EU-Russia Energy Relations and Sanctions

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Abstract

This thesis asks the question whether dependence on fossil fuels from Russia for domestic energy supply influenced the support for sanctions against Russia of EU member states following the Russian annexation of Crimea and activities in eastern Ukraine in 2014. Support for sanctions is measured using data from previous research by Silva II and Selden (2020). Using multiple regression analysis, several other explanatory factors are accounted for, including expected trade change, FDI stock and former membership of the Eastern Bloc.

A small, significant, positive relation between fossil fuel dependence and support for sanctions is found. This leads to three main conclusions: First, energy dependence does not seem to negatively influence the support for sanctions against Russia by EU member states. Second, the analysis suggest a positive relation between these variables might exist. Third, the other explanatory factors accounted for each have no significant influence on support for sanctions. In this time when the EU-Russia energy relations are being reconsidered, this sheds an important light on the debate on energy security and interdependence theory in EU-Russia context.

Introduction

"We have known for years that energy plays a disproportionate role in EU-Russia relations and that Russia has used energy as a political weapon. We are now fully mobilised to cut our excessive dependence on Russia energy imports." (European External Action Service [EEAS], 2022, p.4)

The quote above, as part of the foreword of the High Representative of the Union for Foreign Affairs and Security Policy (HR) Joseph Borrell in the EEAS' latest Strategic Compass, expresses clear concerns about the dependent character of EU-Russia energy relations. This concern is not only expressed in words, but in actions as well, as the European Commission (EC) proposes to ban imports of Russian coal and oil products within one year (EC, 2022a). Understandable as these concerns might be considering the recent return of interstate war to the continent of Europe, they contrast with the reality of EU-Russia energy relations in the last few decades. As a matter of fact, the dependence on Russian energy supply has its roots in the Cold War era (Högselius, 2012) and has over the years been an example of EU-Russian cooperation and institutional hybridisation (Abbas & Locatelli, 2020). However, when in 2014 Russia annexed Crimea and later also supported a separatist movement in Donbass, the EU strongly condemned this action and instituted sanctions in coordination with allies like the US and Canada (The White House, 2014; CBC, 2014). Within the EU, this decision was not uncontroversial among its member states, who all had, and still have, a varying degree of dependence on Russian fossil fuel imports for their energy supply; in fact, fossil fuel imports from Russia actually increased after 2014 (Petkova, 2022).This leaves one to wonder: did dependence on Russian fossil fuels influence the support of EU member states for sanctions against Russia? In order to find a satisfactory answer to this question, this thesis will use a linear regression model to test the relationship between support for sanctions and fossil fuel dependence, as well as test for other variables that might have influenced a member state's position towards sanctioning Russia, including (but not limited to) FDI, trade change, and historic relations towards Russia. As EU sanctions against Russia have since only expanded as a result of the war in Ukraine, and the EC is now actively making policy to reduce energy dependence on Russia, the relevance of these questions for both societal and academic purposes is obvious.

This thesis is structured as follows; first, literature related to the two main topics, energy interdependence and sanctions, will be explored. Thereafter, the theoretical background will

be described using two perspectives rooted in Liberal and Realist theory, leading to two rival hypotheses. This is followed by a section that works out the design of the analysis, including its flaws, and reports the statistical results, which will be explained and its implications discussed. Finally, the conclusion succinctly recapitulates the theoretical framework and provides an answer to the research question, before hinting at its possible implications for the world we now live in, including but not limited to the war in Ukraine and the European dependence on Russian gas and oil.

Energy and interdependence: rival views

There exists a vast literature on energy security and interdependence, and the case of Europe vis à vis Russia is one of the most prominently studied, though certainly not the only one (see e.g. Chung, Kim, Moon, Lim & Yun, 2017, on South Korea; Eberling, 2014, on India, China and Japan; Duffield, 2015, on the US, Europe and Japan; Lima et al., 2015, on Brazil). Overall, two traditional theoretical approaches towards energy dependence are identified in literature, with a third one having been added more recently (Dannreuther, 2016; Kuzemko, Keating & Goldthau, 2018; Siddi, 2017).

The first of these approaches is defined as "geopolitical realism" (Siddi, 2017), though it is also known as a form of mercantilism from an International Political Economic (IPE) perspective (Kuzemko, Keating & Goldthau, 2018). Klare (2008) forms an example of this school of thought. Klare (2008) divides the world into energy-deficit and energy-surplus nations. Energy-deficit nations will attempt to secure their own supply of power, be it through military, diplomatic or economic means, while energy-surplus nations will attempt to control as much of their energy producing sector as they can through a process known as resource nationalism. Klare (2008) goes on to argue that in the past decades, the rising economic powers of India, China and Brazil have caused the demand for energy to rise, as these nations, as well as the already established economic powers like western Europe, Japan and the US, need to import most of their energy supply. This leads to a higher pressure on the worldwide energy supply, and as a reaction, energy-surplus nations like Russia and the Gulf countries increasingly nationalise their energy sectors, both to protect them from foreign influence and to use energy supply as an instrument of power in the international system. Klare (2008) provides various examples and cases to support this argument: for example, the shift in the energy sector from private, western companies (Like BP, American Chevron and Exxon Mobil, Total of France and Royal Dutch Shell) controlling most of the worldwide oil

reserves, to national oil companies (NOC's) like Saudi Aramco, Iraq National Oil and National Iranian Oil (Klare, 2008, pp. 17-19). Correlje & van der Linde (2006) apply this to Europe, and thus argue that energy security should become a crucial part of EU policy, with energy independence as security goal. Downs (2004) makes a similar argument, applied to China. Lilliestam & Ellenbeck (2011) form an example on how the geopolitical realist approach can also be applied to non-fossil energy forms, like solar power of hydroelectric dams.

This approach has gained considerable attention, both in the media and by politicians (Siddi, 2017), but it is hardly the full story. The criticism varies widely; for example, the assumption that worldwide energy supply cannot meet demand in the future made by Klare (2008) is highly controversial: see e.g. Delucchi and Jacobson (2012, 2013), Trainer (2012, 2013) and Jacobson, Delucchi, Cameron and Mathiesen (2018), who discuss whether renewable (green) energy sources could completely fill demand. Further in the future, nuclear fusion reactors may produce a practically infinite supply of energy in a sustainable way worldwide (Liu, 2010; Wackerle, 2014).

This is however not the only criticism received by the geopolitical realist approach. One of the most prominent categories of this criticism comes from the liberal approach, where energy dependence is not considered a simple, zero-sum game, but a complex structure, in which institutions matter and both sides can profit from trade (Siddi, 2017). Within this liberal framework, energy is considered a commodity rather than a strategic good, and thus, trade in this commodity can increase the gains for both the exporting and importing nations (Kuzemko, Keating & Goldthau, 2018). Within this liberal approach, there are various avenues of critique. Stegen (2011) contests the usage of energy as a weapon, arguing that Russia has failed to use their energy dominance to modify the behaviour of states, analysing cases of Poland, Georgia, the Baltics and Ukraine. Judge, Maltby and Sharples (2016) specifically highlight three often overlooked aspects of the EU-Russia energy relationship which might cause this: technical, commercial, and institutional aspects.

The technical critique is undercutting the assumption of perfect competition that the realist approach is based on. For example, the Russian "pivot east" is regarded as an attempt of securitisation of the Russian economy to be less reliant on trade with Europe (Connolly, 2018, p. 75). However, Sharples (2016) points out that there has been very limited progress on

integrating the eastern energy markets with Russian supply, and that competition between the EU and China on natural gas from Russia is therefore unlikely in the near future. Dannreuther (2016) then uses this technical argument to argue that path-dependency, the connected history of the EU-Russia energy relation, with choices made in the past to develop infrastructure heavily focussed on deliverance to the EU, has been a main driver in EU-Russia energy relations and will continue to be so in the future.

The commercial critique, on the other hand, tends to give more attention to the Russian gains of their large energy exports. This traces back to the origin of the energy trade during the 1970s and 1980s: Russia, having huge reserves in natural gas but not the technology to reliably export this, had a strong economic interest to cooperate with Europe, which could deliver the technology and pay for it in foreign currency. This economic interest eventually trumped the highly distrustful political environment of the cold war (Dannreuther, 2016, p. 916). Up to this day, this is still to some extent true: the Russian system of IPE is characterised by competitive exporting sectors (like energy, but also mining and to some extent agriculture), whose income is distributed to uncompetitive sectors. This redistribution is only possible through the high integration of the state with the economy (Connolly, 2018). The energy sector is a prime example of this practise, as pointed out by Gaddy and Ickens (2005). As a consequence, the dependence on energy trade works both ways: Europe might be dependent on Russian energy imports, but Russia is just as dependent on the revenue of these imports, creating a relation of interdependence (Sharples, 2016). The strong correlation between global oil prices and economic growth in Russia further confirms this interdependent relationship (Tuzova & Qayum, 2016).

The institutional critique tends to centre around the way two very different economic systems – the open market economy of the EU and the heavily state-influenced economy of Russia – have cooperated in the energy sector, which is also referred to as “energy governance” (Kuzemko, Keating & Goldthau, 2018, p. 4). For example, the “new interdependence approach” in IPE tends to pay more attention to institutional rule overlap between states and how opportunity structures and asymmetric power shape these rules (Farrell & Newman, 2016). A similar approach is applied by Abbas and Locatelli (2020), explaining how the Russian and European energy sectors have created a hybrid institutional model between the European free-market and the Russian government-led institutional framework, as Russian

state companies need to adapt themselves to EU regulations, thus creating a form of rule overlap between two entirely different systems.

More recently, more constructivism-based avenues of critique have spawned as well; Kuzemko (2014) stresses the importance of varying ideas about energy security within EU-institutions, and Haukkala (2015) argues that the initial treatment of Russia by the EU shortly after the fall of the Soviet Union was largely asymmetric and EU-centred. Finally, Casier (2016a, 2016b) applies a framework of Political Psychology to EU-Russia energy relations and thus diverts attention to the effects of psychological distance of policymakers and biases, where on both sides the "other" was gradually becoming more and more of a competitor rather than a partner. These approaches can help us not to forget the role of ideas and individuals (like Vladimir Putin, who has led Russia throughout the period studied here) which can provide some illustration or nuance to a quantitative analysis like this one.

The meaning of sanctions

Before further analysing the implications of existing theory on the research question at hand, it is useful to briefly discuss the context of the EU sanctions against Russia, to help us analyse how these sanctions fit into the theoretical framework of energy dependence, since energy itself was never a part of either EU sanctions or Russian countersanctions during the studied period.

Giumelli (2011, pp. 34-35) identifies three categories of goals for states to sanction. First, there is coercion, where a set of restrictive measures aims to make the target country do something it would not otherwise do. The second type is constraint, where the sanctions aim to prevent a state from making an action by increasing the cost of said action. The main difference with coercive sanctions is that the goal is not to change the target country's behaviour, but rather to increase the difficulty of political survival more generally. Lastly, there are signalling sanctions. These are designed to send a message to either the target country or the international community in general; the sanctions impose no material costs on the target, and can have many goals, including (but not limited to) behavioural change.

Connolly (2018, pp. 57-60) identifies five aims of the sanctions placed on Russia by western countries: expressing disapproval of Russia's actions and thus diplomatically supporting Ukraine, affirming western commitment to the geopolitical status quo, demonstrating western unity, inflicting economic harm and deterring Russia from expanding involvement in Ukraine or any other country. Empirically, this shows us that multiple goals can be translated into

sanctions at once. Combining Connolly (2018) with Giumeli (2011), signalling and coercing were clearly the main goals of the EU sanctions.

Not all member states were as much in favour of these sanctions. Several, like Italy, Bulgaria, Greece and Spain criticised the form, or the very idea of economic sanctions (Portela, Pospieszna, Skrzypczynska & Walentek, 2021, p. 685). Russia tended to exploit this division by attempting to tilt public opinion to their favour (Cross & Karolewski, 2017), of which the Russian decision to support Italy in the early days of the covid-19 pandemic may have been an example (Osborn, 2020).

When it comes to the effects of the sanctions, one should realise that Russia has historically mainly been economically focussed on western Europe as its main trading partner and source of capital (Connolly, 2018, p. 74). This made Russia one of the main trading partners of the EU, though EU-Russia trade has been relatively declining as both parties have sought new trade partners (Priede & Pereira, 2015). The sanctions have still, however, definitely hurt EU economies, while they have hurt the Russian economy more. Though the economic effects are unevenly spread and tend to have a redistributing effect within the EU (Giumeli, 2017), the Russian retaliatory sanctions on agricultural produce only added to the economic damage done to the EU (Dong & Li, 2018). Yet, the persistence of the sanctions despite the economic costs is attributed to hawkish and dovish domestic groups in member states who facilitated room for consensus on the usually highly divided topic of Russia policy (Portela et al., 2021).

Interdependence and sanctions

Having explored some of the many complexities of EU-Russia energy relations, we can establish that the relation is highly interdependent, with the EU being dependent on Russia for its energy, and Russia on the EU for its foreign currency and high-tech imports. When this interdependent relation is used as context for the EU's decision to impose economic sanctions on Russia, the two formerly explored theoretical frameworks of geopolitical realism and liberalism both have different implications. Geopolitical realism considers energy a strategic good, access to which is key to a state's survival (Klare, 2008). Member states that rely heavily on energy imports from Russia should therefore seek to avoid worsening relations with Russia, which would have a negative effect on their energy security. As economic sanctions put this relation under pressure, according to the geopolitical realist argument, member states that are more reliant on Russian imports of fossil fuels for their energy supply would be less supportive of sanctions. This leads to the following hypothesis;

H_1: EU Member states with a high level of energy dependence on Russia will be less supportive of sanctions against Russia.

If H_1 would be affirmed, this would mean that the dependence on Russian fossil fuels did influence the foreign policy of EU member states, essentially confirming the geopolitical realist argument of fossil fuels as a weapon.

The liberal perspective considers fossil fuels not a strategic good but a trade good like any other. Within liberal interdependence theory, it is generally assumed that higher levels of trade reduce the chance of conflict between nations, as it increases the costs of such a conflict (Polachek, Robst & Chang, 1999). Though economic sanctions are certainly less impactful than war, they still have a similar potential effect in terms of economic loss for domestic constituencies resulting from lost trade (Silva II & Selden, 2020, p. 230). Following from this, one would expect the support of sanctions to decrease as economic ties with Russia (which includes, but is not limited to, fossil fuels imports) increase. However, Silva II and Selden (2020) already determined this is not the case for trade generally: in fact, the relation between support for economic sanctions against Russia and economic interdependence (measured as the sum of imports and exports to and from Russia as a proportion of the GDP) turned out to be slightly positive. This would provide some support for the assumption that it is the expectation of possible future military conflict (and consequent trade loss) as an alternative to sanctions that drives a member state's position towards sanctions, as proposed by Drezner (2011) and Copeland (2015). However, as neither Russia nor NATO ever suggested the possibility of actual military conflict during the Ukraine crisis in 2014, one cannot simply assume that the alternative to economic sanctions, in this case, was war. Instead, the alternative to imposing sanctions on Russia would be inaction (Silva II & Selden, 2020, p. 232).

Connecting the earlier mentioned critiques on realist assumptions on energy security, mainly drawing on the technical, institutional and commercial aspects, with the literature on interdependence and sanctions, one could argue that fossil fuel dependence did not matter for the support of sanctions against Russia. This would be in line with the conclusion from Silva II and Selden (2020), confirming that there is no real difference between energy trade and commerce generally. In other words, the technical, institutional and commercial aspects of the EU-Russia energy trade limit its effectiveness for use as a weapon, thus making energy trade more similar to common commerce. As Silva II and Selden (2020) already determined that

higher commercial ties between EU member states and Russia does not lead to lower support for sanctions, one would not expect to identify a relationship when only looking at fossil fuels either. Silva II and Selden (2020) even find a slightly positive relation between interdependence and sanction support, but attribute this remarkable finding to a higher perception of Russian threat in former Soviet-influenced states, who, as a result of closer geographic proximity to Russia, also have relatively more trade. Trade interdependence is not considered to have played a role in determining the member state's position towards sanctions. This assumption would lead to the following, contrary hypothesis;

H_2: Energy dependence on Russia did not influence the EU member states' position towards sanctions.

Still, the results from Silva II and Selden (2020) could be criticised for taking a too limited approach to economic interdependence. Their analysis defines economic interdependence using the dyadic economic interdependence formula (Oneal, Oneal, Maoz & Russett, 1996). However, this only looks at current trade and ignores, among other things, Foreign Direct Investment (FDI) and trade change over time. Also, the influence of geographical proximity to Russia could influence a member state's position towards sanctions (Silva & Selden, 2020). For these reasons, this analysis will also include several control variables to account for these explanations.

Case selection

The case of EU-Russia is particularly interesting to study energy interdependence for several reasons. First of all, the Russian infrastructure for exporting fossil fuels is strictly focussed on export to Europe (Sharples, 2016). This means that there are few alternative buyers of Russian gas and oil, and few alternatives to Russian energy imports in the EU, and thus, interdependence between the EU and Russia is highly mutual. Secondly, the high level of cooperation on the field of energy despite the political tensions that have existed and still exist between (western) Europe and Russia makes Russia-EU energy relations somewhat of a least-likely case for energy interdependence (Abbas & Locatelli, 2020; Siddi, 2017). Thirdly, the internal structure of the EU allows for a rare opportunity in terms of measurement. During the crisis in Ukraine in 2014, the EU was made up of 28 different member states, all with different levels of fossil fuel dependence and support for sanctions. The principal-agent structure of this relationship between member states and the EU in the area of trade (Dür & Elsig, 2011), combined with the more multilateral field of foreign policy and sanctions,

provides the perfect opportunity to aggregate the preferences of individual member states and the national interests these could be based on.

Method and design

In order to test the hypothesises above as well as several control variables, a multivariate regression model will be employed. To numerically measure the support for sanctions among the EU member states and use it as dependent variable, the coded values from Silva II and Selden (2020, pp. 237-238) will be used. This variable describes the support for sanctions of each EU member state on a scale from 0 (no support) to 5 (full support). As most of the sensitive negotiations to impose sanctions on Russia took place at the level of the European Council, and these deliberations are not public, Silva II and Selden (2020) rely on debates from the European Parliament (EP) to code this variable, only using speeches from EP members belonging to parties who were in governments of their home countries in 2014 or the period right before. On these speeches, they perform a content analysis resulting in a numeric variable. Then, all speeches are grouped together by country, resulting in one average support score per member state, as seen in the table below. There are two missing cases for which support could not be measured, namely Denmark and Luxembourg.

Table 1. EU member state's support for sanctions (from Silva II & Selden, 2020, p. 239)

Member state	Support for sanctions
Austria	4,29
Belgium	4,20
Bulgaria	4,50
Croatia	4,09
Cyprus	3,00
Czech Republic	4,00
Estonia	4,44
Finland	3,56
France	4,06
Germany	4,44
Greece	3,50
Hungary	3,58
Ireland	2,00
Italy	3,78

Latvia	4,00
Lithuania	4,67
Malta	4,00
Netherlands	4,40
Poland	4,17
Portugal	4,00
Romania	4,05
Slovakia	4,00
Slovenia	2,00
Spain	4,33
Sweden	4,50
United Kingdom	3,73
Mean (N = 26)	3,90

This variable has its limitations. Though the total number of coded speeches is sufficient (Silva II & Selden, 2020, p. 239), the number of speeches per country on which the support scores are based is sometimes quite low. This does not only apply to the smallest member states (as can be expected due to their lower number of seats in the EP), but also to Slovenia, Sweden and Ireland, whose scores are based on only a single speech. It is possible that the lack of speeches from these member states reflect an attempt to remain silent on a sensitive topic, but there is no way to know this for sure. Furthermore, speeches from a wide time scope have been coded, ranging roughly from February to August 2014. During this time, opinions regarding sanctions might have changed, for example as a result of the downing of flight MH17 in July 2014 (Natorski & Pomorska, 2016). Because all speeches from each country have been grouped together per country, it is not possible to account for these changes over time. If one were to classify the speeches according to the time they were given as well, this would result in an even lower number of speeches for each country, harming the validity of the analysis.

Dependence on fossil fuel imports from Russia has been measured using a reliance indicator (*R*), as calculated by the International Energy Agency (IEA, 2022). It combines the imports of coal, natural gas and oil. These do also include coal products and peat (products) for coal and oil products (like gasoline) for oil. It excludes shale oil and biofuels, and oil usage for maritime and aviation usage.

$$R = \frac{Coal\ imports_{from\ Russia} + Oil\ imports_{from\ Russia} + Natgas\ imports_{from\ Russia}}{Domestic\ fuel\ consumption} * 100$$

For some countries, this indicator is higher than 100, meaning that more fossil fuels are imported by a country than consumed. This might have several reasons: some imports may be stored and not consumed, some may be reexported, and some may be refined and exported, leading to higher imports than domestic consumption (IEA, 2022). The indicator *R* for each member state is shown in the table below.

Table 2. EU member state's fossil fuel reliance indicator *R*

Member state	*R*
Austria	2,1
Belgium	34,1
Bulgaria	50,5
Croatia	19,9
Cyprus	0,2
Czech Republic	23,0
Denmark	21,1
Estonia	13,2
Finland	48,3
France	8,5
Germany	25,0
Greece	43,6
Hungary	55,8
Ireland	0,5
Italy	24,2
Latvia	27,4
Lithuania	133,4
Luxembourg	5,7
Malta	57,9
Netherlands	59,3
Poland	37,4
Portugal	6,3
Romania	12,1
Slovakia	62,0

Slovenia	7,4
Spain	9,5
Sweden	20,8
United Kingdom	10,3
Mean (N = 28)	29,3

Uranium imports from Russia are not included in the indicator, as nuclear energy is generally considered domestic production since the uranium has to undergo several processing steps before being suitable for usage (EC, 2014, p. 5). This is still a shortcoming, as there are still considerable differences within the EU when it comes to the supply of nuclear fuels. In western European countries, reactors tend to be supplied by a wide variety of companies, while most reactors in the former eastern bloc are entirely dependent on uranium supply and related services from the Russian state-owned company TVEL, which poses a considerably larger political risk (EC, 2014, p. 73). Additionally, many eastern European member states are relatively dependent on nuclear energy for their electricity production (World Nuclear Association, 2022). However, including reliance on Russian uranium and related services would make this study considerably more complex, partly because of how the data is processed, and partly because many member states do not produce nuclear energy at all, or rely on different suppliers.

As mentioned before, several control variables will be used to prevent identifying improper cause and effect relationships.

FDI is a factor ignored by Silva II and Selden (2020) as well as many other researchers when it comes to EU-Russia relationships. This is surprising, given the incredible dependence of the Russian economy on foreign capital, it being in the form of FDI or, more commonly, rents from fossil fuel exports. Prior to the sanctions, the Russian financial sector was the most integrated with the west of all parts of their economy (Connolly, 2018, p. 188). Russia has been one of the prime destinations of FDI from the EU, but it has also been a relatively volatile one leading up to 2014 (Eurostat, 2017). More generally, FDI is could be an important explanatory variable for two reasons. First, FDI stock in particular has been linked to conflict likelihood in the context of interdependence theory, similarly to trade (Bussmann, 2010) Secondly, political tension also tends to be bad for FDI (Desbordes, 2010). These two reasons might mean that member states with high FDI stock in Russia are less supportive for sanctions. Therefore, FDI stock in Russia as a percentage of the owning nation's GDP will be

used to control for the influence of FDI, similarly to Bussmann (2010, p. 146). The FDI data is derived from the JRC-ECFIN database, last updated in 2020, by Nardo et al. (2017). The GDP data is derived from the World Bank (2021). In analysing FDI, the asset-liability principle is used, which is considered the best approach when comparing broad FDI statistics to other variables (OECD, 2014).

Copeland (2015) criticises the liberal approach to interdependence theory by pointing at the importance of expected trade gains which influence conflict, rather than current trade gains. Therefore, we will also control for the change of trade as is done by Giumeli (2017). It is important to note, however, that doing this, it is assumed that member states had at least a decently realistic idea of how their trade would change with or without sanctions. This is a heavy assumption, so one should be careful in attributing to much value to this variable.

Lastly, Silva and Selden (2020) attribute the outcome of their analysis to a higher perception of threat from Russia in Eastern European member states, though they do not clearly define exactly which nations could be categorised as such and which cannot. In order to test for this variable, there were two possible definitions; either member states that make up the Eastern border of the EU according to Frontex (2022), or member states that used to be part of the Eastern Bloc and thus were under direct Soviet control or influence. The latter definition does present some ambiguous cases, most notably Germany, Slovenia and Croatia. Both of these definitions have been tried in the 2 model (for statistical reasons, testing for both within the same model is a worse option), and eventually only the second definition was included. There are two reasons for this; first, this definition resulted in a higher coefficient of determination (adjusted R^2), and second, this definition also allows us to (to some extend) include possible reliance on nuclear materials or services from Russia in the analysis, since the presence of former Soviet reactors aligns more closely to the broader, second definition.

Assumptions and data modification

All of the assumptions of a linear regression analysis have been tested. There are a few issues which are in need of addressing. Firstly, the main independent variable of fossil fuel reliance suffered from different variance at different levels of the variable (heteroskedasticity). Many countries have a low to medium reliance on Russian fossil fuels, with less variance as the level of reliance becomes higher. To make up for this, it has been log-transformed in the regression analysis, which largely, though not completely, solves this problem. The same issue appeared with the FDI stock/GDP variable, and the same solution has been applied, as is

also done by Bussmann (2010, p. 147). Furthermore, as can be seen in the accompanying appendix figures 1 and 3, the assumption of normal distribution of errors forms a weakness in this analysis, as a degree of skewness is visible. Though care should (and will) be taken in interpreting the results, violation of normality of errors is considered to be the least important of the assumptions of linear regression (Gelman & Hill, 2007). Further transforming the data in order to attempt to solve it could also do more harm to the transparency and validity of the analysis than it actually solves (Knief & Forstmeier, 2021).

In the first model, there are 2 outliers with a value above 2 times the standard deviation. These are Ireland and Slovenia, which have very low support for sanctions and relatively low fossil fuel reliance, as can be seen in table 1 and 2. The support score for both of these countries is based on a single parliamentary speech, which could explain the relatively low score. Therefore, some additional research in these specific countries' position was carried out to check if the assigned support score would be close to the truth. As for Ireland, the government does indeed seem to have been a bit softer on Russia. Though they condemned the annexation of Crimea, they did not – contrary to many other EU member states – refer to its military aspect (An Roinn Gnóthaí Eachtracha, 2014a, 2014b). Slovenia appears to have been less supportive of sanctions as well, clearly siding less with Ukraine and stressing the good nature of their relations with Russia (Lowe & Muller, 2014; Radio Free Europe, 2016; Herszenhorn, 2021). In model 2, Slovenia remains the only outlier. Removing the outliers from the analysis did not significantly influence any of the assumptions of linear regression analysis in a positive or negative manner. Because the outliers appear legitimate and they do not greatly influence the general outcome of the linear regression analysis, they were included in the results below.

Results

Figure 1 gives an overview of all cases and their support for sanctions and fossil fuel reliance. The results from the linear regression analysis can be seen in table 3. In the first model, we find a positive effect for fossil fuel reliance of 0,250 which is significant on the $p < 0,01$ level. Because the variable has been log-transformed, one should be careful to attribute to much value to this number itself. However, the core meaning is clear: if reliance of fossil fuels increases, support for sanctions against Russia also increases.

Figure 1. Support for sanctions and reliance on Russian fossil fuels

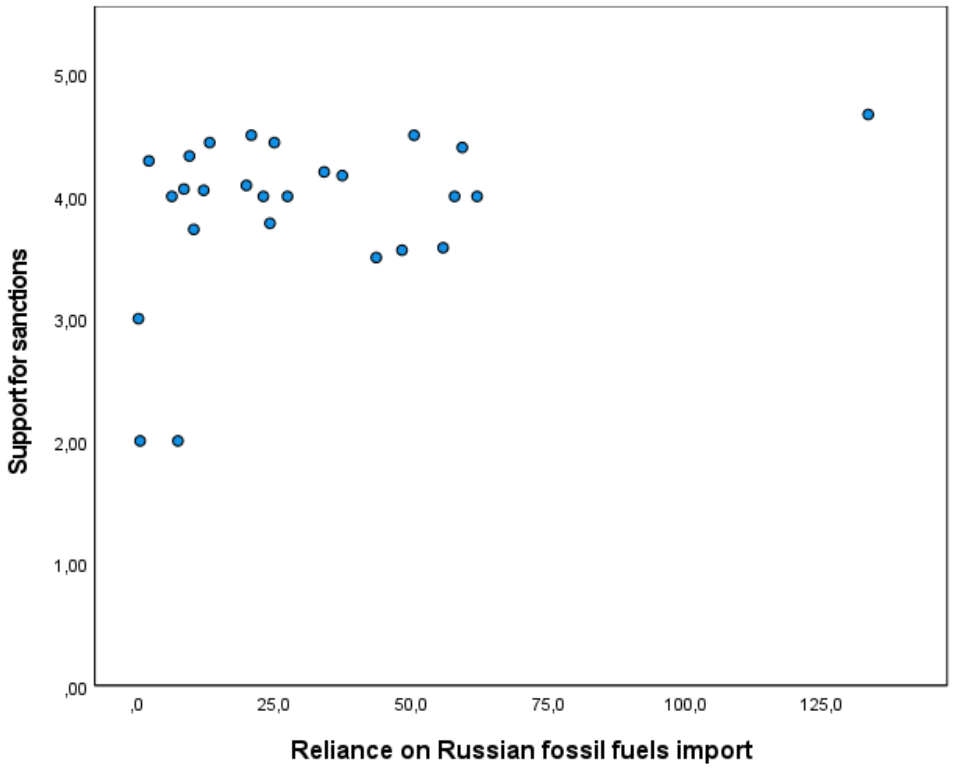

Table 3. Regression model of support for sanctions (0-5) in EU member states

	Model 1	**Model 2**
(Constant)	3,194***	3,282***
	(0,198)	(0,521)
Reliance ln(*R)*	0,250**	0,312*
	(0,077)	(0,111)
Former Eastern Bloc (ref = no former eastern bloc)		-0,254 (0,301)
ln(FDI stock/GDP)		0,085 (0,141)
Trade change		0,005 (0,012)
R^2	0,306	0,332
Adj. R^2	0,277	0,204
N	26	26

Note: Regression coefficients with standard error in brackets.
***p < 0,001 **p < 0,01 *p < 0,05

In the second model, the positive effect is slightly stronger, though it loses one level of significance. None of the included control variables has a significant effect, and there is no significant improvement in general predictability of model 2 when compared to model 1 (the adjusted R^2 of model 2 is lower than in model 1). However, despite the addition of these additional variables, the reliance on fossil fuels remains significant, though at a lower level. Herein lies the reasoning of including the second model; it shows that, even when controlling for various factors, fuel dependence plays a significant role, while these other factors do not.

Using this data to come back to the 2 hypotheses presented earlier, one clear conclusion can be drawn. H_1 should be rejected, as for it to be true, we would have expected a statistically significant negative effect rather than a positive effect for fossil fuel reliance.
At first glance, it would appear that H_2 could be discarded as well, as both of the models indicate a positive and statistically significant effect, where H_2 would have expected none. However, one should be careful to interpret the statistical results too bluntly for several reasons. First, we do have to take into account that some assumptions of linear regression analysis have partly been violated, especially the standard distribution of errors, but there is still a degree of heteroscedasticity present as well, despite the log-transformations. This might have led to an overestimation of effect strength or significance. Second, and more importantly, it is hard to assess how closely the support variable, derived from speeches in the European Parliament, reflect the actual stance of governments on sanctions. We have to take into account that there exists a wide variety of sanctions for the member states to choose from, and while some countries might seem to support sanctions in general they might have strong reservations when it comes to specific sectors or people, which could in turn lead to inaccurate support scores. Third, there may still be variables that were not accounted for, that have a more determinative impact. This applies especially to variables on domestic political factors of member states, but also economic factors which can often be measured in a wide variety of ways.

Interpretation

So how could we then interpret or explain these results? Interestingly, the results from both of the models harmonise with the results from Silva II and Selden (2020, pp. 245-246) on economic interdependence and support for sanctions, as they too find a weak but positive relation between these two variables. As this relation is weak and practically disappears when several outlying countries are removed from their study, it is concluded that the absence of a strong negative correlation is the principal finding (Silva II and Selden, p. 240). However, the

possibility of a positive relation is explained by attributing it to a higher threat perception of Russian actions in Ukraine by former Eastern Bloc states. The theoretical principle of expected future security as proposed by Drezner (2011) is employed to elaborate on these dynamics; states in Eastern Europe would have more worries about their future security as a result of their proximity to Russia and Russia's aggressive behaviour towards other neighbours. This in turn would make them more eager to support sanctions which signal to Russia and their domestic population that the EU is willing to back them up, thus deterring Russia in undertaking further action and soothing their own population's security concerns. A similar line of reasoning could be transferred to this study as well, though there are several differentiating factors of importance.

First of all, our second model corrected for being a former Eastern Bloc member state, but this did not improve the model nor did it have any statistical significance. It appears that there are contrasting differences between different former Eastern Bloc member states in their perception of Russian threat. Additionally, there are member states that have a high perception of threat but were never part of the Eastern Bloc. The strategy called "hybrid warfare" used by Russia in their annexation of Crimea and the stirring of conflict in Eastern Ukraine could explain some of these different perceptions, as some former Eastern Bloc member states would be more vulnerable to it than others (Lanoszka, 2016). Additionally, the positive effect in these models is quite a bit stronger than those found by Silva II and Selden (2020), and more importantly, the coefficient of determination is (R^2) is quite a bit higher (0,306 compared to 0,0192 in Silva II and Selden, p. 245). An imported note is that the independent variable has been log-transformed in this case, whereas Silva II and Selden (2020) did not transform their variables, so the effect strength numbers are not directly comparable. Lastly, we have to consider that the economic interdependence variable used by Silva II and Selden (2020) also includes fossil fuel trade; this partly explains why the results above appear to synchronise with Silva II and Selden (2020).

Assuming that the positive relation actually exists would have some radical implications; it could imply that, for example, were a European country to become more dependent on Russian natural gas, they would at the same time and partly for that reason cool their relationship with Russia. As this appears to be contrasting to the aforementioned literature (Dannreuther, 2016; Klare, 2008; Kuzemko, Keating & Goldthau, 2018), it would be safest to conclude that while H_1 can be rejected, H_2 should be accepted at minimum. In other words, we may conclude that reliance on fossil fuels did not influence EU member state's position

towards sanctioning Russia, but even if it did, then a higher reliance on Russian fossil fuels would have led to a higher support for sanctions, but not lower support. This does, of course, not mean that one individual country may not have considered energy security to be a factor when taking its stance in the sanction deliberations; an in-depth case study of a single member state could shed more light on that. But it does mean that for the bigger, theoretical picture, empirics appears to differentiate from the predictions of the geopolitical realist approach, at least for EU-Russia relations (Klare, 2008; Kuzemko, Keating & Goldthau, 2018).

Here, once again, the various avenues of critique from the liberal school might help us explain why fossil fuel reliance maybe did not matter that much for sanction support. From the technical perspective, a good argument would be that member states never considered being cut off from energy resources a legitimate threat, since a lack of infrastructure towards other markets means Russia has little other places to sell natural gas to. This can then be connected to the commercial critique, expanding the argument further; if Russia were to cut EU member states off from fossil fuels, they would lose their main source of essential foreign currency and capital. As economic growth in Russia and oil prices correlate (Tuzova & Qayum, 2016), this would almost certainly introduce Russia to an economic crisis. EU governments know this, and thus do not fear that their energy supply would be at serious risk when supporting sanctions against Russia. An institutional explanation may also be maintainable; the strong energy governance and hybrid energy institutions in Russia and the EU, which have cooperated throughout several political crises, may have been considered too strongly established to be used as a threat or a weapon of war by policymakers. Similarly, the EU foreign policy could serve as a representative vehicle for member states to sanction Russia rather anonymously without hurting their bilateral relations (and thus energy security) with Russia too much, following from the argument of the existence of a leadership paradox in EU foreign policy (Aggestam & Johansson, 2017) . However, while these three arguments could explain why H_2 would be valid, they cannot explain a positive relation between energy dependence and support for sanctions.

What about the additional economic independent variables? Neither trade change nor FDI stock had a significant impact on sanction support. This implies that expected negative trade change) did not influence the member state's position towards sanction on Russia. Giumeli's findings (2017, p. 1077) confirm this, and also conclude that it is unlikely for a link to exist between trade loss and sanction support, though answering this question was not the main aim of the study. In a broader sense, this puts interdependence theory in a tight spot, as neither

current interdependence nor the change in trade seem to have had influence on sanction support (Silva II & Selden, 2020; Giumeli, 2017). FDI, though often overlooked in this area, seems to have had no impact as well; though there is more room for debate here, as there are many ways to measure FDI stocks and flows (OECD, 2014).

A final interesting remark is that recently, the EU might have, to some extent, "turned the tables" on energy independence. Though at first glance, the EEAS' Strategic Compass (2022) seems to acknowledge energy dependence on Russia can be used as a weapon against member states, in accordance with the geopolitical realist school of thought. However, having just established that their theoretical predictions and conclusions do not seem to accord with empirics, we might look at the EU policy regarding their dependence on Russian energy from a different perspective. If the EU reduces its dependence on Russian fossil fuels, this can put Russia in an increasingly tight spot economically. Already, the present sanctions seem to have delivered heavy damage to the logistics of Russian industry (Meduza, 2022), and may have, for example, completely halted production in the factory of the world's largest tank producer, Uralvagonzavod, due to a lack of microchips (Truscott IV, 2022). In reducing its dependence on Russian fossil fuels, the EU would be cutting off a lifeline that the Russian economy has relied on for decennia. So one can wonder who is really holding the weapon; Russia, because they are (still) supplying the EU's energy, or the EU member states, because they pay for it? The results of this quantitative analysis, as well as the aforementioned recent events, hint towards the latter option. Russia reacts to this by increasingly focussing its attention to the east, also on matters of energy, but there is still a long road to go before this would sufficiently replace European markets (Connolly, 2018; Malle, 2017; von Hippel, Gulidov, Kalashnikov & Hayes, 2011).

Conclusion

In order to find if dependence on Russian fossil fuels influenced EU member state's positions towards sanctions against Russia following and during the crises in Ukraine in 2014, a linear regression model was employed. In general, two main theoretical approaches dominate the area of energy dependence; geopolitical realism considers energy to be a strategic good, the supply of which is essential to the security of a state in the international system. This approach would predict support for sanctions to decrease as dependence on Russian fossil fuels increases. On the other hand, liberal criticism on this approach states that energy is a commercial good like any other, and energy trade does not behave differently from regular trade, partly because some unique aspects. These aspects, applied on EU-Russia energy

relations, include various commercial, technical and institutional limitations and features. In determining support for sanctions, energy trade would not have significant influence, similarly to regular trade (Silva II & Selden, 2020).

Using data on sanction support by EU member states from Silva II and Selden (2020), and on dependence on Russian gas, oil and coal from the IEA (2022), a light positive relation, statistically significant, between energy dependence and support for sanctions was found. This was corrected for being a former member of the eastern bloc, expected change in trade with Russia after sanctions, and FDI stock to Russia. None of these control variables had a statistically significant effect. Using these results, several conclusions can be drawn. First, the commercial, technical and institutional aspects of this complex relationship seem to have caused EU member states not to fear Russian usage of energy as a weapon. Therefore, energy dependence does not negatively influence the support for sanctions against Russia by EU member states, which appears to contradict geopolitical realist theory. Second, even if energy dependence would play a role, higher energy dependence would lead to higher support for sanctions. This positive relation found in the analysis is hard to explain, and future research could try to find theoretical explanations or introduce a missing third variable which explains both high support for sanctions and high dependence on fossil fuels. Third, being a former member of the eastern bloc, FDI stock or expected trade change through sanctions did not appear to have influenced member state's position towards sanctions against Russia. Admittedly, accurately estimating the support for sanctions against Russia numerically remains a large challenge, and is thus a significant weakness. However, since most of the necessary material to do so remains highly confidential, the challenge will be equally large when using other methods. Another weakness is the inability to include dependence on Russia for nuclear energy sources, but further research could focus on how to incorporate this into the EU-Russia energy relation.

The main conclusions described above shed a different light on current and recent events. It helps us interpret the actions of Russia, which has demanded EU member states to pay for deliveries of natural gas in Roubles, hoping to thus increase its value. Bulgaria and Poland have been cut off from gas deliveries as a result of not following these demands (Abnett, 2022). On the other hand, the EU as well as independent member states are now more determined than ever to decrease their dependence on Russian energy; The EC recently presented the REPowerEU Plan (EC, 2022b), while Germany is also planning to rapidly reduce its dependence on Russian gas (Olk, 2022). According to the conclusions of this thesis,

these policies could be interpreted more as an effort to economically punish Russia for its actions in Ukraine, rather than an effort to improve the security of the EU. And while this would allow the EU to act more fiercely against Russian expansionism in Ukraine, it would also cut an important lifeline of the Russian economy. And while on the short term, this is advantageous to the Ukrainian military efforts, it also means that Russia has less to risk in its relationship with the west. And when the Russian military runs out of tanks and fighter planes, their large nuclear arsenal would be a more and more tempting way to achieve significant military goals. One may even argue that in the long run, the energy independence policies in Europe might actually decrease security; for does it truly sound secure to have an economically deficient neighbour waging an unsuccessful war while sitting on top of the world's largest nuclear stockpile?

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