INNOVATIVE APPROACHES TO ELIMINATION OF RISKS IN REAL ESTATE TRANSACTIONS IN TRANSFORMING SLOVAKIA

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Abstract

Slovak Republic is one of the central European countries which economies were centrally planned until 1989. They are mainly economies of all countries of the former socialist block, including Slovakia. The term "transition economies" was emerged at the turn of the 80s and 90s of last century, when gradually they all have decided to leave the path of building socialism. The main characteristic of transition countries is the transition state of their economies - transitive stage - from centrally controlled system to a market economy. Another feature is that this transition involves the transformation of all sectors of the economy, which includes the real estate sector. In transition countries were no real estate market, so small deviations began to move in the same way and to overcome the same problems. Gradually, some of the real estate market became more developed in Hungary and the other in Poland or Slovakia, but in general speaking, the differences were minimal.

Real estate markets can be classified according to the degree of maturity divided into developed, developing and emerging. The main differences are mainly in business opportunities, risk and expected return. In this work we deal with a detailed analysis of the risks to the residential property market as well as innovative ways of eliminating them. These are financial instruments that are closely linked with legal requirements, of which some aspects are content of this article.

Keywords: Real estate development, risk elimination

Introduction and problem identification

In a functioning market economy, a well-functioning real estate market has its own irreplaceable role. The mechanism of its functioning is based both on market principles ensuring the meeting of supply and demand - resulting in equilibrium prices of real estate and services, both at the state of regulatory elements defining a framework for the functioning of the market, of which aim is its functionality and also to ensure the protection of investors Miles et al., 2000). The rapid development of financial instruments in the past two decades has caused that the real estate market is no longer separate, but it is an integrated part of the global financial markets. In fact that real estate sector is closely connected with the economy functioning, the disproportionate development represents significant risks in the financial sector development and the economy as a whole. Real estate market development brings also the risks of fraud in this sphere. Buying a real estate requires orientation within the requirements of planning, economic development of the site as well as legal and other requirements relating to the sale and purchase of property. In security purpose of such transactions respectively elimination of the fraud risk is increasingly the real estate market using various tools such as real documentary credits, insurance title and options. Presumably, their combination could contribute to the maximum protection of individual actors. Currently, they are increasingly used by developer companies in buying land and residential properties from other businesses or individuals. Proper functioning of trade relations is conditional on establishing clear conditions for all stakeholders and requirements alignment of both parties - the seller and the buyer in order to eliminate as many arising risks during the course of trade.

For all who own, manage, value, invest or otherwise enter the real estate market, essential knowledge of risk management is necessary as well as updated information on the economic and financial field (Harwood & Jacobus, 1998). Those findings are a prerequisite for successful business banks, insurance companies and all other entities handling the portfolio of properties.

Changes in supply and demand in the real estate market, the effect of competitive forces in the business environment, growth of the innovation and development dynamics and scientific and technical background which immediately require expertise in understanding the risks, which can be considered as one of the key assumption for success of a development project (Vaughan, 1997). The risk is understood as the possibility of some decision-making situations involving uncertainty, which generates a solution which differs from the approach of decision-making situations without uncertainty. Risks can be divided into different categories, groups, or areas which they directly relate with. According to the characteristics, risks can be fixed, variable, dynamic, static, legal, economic, financial, systematic, unsystematic, operational, speculative, estimated or other.

Ability to recognize, manage and effectively eliminate the risks involved in real estate transactions has become an integral part of the strategic management of development projects (Ivanicka, 2007). Developers who do not realize in time the scale and impact of the risks associated with the development process, while not creating an effective mechanism for the management in the first phase of training development project, clearly gamble with its existential stability as well as with the overall success of the investment. The size of the risk increases proportionally with the difficulty and extent of the total investment. Transactions in the real estate market are activities in which is necessary to perform a risk minimizations.

Determinants of real estate market development in transforming Slovakia

Changing the political system after 1989 brought a change in foreign economic policy not only in Slovakia, but also in other transition countries (see table 1) that are part of the so-called Visegrad Group (V4) - Czech Republic, Hungary, Poland (V4 represents an informal grouping of four Central European countries that subscribe to the same values, share a common history, culture and geographic position).

Table 1 List of transition countries of Central and Eastern Europe

Albania	Latvia
Belorussia	Lithuania
Bosnia and Herzegovina	Macedonia
Bulgaria	Poland
Croatia	Romania
Czech republic	Slovakia
Estonia	Slovenia
Hungary	Yugoslavia

According to the ongoing transition process in the 90s of 20th century, it is understandable that the development of all V4 countries in the economic field is substandard. Stiglitz (2000) emphasizes the inapplicability of simple economic models to specific situations in countries in transition countries. The transformation process in transition countries mainly affected by:

- structural reforms in the previous period, mainly the restructuring of the financial and corporate sectors, changes in the public sector and their impact on public finances,
- recession in the early 90s of the 20th century,
- instability problem of the price level mainly with the price liberalization and deregulation.

The issue of the real estate market and its development in transition countries is very complicated. In the period of central planning here there was no price profile of lands - territory and lands were divided by administrative forms (Golej, 2012). Therefore, the article deals only with cut-out determinants that influenced the examined area. The period after

1989 can be characterized as a period of the real estate market arising. The year 1989 was a turning point in the Slovak Republic, as the subsequent period brought almost absolute residential construction attenuation. After 1993, housing construction is realized by first private investors. The main characteristics are financing the new construction exclusively from buyer's deposits. Restitution Act of 1991 allowed the return of residential houses, commercial buildings and land into private hands. The real estate market was at that time marked by hunger for real estate as well as inexperience of the actors in this emerging market. Lack of finance of new residential real estate is an essential feature of the period, both for developers and the retail sector, which has been introduced gradually:

- Building savings with state bonus was introduced in 1992;
- State Housing Development Fund since 1996 provides loans at preferential interest rates for the construction of rental apartments, houses, purchase and renovation of apartments with well-defined conditions especially for young people up to 35 years;
- Mortgage financing was legislative modified again by amendment to the Act in March 1996, which resulted in that the mortgage loan was no longer provided in Slovakia in any form since 1948 (then banks started to provide first mortgage loans in 1998);
- System of state grants for building infrastructure for rental housing, comprehensive renewal of existing housing, renewable resources used in real estate (solar collectors, thermal management on biomass and etc.).

The development of the real estate market was also supported by other determinants:

- positive GDP growth which had influence mostly on industry, construction and agriculture, which growth of gross domestic product (GDP) exceeded the overall performance of the economy - in 2007, it was the 2nd highest in global view (the first was China). Household final consumption contributed positively to GDP growth due to real wage growth and the influence of low interest rates, and thus the availability of credit to support life and consumption on debt. Gradually there is growth of gross fixed capital formation, supporting the revival of investment activity in the Slovak economy,
- foreign direct investment inflows (FDII), which reflected on the overall condition of the investments at the end of the year in the amount of approximately 5.9 billion EUR. Compared with the previous year 1999, it almost doubles FDI. That trend continued in upcoming years. Slovakia was not only more a recipient than an investor, but in most cases, direct foreign investment had form of

mergers and acquisitions. The most important was Enel, which came to Slovak Power Plants, followed by KIA 2, which meant the expansion of production by another one hundred thousand pieces of cars, as well as the expansion of production by Samsung,

- other determinant, which undoubtedly contributed to the positive image of Slovakia in the entry of foreign investors in the real estate market, has been re-granting the investment rating from the world's leading credit rating agency Japan Credit Rating Agency, which responded to previous rating improvement of Slovakia. Rating increase had impact on reducing interest rates, improved financing options etc.,
- during 2002, results of the restructuring of banking sector started to show - improving the productivity of banks and other financial indicators, increased competition in the market of banking products, especially in the field of credit and equally favourable development of performance indicators of prudential banking. Cooperation between private and public financial institutions has improved in order to facilitate the pooling of funds.

These facts strongly influenced by the arrival of large investment players doing business internationally as well as small foreign investors, mostly from Ireland and Great Britain, towards the real estate investment of package purchases of. Hunger for housing was so great and selection so small that the flats were bought directly from the paper, on the basis of the design, before the actual construction of the project. After 2002, mortgage financing significantly moved on, which has even more significantly contributed to spread of the offers of new residential properties.

Interest rates, which initially (in 1997) reached up to 20% p.a., started declining gradually to the current level (around 4.0% pa). Reducing interest rates caused an increase of demand. The real estate market in Slovakia followed development in the neighbouring countries in the late wave, but with a greater intensity of construction. Especially after 2004, supported by Slovakia's accession to the EU and citizen worries about the loss of money value. The growing demand for real estates, as a relatively safe storage of money contributed to the increase in construction production, which at the turn of 2005/2006 exceeded the growth rate of the volume of construction production also EU member states. Despite the relatively high price of real estate (compared to the average monthly wage) projects had been sold before they were completed. At the same time, major differences between the prices of new and old apartments began to emerge. The situation is then reflected in the ascending price of the commodity, which was strongly influenced by the growing economy and population incomes almost until the end of 2008, when the Slovak real estate market recorded the first impact of the economic crisis. On the other hand, the volume of housing loans was gradually increasing, which were available without special restrictions on financial institutions. Based on studies OECD, average growth of housing loans in the Slovak Republic in the period 2006 - 2008 was around 40% per annum and in the eurozone was about 6% per year. It must be said that the rapid pace of loan growth is characteristic for countries that start almost from zero level of lending for housing. This is primarily related to the release of conditions of banks in providing these types of loans. What brings such a loan boom? The result is soaring housing prices and when they end, there is freefall. Such experiences they have in Ireland, Spain and USA. In these countries, the residential property were financed on debt, fluctuations in prices was significant and the worse the overflow is when the source of cheap money were suppressed. Even though availability of mortgage loans in Slovakia was not as simple as in these countries, more and more people were financing almost the entire buying of property from loan resources. While the number of buyers who bought property on debt for speculative purposes were increasing, as the expected price rise and the subsequent income from rental properties.

The ratio of apartments purchased for investment and housing began to change significantly because of the crisis impact until 2009. While in 2008, about 95 percent of residential properties were purchased for investment and 5 percent on housing, after 2009 the situation has reversed. It can be assumed that the further development of real estate market will depend on the country economic development, weakening the euro, market instability and on labor market only strong and stable development groups will remain. With the development of real estate market (not only in Slovakia), volume of speculative transactions increased as well as sophisticated fraud in real estate. Many scammers have a thorough knowledge of relevant legislation, perfectly controlled process that allows cadastre deposit, familiar regulatory gaps, gaps in land operations, real estate agents, and in particular how to use them for self advantage.

Methodology and Theoretical basis

Risks in real estate transactions, which are discussed in the article, relate primarily to land and residential property. Problems arise not only on the part of investors, but also with the real estate companies, which are in some cases "extended arms of crooks". The process of risk analysis in real estate transactions consists primarily of hazard identification, hazard classification and risk quantification. Risk analysis is the science of risk, probability of occurrence and risk assessment (Zubkova & Matuska, 2007). In risk analysis are two basic cases that affect the choice of methods and procedures:

- Phenomenon, which is a source of danger and has already, occurred at least once. Developer is already familiar with it and knows its nature. It's a real phenomenon and it can occur. Risk analysis following previously known phenomenon is known as a priori analysis.
- Phenomenon, which is a source of danger, and where the developer only on the basis of rational considerations considers that it did not occur in the past but it can occur at present. It is a risk assessment based on an estimate of events that occur after the risk analysis. Risk analysis of unrecognized phenomenon is called a posteriori analysis.

According to the risk analysis based on an evaluation of known or anticipated facts, we set two basic questions for the risks of investing in land and residential property:

1. What adverse events can occur?
2. What instruments can eliminate these adverse events?

Basic considerations for determining the risk analysis method is based on the method of expressing used values. There are two basic approaches to the solution: the qualitative and quantitative methods. Qualitative methods are characterized by the fact that risks are expressed in a certain range (for example, they are assessed from 1-10 or specified by probability <0, 1> or verbally small, medium, large). Qualitative methods are simpler and faster, but there is lack of clear financial statements which often bring problems in the management of risks. Using risk analysis methods, we identified adverse events that may endanger the success of a development already in the first phase of the project. Based on this method, specific financial and legal tools have been selected that are appropriate to reduce the likelihood of such risks.

For assessment of dependency of risks and the tools for risk real estate transactions elimination the χ^2 Chi-square test was applied. The results of the test are presented in the Discussion section. A Chi-square test is designed to analyze categorical data. It tests the null hypothesis that the variables are independent. Assume fij is the observed frequency count of events belonging to both i-th category of X and j-th category of Y. Also assume eij to be the corresponding expected count if X and Y are independent. The null hypothesis of the independence assumption is to be rejected if the p-value of the following Chi-squared test statistics is less than a given significance level α. The degrees of freedom for a Chi-square grid are equal to the number of rows minus one times the number of columns minus one. If the estimated data in any given cell is below 5, then there is not enough data to perform a Chi-square test. The mosaic plot is a side by side divided bar chart that allows you to visually compare proportions of levels of one variable across the levels of a second variable.

Risk characteristics (adverse events) in real estate transactions

The key factor of investment project is a land, which substantially influences also final price of the whole investment activity. Olumuyiwa O Ajayi, Faith O. Oviasogie, Dominic E. Azuh, & Moses M. Duruji (2014) state that lands belongs to those relevant sources which are influenced by urbanism the most. Hence its selection has to be related to a detailed analysis of several key data, which might present for a developer risks with negative impact of the investment project already in its initial phase. It is concerning mainly identification of following risk factors:

- ***exact size of a site and its utilization*** **–** i.e. what type of land it is and if there is any special regimen (it means if for example the land in question is not in listed building protection zone,
- ***relation to the real estate and acquiring title*** - if there is just one owner and on basis of what acquiring title (the document on basis of which the owner gained the real estate, e.g. contract of sale, deed of gift, deed of transfer of a flat ownership, inheritance and so on) he/she gained the real estate,
- ***encumbrance*** by a certain right of user or vice versa if there is not established a certain real burden in favour of the real estate,
- infrastructure network ***availability*** and ***possibility of connection to them*** and so on.,
- ***documentation of ownership or other right*** to the land which is an inevitable condition for an application for a decision on structure location or if planning permission is under the valid Slovak law. Many developers rely on certificate from cadastre, i.e. land title. Bank institutions which finance developer projects behave in the same way. Unlike surrounding countries, as e.g. in Poland and in some extent in Germany, the state in the Slovak Republic does not guarantee at all that data stated in the real estate cadastre are in accordance with reality. The Land Register Office just keeps records of ownership relations to a real estate as it results from submitted documents. Its authority and mainly the duty to examine this legal correctness of the documents is strongly limited. If a developer or by him entrusted legal office wants to investigate the history of ownership relations, then it is in Slovakia even more markedly complicated.

This situation is in Slovakia marked by quite a number of negative aspects, namely as a result of - already over more than 50 years - suppressed tenet SUPERFICIES SOLO CREDIT, i.e. the principle that the building is the part of the land. There appear cases when the developer's ownership is impugned for example as a result of exercising of restitution claim or ownership legal action, where he/she might lose his/her ownership right. Certainty of ownership or other right to the land is for a developer is crucial;

- ***authenticity of documents*** - it concerns the fraud, when "participants" use in transactions false or by fraud or theft gained authentically documents,
- ***rightfulness of seller to dispose of property*** and if his/her ownership cannot be doubted.

Other identifiers of a possible risk in real estate transaction might also be:

- ***price of real estate is lower than other comparable ones,*** freely available real estate (land), where it is not necessary to overcome obstacles,
- ***a seller implicitly requires the payment of whole purchase price*** at signing of contract of sale and does not agree with blockage of payment in a bank or notary and so on.

Innovative approaches to risk elimination (adverse events) in real estate transactions

Innovations in real estate market are the consequence of growing sophistication (positive but also negative) of real estate market and its players who still more often use financial-legal tools needed for effective management of real estate risk operation (Baranoff, 2004). The most important innovative tools are focused on minimization of risk in the field of cadastre and ownership relations to real estate as well as safety at purchase and sale of real estate, which means provision of maximum rate of safety for a seller as well as for a buyer, also in the sense of internationally valid rules. According to professional estimates the rate of risk in the real estate market has not only decreased but vice versa increased substantially.

A. Title insurance - minimization of risks in the field of cadastre and ownership to real estate. A developer society acting in the field of residential real estate faces pressure from many sides and so it is important in maximum extent to limit risks, which might negatively influence overall costs of a project as e.g. already at obtaining of lands. Fatal results, which often lead to stoppage of construction or finally to frustration of the whole project, as to loss or court impeachment of his/her ownership or other right to real estate in question. A condition of a successful investment or developer project is a thorough due diligence, which together with ownership right insurance in a form of so-called title insurance (insurance of ownership right - insurance against a financial damage, which arose due to impeachment of ownership right to insured real estate and/or due to invalidity or irredeemably of lien of a creditor) seems to be the only effective way how as an assignee - buyer (but also an investor, a bank or a pledge) effectively protect against possible risks. While a lawyer might provide a legal opinion to real estate that it is a trouble free and saleable real estate, but he/she does not provide a guarantee for hidden faults and unwritten risks.

Title insurance provides (for single insurance) indemnification of loss in full extent after additional finding of a difference between a real condition and the one administered in the Cadastre of Real Estate of the Slovak Republic. Insurance of fault in the deed of title is the only type of insurance which is valid retroactively (claim event which arose in the past, but the consequences manifest after its acquiring) and during the whole time of real estate ownership (Rejda, 2003). From available analyses it results that a substantial part of acquiring title registered in cadastre of real estate suffers from relative or even absolute invalidity. For example there are not rare problems of incorrect definition of transferred real estate, signature of illegitimate person, incorrect or even missing power of attorney, and absence of a necessary permission at sale of state property, violation of a legal procedure at sale of municipal property, hidden lien, right of refusal or other rights equivalent to real burden and so on.

B. Call option to real estate. To eliminate the risk already in the first stage of the prepared developer's project in Slovakia derivatives – options – intended for real estate market came into use. They are financial tools whose value is unfolded from the price of real estate and which are more or less a standard tool in the countries with the mature real estate market. In the conditions in Slovakia it is an innovative tool which started to be used in the last decade.

An option contract for real estate is a legal contract between a potential buyer and a real estate owner. This contract provides a potential buyer an exclusive right to buy real estate for a stated price in stated time without necessity to really buy it. The potential buyer has to pay to a real estate owner option fee (at not exercising of the option contract he/she is losing this fee as a reward) for the right provided in an option contract. As an option is derived from a contract about real estate sale, the option contract is a financial derivative. If the option contract is transferrable, it has its own value and might be transferred to another potential buyer with a profit. The advantage of option contract is that it enables a potential buyer to have more time for providing of financial resources, to gain relevant information and investigate the possibility to realize adjustment of real estate or business plans or to attract interest. It enables for a potential buyer to invest a small amount of money and gain a lot.

To common ways of option utilization belongs also a rent with a later possible purchase of a real estate or lease option transaction, where the buyer rents real estate with the right to buy it for a specific price after a year. The buyer might get better loan conditions and also to gain a part of rent back as a partial instalment of the real estate price. The optional contract means also advantages for a real estate owner, who keeps the whole option fee and of course further he/she is an owner of real estate and also he/she has more time before conclusion of the contract about sale. On the other side a disadvantage of the option contract is for a real estate owner loss of possibility to sell real estate during the lasting of the option, mainly if the length of optional contract is too long and the real estate price increases over the agreed price in the optional contract. Options for real estate is historically mostly used in the USA and particularly in the state Texas.

C. Real estate documentary letter of credit. One of the most used payment - securing – tools which offer a quality payment security for both participating sides in a business transaction – a seller (supplier) and also a buyer (customer) is a documentary letter of credit. This payment tool was until recently used mainly in an international trade, but recently it has started to establish also in the domestic real estate market on one side due to enormous increase of trade in the field of real estate and on the other side security at purchase and sale of real estate.

When buying a land the interest of a buyer is to pay the purchase price after transfer of ownership rights and the interest of a seller is to transfer the ownership rights after receiving of the agreed purchase price, on the basis of which different requirements of both participating sides are arising. The stated situation is effectively solving documentary letter of credit, which presents a written obligation of a bank as an independent institution in the given trade relation to pay the purchase price to a seller of the land in the case of early submission of all written documents as e.g. abstract from deed of title, where as the owner is already written the buyer, and so on (i.e. fulfilment of conditions stated in the letter of credit). By that there is provided a maximum rate of protection for a seller as well as a buyer in the sense of internationally valid Uniform Customs and Practice for documentary credits (UCP) drawn up by the International Chamber of Commerce in Paris as a publication No. 600/2008.

To the biggest advantages of the documentary letter of credit belongs the fact which provides for a buyer that his/her bank will pay the stated sum after fulfilment of agreed conditions stated in the letter of credit. If letter of credit will require submission of copy of deed of title, it means that the bank will pay only after the check of the seller, if he/she submitted the deed of title in stated period as well as a fulfilment of other prescribed conditions (e.g. if there is a correctly stated description of bought real estate, if it does not contain unauthorised burdens and so on. And at the same time the seller will gain in the form of the letter of credit irrevocable obligation of the buyer's bank to pay after submitting of documents and fulfilment of agreed conditions. By that the risk of the buyer insolvency is treated as well as his potential unwillingness to pay the purchase price. Participants of the letter of credit operation are:

- ***Applicant of the letter of credit - buyer,***
- ***Advising/confirming bank and at the same time issuing bank,***
- ***A beneficiary – a seller,***
- ***The group of site owners.***

Following Figure 1 visually demonstrates the documentary letter of credit with assignment of yield (sale price of a site) to land owners.

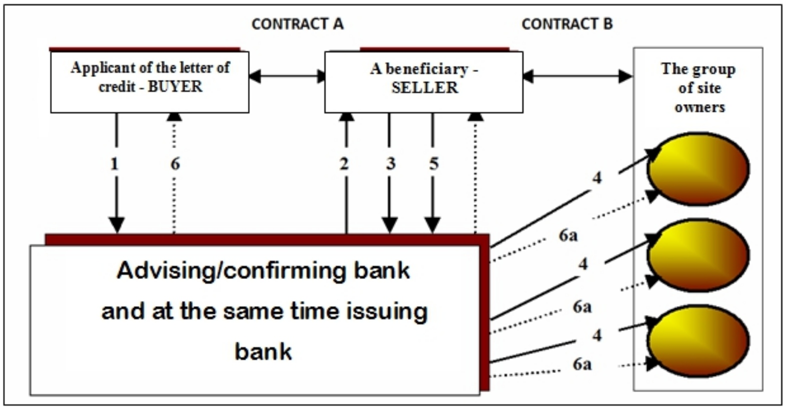


Figure 1 Real estate documentary letter of credit

Description of particular transactions:

1 Application for issuing of the letter of credit
2 Issuing of the documentary credit and informing of an eligible person
3 Submission of irrevocable orders for cessation/transfer/ of the yield from the letter of credit
4 Issuing of notification on yield cessation in favour of particular land owners
5 Presentation of documents required by the letter of credit
6 Billing of counter-value of documents and issuing of documents
6a Realisation of cessation/transfer of the part of yield according to Notification about yield transfer
6b Payment of the rest of counter-value of documents in favour of the eligible person.

Real estate documentary letters of credit are important namely in the first transactions with sites, where it concerns land consolidation, i.e. there are much more participants on the side of a seller. Risk related to these transactions is not little, which is why the mentioned financial tool gains increasing popularity in developers, investors and other participants in the market. The stated fact shows evidence about increasing sophistication (positive and negative) of the real estate and its participants, who more and more often try to use bank-legal tools needed for effective management of risk in real estate operations.

Discussion

Real estate transactions (RET) are defined as the real banking trading cases. We had selected 60 RET transactions that are tested by Chi-square. In majority of cases the actors (buyers) tried to eliminate the transaction risks by using the risk management tools showed in Table 3, or by their combinations. Based on these data we prepared the contingency table (Table 2), that is the starting point for further analyses.

The first value in the Table 2 represents the frequency of risks of RET cases (in rows) and the tools for elimination of risks (in columns).

The second value represents the percentage of incidence from the total number of 420 combinations of risks and tools.

The third value is the percentage of a given frequency on the number of RET with a given risk.

Fourth value represents the percentage of the incidence of RET on the number of RET with the use of the tools to eliminate risk.

The last row represents the frequency (expressed also by its percentage) from the total number of application of the particular tool for risk elimination.

Table 2 Contingency table depending on risks and tools to eliminate risk

Table of riziko by tools						
RISK	TOOLS					
	AC	B	BC	C	D	TOTAL
1	8 1.90 13.33 14.29	36 8.57 60.00 25.17	11 2.62 18.33 25.00	1 0.24 1.67 1.64	4 0.95 6.67 3.45	60 14.29
2	8 1.90 13.33 14.29	36 8.57 60.00 25.17	11 2.62 18.33 25.00	1 0.24 1.67 1.64	4 0.95 6.67 3.45	60 14.29
3	8 1.90 13.33 14.29	36 8.57 60.00 25.17	11 2.62 18.33 25.00	1 0.24 1.67 1.64	4 0.95 6.67 3.45	60 14.29
4	8 1.90 13.33 14.29	35 8.33 58.33 24.48	11 2.62 18.33 25.00	1 0.24 1.67 1.64	5 1.19 8.33 4.31	60 14.29
5	8 1.90 13.33 14.29	0 0.00 0.00 0.00	0 0.00 0.00 0.00	19 4.52 31.67 31.15	33 7.86 55.00 28.45	60 14.29
6	8 1.90 13.33 14.29	0 0.00 0.00 0.00	0 0.00 0.00 0.00	19 4.52 31.67 31.15	33 7.86 55.00 28.45	60 14.29
7	8 1.90 13.33 14.29	0 0.00 0.00 0.00	0 0.00 0.00 0.00	19 4.52 31.67 31.15	33 7.86 55.00 28.45	60 14.29
TOTAL	**56** **13.33**	**143** **34.05**	**44** **10.48**	**61** **14.52**	**116** **27.62**	**420** **100.00**

Legend labelling the individual risks and selected tools to eliminate risks is in Table 3 and 4

Table 3 Risks (adverse events) in real estate transactions

1	exact size of a site and its utilization
2	relation to the real estate and acquiring title
3	encumbrance by a certain right of user or vice versa if there is not established a certain real burden in favour of the real estate
4	infrastructure network availability and possibility of connection to them and so on
5	documentation of ownership or other right to the land
6	authenticity of documents
7	rightfulness of seller to dispose of property

Table 4 Tools to risk elimination (adverse events) in real estate transactions

A	Title insurance
B	Call option to real estate
C	Real estate documentary letter of credit
D	None of these tools or other

Table 5 Result of the Chi - Square

Statistic	DF	Value	P - Value
Chi-Square	24	289.5761	<.0001
Phi Coefficient		0.8303	
Contingency Coefficient		0.6388	
Cramer's V		0.4152	

Cross classification tables (contingency tables) are used to determine independence and dependence for variables. It is often useful to measure the degree of association that exists between nominal variables (Stehlikova, 2005b).

Cramer's V

Denote r the number of rows, and c is the number of columns. N is a sample size, χ^2 is chi square test statistics. The Cramer's V is defined as

$$V = \sqrt{\frac{\chi^2}{N \min\{r-1, c-1\}}} \qquad (1)$$

Cramer's V is the chi-square statistic rescaled to values between 0 and 1. Cramer's V equals 0 when there is no relationship between the two variables.

Cramer's V is not affected by sample size and therefore is very useful in situations where a statistically significant chi-square was the result of large sample size (Stehlikova, 2005a).

Phi Coefficient is defined as

$$\sqrt{\frac{\chi^2}{N}}, \qquad (2)$$

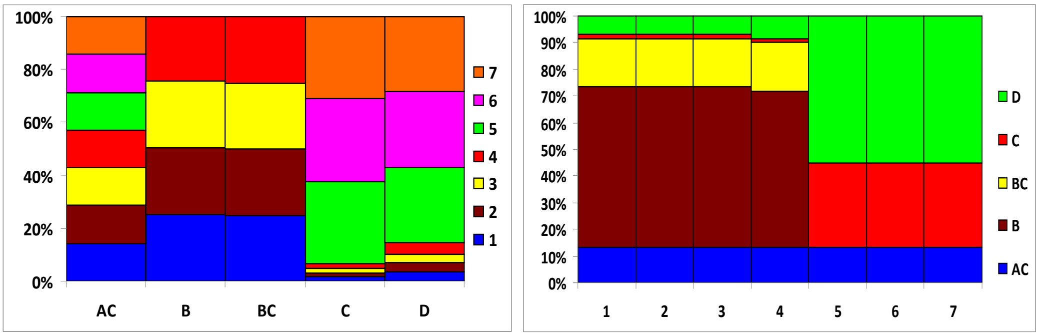
where , χ^2 is chi square test statistics, N is a sample size. Phi coefficient have a range from 0 to min{r-1,c-1}. It is difficult to compare values of Phi coefficient between tables of different dimensions. If several tables, all of the same dimensions are being compared, is a useful measure.

Contingency Coefficient is defined as

$$C=\sqrt{\frac{\chi^2}{N+\chi^2}}, \qquad (3)$$

where , χ^2 is chi square test statistics, N is a sample size. The value C equals 0 when there is no relationship between the two variables. The value C cannot exceed 1. The result is dependent on sample size N.

Table 5 contains the result of chi-square test. The value of the test statistic is 289.5761. The test statistic has a chi-square distribution with 24 degrees of freedom ((7-1) * (5-1)). Lowest significance level at which we can reject the zero hypothesis of independence of risk types and tools for elimination of risks is lower than 0.0001. This means that the types of risk and tools for their elimination are statistically significantly correlated.



Graph 1 Mosaic Plots

For measuring the intensity of this dependency, we applied three measures of nominal dependence characters - Phi Coefficient, Contingency Coefficient and Cramer's V. The calculated values of these measures confirmed strong correlation among monitored variables.

Conclusion

In the context of above mentioned facts it is possible to state that the developer in the Slovak Republic faces pressure from several parties; that is why it is important for him/her to limit to minimum risks related for instance to land acquisition. The indispensable requirement for project development (including the allocation of credit from financial institution) is the ownership of the land title or other property rights. Many developers rely on the copy of title from the cadastre i.e. title deed. Such approach is characteristic for behaviour of bank institutions, which finance the development projects. Unlike the neighbouring countries e.g. Poland, the situation in the Slovak Republic does not guarantee that data stated in the cadastre correspond to reality. The cadastral office only keeps the register of real estate ownership relations, which reflects the submitted deeds. Unfortunately some deeds are not register in cadastre. The power of Cadastre and its duty to investigate this legal flawlessness are very limited. For that reason we have investigated the selected instruments - Title insurance, Call option and Real estate documentary letters of credit and their influence on the risk elimination in real estate transactions from the developer's perspective. By applying Chi-square test the statistically significant dependence was revealed. Based on it we are able to confirm that the selected instruments have the positive impact on risk elimination of real estate transactions realized by developers.

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