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ECONOMIC SANCTIONS: THEORY, POLICY, MECHANISMS

Anton Filipenko[1], Olena Bazhenova[2], Roman Stakanov[3]

Abstract. *The purpose* of the article is to analyze the theory and practice of international economic sanctions. The application of international economic sanctions and debate about their effectiveness and scale of losses are now at the centre of international politics. Analysis of key factors, mechanisms and socio-economic consequences of economic sanctions in the world economy need a conceptual understanding. *The subject* of the research is international economic sanctions. According to known practice, economic sanctions policy is based largely on the discretionary approach of using, as required, a policy of rigid rules, which is clearly reflected in the mechanisms, means and instruments of its practical implementation. Economic sanctions are the integral part of international economic policy, implemented through the theory of public (rational) choice, structural theory (cost-issue model), decision-making theory, the theory of coordination and cooperative games, etc. The hierarchical nature of the mechanism for the application of sanctions is available in three main levels: global, regional and national. There are three types of economic sanctions: trade, investment or financial ones, and so-called targeted sanctions or "smart" sanctions (transportation and communications restrictions). The case of introduction of economic sanctions, especially by supranational bodies of international integration organisations, namely the EU, is of particular importance for economic policy coordination. The specific consequences of imposing economic sanctions take on various socio-economic dimensions, the main ones of them indeed being the economic growth rates. The economic sanctions demonstrate how the individual countries, regional and international organizations react on huge violations of human rights, sovereignty of countries, international law in general. *Methodological basis* of the research comprise the list of theoretical and empirical methods of research; in article, the analysis of recent research publications subject under the discussion has been provided, the results obtaining with statistical data have been compared, the practical recommendations, received on the base of survey results have been suggested. To examine how the Iranian economy responds to sanctions imposed by the US and other countries we have constructed vector autoregression model. To test the variables of the model for unit root we have used augmented Dickey-Fuller, Phillips-Perron and Kwiatkowski–Phillips–Schmidt–Shin criteria, which have shown that almost half of the indicators are first-order integrated, with the rate of inflation and investment, in relation to GDP, GDP growth rate, imports of goods and services and oil rent are stationary, that is zero-order integrated. The US sanctions have increased oil price fluctuations in the Middle East region. The results of the study have shown that economic sanctions nowadays are a comprehensive tool in global economic wars, which effectiveness largely depends on the ratio of the economic power of the sanction imposing country to the sanctioned one.

Key words: economic sanctions, world economy, GDP, USA, Iran.

JEL Classification: C43, F13, F51

1. Introduction

The processes of world economic globalization causes the activation of new economic mechanisms in international relations system to influence the policy and behaviour of a particular governments or group of states acting in the interests of public security. The application of international economic sanctions and debate about their effectiveness and scale of losses are now at the centre of international politics. In today's globalized and interdependent world with national

Corresponding author:
[1] Taras Shevchenko National University of Kyiv, Ukraine.
E-mail: anton_filipenko@ukr.net
ORCID: https://orcid.org/0000-0001-8458-2770
[2] Taras Shevchenko National University of Kyiv, Ukraine.
E-mail: elena12042010@gmail.com
ORCID: https://orcid.org/0000-0003-3197-8426
[3] Taras Shevchenko National University of Kyiv, Ukraine.
E-mail: roman.stakanov@gmail.com
ORCID: https://orcid.org/0000-0003-3412-8451

economic interests, sometimes diametrically opposed, complex measures are increasingly used to change the economic or political strategy pursued by states. The widespread use of international economic sanctions in the early 21st century adds particular relevance to this problem. World economic science does not reveal sufficiently the theoretical basis and methodology of the international economic sanctions study.

Usually, the imposition of sanctions is not an ordinary but an exceptional measure of foreign economic policy aimed at achieving certain political goals. It can be argued that sanctions are the antithesis of normal foreign economic policy. The imposition of sanctions has many negative consequences associated with the slowdown in GDP growth, the development of the business sector, and the loss of jobs. Economic sanctions in combination with other measures (such as military and political ones) can have a destabilizing effect on the government system of the sanctioned country.

The analysis of the main factors, mechanisms and socio-economic consequences of economic sanctions in the world economy need conceptual reflection. Analysis of key factors, mechanisms and socio-economic consequences of economic sanctions in the world economy need a conceptual understanding. Particular attention should be paid to the use of an interdisciplinary research methodology of the economic sanctions models in the world economy, since its causes and consequences go far beyond the realm of economic sphere. The authors have attempted to contribute to the development of theoretical principles of analysis and study of the practical aspects of international economic sanctions mechanisms of modern global economy.

2. Literature review

Theoretical aspects of economic policy of the second half of the 20th century have been discussed in the works of V. Eucken (Eucken, 1952), J. Tinbergen (Tinbergen, 1956), K. Boulding (Boulding, 1958) and others. Sanctions are a weapon of the rich and powerful (Economides, 2001), and smaller and weaker countries find it harder to achieve the effect of sanctions, unless participating in collective sanctions.

According to G. Hufbauer, J. Schott, and K. Elliott, sanctions are usually successful against small countries (the median ratio of GDP of the initiating country to the target country was 105) (Hufbauer et al., 2007). The use of economic sanctions may not achieve the economic goals set by an economic power or lead to losses, as it may alter economic decisions. Sanctions can lead to an enrichment of the elites that control the shadow market (Cronin, 2009). Third-country intermediaries can be used to circumvent sanctions. As K. Elliott points out, market forces weaken the effect of trade sanctions but increase the effect of financial sanctions (Hufbauer et al., 2007).

The consequences of sanctions are transformational (due to changes in regulation and redirection of trade flows) and additional transaction costs (growth of formal and informal trade barriers), primarily for the target country, but also for the initiator of sanctions and third countries. J. Frank suggests that comprehensive sanctions are not used against important trading partners. Sanctions, at least moderate, reduce trade between countries (typically on 6-10%) (Frank, 2017).

In terms of interdependence, increasing problems in the force object may adversely affect the force subject (narrowing the market, reducing the return on investment abroad, the readiness of the force to respond more radically, etc.). Sanctions are often difficult to target, so innocent citizens may suffer for the policies pursued by the ruling elite. It can worsen the reputation of a country that implements sanctions (Büthe, 2009).

Financial and combined trade-financial sanctions increase the income inequality of the population.

Mostly poor people suffer from the suspension of international assistance, restrictions in the activity of international organizations. Purely trade sanctions (especially import sanctions), on the contrary, reduce such inequality (Afesorgbor, 2016). Sanctions also have a negative effect on neighbour countries, increasing the regional economic crisis possibility (Baluev, 2014).

R. Pape argues that not all sanctions identified as successful can be considered as such: the achievement of goals has been promoted not by sanctions, but by military actions or other factors (Pape, 1997). However, economic sanctions are still used because of their relative lower cost than the cost of warfare (Kunz, 1994), including reputational losses.

The ideological and theoretical origins of realism are associated with the works of N. Machiavelli, T. Hobbes, F. List, and others. This area has been called "horizontal informal system", which is founded on three main assumptions.

The first assumption. Sovereign states are the dominant actors in the international economic policy and main units of analysis.

The second assumption. Sovereign states are the maximisers of power that urges them to continuously increase economic, political and military potential.

The third assumption. Sovereign states are rational actors. They analyze costs and outcome to maximize their power. The state has a priority over the markets, political actor shapes market relations. As Karl Polanyi stated back in the day: "Economic history reveals that the emergence of national markets has been in no way the result of the gradual and spontaneous emancipation of the economic sphere from governmental control. On the contrary, the market has been the outcome of a conscious and often violent intervention on the part of government which imposed the market organisation on society for noneconomic ends" (Polanyi, 2002).

3. Theory of international economic sanctions

In the context of functional differentiation and decision-making, there are two main concepts of economic sanctions policy: realism and liberalism and two derivatives: cosmopolitanism (within the framework of liberal conception) and hegemonism (as a derivative of realism). Some authors refer to the latter as constructivism. The public choice theory is a liberal one and is used as an important applied mechanism for calculating the socio-economic consequences of sanctions in trade, investment, finance, etc.

According to the tenets of realism, there are no uniform rules in the international economic system, anarchy reigns here, states are sovereign, act at their own discretion as the highest-level entities, and are subject to all other actors governed by their own laws. Therefore, according to realists, international economic policy is formed primarily as a result of the rational actions of the states in the struggle for power and wealth.

Zero-sum game prevails in relations between states, when the victory of one entity necessarily implies the loss of another, which inevitably gives rise to conflicts and economic wars. The priority claim to sanctions lies not with international organisations, but with states; economic sanctions are not a mean of coercion of abiding by the law, but a foreign policy tool; economic sanctions do not reduce the amount of deviant actions in the international community, but they force the opponent to do what the sender country requires.

The liberal trend in international economic policy traditionally advocates the free trade and free markets, based on the neoclassical paradigm. The key position is the one on the need to achieve the fundamental harmony of interests between states as a result of free exchange of goods and services between them, the deepening of cooperation. The cornerstone of liberalism is to focus on the behaviour of individuals, firms and countries (horizontal formal system).

According to liberalists, given the receipt by countries of maximum benefits, the free trade does not create any economic grounds for international conflicts and wars. The liberal concept also implies the need to manage the international economic relations by a country through:
– establishment of appropriate trade regimes;
– adoption of rules, norms and standards to ensure;
– equivalent exchange between countries;
– prevention of unfair competition, etc.

The liberal approach rests on the assumption of the existence of rights and norms for the imposition of sanctions. According to the liberal paradigm, sanctions are an impossibility without common rules or legal provisions governing deviant behaviour. The liberal paradigm emphasizes the difference between coercion and sanctions. Sanctions are an act of coercion, but not all coercive acts are sanctions. Norms and law should precede the imposition of sanctions since they work as constitutive rules that determine the practice of legislative coercion (i.e. sanctions).

The essence of the liberal paradigm-driven public choice policy is that both the endogenous (internal) consequences of sanctions for different interest groups (parties, trade unions, business associations, etc.) and the socio-economic and political consequences for target countries are assessed. This indicates that economic loss is not a key position in determining the nature (essence) of a sanction package for another country.

The simplified constructivist theory comes down to the existence in the world system of a hegemonic power centre, which uses its economic, political, technological, military power, imposes its rules of play in the system of international relations, including the policy of sanctions (vertical informal system). At the same time, constructivism focuses on the social aspects of sanctions policy.

The conceptual basis for international economic policy coordination lies in the theories of public choice and of games, including the prisoner's dilemma. The public choice theory establishes the basis for the collective decisions analysis. The main ones here are K. Arrow's "impossibility theorem" and prospect theory of Kahnemann and Tversky. The key elements of the Arrow's theorem are the social welfare function, aggregation methods, axiomatic methods, welfare-evaluation methods and voting methods.

According to the theorems and axioms, the social welfare function, the main criterion for international economic policy coordination, must satisfy the following four conditions:

1. The Pareto criterion for efficiency is valid; if each actor prefers c to b, then society at large would prefer c to b.
2. No individual should determine the collective decision (non-dictatorship); citizens are not allowed to sell their right to vote (no-market condition).
3. Independence: the choice between two options is independent of irrelevant alternatives (social choice under the existence of other alternatives should depend only on the choice (preference) of these alternatives).
4. Unrestricted domain (a requirement that all logical preference-orderings are allowed, ordered, definitively formulated and embodied understandable individual choices) (Keizer P., 2015).

Impossibility theorem claims that it is impossible to meet all conditions at once. At the same time, combined with other similar exploratory studies (Harsanyi's utilitarian theorem, Condorcet's jury theorem, median voter theorem, etc.), important scientific and practical deliverables are achieved in the system of public choice, including on the level, mechanisms, and scope of economic sanctions. The rational choice focuses on individual choice under uncertainty and is dominant in today's economic mainstream (neo-classics, post-neoclassics). Its essence is to maximize utility on the basis of the excess of benefits over cost. In this case, the well-known cost-benefit analysis can be used to impose sanctions. Monetary as well as political, moral and other elements may serve as units of measurement. An upgraded version of the theory of rational choice lately takes shapes of concepts of experimental economics and neuroeconomics.

The principles of the prisoner's dilemma model are widely used in the analysis of international economic policy coordination. This is in no way attest to the fact that formal cooperation is always necessary. The rule here is that if one player does not adhere to cooperative behaviour, the other may not adhere to it in the next round (Tit-for-Tat strategy, or retaliation strategy).

In general, the strategy of reciprocal actions is based on four principles:
– clarity;
– niceness;
– retaliation;
– forgiveness.

The constellation of coordination games also includes the battle of the sexes, median action games, weakest link games, the Stag hunt, sequential game, repetitive games, arrangement games, universal signal game, the Trust game, the Ultimatum game and the Dictator game (Dhami, 2016).

There are two main types of economic policy used in international economic relations. The first is premised on the strict observance and enforcement of applicable legal and economic rules. The second involves arbitrary interpretation of the rules depending on the economic and political situation (discretion approach; 'discretion' means a free choice).

Advocates for rigid rules based approach substantiate their position with four basic arguments. Firstly, it is a possibility of establishing the best options for the goals, objects and mechanisms of international economic policy coordination. Secondly, the rules are seen as the only viable mechanism for imposing discipline on top officials who can manipulate economic policy instruments for their own ends. Thirdly, the rules are considered as ones that enhance the predictability of policy actions and, thus, improve the ability of the private sector to make informed decisions about resource allocation. Fourthly, the rules have a significant advantage over how the economy works during destabilization processes. "Fine tuning" allows you to design economic policy measures in accordance with the nature of fluctuations in the economic environment.

The discretionary approach (deviation from the rules) emphasizes on:
– unpredictability;
– stochasticity of economic processes;
– volatility of modern financial and economic systems;
– imperfection of existing macroeconomic and geo-economic models based on rigid rules;
– fundamental uncertainty (post-Keynesian paradigm).

At the same time, deviation from the rules should not be detrimental to national economic interests. According to known practice, economic sanctions policy is based largely on the discretionary approach of using, as required, a policy of rigid rules, which is clearly reflected in the mechanisms, means and instruments of its practical implementation.

There are three types of economic sanctions: trade, investment or financial ones, and so-called targeted sanctions or "smart" sanctions (transportation and communications restrictions). Types of economic sanctions and means of reflecting and encouraging co-operation between countries are shown in Table 1.

Table 1
Types of economic sanctions

Positive sanctions	Negative sanction
Existing or promised gains	Existing or threatening penalties
Trade sanctions: – Tariff reduction – Tariff elimination	– Partial embargo – Absolute embargo
Investment or financial sanctions: – Financial or investment assistance from various institutions such as the IMF, the WB or from countries	– Reduction of capital flows (*lending reduction or suspension*) – Forced disinvestment – Reduction in international payments – Assets freezing
Targeted sanctions: – Humanitarian aid	– Transport and communications ban – Travel ban – technology transfer ban, IPR transfer ban

The political and economic interpretation of the economic sanctions of the institutional content is given in Table 2.

Table 2
Economic sanctions system

Functional differentiation / Decision-making procedure	Horizontal
Informal	Realism States
Formal	Liberalism States and international organisations

When determining the content, nature and types of economic sanctions, the main areas of their application should be taken into account (Table 3).

The case of introduction of economic sanctions, especially by supranational bodies of international integration organisations, namely the EU, is of particular importance for economic policy coordination. International economic policy coordination is the process of joint adjustment of measures and instruments of national economic policy with the parties concerned within the framework of bilateral relations or within regional and global associations. The

Table 3

Primary areas for imposing sanctions

1. Culture and sports	Suspension of exchanges
2. Diplomacy	Reduction or closure of diplomatic missions. Expulsion from international organisations. Prohibition of taking office.
3. Transportation	Prohibition of air and sea communications. Suspension of railway and road transport.
4. Communications	Suspension of postal and telecommunication services
5. Development cooperation	Termination of financial and technical assistance
6. Military issues	Termination of military cooperation
7. Finances	External assets freezing Prohibition of financial transfers
8. Trade	Boycott Embargo
9. Criminal justice	International Tribunal

problem of international policy coordination is driven by the ever-increasing interdependence of different countries, resulting in the economic policies of one country affecting the economic situation and principles of economic policies of other countries. Coordination may relate to the exchange of information between governments, coordination of economic and political activities of different countries, including the possible delegation of powers to supranational authorities (the EU Single Monetary, Commercial and Agricultural Policy). Objectives of the economic policy, its scope and timeframe, alternative options, information on forecasts, structural changes and other macroeconomic indicators are to be coordinated as well. Coordination, therefore, involves major changes in domestic policy, taking into account international interdependence. The main tasks and prerequisites for coordination are:

– increase in public benefits, growth of national welfare and consumption;

– consideration of external causes and factors associated with changes in international trade and business conditions;

– diversity of government approaches to the principles, objectives and mechanisms of economic policy implementation;

– maintaining macroeconomic equilibrium, especially in times of regional and global economic and financial crises.

Upon imposing sanctions the sanctioning unit behaviour can be analysed from two standpoints: the interest group theory and the rational actor methodology.

These two concepts are not inevitably inconsistent with each other. Rather, they focus on different questions. According to the interest group theory, observed policies in international relations and their implications are perceived as outcomes of the set-ups of domestic interest group politics within sender and target countries. In other words, it expresses how national policy choices mirror the interests of constituency groups within the polity. In this approach, embargo's objective and more generally sanctions' objective are to serve the interests of pressure groups within the sender country. National governments are considered as arbiters of competing domestic interest groups, acting in a more or less impartial manner. While some pressure groups might derive pecuniary benefits (income effects) from the implementation of economic sanctions, others get utility directly from taking a moral stance against a target country's deviant policy.

The first situation is expressed as the instrumental motive while the second case is well-known as the expressive motive developed by Per Lundborg (1987) and Johan Galtung (1959) (Kaempfer and Lowenberg, 1988).

The public choice approach is based on the fact that policy markets exist. Both sender and target states owe such markets. Interest groups play a decisive role in national policy decisions by constituting the political market. They seek maximum net gain from implementing the relevant public policy. Even if these groups are defined by commonality of interests, each member of the group sees its political participation tempered by a propensity to free ride, as it stems out from the Arrow's impossibility theorem (Kaempfer and Lowenberg, 1988).

The basic narrative says that the government of the sender country supplies economic statecraft for an amount greater than zero. This is due to the fact that the sender country's interest groups demand sanctions, bidding up what they are willing to pay. On the one hand, the price reflects the cost of engaging the government to take action. On the other hand, the quantity constitutes the level of action that the government is willing to undertake. Target countries face the same policy market. However, as the target government supplies deviant policy that it knows, will spark off economic sanctions as a reaction, it engages in that policy with an expected cost. This expected cost is an imported cost that needs to be added to the domestically produced policy cost resulting of supplying the deviant policy of the target country.

The specific consequences of imposing economic sanctions take on various socio-economic dimensions, the main ones of them indeed being the economic growth rates. For example, when it comes to trade sanctions, as is known from classic and neoclassical models, foreign trade has a direct impact on the well-being of the population and on the dynamics of economic development. A gravity model is used to calculate the impact of sanctions on trade. It takes into account GDP, population of countries, distance and size of sanctions:

$$\begin{aligned} lnTrade_{ijt} = \beta_0 + B_1Ln\ GDPit + \beta_2Ln\ GDPjt + \\ + \beta_3LnPOPit + \beta_4LnPOPjt + B_5LnDIST_{ij} + \\ + B_6SANCTION_{it} + u_{ijt}. \end{aligned} \quad (1)$$

The model in question produces four results for understanding the success of economic sanctions and issue linkage.

The first result, a player's preferences for the issue under dispute and the imposition of sanctions are critically important to understanding the sanctions game. **The second result,** threatening sanctions is a priority. A decision-theoretic model shows that the choice between the use of sanctions, incentives, or a combination of them depends on the level of interdependence between target and sender. Imposing sanctions is a strategy in international disputes. When sanctions are likely to be successful, it is the threat, not the imposition, of sanctions that changes a target state's behaviour. **The third result,** states that ignore the threat of sanctions are unlikely to change their behaviour after sanctions are imposed. **The fourth result,** sanctions that do not change a target's behaviour may still be successful by enhancing the coercer's reputation as a resolute player, improving its political rating.

When both collective and individual sanctions are to be imposed, modern macroeconomic models can be used to determine the socio-economic consequences for both parties. Structural models are based on Leontief's "input-output" theoretical concepts and on extensive econometric tools (Hashimzade and Thornton, 2013). They allow assessing of structural changes in the economic, demographic, technological, political and other areas, occurring as a result of the introduction of sanctions policy. The basis of the analysis is the general theory of economic interdependence, improved and expanded by V. Pareto (Leontief, 2006). Threshold vector autoregression (VAR) econometric models are used to determine the threshold effects of economic sanctions policy in the context of SWOT analysis (strengths, weaknesses, opportunity, threat, constraints, behaviour of the sanctioned countries, etc.) (Hashimzade and Thornton, 2013).

Structural instability, an outdated economic structure, and a raw material orientation (Venezuela, the DPRK, Cuba, Iran, Russia) are commonly observed in targeted countries. Econometric tests of such economic systems include three main types of instability:
– parameter breaks;
– other parameter instabilities;
– model instabilities.

The first category of tests, parameter breaks, focuses on sudden parameter changes. The time of change is called break-point in econometrics and change-point in statistics. The said parameters are considered both known and unknown. However, methods for detecting multiple break-points are applied as well in the break models.

Other parameter instabilities tests are based on the state of the art tests for threshold models, smooth transition models and Markov-switching models.

The third category of tests, model instabilities, stipulates for a change in a functional form of the model after a known or unknown break (Hashimzade and Thornton, 2013).

The first test is implemented via generalized method of moments (GMM), when estimating and calculating the optimal way to evaluate the economic model parameters, in particular the financial state of the economy as a result of the application of sanctions policy; rational expectations parameters in the macroeconomic model; business cycle models, exchange rates, land relations, demand for labour and etc. (Hashimzade and Thornton, 2013). Tests for multiple break-points can be primarily estimated via ordinary least squares (OLS), two-stage least squares (2SLS) and nonlinear least squares (NLS).

The multiple break-points strategy based on least-squares is the most popular one. This strategy includes three types of tests:

1) testing no breaks versus a known number of breaks; 2) testing no breaks against an unknown number of breaks up to a fixed upper bound; 3) testing against +1 breaks. Tests of other change parameters, as mentioned above, is carried out by using threshold and smooth (homogenous) transition models (Hashimzade and Thornton, 2013).

The mechanism of economic sanctions is formed within the instrumental paradigm, since it involves the use of various instruments of influence on the target country in order to inflict economic losses on it. Its content and structure are multidisciplinary in nature, reflecting the interaction of economics, politics, law, etc.

The mechanism of economic sanctions has a three-tier, hierarchical nature: global, regional and national (state). A comprehensive, single document on the mechanism of economic sanctions at the UN level has not been established yet. International law experts provide examples of collective sanctions being imposed within the League of Nations related to the possibility of hostilities by individual states. In particular, trade, financial and other sanctions were spelled out in Articles 12, 13 and 15 of the Covenant of the League of Nations.

Global level of sanctions.

At the UN level, the Security Council regularly sets up sanctions committees as auxiliary bodies. They are composed of representatives of all Members of the Council and their job is to interpret and enforce the sanctions regime. Finally, the Security Council may use regional agencies (Chapter VIII), such as the Organisation for Security and Co-operation in Europe, NATO, and the International Security Assistance Force, to implement sanctions.

At the same time, there are proposals to increase the effectiveness of the UN Security Council in terms of both the introduction and implementation of economic and other sanctions. Firstly, it is proposed to abolish the right of veto that does not live up to present-day developments. Secondly, the number of Security Council members needs to be extended. Thirdly, the Council should be more transparent and allow emerging markets countries and small states to exercise their right and influence in the Security Council.

Separate parts of imposing sanctions mechanism are set out in a number of international instruments. In particular, the general economic part without explicit mentioning of the sanctions is laid down in the Charter of Economic Rights and Duties of States of 1974. The economic sanction mechanism provides for restrictive measures of an economic nature applied by a country or group of countries to another country or group of countries to coerce the governments of those countries to change their policy.

The system of international sanctions encompasses the prohibition for aircraft to land and make transit flights; prohibition or suspension of road, rail, water or sea transit; tourism ban, telephone ban, telegraph and communications ban, etc.

Economic sanctions are also embargoes, boycotts, blockades. Black lists of businesses or traders dealing with the offending country may be introduced, which generally corresponds to the widespread view of sanctions.

WTO Dispute Settlement Body may impose sanctions under Articles XXI GATT 1994 and XIV GATS in the event of a disruption of trade that causes damage to a partner (unfair competition, dumping, etc.).

The EU sanctions are implemented under the Common Foreign and Security Policy (CFSP). Title IV: Restrictive Measures, Article 215 of the Treaty on the Functioning of the European Union lays down formal grounds for imposing sanctions. The European External Action Service, together with the European Commission, implements the imposing of sanctions approved by the European Council. The consent of the European Parliament is not applicable.

National laws of countries, including Ukraine, have their own legal basis for both the imposition of sanctions and the mechanisms and means of responding to sanctions imposed by other states or international organisations.

How do the EU sanctions work? The first document is the Basic Principles for the Use of Restrictive Measures (Sanctions) (hereinafter – the "Basic Principles") approved by the Political and Security Committee (PSC) in June, 2004. In addition, an appeal was made to the EU Council to develop a policy framework for more effective use of sanctions. The Basic Principles argue that the EU shall impose sanctions in accordance with the UN Charter, as well as autonomously, when it is necessary to achieve the EU's objectives. That document established the basis for the application of targeted sanctions and the second and third documents were adopted to achieve the same.

The second document is the Guide to the Implementation and Evaluation of Restrictive Measures (Sanctions) under the Common Foreign and Security Policy of the EU (hereinafter – the "Guide"), adopted in 2003 and updated in 2005, 2009 and 2012, containing definitions and directives on the design and implementation of restrictive measures, as well as important information on the various types of restrictions that may be imposed and how to measure their impact. Finally, the EU Best Practices for the Effective Implementation of Restrictive Measures (hereinafter – the "Best Practices"), approved in 2008, provide relevant information on how to properly identify individuals or organisations, as well as the administrative conditions for asset freezing and product bans, including the procedure for granting exceptions to such measures (Giumelli, 2013).

4. Mechanism of international economic sanctions

The logic and type of the EU sanctions (regional sanctions level). Dominant logic of sanctions in the EU covers coercing, signalling and constraining ones. Experience shows that coercive dimension is not the dominant one in the vast majority of cases. Each sanction case can have its own dynamic and some cases go on for much longer than others. In order to describe the different characteristics of how sanctions can change over time, the concept of episode has been used. Any sanction case can be sub-divided in "episodes", with each episode corresponding to a different phase of the case. A new episode begins when a relevant element of the sanctions case changes, for instance when the purpose changes or when other foreign policy instruments are used with sanctions. As mentioned above, the three logics are not mutually exclusive, as they identify how power is exercised through sanctions, which means that different logics can be at work at the same time. Additionally, the advent of targeted sanctions has allowed senders to include multiple targets in the list, some of which are intended to be coerced, while others constrained and signalled.

What should be improved in the EU sanctioning policy? The adoption of the three purpose approach can yield important advantages in each sanctioning phase, from designing to monitoring and implementing. There should be three priorities for the immediate future: pre-assessment phase, monitoring and policy coherence.

Firstly, the EU Council needs to run thorough pre-assessment evaluations of the effects that sanctions are expected to have. This phase can be overseen by the security division of the EEAS, which can trigger a process of institutionalisation of memory, while the discussion on this point is conducted by the Member States in the RELEX meeting or in any other relevant committee (the PSC for instance). These actions can improve the reputation of sanctions in foreign policy because the imposition of sanctions is often coupled with unclear expectations rather than a careful evaluation of what sanctions can actually cause. The focus on the logic of sanctions can narrow the gap between what the Council wants to achieve and what sanctions can achieve.

Secondly, the EU institutions need to be empowered when it comes to implementing and monitoring the EU restrictive measures. In fact, since the entry into force of the Treaty of Lisbon, the EU Council has taken over the implementing powers that used to be exercised by the Commission, de facto returning powers from the EU institutions to the member states. Instead, the EU institutions (the EU Commission or the EEAS) should be given the capacity to investigate and monitor what happens after sanctions are decided by the Council. A proposal in this direction could be that of following the example of the Security Council and establishing panels of experts that would collect information on how states operate and how target countries attempt to evade sanctions. This would create a positive spiral as member states would have an incentive to strengthen cooperation and knowledge would be institutionalised on evasion strategies and techniques.

Finally, sanctions cannot be disconnected from other foreign policy tools. In fact, sanctions should be devised and designed to complement other decisions linked to foreign assistance, use of force and diplomatic activity. With regard to this aspect, the EEAS should be the key institution in bringing together the knowledge available on each case and coordinate actively the strategy to be undertaken towards crises.

National level of sanctions (the Ukrainian case). The third national (state) hierarchical level of imposing sanctions is clearly embodied in the Law of Ukraine "On Sanctions", which regulates the process of imposing, cancellation and amendment of sanctions in the logical order as follows.

1. Proposals for imposing, cancellation and amendment of sanctions shall be submitted for consideration of the National Security and Defence Council of Ukraine by the Verkhovna Rada of Ukraine, the President of Ukraine, the Cabinet of Ministers of Ukraine, the National Bank of Ukraine, and the Security Service of Ukraine.

2. A decision on imposing, cancellation and amendment of sanctions against a foreign state or an undefined group of people engaged in carrying out certain activity (sectoral sanctions) provided for in Article 4 Part 1 paragraphs 1-5, 13-15, 17-19, 25 of this Law, shall be adopted by the National Security and Defence Council of Ukraine, enacted by a Decree of the President of Ukraine and approved by a resolution of the Verkhovna Rada of Ukraine within 48 hours from the day of the Decree issued by the President of Ukraine. The respective decision becomes effective from the moment the resolution of the Verkhovna Rada of Ukraine is issued and is legally binding.

3. Decisions on imposing, cancellation and amendment of sanctions against a separate foreign legal entities, legal entities controlled by foreign entities or non-resident individuals, foreign individuals, stateless individuals, as well as other persons exercising terroristic activity (personal sanctions) provided for in Article 4 Part 1 paragraphs 1-21, 23-25 of this Law shall be adopted by the National Security and Defence Council of Ukraine and enacted by a Decree of the President of Ukraine. The respective decision becomes effective from the moment the Decree of the President of Ukraine is issued and is legally binding.

4. Termination of international treaties ratified by the Verkhovna Rada of Ukraine as a sanction pursuant to this Law is implemented by the Verkhovna Rada of Ukraine on the recommendation of the President of Ukraine or other subject of legislative initiative.

5. Decision on imposing of sanctions shall have a timeframe for their application excluding the sanctions that imply suspension of rights or other sanctions that cannot be applied temporarily due to their nature.

6. A decision on amendment of sanctions shall be taken by the same authority that has made the decision on imposing the sanctions pursuant to this Law at its own initiative or based on proposals from other state authorities set forth in part 1 of this Article.

7. A decision on cancellation of sanctions shall be taken by the same authority that has made the decision on imposing the sanctions pursuant to this Law if the sanctions have achieved their objective (Verkhovna Rada, 2020).

Therefore, economic sanctions are an integral part of international economic policy implemented through the theory of public (rational) choice, structural theory (input-output model), decision theory, theory of coordination and cooperative games, etc. The hierarchical nature of the mechanism for the application of sanctions lies in the existence of three main levels: global, regional (integration) and national.

The US-Iran sanctions case. To test the economic impact of sanctions, we examine the impact of US sanctions on Iran's economy. Iran is a country of great strategic importance to the United States. First of all, it is one of the largest oil producing countries in the world, able to affect the dynamics of world energy prices directly, which shapes the political climate in the region.

Due to its geopolitical location, Iran is able to control the Strait of Hormuz in the Persian Gulf and, under certain circumstances, block all tanker communications from the region, which provides for almost a quarter of the world's oil production, thus triggering a global energy crisis if necessary. In this context, the US-Iran relations are a political and economic barometer that largely determines the US status in the international arena and influences their internal political agenda.

Let us examine how the Iranian economy responds to sanctions imposed by the US and other countries. The study uses statistical data from World Development Indicators (The World Bank, 2020), International Financial Statistics (International Monetary Fund, 2020a) and Primary Commodity Prices (International Monetary Fund, 2020b) for the 1960-2018 periods.

The following macroeconomic Iran indexes have been selected for modelling:

CPI_GR – growth rate of consumer price index, in %; DUBAI_CRUDE_INX – Dubai crude oil price index, used as a reference for oil produced in the Gulf countries and exported to Asian countries; EXP_GDP – exports of goods and services, in % of GDP; FDI_NI_GDP – FDI inflow, in % of GDP; GCF_GDP – investments, in % of GDP; GDP_GR – GDP growth rate, in %; HH_FCS – expenditures of households and non-profit institutions serving them on final consumption, in % of GDP; IMP_GDP – imports of goods and services, in % of GDP; OIL_RENTS_GDP – oil rent, in % of GDP; SANCTIONS – dummy variable that reflects the periods of sanctions imposition on Iran; UNR – unemployment rate, % of labour force; EX_RATE_USD – Iranian rial exchange rate to USD.

Some indicators, such as fuel exports as a % of merchandise exports, were not included in the model due to insufficient data. SANCTIONS is dummy variable and has value "0" for 1960-1978 and in 2016, 2017, and "1" for 1979-2015 and in 2018.

Testing of selected variables for the presence of a unit root by the augmented Dickey-Fuller test and the Phillips-Perron and Kwiatkowski–Phillips–Schmidt–Shin criteria have showed that almost half of the indicators are first-order integrated, with the rate of inflation and investment, in relation to GDP, GDP growth rate, imports of goods and services and oil rent are stationary, that is zero-order integrated (Table 4).

Therefore, the model considered the growth of these variables, although the exchange rate of the national currency to the USD was excluded due to second-order integration.

In general, constructed first order vector autoregression model can be represented as follows:

$$\begin{pmatrix} d(\exp\_gdp_t) \\ d(cpi\_gr_t) \\ d(crude\_ind_t) \\ d(fdi\_ni\_gdp_t) \\ d(gcf\_gdp_t) \\ d(gdp\_gr_t) \\ d(hh\_fcs_t) \\ d(imp\_gdp_t) \\ d(oil\_rents\_gdp_t) \\ sanctions_t \\ d(unr_t) \end{pmatrix} = A_0 + A_1 \begin{pmatrix} d(\exp\_gdp_{t-1}) \\ d(cpi\_gr_{t-1}) \\ d(crude\_ind_{t-1}) \\ d(fdi\_ni\_gdp_{t-1}) \\ d(gcf\_gdp_{t-1}) \\ d(gdp\_gr_{t-1}) \\ d(hh\_fcs_{t-1}) \\ d(imp\_gdp_{t-1}) \\ d(oil\_rents\_gdp_{t-1}) \\ sanctions_{t-1} \\ d(unr_{t-1}) \end{pmatrix} + \varepsilon_t, \quad (2)$$

where A_0 – vector of constants, A_1 – the coefficient matrix with dimension 11x11, ε_t – vector of perturbations.

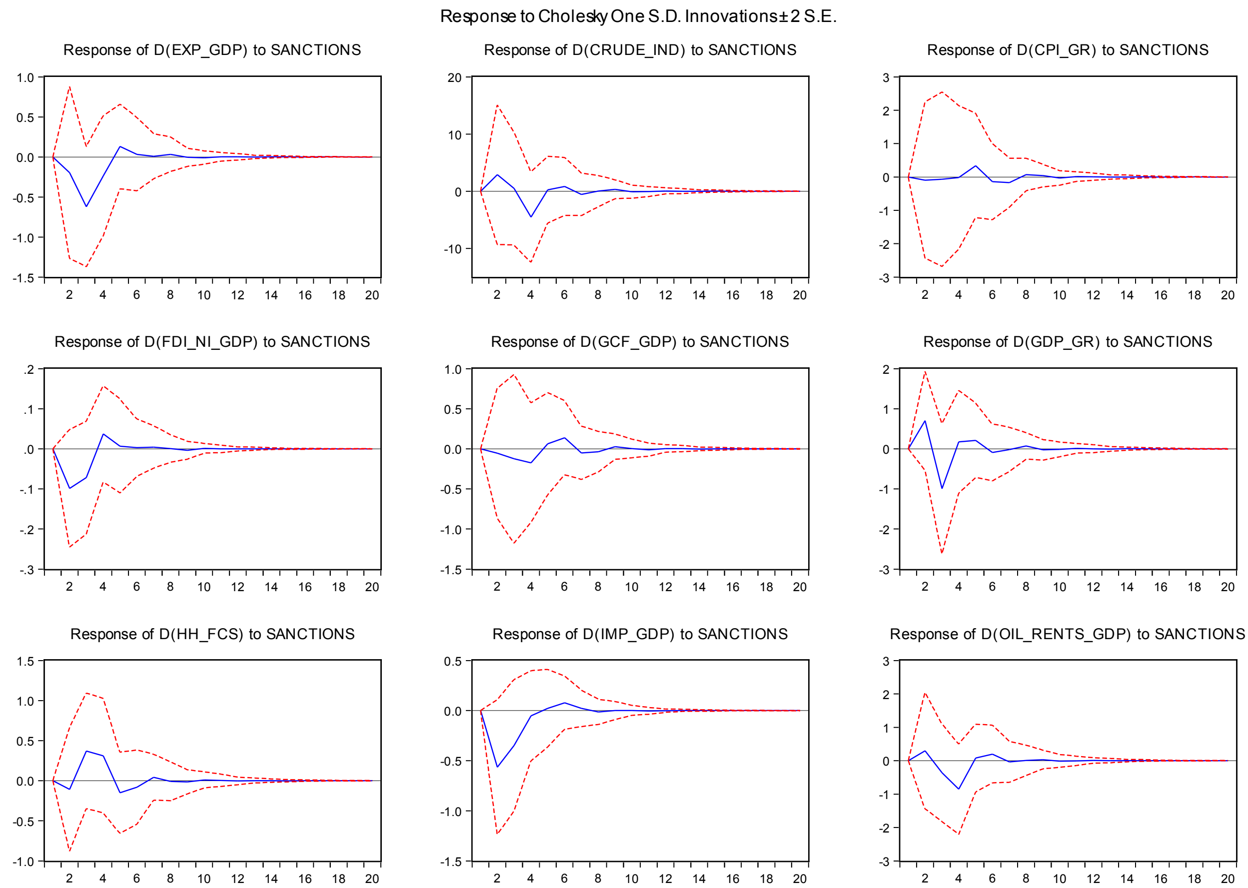

Figure 1. Impulse functions of key macroeconomic indicators in response to sanctions imposed on Iran's economy

Table 4
The results of testing the model's variables for the presence of a unit root

	Augmented Dickey Fuller test statistic	Phillips-Perron test statistic	Kwiatkowski-Phillips-Schmidt-Shin test statistic
CPI_GR			
Level	-3.708724*	-3.656835*	0.203741
1st differences	-7.853263	-15.08554	0.500000
CRUDE_INX			
Level	-1.885313	-1.885313	0.096219
1st differences	-4.394222*	-4.364545*	0.089777
EXP_GDP			
Level	-2.213141	-2.459382	0.083980
1st differences	-6.841613*	-6.847534*	0.051996
FDI_NI_GDP			
Level	-3.163795**	-3.296171	0.127850
1st differences	-8.661010*	-10.62144*	0.149100
GCF_GDP			
Level	-3.695595*	-3.649480**	0.087524
1st differences	-7.896751	-11.29626	0.211821
GDP_GR			
Level	-4.786256*	-4.809914*	0.263138
1st differences	-7.995384	-15.71650	0.103352
HH_FCS			
Level	-2.035934	-2.331047	0.080224
1st differences	-6.924034*	-7.088053*	0.133884
IMP_GDP			
Level	-3.155543**	-3.155543**	0.088792
1st differences	-7.128431*	-7.119012*	0.032772
OIL_RENTS_GDP			
Level	-2.984599**	-3.072106**	0.089013
1st differences	-7.429237*	-7.562084*	0.062878
SANCTIONS			
Level	-2.481996	-2.439001	0.211876
1st differences	-7.684869*	-8.311252*	0.618091
UNR			
Level	-3.012489	-3.126613	0.060872
1st differences	-5.071538*	-5.185183*	0.063159
EX_RATE_USD			
Level	3.831934	8.046119	0.233758
1st differences	-2.200124	-2.412342	0.694881

* significance at 1%
** significance at 5%
*** significance at 10%

The VAR model is stationary with lag 1 that has been chosen using Schwarz, Akaike and Hannan-Quinn information criteria.

Commenting the simulation results, it should be noted that the imposition of sanctions on Iran leads to an increase in the turbulence of its economy, in particular, there is deteriorating of some macroeconomic indicators and fluctuations of others, which is also confirmed by the input data dynamics (Figure 1).

Firstly, the imposition of sanctions results in a decrease of exports and imports of the country (which will offset only over the next eight years), a fall in the foreign direct investment inflows observed within four years, a slight decrease in investment in the economy within five years, and reduction of oil rent.

Secondly, sanctions lead to increased oil price volatility in the region, which could trigger turbulence in Middle East oil exporting countries and fluctuations in Iran's economic growth rate. From our point of view, for instance, volatility of GDP growth in the first three periods after shock caused by sanctions imposing could be explained by inertia of this indicator (Table 5).

However, despite the fact that these fluctuations are significant, they are temporary because the effects of the shock are gradually smoothed out over a period of four to eight years.

The results of variance decomposition of GDP growth demonstrate that volatility of GDP is mainly caused by oil price, sanctions and oil rent (Table 5). These factors constitute almost 50% of GDP growth volatility from

Table 5
Variance decomposition of GDP growth rate

Period	D(EXP_GDP)	D(DUBAI_CRUDE_IND)	D(CPI_GR)	D(FDI_NI_GDP)	D(GCF_GDP)	D(GDP_GR)	D(HH_FCS)	D(IMP_GDP)	D(OIL_RENTS_GDP)	D(SANC-TIONS)	D(UNR)
1	3.44	1.57	0.00	0.00	0.00	93.77	0.00	0.00	1.12	0.09	0.00
2	2.30	24.15	3.47	1.71	0.80	53.81	0.05	0.15	2.34	11.11	0.10
3	2.87	26.52	3.32	3.01	1.27	40.96	0.12	0.22	6.74	14.40	0.58
4	2.75	27.91	3.03	4.21	1.70	37.72	0.30	0.22	7.53	14.02	0.61
5	2.72	27.87	3.33	4.19	1.73	37.52	0.31	0.21	7.52	13.97	0.63
6	2.72	28.10	3.49	4.16	1.73	36.97	0.31	0.22	7.42	14.12	0.76
7	2.71	28.04	3.49	4.15	1.74	37.01	0.31	0.22	7.43	14.11	0.78
8	2.77	28.09	3.48	4.15	1.74	36.91	0.31	0.22	7.45	14.09	0.79
9	2.81	28.13	3.47	4.17	1.74	36.80	0.32	0.22	7.43	14.10	0.80
10	2.82	28.13	3.47	4.17	1.74	36.80	0.32	0.22	7.43	14.10	0.80
11	2.82	28.13	3.47	4.18	1.74	36.79	0.32	0.22	7.43	14.10	0.81
…											
20	2.82	28.13	3.47	4.18	1.74	36.78	0.32	0.22	7.43	14.10	0.81

period 4. In addition, changes in oil price are the most influential drivers of fluctuations in gross domestic product in Iran. However, approximately 37% of its volatility is due to own fluctuations.

5. Conclusions

Economic sanctions are an integral part of international economic policy, implemented through the theory of public (rational) choice, structural theory (cost-issue model), decision-making theory, the theory of coordination and cooperative games, etc. The hierarchical nature of the mechanism for the application of sanctions is available in three main levels: global, regional and national.

Despite its moderate effectiveness, the use of economic sanctions may also be appropriate for the following reasons: 1) infringer countries should not function in equal economic conditions with others, which is a signal to all countries, sanctions are an attempt to align the rules and reduce the level of unpredictability of actors in the sphere of international relations; 2) involvement in a confrontation with a sanctioned initiator may also mean the need to incur additional costs for the target country to support or increase its own military forces and reputational losses (if the sanctioned initiator has sufficient soft power level to convince third parties); 3) sanctions are often a deviation from the principle of individual responsibility when it is difficult to influence the perpetrators directly, but the introduction of smart sanctions against the perpetrators and those who support them directly, instead of the all the country population, may solve this problem only partially; 4) economic sanctions can serve as an auxiliary tool or a tool for rapid application or prevention.

The effectiveness of economic sanctions is determined by their role in the forms of countries and international organizations reaction on major violation of human rights, sovereignty of countries, international law in general. Our modelling of the economic sanctions effectiveness on the example of te US actions against Iran has shown that imposing sanctions on Iran leads to growth instability of Iranian economy, decline of budgetary, commercial and monetary indices, including foreign trade decrease (which will balance in the next eight years, at other equal conditions), falling FDI, reduction in oil rent, etc. The US sanctions increased oil price fluctuations in the Middle East region. The simulation results have shown that the Iranian GDP decreased is mainly caused by oil price drop and the US sanctions, but approximately 37% of its volatility is caused by internal reasons. However, these fluctuations are temporary, as the shock effect gradually negates in the period from four to eight years.

Overall, regardless of how scientists determine and evaluate economic sanctions, we believe that economic sanctions should now be seen as a comprehensive tool in modern global economic wars.

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