Nash Equilibrium Scenarios for Russian Automotive Market Development

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Abstract This paper considers the problem of Russian car market development under interested parties' interaction. For this purpose the main players' strategies and payoffs are defined and an extensive form of the game is built. Nash equilibrium scenarios are found and interpreted in terms of individual and cooperative points of view.

Keywords: car industry, extensive form of the game, nash equilibrium, pareto equilibrium.

1. Introduction

In this paper the problem of equilibrium scenarios for Russian automotive market development and its substantial interpretation is considered. The purpose of this article is to find equilibrium scenarios for Russian automotive market development using multistage game theory model. Mathematical models of the conflicts with an account for dynamics are studied in the theory of positional games. The simplest class of positional games is a class of the finite-stage game with complete information.

In order to achieve the objective of the paper several steps are needed to be implemented. First of all, we need to conduct analysis of car industry's state of affairs in Russian Federation from interested parties' points of view. After that we will be able to identify the interested parties and players of the conflict. The third step is the revelation of the players' strategic options and building the game tree of the conflict. The final step of the paper is finding the equilibrium scenario and conclusion making.

Thus, in this paper the applicability of the game-theory modeling to the number of conflicts without access to the quantitative information is considered. The main conditions and framework of the method are stated. After all, the effectiveness of game-theory modeling is proved and the main advantages and drawbacks of the method are depicted.

2. Present Situation in Russian Automotive Industry

Nowadays the Russian automotive industry is the subject for constant discussions. On the one hand the market has grown significantly, the foreign companies have come to Russia and national companies came back to the profitability in 2010 after sharp slump in 2008-2009 (Russia Autos Report. 2011). Actually, in the end of

2009 - beginning of 2010 the market reach the historic minimum of 2006. The sales volume was 1,52 mln vehicles, including 1,355 mln passenger cars. The production also decreased noticeably from 1,79 mln vehicles in 2008 to 0,722 mln in 2009.

The passenger car market increased in 2010 by 30%, while the production grew up by 86% and reached the number of 1,108 mln cars. The difference between the market and production increase is substantial. Therefore, we can conclude, that the volume of imported cars changed insignificantly. It is also proved by the following data:

Table1: **Car sales in 2009-2010 in Russia.**

Car types	**Thousands of units**			**USD, bln**		
	2010	2009	Change (%)	2010	2009	Change (%)
Russian cars	555	380	46%	5,0	3,4	47%
Foreign cars assembled in Russia	605	350	73%	11,8	5,9	100%
Import of new foreign cars	600	625	-4%	16,9	16,5	2%
Total	1760	1355	30%	33,7	25,8	31%

The reason of Russian cars sales volume increase by 46% (to 555 thousands of units) is the Utilization program, held by Russian authorities. This program assumes the discount allotment that covers the particular car models for those customers, who utilized their old cars. Within this program 270 thousands vehicles were sold (Ministry of Industry and Trade. 2011), therefore such a program boosted the market demand. According to the Minpromtorg, approximately 80% of cars in the program were the AvtoVAZ production. In 2011 the government is planning to subsidize additionally 100 thousand cars. After that the program will be scraped gradually in order to avoid sharp decrease in sales.

Despite the fast growth in 2010, the market share and production share of the Russian car producers have been decreasing since 2003 (Figure 1).

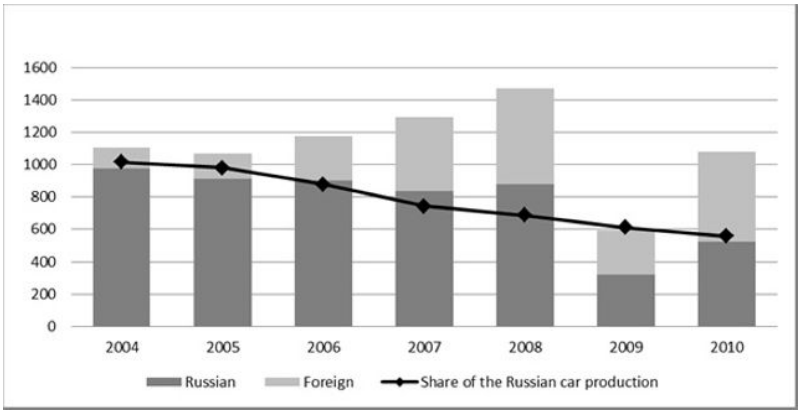


Figure1: Car production in Russia (thousands of units)

Car production of foreign companies on the Russian Federation territory has risen during last several years In fact, the foreign car producers, who assemble car in Russia, had the most substantial growth in 2010 (116%) due to the import

substitution (Rut S. 2011). In 2005 the Russian authorities impose the so called "industrial assembly" regime. According to this regime the multistage production localization of the vehicles and auto components was considered (Strategy of the Russian industry development till 2020. 2010) in order to substitute the part of the direct import by the Russian-made products. Within this regime a lot of car makers came to Russia and start to assemble the cars on the territory of Russian Federation. The terms of industrial assembly required from the foreign carmakers the production capacities of 25 thousands cars per year and the production localization at the 30% level (including car painting, welding and assembly) (Reus A. 2010.). If the foreign companies complied with these rules, they obtained the right of the components duty-free transportation in Russian Federation. The customs duties on finished products were raised to 30% to make the regime functional.

Nevertheless, according to the report, presented in "Strategy of the Russian Automotive Industry Development till 2020", this regime "didn't create the premises for development of economically reasonable up-to-date production facilities in the Russian auto components' industry". Hence, despite the increasing investments into Russian economy, this regime wasn't sufficiently effective for industry's sound development.

In fact, the present situation in the Russian automotive industry reveals the number of problems that should be solved for effective and sound car industry development. The main problems of Russian car industry are listed below:

- Lack of R&D and absence of innovations implementation experience negatively influences on quality and assortment of the products offered;
- inefficient usage of production facilities - on the one hand the production facilities are incapable to satisfy the internal demand of Russian market, but on the other hand they remain uncharged;
- underdevelopment of the Russian auto component's industry (because of the lack of competition) results in unsatisfactory quality and narrow assortment of the Russian-made components (Strategy of the Russian industry development till 2020. 2010);
- total deterioration of the factories' capital funds and technology obsolescence at the native production facilities leads to lag in technology within the industry and "low level of the Russian companies' investment appeal" (Sharovatov D. I. 2007);
- management ineffectiveness consists of huge bureaucratic system of the administrative staff and low quality of production and human resource management;
- lack of flexibility and slow adaptation of the Russian carmakers to fast-changing environment is resulted from the complex vertically-integrated organizational structures and inexperience in terms of the globalization. Consequently, for native companies it is impossible to resist the increasing competition of the foreign carmakers on Russian market (Sharovatov D. I. 2007);
- insufficient industry legislation, including absence of the clear integrated customs regulation policy hinder the industry development.

In order to solve the following problems the "Strategy of the Russian Automotive Industry Development till 2020" was elaborated by Ministry of Economic Development and Ministry of Industry and Trade in March 2010.

Based on the legislative acts and other enactments for Russian socio-economic

development and on the conducted analysis of the current Russian automotive market conditions, the Strategy states the main purpose, goals and scenarios for Russian automotive industry development (Strategy of the Russian industry development till 2020. 2010). The main purpose of the Strategy is the maximization of the value added at the each car production stage from the steel and materials production to finished product assembly. Also in the Strategy the necessity to provide the variety and quality of the cars produced is highlighted (Ministry of Industry and Trade. 2011).

In order to achieve the purpose of the Strategy the following goals are posited:

- the satisfaction of the transportation industry needs;
- competitive recovery
- maximal localization of the auto components and vehicles production and the boosting competitiveness of the Russian auto components-makers;
- development of the technical regulation in the automotive industry and shortening of the technological lag between Russia and leaders in the automobile production;
- development of the production facilities in different regions of the Russian Federation, including Siberia and Far East;
- scientific base establishing in order to conduct R&D and find the opportunities for new cars and components design and construction;
- reformation of the education system for automotive industry;
- legislation improvement in the automotive industry.

In the Strategy the list of the main activities was also defined in order to reach the objectives. In includes stimulating demand activities for Russian market growth, different tariff and non-tariff measures for import diminution, stimulation of the localization level increase, establishing different joint ventures between native and foreign companies, legislative base elaboration, etc. Difference in views of interested parties can be noticed while considering these activities. According to the UK analytic company Business Monitor International import tariffs and new terms of industrial assembly won't be effective measure and can alienate investments from Russia. Moreover, modified terms of industrial assembly mismatch with the World Trade Organization requirements and can impede the entry of Russia in WTO.

New terms of industrial assembly came into effect the 4th of February 2011 (New terms of the industrial assembly. 2011). They assume that assembling facilities should be at minimum capacity of 300 thousands vehicles per year. In addition, investments in the establishing new facility should be at least $ 750 mln., while investments for modernization of an existing facility should be at least $ 500 mln. The other term of the industrial assembly regime is the gradual localization percentage increase within 4 years from 30% to 60% (Nepomnyachi A., Pismennaya E. 2010). The new terms should have been signed till the 28th of February 2011 for 8 year period. Despite the fact that these terms can be applied not only to single companies, but also to the alliances, they could push away certain investors (Russia Autos Report. 2011). For example, Fiat decided to leave the Russian automotive market, Volkswagen also had some claims.

Low quality of Russian brands' products often provokes complaints of the customers, customs duties increase and toughening the terms of industrial assembly could lead to price increase. All these factors could negatively influence the demand and customers satisfaction.

3. Interest parties, their goals and policies

In order to analyze the conflict considered we should reveal the interested parties, players of the conflict and their goals and policies. Interested parties are the government, native carmakers, foreign carmakers, customers, producers of auto components, dealers, etc. Nevertheless, only a few interested parties have the opportunity to influence the decision making process of other parties. They are the players of the game.

The first player in the conflict is the foreign carmakers. The assumption of this paper is that the foreign carmakers represent the entity and we don't split them in smaller subsets. In the set of foreign companies we include the importers of finished products in Russia, as well as the companies with production facilities on the territory of the country.

The question of Russian car market attractiveness is disputable nowadays. According to the Roland Berger European consultancy Russian car market is very attractive for foreign carmakers in long-term perspective, in spite of its sharp decline in 2008-2009. The Government is highly interested in foreign investments attraction, and the Russian carmakers assets prices were favorable for Russian companies' acquisition. Nevertheless, according to the Mark Mobius, the well-known investor, "Russian automotive industry has a long-term potential, but its short-term perspectives are not so bright". He gives a preference to Chinese car industry in comparison with Russian automotive industry. The Business International Monitor agency in its report also mentions factors of investments and importers outflow (such as industrial assembly terms toughening).

Nevertheless, according to the Original Equipment Suppliers Association data the average price of a new car in Russian in 2008 was $ 23 000 (Roland Berger Strategy Consultants. 2010), which is the highest price in BRIC countries (Figure 2).

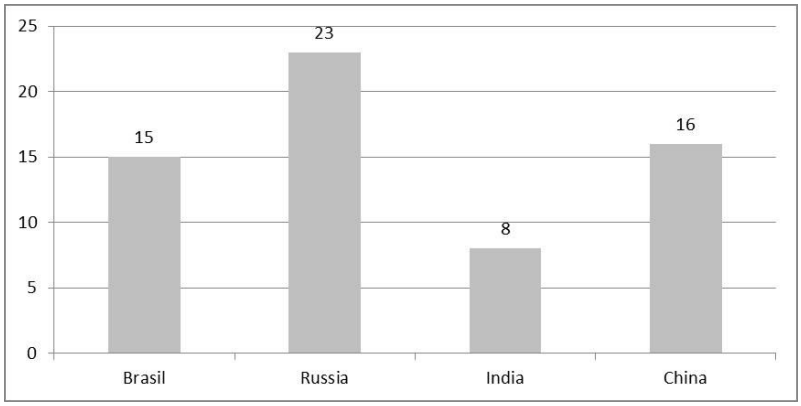


Figure2: Average prices on cars in BRIC countries, 2008 (in thousands of USD)

Attractiveness of Russian car market for foreign investors is also confirmed by CEO of "Avtostat" analytic agency Sergey Udalov. In March 2010 he claimed that "foreign companies considered the Russian automotive market as prospective, and those companies who have the possibility to invest continue to run their projects"

(Buchina I. 2010). He also admitted that termination of investing into production facilities development is unprofitable for foreign companies even with significant change of the conditions. Low competitiveness of the Russian companies also benefits for foreign carmakers.

Therefore we can conclude that foreign companies presented on the Russian car market consider this market as prospective. Nevertheless, the carmakers that intent to penetrate this market and exporters are less interested in the further activity, because of the high customs duties barriers and huge expenses for newly entering companies in terms of industrial assembly regime (Nepomnyachiy A., Pismennaya E. 2010).

On the basis of the above mentioned information we can derive that foreign carmakers want to stay at the Russian car market, save their investments and share of the market. Nevertheless, to decline negative effects and additional costs because of new terms of the industrial assembling, they try to establish alliances with other carmakers. Therefore, the main direction of the foreign carmakers' policy is the temporary abstention from the large-scale activity on the Russian car market and taking the waiting attitude. Companies that didn't sign the agreement on terms of industrial assembly will wait for Russian entry in WTO and customs duties diminution (Toyota, Hyundai-Kia). The companies, which contracts came to an end, signed the new terms of the industrial assembly on the basis of compelled behavior, trying to avoid the additional costs.

The second player in the conflict is native carmakers. There we also have no subsets and consider national carmakers as a single decision-making unit. The main native carmakers are such companies as "AvtoVAZ", "GAZ Group" and Sollers. The largest Russian carmaker is AvtoVAZ with its brand "Lada" capturing 30% of the market in 2010 according to the analytic company "Avtostat" (Avtostat. 2010). The company has concluded a lot of partnership agreements with such corporations as General Motors and Renault-Nissan alliance. At the moment Renault-Nissan possess 25% shares of the Russian carmaker. Moreover, partners are planning to renew the product line of AvtoVAZ by the Renault platform (Nepomnyachiy A. 2011).

As the senior analysts of the IFC "Metropol" Andrey Rozhkov claims, GAZ Group according to its anti-crisis strategy plans to stop the production of the passenger cars and reorient its facilities for light commercial trucks production (Druzhinnin S. 2011). Nevertheless, the alliance with Volkswagen allows the company to safe presence at the passenger car market. Sollers firstly had concluded the partnership agreement with Fiat but then changed the partner for Ford.

Therefore, we can derive that in general Russian companies have no opportunities to compete with progressive foreign companies, because of the systemic problems, such as low quality of products, lack of innovations and so on. Therefore, their main goal for Russian carmakers is to avoid direct competition with foreign companies by concluding partnership agreements with them.

The third player in the conflict is the customers. They can indirectly influence on the other players decision making by accepting the products of the carmakers or refusing to buy them. It is obvious that the higher quality level and broader assortment first of all will benefit for customers of the cars. Closing the market for importers and change of the market conditions can result in the price escalation for foreign production and, consequently, can decrease customers' benefits. Therefore

the main direction of customers' policy is to gain access to the foreign carmakers production at the reasonable price.

In this paper we also consider the goals and policy of the government as interested party, although we don't consider it as the player in the conflict. The Russian government establishes legislative frames and activity conditions for all other players. The authorities are interested in the Russian automotive industry development which is the significant point for the both internal and international policy.

We assume that the government has already made its decision by elaborating the Strategy of the Development till 2020 and the new terms of industrial assembly. Nevertheless, we will consider the goals and policy of the government as the important interested party and one of the main players in the further development of the conflict.

According to the Strategy the authorities have stated several possible scenarios for the Russian automotive industry development and one of them was singled out as first-priority scenario. This scenario (called "Partnership") states the following situation on the Russian car market at 2020:

- integration of the Russian carmakers in the global groups and localization of several foreign manufactures;
- goal of the industry to satisfy internal demand, and therefore low volumes of import and export;
- wide presence of the foreign producers of auto components on the Russian market within the partnerships with Russian auto components' producers;
- mutual innovation base for Russian and foreign carmakers.

Hence, the key interests of the government are the native carmakers promotion on the Russian car market, active involvement of the foreign partners, international joint ventures organization, auto components producers consolidation, etc. (Strategy of the Russian industry development till 2020. 2010). All these goals result in the main goal of the Russian government to create developed competitive automotive industry in Russia.

4. Decision Tree

In order to compose the game tree of the conflict we need to define the options of the each player which are based on its goals and policies.

For the each player the following set of alternatives is defined:

- Player A (Foreign carmakers)has three options:
  - A_1 - *actively operate on the Russian market.* In this option the foreign carmakers will develop their production facilities in Russia in order to gain the market share. This option assume the intensive collaboration between Russian and foreign carmakers.
  - A_2 - *exit from the Russian car market.* This option assumes that new entrants of the market will stop all their activities of internationalization and decrease their import. The carmakers who obtain production facilities on the Russian territory are going to get rid of the Russian assets and leave the market.

  - A_3 - *wait-and-see approach.* According to this option the foreign car makers are going to choose the wait-and-see attitude. It will be expressed in the modest investments that are inevitable for the present market share retention. Moreover, the foreign carmakers will be encouraged to make partnership agreements with Russian companies in order to gain access to the Russian production facilities and meet with the terms of the industrial assembly.
- Player B (Russian carmakers)has the two options:
  - B_1 - *collaborate with foreign carmakers.* The Russian carmakers allow foreign companies enter the market and try to create international alliances and joint ventures in order to gain access to the innovative technologies and management techniques. This collaboration can increase the Russian carmakers competitiveness and the market share.
  - B_2 - *compete with foreign carmakers.* Russian carmakers refuse to cooperate with foreign companies and try to hinder the foreign penetration on Russian car market. It can decrease the competitiveness in the industry and facilitate the activity of the native companies.
- Player C (Customers)also has two strategic options:
  - C_1 - *prefer foreign carmakers' product.* Customers can support the foreign carmakers product because of the better quality and broader assortment of the products.
  - C_2 - *prefer Russian carmakers' product.* Customers also can support the Russian carmakers if the price on the foreign products is inappropriate for them.

The decision-making process is a sequence of choices made by different players. Therefore it can be presented in the extensive-form game. Mathematical models of the conflicts with an account for dynamics are studied in the theory of positional games. The simplest class of positional games is a class of the finite-stage game with complete information.

The first step is made by the player A (Foreign carmakers). The player A chooses one of its three strategic options. Then the player B (Russian carmakers) decides which of its strategic options he is going to implement: whether he will collaborate or compete with the player A. At the last stage of the game the player C (Customers) chooses the foreign or native product.

All possible scenarios and outcomes are presented in the table 2. The number of scenarios was reduced to 7 by eliminating dead-lock scenarios. For example, it is obvious that when the player A leave the Russian market (the strategic option A2) the player B has no possibility to compete or to collaborate with the player A.

Moreover, if the player B (Russian companies) chooses the option B1 - collaborate with foreign carmakers - for the customer (the player C) there is no difference between Russian and foreign product.

On the basis of the conflict participants policies possible outcomes were ranked in terms of each player's position. For the scenarios rating the expert judgments were used. Ranking the outcomes for the foreign carmakers was based on the expert assessment of the Roland Berger Consultancy. Ranking the outcomes for the Russian carmakers and Government was based on the expert opinion of the consultants from the Avtostat analytic agency and the ministries reports. Ranking of

Table2: **Possible outcomes and scenarios of the game**

Scenario	**Outcome**
A_1B_1C	Large-scale cooperation of foreign companies with Russian carmakers within the alliances
$A_1B_2C_1$	Large-scale activity of foreign companies under competition with Russian carmakers and consumers' support of foreign products
$A_1B_2C_2$	Large-scale activity of foreign companies under competition with Russian carmakers and consumers' support of Russian products
A_2BC	Exit of foreign carmakers from Russian car market
A_3B_1C	Wait-and-see behavior of foreign carmakers under moderate cooperation with Russian carmakers
$A_3B_2C_1$	Wait-and-see behavior of foreign carmakers under competition with Russian carmakers and consumers' support of foreign products.
$A_3B_2C_2$	Wait-and-see behavior of foreign carmakers under competition with Russian carmakers and consumers' support of Russian products.

the customers' outcomes was based on the current information from the periodicals. The main criterion for the ranking was correspondence to the goals and policy of each player. Results of the ranking are presented in the Table 3.

Table3: **Ranking the scenarios**

Scenario	**Foreign carmakers (Player A)**	**Russian carmakers (Player B)**	**Customers (Player C)**	**Government**
A_1B_1C	5	7	7	7
$A_1B_2C_1$	4	1	6	2
$A_1B_2C_2$	2	3	3	6
A_2BC	1	5	1	3
A_3B_1C	7	6	5	5
$A_3B_2C_1$	6	2	4	1
$A_3B_2C_2$	3	4	2	4

Ranking was done as follows: for each player outcomes were ranked from 1 to 7, where 1 corresponded to the least preferable outcome for this player and 7 corresponded to the most preferable outcome for this player.

For foreign carmakers (Player A) the most preferable scenario is the A_3B_1C which results in the following outcome: "wait-and-see behavior of foreign carmakers under moderate cooperation with Russian carmakers". This outcome is actually in concordance with the policy of the player A and allows to avoid additional costs while attaining the current market share. Hence, the rank of the scenario A_3B_1C is 7 for the player A.

The least preferable scenario for the foreign car makers is the scenario A_2BC resulting in the outcome "exit of foreign carmakers from Russian car market", because the foreign companies have already invested in the Russian car industry huge amount of the capital which can be lost if this scenario is realized. Hence, the rank of the scenario A_2BC is 1 for the player A.

For Russian carmakers the most preferable scenario is scenario A_1B_1C resulting in the outcome "Large-scale cooperation of foreign companies with Russian carmakers within the alliances", because the Russian carmakers gain the access to the innovative and advanced technologies, R&D of foreign companies and can avoid the severe competition. The least preferable scenario for player B is $A_1B_2C_1$, which assumes the large-scale activity of foreign companies under competition with Russian carmakers and consumers' support of foreign products. The support of the customers predetermines the result of the competitive struggle in favor of foreign carmakers.

For player C (Customers) the most preferable scenario is also A_1B_1C and it results into following outcome: "Large-scale cooperation of foreign companies with Russian carmakers within the alliances". They can gain access to the broad range of the high quality products. In addition, the price will be lower than in terms of competition, because of the partnerships and common investments into production and innovations. The least preferable scenario for customers will be A_2BC. It leads to the outcome "Exit of foreign carmakers from Russian car market", when there will be only the cheap and low quality products of Russian carmakers on the market, which cannot fully satisfy the needs of the customers.

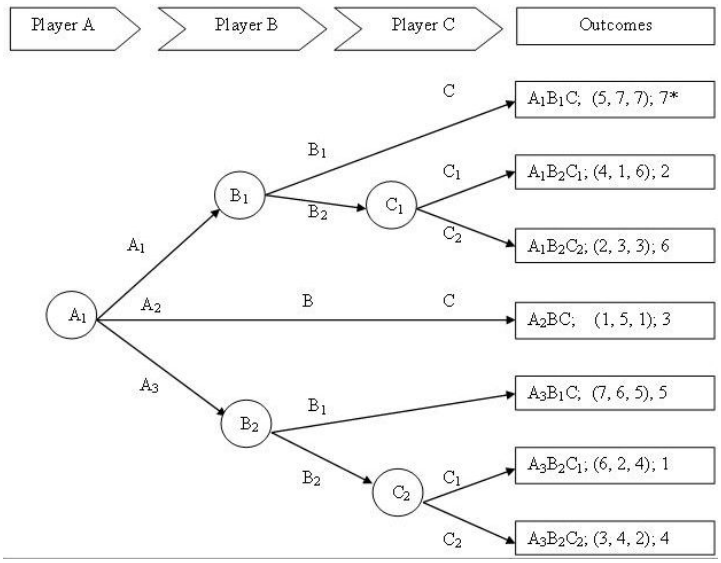
For the government the most preferable scenario is A_1B_1C, because the active collaboration of foreign and Russian carmakers enables to develop the native automotive industry by adoption of advanced technologies and enhancing the quality level of the finished products. The least preferable scenario for government is $A_3B_2C_1$ that results in "wait-and-see behavior of foreign carmakers under competition with Russian carmakers and consumers' support of foreign products". The Russian carmakers cannot compete with foreign companies because of the technological lag and other systematic problems of Russian automotive industry and therefore the native companies could be fully acquired by foreign carmakers or go bankrupt in the long-term perspective.

The process of players' decision-making as well as the search for equilibrium is presented in the form of decision tree - Figure 3.

5. Game-theoretic Analysis of the Model with Rankings

It is necessary to make game-theoretic analysis of the game, taking into account that all the players act rationally

Let $\nu_A(x)$,$\nu_B(x)$, $\nu_C(x)$ be the rankings (as here we have no payoffs) in the subgames Γ_x in the situation of Nash equilibrium. In the subgame Γ_{C_1} there is one Nash equilibrium $A_1B_2C_1$ where $\nu_A(C_1) = 4$, $\nu_B(C_1) = 1$, $\nu_C(C_1) = 6$. In the subgame Γ_{B_1} there is also one Nash equilibrium A_1B_1C where $\nu_A(B_1) = 5, \nu_B(B_1) = 7, \nu_C(B_1) = 7$. In the subgame Γ_{C_2} there is one Nash equilibrium $A_3B_2C_1$ where $\nu_A(C_2) = 3, \nu_B(C_2) = 4, \nu_C(C_2) = 2$. In the subgame Γ_{B_2} there is one Nash equilibrium A_3B_1C where $\nu_A(B_2) = 7, \nu_B(B_2) = 6, \nu_C(B_2) = 5$. In the overall game there is a situation of absolute Nash equilibrium A_3B_1C, where $\nu_A(A_1) = \nu_A(B_2) = 7, \nu_B(A_1) = \nu_B(B_2) = 6, \nu_C(A_1) = \nu_C(B_2) = 5$. The outcome of the scenario A_3B_1C is the wait-and-see behavior of foreign carmakers under moderate cooperation with Russian carmakers. This scenario is absolute Nash equilibrium, which shows the dynamic sustainability of this equilibrium (it proves realizability of NE-scenario).



***ranking for the government that is not a player of the game but has some interest in the conflict and can influence the further stages of the conflict**

Figure3: Decision tree

Now it is necessary to find Pareto optimal scenarios (which cannot be changed in the negotiations process without making the one player's payoff worse). There are two of them in this game: $A_1B_1C(5,7,7)$ and $A_3B_1C(7,6,5)$.

Therefore it is seen that there is one Pareto optimal scenario coinciding with the absolute Nash equilibrium (A_3B_1C) and the other one (A_1B_1C) does not dominate it. The Foreign companies are the main player in this conflict. In the equilibrium scenario it reaches the goal to the whole extent because the ranking of foreign companies in this outcome is 7 out of maximum 7 points. Moreover, this result is also on the second preference place for Russian carmakers.

The conducted analysis also depicts that government policy of Russian automotive industry regulation is quite effective (5 of maximum 7 points). Nevertheless, we can conclude, that the development of the car industry would be less active as the government supposed, because the rank of the equilibrium situation for government is 5 out of 7 and consequently the governmental goals are not fully achieved.

Moreover, the policy will be effective and equilibrium will be stable only with holding all conditions in the industry unchanged. The alteration in the conditions, such as legislation improvement or WTO entry, is likely to change the equilibrium scenario and put the conflict out the next stage.

6. Conclusion

Hence, the analysis of the current situation in the Russian automotive industry revealed a certain conflict between different interested parties: foreign carmakers, Russian carmakers, customers and government. In order to find equilibrium scenario in the Russian car industry conflict the game-theoretic model was built. The formulated scenarios were ranked according to different interested parties' positions.

Ranking was based on the conducted analysis of the current situation and on the interests and policy's directions of players.

The main conclusions can be derived from the carried out game-theoretic analysis of the conflict. First of all, the game-theory modeling is effective method of the forecasting conflict situations. Using this method in other conflict situations can facilitate negotiations and the decision-making process.

The game-theory modeling allows us to find the equilibrium scenario with only usage of non-numeric and non-complete information. This feature of the model makes it applicable to the conflicts, where the quantitative analysis cannot be carried out.

It also has its own drawbacks. The most significant of them is the dependency on the conditions invariability. The changes in the conditions result in model changes and thus can influence the change of equilibrium scenario. Nevertheless, if we possess the information about possible changes, we can build the game-theory model for further stages of the conflict.

Therefore, described approach can be considered as the basis for the model of choosing the company's strategies in the conflict of interests of parties concerned.

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