Russian Urals Crude Oil Spot Price
(units in $ USD, price per barrel)

Russia Drawing Down One-Third of Sovereign Wealth Fund to Cover 2022 Budget Deficit
(according to Reuters and Russian sources)

Source: Yale Chief Executive Leadership Institute, Morgan Stanley, Russian Federal Service of State Statistics, Bloomberg, JPMorgan, Bank of America Global Research, UBS

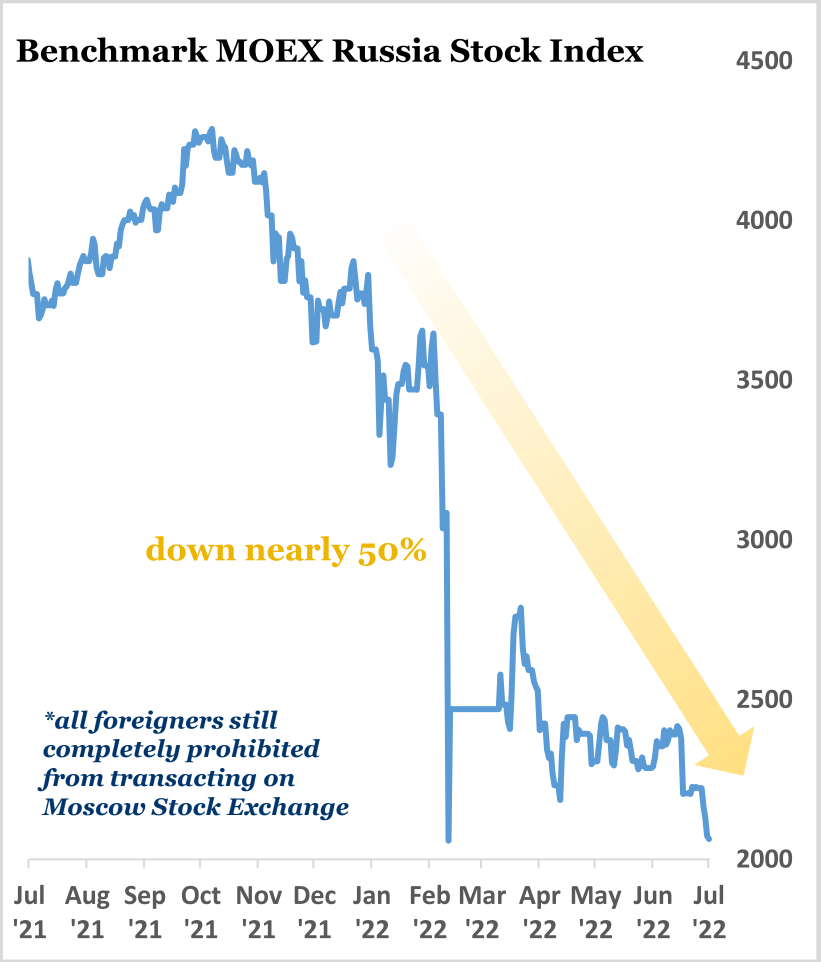
Russian Economy In Crisis Theme #7: Russian Financial Markets

Russian Financial Markets

Financial markets are useful not only as an indicator of current financial and liquidity conditions, but also as a discounting mechanism for understanding what is priced into the future. If the performance of Russian financial markets across asset classes this year is to be given any weight, then the message seems to be clear: the situation is dire now, and the situation is dire moving forward – especially with Russian entities frozen out of international capital markets.

Source: Yale Chief Executive Leadership Institute, Bloomberg, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Frozen Out Of International Capital Markets, Capital-Starved Russian Financial Markets Pricing In Sustained Weakness



Russian Access to International Capital Markets Since Start of Invasion

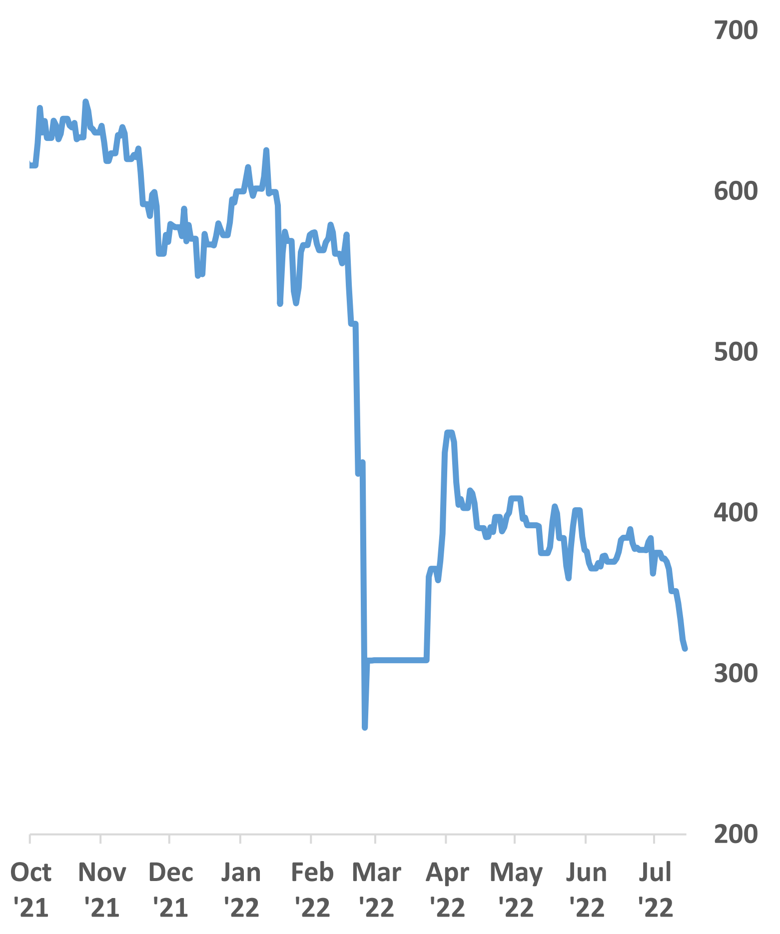
zero	*equity (stock) issuances*
zero	*debt (bond) issuances*
one	*sovereign debt default*

Russian Financial Markets

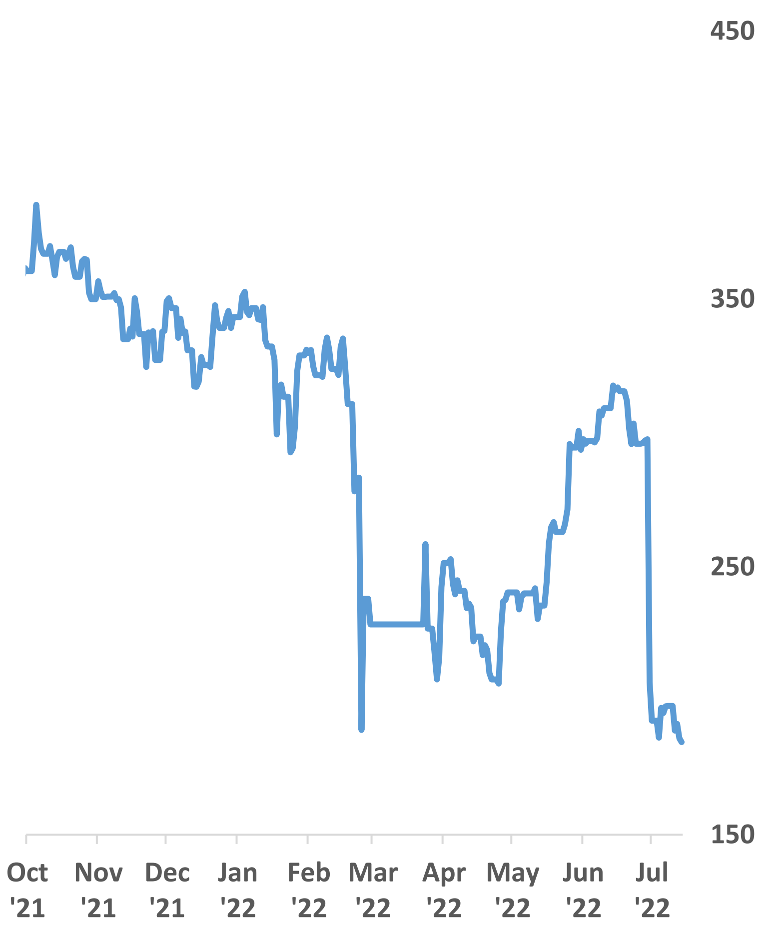
The benchmark Russian equity index is one of the single worst performers of any major country index in the entire world this year, falling nearly ~50% since the start of the invasion. This reflects purely domestic sentiment from Russian investors alone: if foreign investors were allowed to liquidate their positions, selling pressure would be several degrees higher across the entire Moscow Stock Exchange. What is even more striking is that, in examining single stock performance across the Moscow Stock Exchange, several of the worst performing single stocks are those of Rosneft, the Russian state oil giant, and Gazprom, the state gas giant – and some of the erstwhile crown jewels of the Russian economy. Clearly, financial markets are unwilling to touch these companies with a ten-foot pole in the expectation that Putin is cannibalizing what had been credible, profit-making companies to advance his geopolitical agenda.

Source: Yale Chief Executive Leadership Institute, Moscow Stock Exchange, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, UBS

Major Russian Energy Giants Are Some Of The Worst Performing Stocks On The Moscow Stock Exchange This Year



Rosneft Stock Performance (ROSN)



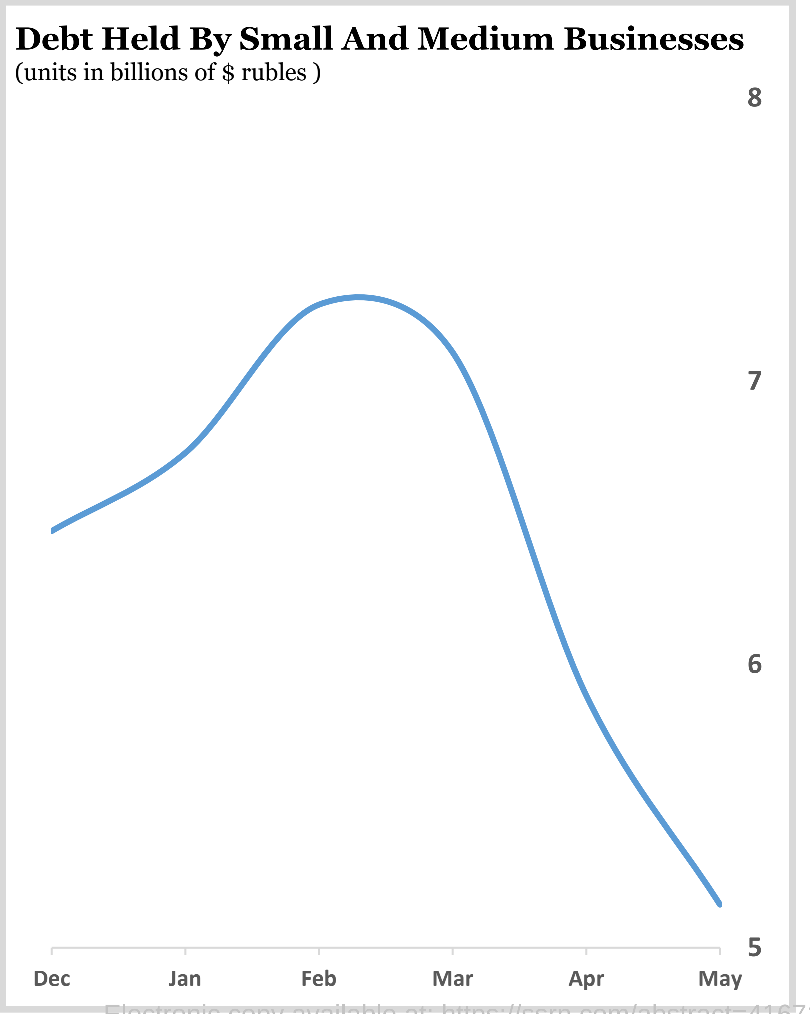
Gazprom Stock Performance (GAZP)

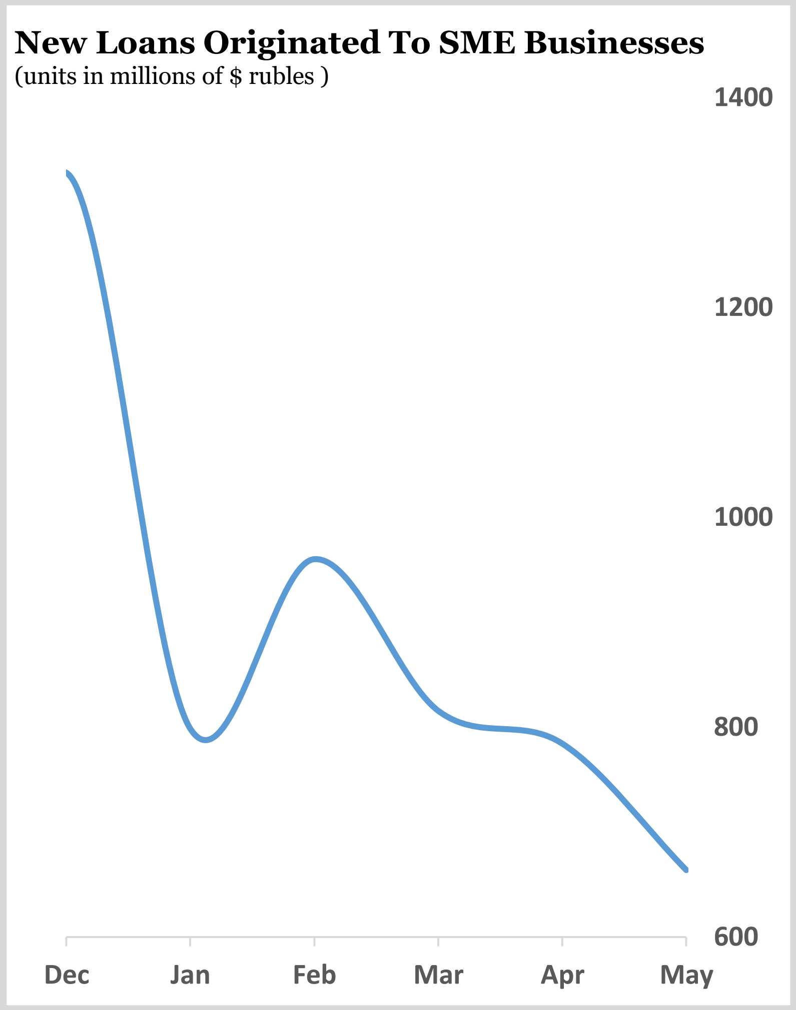
Russian Financial Markets

The massive Kremlin-backed liquidity and credit injections which prevented a financial crisis in the days following the invasion have been insufficient to spur true credit formation and risk-taking by small and medium sized businesses. In fact, despite the permissive credit environment fostered by the Kremlin and state subsidization of various forms of loans including mortgages and business loans, loans originated to small and medium businesses have actually fallen dramatically in spite of these subsidies. It seems no amount of Kremlin incentives are enough to spur businesses to underwrite new investments and capital expenditure in this political and economic climate – a reflection of what Russian business leaders truly think about their own economy, and the outlook for future growth (or more aptly, contraction).

Source: Yale Chief Executive Leadership Institute, Moscow Stock Exchange, Bloomberg, Russian Federal Service of State Statistics, JPMorgan, Bank of America Global Research, Deutsche Bank, UBS

Credit Not Flowing Through To Liquidity-Challenged Small And Medium Russian Businesses





Russian Economy In Crisis Theme #8: Sustained Economic Pressure Is Working

Conclusions

- **Russia's strategic positioning as a commodities exporter has irrevocably deteriorated, as it now deals from a position of weakness with the loss of its erstwhile main markets, and faces steep challenges executing a "pivot to Asia" with non-fungible exports such as piped gas**
- **Despite some lingering leakiness, Russian imports have largely collapsed, and the country faces stark challenges securing crucial inputs, parts, and technology from hesitant trade partners, leading to widespread supply shortages within its domestic economy**
- **Despite Putin's delusions of self-sufficiency and import substitution, Russian domestic production has come to a complete standstill with no capacity to replace lost businesses, products and talent; the hollowing out of Russia's domestic innovation and production base has led to soaring prices and consumer angst**
- **As a result of the business retreat, Russia has lost companies representing ~40% of its GDP, reversing nearly all of three decades' worth of foreign investment and buttressing unprecedented simultaneous capital and population flight in a mass exodus of Russia's economic base**

Conclusions – Continued

- Putin is resorting to patently unsustainable, dramatic fiscal and monetary intervention to smooth over these structural economic weaknesses, which has already sent his government budget into deficit for the first time in years and drained his foreign reserves even with high energy prices – and Kremlin finances are in much, much more dire straits than conventionally understood

- Russian domestic financial markets, as an indicator of both present conditions and future outlook, are the worst performing markets in the entire world this year despite strict capital controls, and have priced in sustained, persistent weakness within the economy with liquidity and credit contracting – in addition to Russia being substantively cut off from international financial markets, limiting its ability to tap into pools of capital needed for the revitalization of its crippled economy

- The Kyiv School of Economics and McFaul-Yermak Working Group under former US Ambassador to Russia Mike McFaul have led the way in proposing additional sanctions measures across individual sanctions, energy sanctions and financial sanctions. Looking ahead, there is no path out of economic oblivion for Russia as long as the allied countries remain unified in maintaining and increasing sanctions pressure against Russia

- Defeatist headlines arguing that Russia's economy has bounced back are simply not factual - the facts are that, by any metric and on any level, the Russian economy is reeling, and now is not the time to step on the brakes