

Analysis of Russian Foreign Action Decision-Making under Prospect Theory

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Abstract: *Prospect theory, as a meso-theory of foreign policy-making, has shown unique advantages in analyzing foreign policy-making problems. The Russian-specific complex frame of reference plays an important role in decision-making on high-political issues, framing itself in a constant-loss framework through complex reference dependence, and thus exhibiting dynamic loss characteristics. The Russian complex frame of reference is a three-dimensional dynamic framework consisting of four main reference spheres: the Slavic ethnic sphere, the Orthodox cultural belt, the collection of Russian-speaking communities, and the focus of geopolitical interests, and thus exhibits different subjective value judgments, i.e., psychological reactions. The compounding of the different spheres leads to a superimposed effect in framing Russia's situation and to a strong representation of its behavioral responses.*

Keywords: *Prospect theory, Composite reference system, Constant loss framework*

1. Problem formulation and significance of the study

1.1. Problem formulation

On December 17, 2021, the Ministry of Foreign Affairs of the Russian Federation published the draft "Russian-US Security Assurances Treaty" and the draft "Agreement on Security Assurances between Russia and NATO Members". The Ministry of Foreign Affairs stressed its serious concerns about NATO's eastward expansion and the principle of "indivisible security". The President of Ukraine said that Ukraine will continue to seek membership in NATO, and NATO Secretary General Jens Stoltenberg made it clear that "Russia does not have a veto on Ukraine's membership in NATO". Prior to this, NATO had completed five eastern expansions on the basis of the size of the end of the Cold War, gradually approaching the Russian national security "red line". On February 24, 2022, Russian President Vladimir Putin made an emergency televised statement that he had decided to conduct special military operations in the Donbas region. The Ukrainian General Staff also said on the same day that Russian armed forces began strikes on military facilities and military airports in several Ukrainian cities at 5:00 p.m. local time.

1.2. Significance of the study

In January 2022 Professor Tang Shiping predicted the probability that Russia would send troops to Ukraine through the inverse induction method of game theory. He tried to apply the logic of preventive war to explain Russia's action against Ukraine. In addition many scholars explain this Russian foreign military action mainly through historical analysis method and empirical research method, but there are few cases of analysis using systematic theory. This paper attempts to use prospect theory to identify the deep logic of Russia's foreign actions and explain the root causes of Russia's foreign actions. This paper provides new universal normative theories and perspectives for understanding Russian foreign policy-making, and proposes new concepts such as compound reference system, compound reference dependence, constant loss framework and dynamic loss, which open up new ideas for understanding the decision-making process of Russia's foreign actions in high political issues.

2. Prospect theory analysis framework

2.1. Literature review

Prospect theory, also called prospect theory, is a theory of decision making under uncertainty and has been widely used in many fields since its creation in 1979. It was co-proposed by Daniel Kahneman and Amos Tversky, and belongs to the descriptive paradigm among the three paradigms of political psychology. In his article "A Review of the International Political Psychology School," Qingmin Zhang argues that international political psychology, including prospect theory, makes up for the shortcomings of international relations theories such as realism and liberalism, which focus too much on macro-theoretical construction, and opens up new paths for international political research. Prospect theory is a combination of psychology and economics, and its research object focuses on the individual decision-making level of leaders and leadership or leadership groups, and studies behavioral decision-making under uncertainty in social sciences. Prospect Theory: Analysis of Decision-Making under Conditions of Risk, published in 1979, is considered to be the founding work of prospect theory. In his article "Prospect Theory, Rational Choice, and International Relations," Jack S. Levy argues that prospect theory can present experimental findings in a combinatorial model. Therefore, prospect theory has a great impact.

2.2. Decision-making process

The decision making process of prospect theory can be divided into two phases: editing and evaluation. The editing stage has two tasks: one is to select a reference point, and the other is for the decision maker to determine whether its own situation is a gain or a loss based on the selected reference point, i.e., to frame the situation. Based on the determination of their own reference points and frameworks, they consider the possible policy options available and the possible outcomes of the policy options, i.e., they assess the value and probability of the policy.

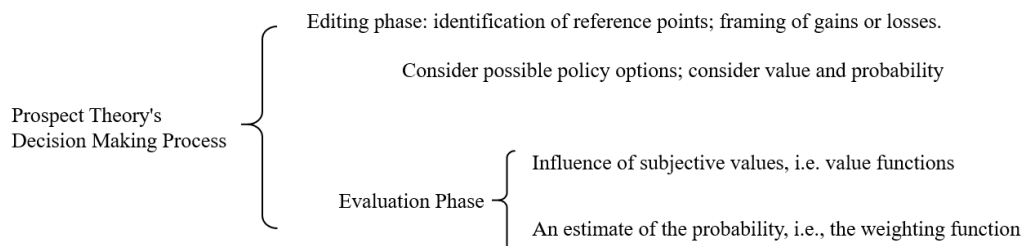


Figure Source: Jiwen Chen. *A Study on Japan's Territorial Disputes with Neighboring Countries in the Perspective of Prospect Theory (1991-2020)* [D]. School of Foreign Affairs, 2021. DOI:10.27373/d.cnki.gwjxc.2021.000021.

Figure 1: Decision-making process of prospect theory

In the evaluation phase, the main task of the decision maker is to assess the value and estimate the probability for the decision options derived from the editing phase and to make a final decision. In the perspective of prospect theory, the results of the evaluation phase are mainly influenced by two factors, namely, the estimation of subjective value and probability, which can be expressed by the value function and the weighting function, respectively.

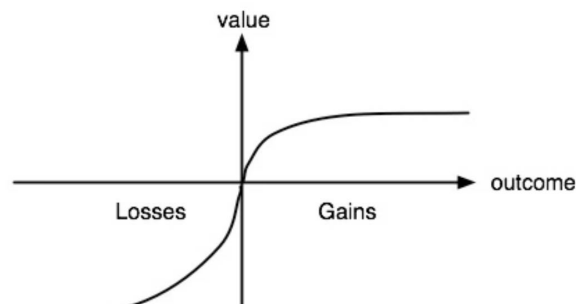
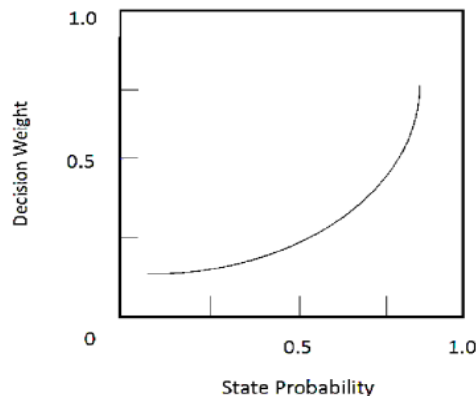


Figure Source: Kahneman Daniel and Tversky A.N, "Prospect theory: An analysis of decision under risk" *Econometrica*, Vol.47, No.2, 1979, p.283.

Figure 2: Prospect Theory's Value Function

Observe the value function we will find the following characteristics: First, the value function is based on the change of the reference point and change, that is, the final benefit is measured by the degree of deviation from the reference point to define, rather than the final amount. Second, the graphical value curve is concave in the gain zone, i.e., above the reference point (zero), and convex in the loss zone, indicating that people have diminishing sensitivity, i.e., diminishing marginal utility, as the gain or loss continues to increase. This implies that the benefit framework exhibits risk aversion characteristics, while in the loss framework it exhibits risk acceptance characteristics. Finally, the slope of the curve change in the loss framework is greater than the slope of the change in the gain framework, i.e., the diminishing marginal utility at benefit is faster than the diminishing negative marginal utility at loss, and exhibits loss aversion in the decision making process



A hypothetical weighting function

Figure Source: Jack S. Levy, "An Introduction to Prospect Theory", *Political Psychology*, Vol.13, No.2,1992, p.182.

Figure 3: Prospect Theory's Weighting Function

The weight function is used to measure the effect of event probability on expected expectations. The weight function is not a linear function, and the relationship between decision weights and event probabilities is not a fixed multiplicative one. This suggests that decision makers tend to overestimate small probability events and underestimate medium to large probability events when making decisions, but are not sensitive to changes in probability at intermediate stages. This may be a good way to explain why Russia's military action against Ukraine was so unexpected. Looking at the weight function we see that the slope of the function is less than 1 except at the endpoints where it is close to 1.

This reflects the fact that decision makers are less sensitive to changes in probability than expected due to their preference for the event itself. That is, there is a deterministic effect: the weighting of "deterministic events" is greater than that of other "uncertain events".

2.3. Basic viewpoint

Through a basic understanding of the prospect theory decision process, it is easy to find the following characteristics of decision makers when making decisions, which are the basic perspectives of prospect theory.

2.3.1 Reference dependence

Decision makers tend to be more sensitive to how much the gain changes than how much the total gain is. Therefore, the inflection point between gains and losses is extremely important in decision making, and this inflection point is called reference point in prospect theory. Reference dependence is the cornerstone of prospect theory, and different reference points generate different risk preferences and lead to different policy choices. For example, "routine military exercises" conducted by NATO members are likely to be perceived as a "serious military provocation" by Russia, while military exercises conducted by China are rarely and rarely perceived as a threat.

2.3.2. Framing effect

The framing effect is the effect of a decision maker's subjective framing of an objective situation. The framing effect is a central component of prospect theory, where the decision maker's preference depends on the outcome of the framing, i.e., whether he or she is in a position to gain or lose relative to a chosen

reference point. Kahneman and Tversky point out that in the process of subjective framing, individuals tend to underestimate higher and overestimate lower possibilities. That is, different subjective representations of the same objective situation may lead to different decision outcomes. For example, in his emergency televised address in February 2022, Vladimir Putin will repeatedly emphasize the decline of the Soviet Union and the West's deception of Russia. He pointed out that the Western bloc is an "empire of lies" that is trying to "crush and even destroy Russia. This is a reference point to the strength of the Soviet era, framing himself in terms of loss.

2.3.3 Loss aversion

Decision makers' subjective perceptions of gains and losses in the decision-making process are asymmetrical, manifested by a greater sensitivity to losses than to gains. Looking at the value function, it can be found that the loss part of the curve below the reference point is closer and steeper to the vertical axis, i.e., "the subjective impact of losses is greater than the equivalent gains". For example, for Russia, the attitude on Chechnya is stronger than that on Crimea. This is due to the fact that the loss of Chechnya and the gain of Crimea bring different subjective feelings to Russia.

2.3.4 Status preference

Status quo bias is the tendency to be risk-averse. Decision makers tend to view the costs of deviating from the status quo as losses and the benefits of deviating as gains when making decisions. Since decision makers are loss averse, they tend to exhibit a tendency to maintain the status quo. It manifests itself as a different risk preference when making foreign policy decisions. When below the reference point in the loss framework one dares to take risks to restore the psychological expectation of the situation, while above the reference point in the gain framework one tends to avoid risks to maintain the status quo. Russia's military risk-taking actions against Ukraine are characteristic of risk acceptance resulting from status quo preferences.

2.3.5 Other perspectives

In addition to the basic points mentioned above, there are a number of important perspectives on prospect theory. These include: it can explain the sunk cost effect of the Soviet Union's reluctance to withdraw its troops despite its huge losses in Afghanistan. The certainty effect of rejection of uncertain events and preference for certain events caused by loss aversion. And the endowment effect - the valuation of an item already owned is higher than the valuation of an item when it is not owned - can be used to explain the Russian government's resolute attitude on Chechnya.

3. The Russian "composite reference" model

3.1. Composite reference system

The selection of the reference point is a prerequisite for the decision analysis under the prospect theory. The decision of Russia's foreign actions must be based on a certain psychological expectation reference point, which is not a "national security red line" in the simple sense. This reference point is not a "national security red line" in the simple sense, but a composite reference system with a wide range of meanings constructed from several reference points. This system includes, according to the hierarchy of importance, from low to high

(1). Slavic ethnic circle: Slavic ethnic group is the largest ethnic group in Europe, widely distributed in the east, south and southeast of Europe, divided into East, West and Yugoslavia. As the outermost circle of the entire frame of reference, the Slavic ethnic circle plays a role in Russian foreign policy considerations. Its often used to frame non-core interests along the outer edge. For example, the Soviet Union's inclusion of Poland, the Czech Republic, and other Central and Eastern European countries in its sphere of influence during the Cold War was in part a result of this consideration. In the modern Russian diplomatic action decisions are mainly manifested as a weak identity and cultural cognitive ties, the reference role is more limited.

(2). Orthodox cultural belt: Russia inherited the mantle of Orthodoxy after the fall of the Eastern Roman Empire and was named the "Third Rome". The Orthodox cultural belt mainly includes the Slavic countries of Eastern Europe (Ukraine, Georgia, Belarus) and other regional countries, such as Serbia, Armenia, etc., as well as some individual nationalities within the countries. The Orthodox cultural belt is used as a sub-outer circle of the composite frame of reference, mainly to frame Russia's non-core interests within the inner line. The seizure of Kosovo's airfields during the 1999 Kosovo War, with the

cooperation of Russian forces and Serbia, can be seen as an action taken after framing the Orthodox cultural belt as a reference.

(3). Collection of Russian-speaking communities: Russian was the only official language of the Russian Empire under Tsarist Russia and was widely spoken throughout the Soviet Union and parts of the surrounding region during the Soviet era as a result of the Soviet government's language policy. The Russian language is currently spoken in some of the former Soviet republics (Central Asia, Belarus, etc.) and some of the former Soviet satellites (Mongolia, etc.), as well as in some of the countries with individual ethnic groups (the Udorn region). The collection of Russian-speaking communities serves as a secondary inner circle of the complex frame of reference. It is mainly used to frame the outer boundaries of Russia's core interests. When large-scale civil unrest broke out in Kazakhstan in early 2022, the Russian-led CSTO actively intervened and quickly quelled it. The outbreak of the crisis in the UAE in 2014 and the assistance to the Russian-speaking population in the UAE were, to some extent, the result of the framing of the Russian-speaking community pool as a reference.

(4). Geo-interest focus: Geo-interest focus is the most critical reference point in the entire "composite reference system", and is also the "bottom line" and "red line" for Russia's geopolitical interests. They are often the core hotspots that have a significant impact on Russia's national security, including the key areas in and around Russia's territory and some of the pivot points of Russian interests abroad. The innermost circle of the entire frame of reference is often used to define the inner boundaries of Russia's core national interests. The two drafts published by the Russian Foreign Ministry on December 7, 2021, give us a first idea of the contours of the "geo-interest focus" in Russia's eyes. The drafts explicitly require that NATO not engage in military activities in Ukraine, Eastern Europe, Transcaucasia and Central Asia that are detrimental to Russia's national interests. And Ukraine cannot join NATO. The parties will not deploy short- and medium-range missiles in areas where they can strike each other. As we can see from the above statements, the core of Russia's national interests is focused on geopolitical interests and national military and political security. The most central element of Russia's foreign military decisions on several occasions has been the divergence of this reference point from the status quo, which has caused Russia to lose money and take risky actions.

It is worth noting that the boundaries between the different circles of the "composite frame of reference" are not very clear, there are often areas of intersection and overlap, and there is a tendency for dynamic adjustments. This adjustment changes with the size of the political and economic power of the Russian state and the international and regional situation. The magnitude of change is influenced both by changes in national strength and by the regional situation and international power contrasts. While the focus of geopolitical interests is central, it may also exist outside the outermost circle and behave more diffusely. A good example of this is Russia's troop deployment to Syria in 2015 in support of the Bashar government.

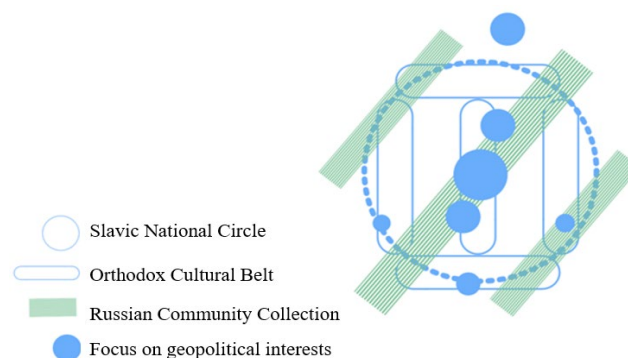


Figure 4: Russian Composite Reference Frame

Figure source: Author's own production

3.2. Compound reference dependence and constant loss framework

The determination of reference points leads to reference dependence of decision makers. The compound reference system brings about "compound reference dependence". In other words, when facing the same situation, Russian decision makers often do not choose only one reference point, but also several different reference points at the same time. After a series of complex processes, a three-dimensional reference system is formed, which frames the situation. This is particularly evident when it

comes to high political issues. The result of using this composite frame of reference to refer to and frame its own situation is that no matter how the frame of reference changes, Russia will always end up framing itself within a loss framework, or a "constant loss framework. Understanding this framework is the key to understanding Russia's foreign operational decisions.

The growth of the early Russian state as a defenseless plain state was accompanied by a history of invasion and aggression, and as a result, a high sensitivity to the so-called "buffer zone. During the Cold War, the buffer zone was even extended to the outside of the Slavic national sphere and was maintained for almost 40 years. This prolonged satisfaction of psychological security led the decision makers of the time to frame themselves in a high-yield framework. The situation changed radically in the 1990s. The instantaneous change from high gains to high losses prompted Russian decision makers to show a strong aversion to losses, which directly contributed to the formation of complex reference systems and complex reference dependence. Compound reference dependence is a three-dimensional dynamic dependence. It includes both the stable psychological expectations formed in the early stage and the new perceptions of the current situation formed in post after continuous adjustment. The framing under the action of the compound frame of reference thus exhibits the characteristics of dynamic loss. In order to better understand the particular constant loss framing under compound reference dependence in Russia, we assign values to different circles in the compound frame of reference. The following table can be derived.

Table 1: Russian Constant Loss Framework

Different circles in the composite reference system	Non-Core Interests Outside the Lines	Non-Core Interests Inside the Lines	Outside the core interest line	Along the line within core interests
Amount of gain	-1	-2	-3	-4
Psychological response	Doubt	Nervousness	Anxiety	Anger

Chart source: Author's own production

Composite reference dependence emphasizes the composite nature of reference selection with the dynamic loss of constant loss frameworks. Compoundness emphasizes that the reference standard that provides the benchmark for situation framing is not a fixed point, but a three-dimensional system. Some of the circles in this system may change partially, but the system as a whole is able to maintain dynamic equilibrium in general. For example, Slavic ethnic circles change with population movements, but Slavic-majority countries remain largely unchanged for a considerable period of time. Orthodox cultural belts change with the population of believers, but the extent of their influence is historically shaped. This process of converting people to religion is extremely slow. Russian-speaking communities can change in response to adjustments in the language policy of the host country. But this change is often intergenerational. The impact on established communities and their perceptions of their own identity is limited. Changes in the focus of core interests are more difficult. These foci are inherent impressions developed over a long historical process, and their changes tend to vary from state to state and often manifest themselves in the form of regional flashpoint issues. Dynamic losses emphasize that the perception of the amount of losses is dynamic, giving the framing results a "superposition effect".

When different reference points in the complex frame of reference are selected, the decision makers show the psychological response pattern shown in Table 1. However, the special feature of the Russian composite frame of reference is that the frame is not a reference point, but a frame of reference. The framing by reference points leads to subjectively different value judgments, i.e. different psychological reactions. In contrast, framing by a compound reference system often shows different behavioral responses resulting from the compounding of different psychological responses. Behavioral responses are not directly caused by subjective value judgments, but by the "superposition effect" of different value judgments under different conditions. The pattern of behavioral responses will be superimposed and change within a certain range according to the amount of losses under different value judgments. When the superposition of losses exceeds a certain range, the behavioral pattern will change accordingly, which makes the Russian constant loss framework exhibit the characteristics of dynamic losses.

We name the different circles in the composite frame of reference as ABCD in descending order of importance, and the following occurs when they are superimposed according to the assignment in Table 2.

$$A=-1 \quad B=-2 \quad C=-3 \quad D=-4$$

$$A+B=-3 \quad A+B+C=-6 \quad B+C=-5 \quad C+D=-7 \quad A+D=-5$$

$$A+C=-4 \quad A+B+D=-7 \quad B+D=-6 \quad A+B+C+D=-10 \quad B+C+D=-9 \quad A+C+D=-8$$

Table 2: Dynamic loss characteristics in the constant loss framework

Earnings Value	Behavioral Response
-1~3	Conversation
-4~6	Low Intensity Intervention
-7~9	High Intensity Intervention
-10	Full confrontation

Chart source: Self-made by the author

Graph 6 allows us to have a deeper understanding of the significance of the constant loss framework, and many examples can be found in reality. For example, Syria, where the situation deteriorated in 2015, is simply a focus of geopolitical interest. The fall of the Syrian government and thus pro-West may affect Russia's geo-security with a gain value of -4. The Russian government intervened at a low intensity, such as building military bases and airstriking terrorist groups in Syria, and the CD condition was met in early 2022 with a gain of -7. The Russian government intervened at a high intensity, and the CSCE quickly dispatched troops to quell the unrest. The Ukraine crisis is a good example of the dynamic nature of the framework. At the time of the 2014 crisis in the Ukraine, NATO had not yet completed its fourth round of eastward expansion. The possibility of Ukraine joining NATO was within Russia's control, satisfying the ABC condition with a gain of -6. Russia intervened at a low intensity, providing support guidance and assistance to the militias in the U.S. East. When NATO completed its five rounds of eastward expansion and targeted Ukraine, the likelihood of Ukraine joining NATO and going nuclear suddenly increased. Whether Ukraine joins NATO has become a serious threat to Russia's national security and a focus of geopolitical interest. At this point the situation meets ABCD conditions and a full-scale confrontation breaks out.

3.3. Evaluation phase

At the end of the first phase of prospect theory, the editing phase, decision makers focus on value assessment, or the evaluation phase. This phase relies on the principles demonstrated by the value and weight curves for policy selection and ultimately decision making. In fact, this phase of the process begins when the Russian composite frame of reference is formed and framed. The transformation from psychological to behavioral responses is itself the result of an evaluation. Based on the dynamic loss characteristics of the responses in Figure 6, the following conclusions can be found after a simple probability calculation. The probability of the outcome leading to a dialogue is 4/15 out of 15 superimposed. The probability of leading to low-intensity intervention is 6/15. The probability of leading to a high intensity intervention is 4/15. The probability of leading to full-scale confrontation is only 1/15. This implies that the Russian government may be inclined to intervene at different levels of intensity when making policy choices. This seems to be a good explanation for Russia's ability to be assertive in its foreign action decisions while always maintaining a degree of restraint. But in practice it should be noted that regardless of the initial subjective value judgments, the reference should be made to the inner line of core interests. That is, when the issue touches the focus of Russia's geopolitical interests, its behavior pattern immediately changes qualitatively. The most important variable that causes the overall confrontation is the superposition of the reference along the core interests. This is also reflected in the weighting function: although the probability of full-scale confrontation is only 1/15 in the total behavioral response pattern, Russian decision makers show high sensitivity to this small probability event in the decision-making process due to the presence of the largest variable of the geopolitical interest focus.

3.4. Other explanations

Some other principles of prospect theory can play a complementary role in our understanding of this Russian military action. First, if Russia allows NATO to approach Ukraine, the outcome is beyond Russia's control and certainty. However, if a military operation is launched against Ukraine, the process of Ukraine's joining NATO will be directly interrupted. It is certain that Russia regains the initiative, and this is the certainty effect. Secondly, the sunk cost effect can be used to understand Russia's behavior of increasing its investment after investing a lot of money and energy in the direction of Ukraine unable to accept the development of events in the direction unfavorable to itself. Finally, according to the endowment effect, the special historical, political and economic ties between Russia and Ukraine make Russia consider Ukraine as a "brother nation" and its own traditional sphere of influence. The loss of Ukraine would be absolutely unacceptable for Russia.

4. Conclusion

The analysis of Russia's foreign action decisions based on the composite reference model shows that the Russian government consistently frames itself in a loss framework in its action decisions on high political issues. This framing leads to strong loss aversion and high-risk acceptance characteristics in the decision-making process. The constant-loss framework under compound reference dependence has dynamic loss characteristics, which implies that there may be stable psychological expectation responses to different amounts of losses. However, subjective value and weight judgments and the resulting behavioral responses exhibit superposition effects due to the composite nature of reference selection. This also explains why the Russian government tends to be highly sensitive to high political issues and is used to show assertiveness when making decisions. The weighting function also well explains how behavioral responses in the dynamic loss profile can change instantaneously from high-intensity intervention to full confrontation by adding just one loss amount. Decision makers are not sensitive to probabilistic changes in intermediate stages. In short, this particular Russian military action against Ukraine appears to be a historical accident, but is in fact a realistic necessity.

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