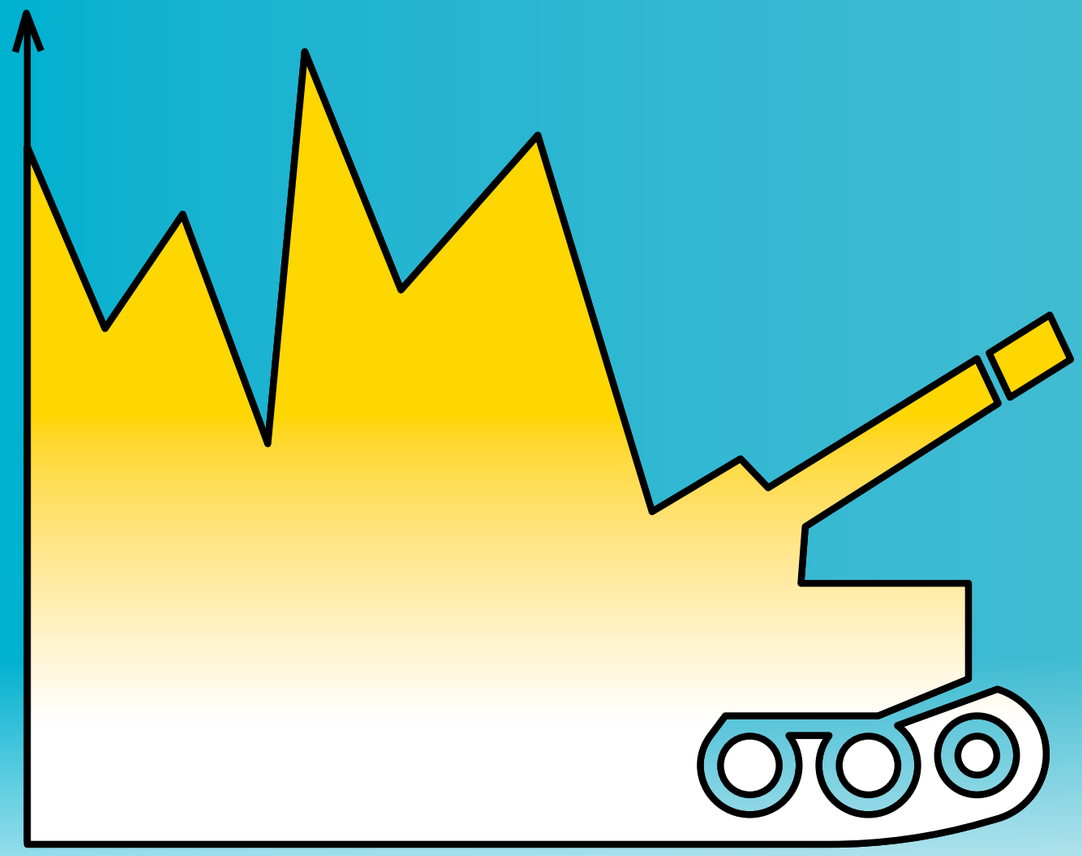

Facing Russia's War Economy

Alvin Bürck

Alvin Karl Bürck is pursuing a MSc. in International Political Economy at the London School of Economics after graduating with a BA in Political Science from the University of Konstanz.

Since Russia's invasion of Ukraine on 24 February 2022, public discourse has been full of speculations. While some proved to be right, and others proved to be wrong, they often shared the commonality of being strongly influenced by wishful thinking or current short-term developments on the battlefield. The initial belief that Ukraine would fall in a handful of days gave way to stark optimism after successful reconquests by the Ukrainian military in October 2022. Concerning Russia's economy, many economists predicted an unbearable decline after the introduction of sanctions.

However, Ukraine's counter-offensive in 2023 and the net effect of Western sanctions arguably fell short of expectations. Over two years, politicians and the public confront a bitter realisation: The war in Ukraine does not appear to be ending anytime soon. While Ukraine remains resilient, even optimists deem major territorial gains on the battlefield unlikely. And Russia, though having achieved only small advances at high costs, shows no sign of fatigue so far. Most interestingly, its economy seems to defy all sanctions and predictions of collapse whilst adapting to the new priority: war-making. Particularly concerning is that Russia allocates 6% of its GDP towards its military-industrial complex (Bloomberg, 2023). Meanwhile, the West seems to act irresolute. Against this backdrop, it becomes clear that for the future of Russia's invasion of Ukraine, one important factor is how well its war economy is doing. Hence, this article aims to answer the questions: What is the state and prospect of Russia's war economy? What can the West do to face it?

The first section of this article introduces the necessary historical and theoretical background. It defines what a war economy is and explains the historical "guns versus butter" debate, which relates to the role of defence spending for economies. Thereafter, it employs economic growth theory and a political cycle to discuss determinants of growth and productivity and how they relate to the Russian war economy. The second section evaluates the power and limits of Russia's war economy by referring to the introduced background and looking at economic data and trends. The third section assesses the actions of Western states, explaining why sanctions failed and what they should do in the future.

The article shows that the Russian war economy is resilient. Predicting its durability and future course is difficult, as will be explained. However, there is no reason to assume that it will collapse soon. Combined with the fact that Western sanctions have not had the desired effect and that the war is here to stay, I argue that Western countries have no alternative but to increase their military capacities in order to confront and deter Russia's aggression.

1. Historical Background: What Characterises a War Economy?

Broadly speaking, a war economy is a national economy that is primarily oriented towards the allocation of resources for military purposes. Government spending and policies related to the private sector incentivise or even force the redirection of labour, capital, and technological goods towards the military-industrial complex. This typically comes at the expense of investment into other sectors, such as education, healthcare, infrastructure, or social security. Conceptually, a war economy must not be engaged in active conflict but can also relate to a heavily militarised economy (e.g. North Korea), which is

focused on maintaining a high state of military readiness during peaceful times.

Historically, defence spending played an important role in shaping national economies and, as some argued, even in the process of state formation itself. Political scientist Charles Tilly prominently stated that "war made the state and the state made war" (Tilly, 1975, p.42). Warmakers needed access to economic resources, creating the need for taxes and bureaucracy, which led to a permanent effect on the size of the state. The fiscal system is innately linked to the need to raise resources for wars.

Particularly during conflict, countries increase their military spending to match war demands, which in turn causes profound changes in their overall economic structure. Perhaps this became most apparent during World War II, as belligerents invested unprecedented amounts to sustain their war efforts. At the height of the war in 1943, military spending represented 47 per cent of the United States' GDP, 57 per cent of the United Kingdom's GDP, and 76 per cent of both the Soviet Union's and Germany's GDP (Harrison, 1988). These figures seem unreal in light of the discussions about NATO's 2% guideline. After World War II the ensuing arms race of the Cold War meant that defence spending continued to play a crucial role. Both superpowers (the United States and the Soviet Union) engaged in a race towards technological superiority and nuclear weapons, which had major consequences. The economic strain of sustaining such high levels of military spending was noted as contributing to the collapse of teh Soviet Union (Sakwa, 2013). Defence spending significantly fell after the Cold War ended in 1991, amounting to between one-third and one-half of previous levels. The economic benefits of decreased military spending were infamously termed the "peace dividend".

The economic dilemma faced by nations when deciding on the allocation of their resources is historically called the "guns versus butter" debate. It illustrates a trade-off: Nations must provide both security, for which they need military spending (guns), as well as civilian goods (butter) like education, healthcare, and infrastructure. Although the detrimental effects of military spending on civilian goods are empirically disputed (Carter et al., 2020), the analogy has influenced the public debate. Finding an optimal balance is often the subject of budget negotiations and electoral campaigns. But how do economists view the guns versus butter debate, and what problems could war economies face with military spending?

2. Theoretical Context: What Determines Economic Growth and Productivity?

Economists and political scientists introduced models that help to comprehend dynamics and relationships regarding war economies. For one, the Solow-Swan model reflects on determinants of economic growth and productivity in general. For another, political scientist Heidi Peltier introduces a cycle concerning military spending, industrial power, and economic dependence. Let us examine the economic side of the equation first before turning towards potential political implications.

Gross Domestic Product in Constant Prices: Gross domestic product (GDP) is the market value of all final goods and services produced within a country in a given period of time. Measuring GDP in constant prices (real GDP) involves adjustment to account for changes in price levels, thereby allowing for the comparison of economic output without distortions caused by inflation.

To gain a better understanding of both the status quo and prospects of the Russian economy, as well as the possible consequences of increased military spending, we should take a step back and think about the general determinants of economic growth and productivity. Economists put forward several models, the arguably most common and widespread of which is the Solow-Swan model (Solow, 1956) of economic growth. Since its publication, it has been extensively discussed, expanded to include more factors, and continuously adapted to new developments. Despite this increase in complexity, its basic reasoning is rather simple and can be illustrated with the help of Figure 1.

Every national economy produces goods and services. Their combined value reflects a nation's gross domestic product (GDP). The higher a nation's GDP is, the wealthier its economy is and the more resources the state has. Figure 1 illustrates this by the level of y on the y-axis. GDP, in turn, depends on multiple production factors, such as labour (total workforce of a country) or the available production technology. However, one critical factor is the amount of capital, which is denoted by k on the x-axis. Economists define capital as equipment and facilities that can produce goods and services (Mankiw & Taylor, 2023). Two principles apply now: First, the more capital a nation has, the higher its GDP, which is illustrated by the function f(k) and the corresponding green line. For every capital stock on the x-axis, there is a level of GDP on the y-axis. Second, capital has diminishing marginal utility. This means that each additional unit of capital comes with a slightly smaller benefit than the previous unit. Why? Imagine moving from an old machine to an average machine. This usually brings a high increase in productivity for modest costs. Thereafter, upgrading to the best machine again boosts productivity, but the increase is comparatively smaller than for the previous step, while costs are relatively higher.

Next, economists separate GDP into different components since produced goods and services differ. One central distinction is made between consumption goods and investment (or capital) goods. The latter broadly denote goods that can be used as productive inputs themselves, thus adding to the capital stock of a nation's economy and enhancing its future productivity. This includes both physical infrastructure (buildings, roads, etc.) as well as production equipment (machinery, software, etc.). The former, consumption goods, correspond to all other goods and services that do not serve this purpose. Notably, the term is defined broadly, including not only short-term consumables (food, clothing, etc.) but also long-term durables (cars, furniture, etc.). Building on that, the share of a nation's GDP being used to produce investment goods is called its investment rate. The investment rate is illustrated in Figure 1 with the function sf(k) (black line). This is simply a nation's GDP function f(k) multiplied by its investment rate s. Notably, the difference between f(k) and sf(k), i.e. the area between the lines, equals a nation's consumption rate. Basically, every nation must decide how much of its scarce resources it allocates towards consumption or investment respectively. Finally, the depreciation rate k (red line) in Figure 1 signifies how much of the capital stock is being used up or breaks down every year and needs to

be replaced. After all, no machine runs indefinitely, and every factory eventually requires renovation. Logically, the higher the capital stock of an economy is, the more capital depreciates every year, which is why k continuously increases.

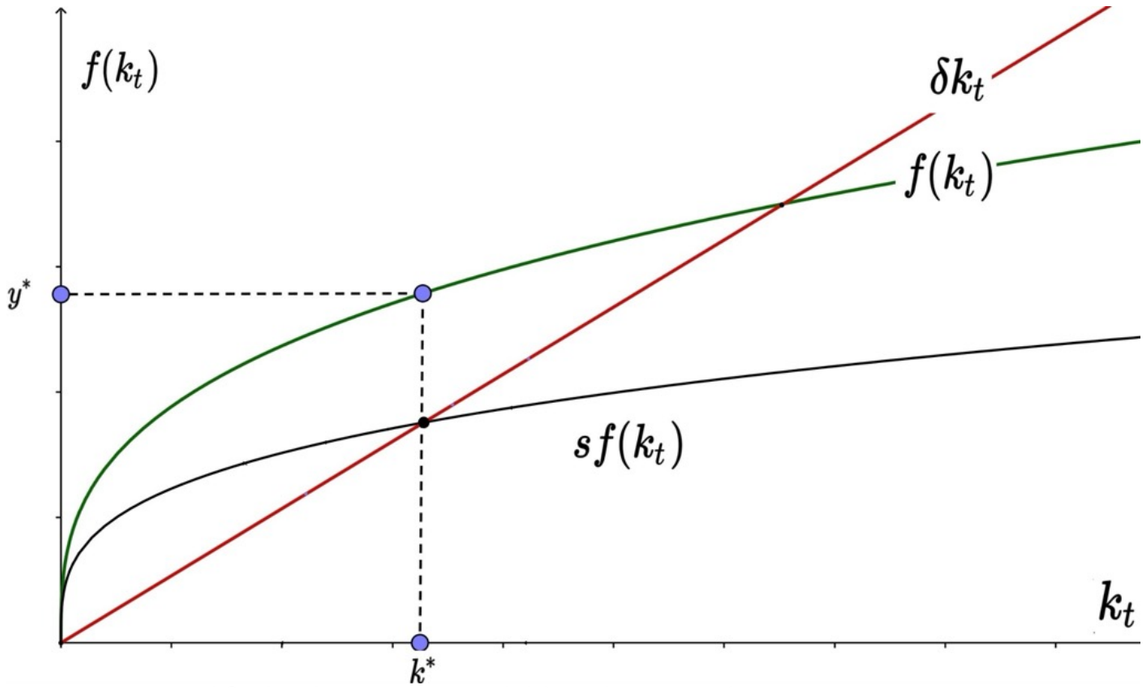

Figure 1: Simplified Solow-Swan Model (JonskiC, 2017)

Bringing everything together, what does this model tell us about the conditions and prospects of economic growth and productivity? Essentially, every national economy tends to move towards an equilibrium, which in Figure 1 is characterised by some capital stock k* and some level of productivity y* = f(k*) resulting from that. Importantly, the location of this equilibrium is not random but rests at where the investment rate and depreciation rate intersect. Why? When a country invests more in its capital stock than it depreciates, i.e. if for some level of k, the black line lies over the red line, the capital stock grows, and GDP increases. However, the grown capital stock leads to a higher depreciation rate. The dynamic comes to a halt at equilibrium. Importantly, the same goes the other way. When a country invests less in its capital stock than it depreciates, i.e. if, for some level of k, the black line is under the red line, the capital stock shrinks, and GDP decreases. This happens as not all depreciated capital is being replaced, and in consequence, less capital is available to produce goods and services.

Now to the main implication: Countries can influence the state of their economy and GDP with their investment rate. When a nation invests more of its GDP, the function sf(k) rises and moves closer to the GDP function f(k). Its capital stock grows until it corresponds to the depreciation rate. The new equilibrium is further to the right of the previous one: The nation has a higher capital stock and, hence, a higher GDP but "pays" by having fewer resources available for consumption. As mentioned above, the dynamic applies to the other direction, which possibly reflects the problem of Russia's war economy.

If a country like Russia uses more of its scarce resources to build weapons and ammunition, it has less of its resources at its disposal for investment goods such as roads, equipment, or factories. Even though it may sound counterintuitive at first, tanks and warplanes are, in that logic, consumption goods. One cannot produce further goods and services with (at least most types of) military equipment. This might lead to different temporal consequences. In the short run, one may witness a booming economy and rising output. However, in the long run, the capital stock shrinks as capital depreciates. Therefore, the years ahead might be more challenging. In the future, it will be difficult for Russia to sustain military consumption while maintaining its capital stock. Either Russia compromises on some of its capital stock or increases its external debt by borrowing from abroad. Both options would prove detrimental to its prospects for economic growth and prosperity.

Beyond this economic perspective, there are political dynamics that could cement the mentioned consequences, as political scientist Heidi Peltier analyses. For Brown University's Costs of War project, Peltier (2023) assesses the implications of increased military spending and puts forward a cycle related to the policy process surrounding it. She postulates that increased defence spending and the resulting profits of military contractors over time lead to the military-industrial complex amassing power, which it uses to further entrench its position in the political system while framing military spending as being too important to cut. Consequently, military spending increases more and more. Peltier contends that the strong share of U.S. military spending skewed the economy and government priorities, weakening vital sectors like infrastructure, healthcare, and education whilst perpetuating high defence budgets. This dynamic can be expected to unfold (at least to some degree) in an even more corrupt Russia.

3. Can We Predict the Prospect of Russia's War Economy?

Predicting the prospective development of Russia's war economy against this background is challenging. There are three main reasons why: First, economies and their surrounding dynamics are incredibly complex, which is why economists regularly disagree about which models apply. The quality of models is assessed by how accurately they predict reality or the future. By this measure, economists performed poorly, given that nearly every prediction at the onset of the war (even those by the Central Bank of Russia in 2022) considerably underestimated the resilience of Russia's war economy. Second, the performance of models depends on the quality and validity of available data. However, Russia is a highly authoritarian state. This permits serious doubt about the figures published by their government statisticians and economists. Thirdly, the future of Russia's economy hinges on factors that are barely predictable. How will energy prices develop in the future? How many dual-use goods will China export in the coming years? Forecasts about the long term are very susceptible to fluctuations in such factors.

4.The Power and Status Quo of Russia's War Economy

Therefore, let us first look at the present state of the Russian economy. Doing so reveals that it is faring surprisingly well, as current data from the International Monetary Fund (IMF,

2024) shows. In the first year of the war, Russia's GDP at constant prices diminished by 1.2 per cent from 135.8tn ₽ in 2021 to 134.1tn ₽ in 2022, as Figure 2 shows. However, in 2023, it rose again by 3.6 per cent to 139tn ₽, exceeding pre-war levels. For the next years (2025 to 2029), the IMF estimates growth rates of around 1.5 per cent. Beyond this primary economic indicator, a similar picture can be observed. Russia's total investment in per cent of GDP increased from 22.7% prior to the war to 26.8% in 2023 and is currently predicted to steady around 24% in the near future. The general government gross debt in per cent of GDP is projected to rise from 18.5% in 2022 to nearly 24% in 2029, whereas Russia's structural deficit in per cent of GDP is expected to level off from -1.26% in 2022 up until 2029. Regarding foreign trade, Russia's imports have corrected upwards by 16% in 2023 after a plunge of 14.6% in 2022. And although its exports were hit harder, dropping by 8.4% in 2022 and 15.6% in 2023, they are forecast to grow by an average of 5% annually between the years 2025 and 2029. Looking at the concerns of the average Russian citizen shows that inflation for consumer prices, while remaining manifest, slowed from 13.8% in 2022 to 5.9% in 2023 and is expected to stabilise around 4% over the following years. And all this while the unemployment rate of 3.94% in 2022 is estimated to settle at 3.5% in the near future.

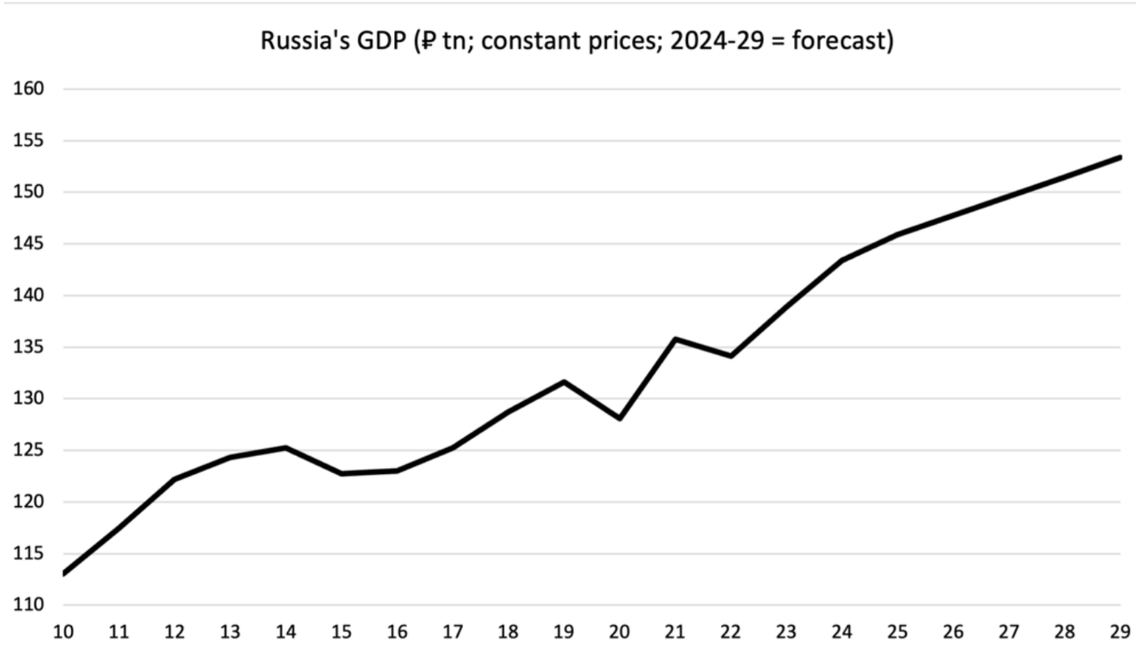

Figure 2: Development of Russia's GDP (own work based on IMF (2024) data)

Now, what to make out of these statistics? Although individual economic indicators should be treated with caution, and aforementioned predictions are surrounded by uncertainty, they do paint a clear picture. Growth rates may be below average when compared to Western countries, and inflation might persist, but Russia's economy appears to be in solid shape and shows no signs of slowing down. Could the figures be better? Surely. Do they portray an economy at rock bottom? Not really.

Several reasons are able to explain why the Russian economy is outperforming expectations. Dabrowski (2023) points out the role of Russia's monetary and fiscal policies, which were conservative before its invasion and managed to respond well to the new situation after the invasion. For instance, to counter a massive capital outflow, Russia's Central Bank implemented transaction restrictions and elevated interest rates to 20 per cent (Inozemtsev, 2022). These measures stabilised Russia's currency. In addition to that, high global energy prices played a relevant role (Dabrowski, 2023). While the price of a barrel of crude oil plunged below $20 in 2020, it soared to over $100 for multiple months in 2022 (Financial Times, 2024). Finally, as elaborated below, sanctions against Russia largely underperformed.

> Looking at economic data, (…) Russia's war economy outperformed expectations, seems to be resilient, and shows no signs of slowing down.

5.The Limits and Challenges of Russia's War Economy

Nevertheless, in spite of the difficulty of predicting the future course of Russia's war economy, and though divinations of downfall have not materialised, there are challenges that Russia likely faces in the short and in the long run. First, energy prices fluctuate. Although Russia has long benefited from high energy prices, they could plummet again at any time. This would hit the Russian economy, which depends on high energy prices. Second, Russia is experiencing a serious "brain drain", which describes the economic cost of an unparalleled human capital flight. Since February 2022, reportedly up to one million Russians have left the country (Al Jazeera, 2024), though it is difficult to provide exact figures. Strikingly, in the five days after President Putin declared a partial mobilisation decree on 21 September 2022, over 261.000 men allegedly left the country (Novaya Gazeta, 2022). The situation in academia is similar. Since the war began, 2.500 scientists have left Russia (Novaya Gazeta, 2024) due to international isolation, oppression of academic freedom, and challenges with organising capital-intensive scientific equipment. As Russian physicist Vladimir Marakhonov puts it: "The trouble is that it is primarily smart people who leave." (The Barents Observer, 2024, para. 9). Past skilled workers, there are hundreds of thousands of men who were mobilised to fight in Ukraine (Reuters, 2023). Last but not least, there are estimates of nearly 500.000 Russians being killed or wounded in the war (UK Defence Journal, 2024). Taken together, the IMF (2024) projects the Russian population to shrink from 146.7m in 2022 to only 142.9m in 2024, which places a considerable burden on the Russian labour market and its prospects.

Thirdly, aggregate economic figures might look better than they actually are since they often fail to reflect the underlying variation. Yes, Russia's GDP and its investment rate ap-

pear to be unchanged. However, according to economist Sergey Guriev (2024), Russia's economy has been divided into two parallel sectors recently. The military sector, driven by government spending, has experienced growth. In contrast, the civilian sector suffers from human capital flight, robust inflation, and high credit rates. Overall figures mask the 10% collapse in civilian production, which will likely have a detrimental impact on Russia's capital stock and conditions for long-term growth.

Finally, there are costs and a dilemma that are related to the war itself and its consequences. As of June 2024, Russia is clinging to the territories it has illegally conquered and annexed. There is no foreseeable military or political way to force Putin to relinquish them. Assuming that Russia desires to hold on to these territories in the future, it will have to rebuild them. This will be hugely expensive. In its Rapid Damage and Needs Assessment (2023) report, a group around the World Bank estimates that reconstructing Ukraine would cost $486bn over the next decade, a large part of which corresponds to Russian-occupied territories. Mariupol alone experienced $14bn in damage (Kyiv Independent, 2022). Renaud Foucart (2024, para. 16), economist at Lancaster University, argues that the "cost of rebuilding and maintaining security in a conquered Ukraine would be too great". Russia faces a notable dilemma: Its economy depends on the war since a large portion of its GDP hinges on defence spending. Stopping the invasion would negatively impact its economy, at least in the short run. On the other hand, Russia cannot afford the costs of reconstructing occupied territories and is lagging behind its growth potential due to an ongoing brain drain, Western sanctions, and a capital stock that is likely to depreciate.

6.The West's Economic Strategy in Facing Russia

Against this backdrop, Western states have pursued two strategies to face and inhibit Russia: Sanctions and armament. With the former, they tried to cripple Russia's $2.2trn economy and aimed to restrict its ability to produce military equipment. By striving for the latter, they want to come to an equal footing in the defence industry. Let us examine both paths, starting with the former.

Starting on the first day of Russia's invasion, Western countries introduced an unprecedented battery of sanctions on Russia (S&P Global, 2024), thereby turning it into the most sanctioned country since WWII (The Economist, 2022). Sanctioning countries encompass the G7 and the European Union (Castellum.AI, 2024). Remarkably, these countries boast over 20 times the GDP of Russia: Over $50trn versus $2.2trn (IMF, 2024). Sanctions consist of trade embargoes and financial measures. The former banned or limited exports to and imports from Russia. The latter targeted individual persons (such as oligarchs or politicians), banks, and companies by freezing their assets and restricting their actions. At present, respective blacklists amassed over 20.000 targets (Castellum.AI, 2024) and are frequently updated to prevent circumvention, which also explains why new sanctions are constantly being issued. Prominently, $325bn worth of assets from the Russian Central Bank remain frozen to date (BBC, 2024).

Western sanctions are focused on multiple strategic objectives (European Commission, 2024). Most importantly, they strive to diminish Russia's productive and financial capacities, thus limiting its ability to produce (sophisticated) military equipment and fund Russia's warfare. Ursula von der Leyen (2023, para. 6), President of the European Commission, declared: "Our sanctions are eroding sharply its economic base, slashing any prospect to modernise it."

Over two years after Western sanctions began, it seems reasonable to question their success. Providing a definitive answer is challenging since it hinges on the yardstick employed to measure "success". Have sanctions diminished Russia's productive capacities? Yes. According to calculations by the US Treasury in 2023, the Russian economy is estimated to be 5% smaller than it would be without Western sanctions. At the same time, however, sanctions have underperformed several expectations.

While the International Monetary Fund expected a reduction of 10% between 2021 and 2023 at the beginning of the war, the Russian economy actually grew slightly over that period. Although Western countries tried to block Russia from its technological goods, it e.g. imported more than $1bn worth of semiconductors designed in the West in 2023 (Bloomberg, 2024). One principal reason stands out: Over 120 countries that represent almost 40% of the world's GDP did not join the West's sanctions regime (The Economist, 2024). India and China buy record amounts of Russian energy, thus thwarting import bans, while Central Asian nations sell technological goods to Russia, thereby obstructing export restrictions. In addition, financial sanctions are less constraining in a world relying ever less on the US dollar and offering ever more alternatives (JPMorgan Chase, 2023). Moving towards multipolarity, the West's economic power is increasingly limited. Western countries should recognise those limitations. Pushing sanctions further, e.g. through secondary sanctions (Dow Jones, 2024), is a dangerous gamble. They would necessarily affect those fence-sitting countries that the West is trying to win over, which entails the risk of further isolation from the West.

7.A Bitter Realisation: There Is No Alternative to Armament

Let us bring the various insights together. As we have seen, the Russian war economy appears to be in solid shape and shows no signs of slowing down soon. Yes, there are problems that the Russian economy will likely encounter in the future, particularly an ongoing human capital flight and a depreciating capital stock. Nevertheless, it is uncertain whether and to what extent these problems will materialise. In addition to that, Western sanctions have severely underperformed expectations. With this in mind, Western nations should not rely on wishful thinking or luck but rather take action to confront Russia.

If it was not evident before, it is now at the latest: Sanctions cannot substitute for armament. For European security, there is no alternative to a considerable expansion of their military capabilities. Russia ramped up its military-industrial complex, investing over 6% of its GDP (up from 2.7% in 2021) and 40% of its government budget into its war-making efforts (Bloomberg, 2023). Meanwhile, the war in Ukraine is raging on. The fact that a record 23 NATO members reach their 2% target is a good start (AP News, 2024), but it is likely to be too little. Particularly given that Western promises of armament supplies, such as the delivery of one million artillery shells, often appear too late (Euractiv, 2024). The West must do more, and especially Europeans must strive for leadership .

8.Conclusion: Resilience, Uncertainty, and the Need for Armament

Two years after Russia launched its invasion of Ukraine, we can confidently say that two major predictions made in the early days of the war turned out wrong. On the one hand, Ukraine and its military are much stronger and more resilient than expected. On the other hand, the same can be said about Russia's economy, which appears to defy all calls for its demise in a surprisingly resilient way. Consequentially, politicians and the public gradually realised that the war in Ukraine would not end soon.

The future of Russia's invasion considerably depends on the performance of its war economy, which currently allocates over 6% of its GDP on its military (Bloomberg, 2023). The present article thus examined: What is the state and prospect of Russia's war economy? What can the West do to face it?

Looking at economic data, the article demonstrated that Russia's war economy outperformed expectations, seems to be resilient, and shows no signs of slowing down. Instead of a predicted 10% slump, the Russian economy has slightly grown its GDP since February 2022. Moreover, it remains difficult to predict its prospects. Past forecasts by economic models proved to be false, economic data from Russia's authoritarian government must be taken cautiously, and there are several critical factors (e.g. global energy prices) whose development is impossible to anticipate.

Despite its relatively good performance, there are several areas that could cause problems for the Russian economy in the future. First, falling energy prices could cause budget deficits for a country that heavily relies on hydrocarbon exports. Second, an unparalleled human capital flight and casualties on the battlefield already put pressure on the labour market. Third, aggregate economic figures mask differential trends within the Russian economy. While the military industry booms, the civilian industry contracted by over 10%, which could eventually depreciate Russia's capital stock. Finally, the most difficult might be the dilemma of Russia's war economy. For one, its huge military production depends on the war and contributes a great deal to national GDP. But for another, Russia cannot afford the exorbitant costs of reconstructing the territories it illegally occupied.

The West's reaction to the Russian invasion involved two strategies: Sanctions and armament. Two years later, it becomes clear that sanctions largely fall below expectations and do not have the desired effects. That does not imply that they are wrong. However, in times of growing multipolarity, they are limited. Western countries must recognise that. For the future of Ukraine and European security, there seems to be no alternative to armament. Yet, efforts to date are often too little, too late.

Given uncertainty regarding the commitments of the United States towards defending Europe and intensified Russian military spending, Europeans in particular are required to step up and do more. General Vigilant's article for EPIS Magazine explains how they can do this within NATO.

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