

## GEOPOLITICAL RISKS AND THE BANKING SECTOR

*Szabolcs Grébel – Tamás Pesuth<sup>1</sup>*

### ABSTRACT

Geopolitical risks have come into the foreground recently as their effects on macroeconomy are analysed. This said, the banking sector is key due to its embeddedness in the economy and because risk management is an important part of the stability of financial systems. Banking regulations have quantified different types of risks over the past decades, but several types of risks can be considered in the model side by side with economic changes. One experiences the highest number of obstacles in preparing for risks that, on the one hand, are difficult to measure and, on the other hand, occur relatively infrequently but may exert a major impact on individual businesses or for the whole economy. Geopolitical risks belong to that group. In this paper, we survey the most significant geopolitical risks of the modern age and examine the corporate reports of banks in the US, Europe, and Asia to analyse the occurrence of terms relating to geopolitics. Then, we attempt to build an index which can help compare the regions more. Risk indexes have been on the rise recently following the conflicts of the past years. The risk index formed from corporate reports also correlates with geopolitical indexes found in other types of the literature.

*JEL codes:* G10, G21, G28

*Keywords:* geopolitics, banking sector, risks, banking regulation

### 1 INTRODUCTION

The objective of this paper is to point out how geopolitical risks have become increasingly emphatic for businesses over the past years. A proof of that is the frequent appearance of terms related to geopolitical risks in corporate reports. Geopolitical risks may have financial consequences, as different events exercise both direct and indirect impact on different industries, while worsening mac-

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roeconomic outlooks or damages to supplier chains, for instance, influence the profitability of companies. In the banking sector, such effects can be seen in provisioning. Also, credit loss might be higher if a bank has exposure in a region where risks are higher. Although the Basel regulations do not cover geopolitical risks, taking them into consideration may be important for bank management – in addition to regulatory requirements – both in the event of acquisitions and at setting provisioning levels. In our analysis, we are trying to call attention to potential extra risks of the recent past, underlining their geopolitical factors and focusing on the methodology of risk measurement used so far. The core issue of the paper is how geopolitical risks can be measured or even detected by different businesses. The question is whether one can establish an index to characterise geopolitical risks and how that index will relate to / move together with other indexes measuring geopolitical risks.

### 1.1 Geopolitical risks

Geopolitical risks are nothing new, but recent events have shed more light on them. A reference to geopolitical risks already appeared in the ECB 2007 *Financial Stability Review*, but – analysing the context – it is clear the reference was only made to the impact of geopolitical tension on raw materials. It is not surprising as geopolitics has been a factor impacting the price of oil and other raw materials. The 2009 *Financial Stability Review*, for instance, makes no reference to geopolitical risks. However, the latest ECB *Financial Stability Review* also deals with the impact of geopolitical risks on macroeconomy and the global economy, emphasising geopolitical risks. Further, it presents a chart of a geopolitical risk index (Caldara and Iacoviello, 2022). Currently, ECB does not only mention the impact on raw materials but also on the money and capital markets. The volatility of capital markets seen over the past years is a proof that markets, and hence investors, respond to geopolitical risks increasingly sensitively. Referring to the definition offered by ECB in the context of financial stability, the identification of relevant risks is important to maintain financial stability and the part played by geopolitics in it has been emphatic.

The 2023 EBA stress test also mentions geopolitical risks as different scenarios are introduced as a factor exerting an adverse effect on global economic growth and inflation. In the stress test, side by side with country-specific factors, the differences of individual economic sectors have also been considered. The Corona virus pandemic and war conflicts have had different impact on different sectors, mostly on energy intensive ones, which was considered by the EBA for its latest stress test in 2023 (EBA, 2023).

At the beginning of our study, the definition of geopolitical risks must be provided. There is no uniform definition in the literature, or the term geopolitical risk is merely used with reference to the dangers of war conflicts.<sup>2</sup> On the other hand, you can find the following definition in the Cambridge dictionary, “*Geopolitics is the study of how a country’s geography, location, terrain, etc., affect its power and its relations with other countries*”. Foster (2006) and Dijkink (2009) made similar statements regarding the definition of geopolitics.

However, capital markets are affected by the risk of actual events occurring, so if you want to explore geopolitical risk indexes, you must assess geopolitical risks as they are linked to certain events. Thus, one can define geopolitical risks as the increase of the probability or the occurrence of war conflicts. Caldara and Iacoviello (2022) use the same approach in how they define geopolitical risks. The interpretation of geopolitical risks lead you to a potential methodology of measuring geopolitical risks.

## 1.2 How to define financial stability?

Financial stability is the state of a financial system (including financial mediators, markets, market infrastructure) that is able to withstand different shocks or imbalances that are large enough to significantly reduce profitable capital allocation. Therefore, maintaining financial stability necessitates the relevant risks to be identified (ECB, 2009). The National Bank of Hungary defines financial stability as follows, “*Financial stability is a state in which the financial system, i.e., the key financial markets and the set of financial institutions are able to withstand economic shocks and smoothly deliver their main functions, such as the mediation of funds, risk management and the management of payments*” (NBH, 2023). Geopolitical risks may be such risks.

## 1.2 Measuring geopolitical risks

Measuring geopolitical risks is a difficult task. There are some indicators for other, for instance, market risks to be used to estimate some kind of risk premium. Although geopolitical risks are difficult to quantify, they have become more and more important over the past decades and also at present. On the other hand, geopolitics has been a separate political area since the 19<sup>th</sup> century as history has

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2 Castree, N. – Kitchin, R. – Rogers, A. (2013): *A Dictionary of Human Geography*. Oxford University Press, [https://books.google.hu/books?id=eYWcAQAQBAJ&printsec=frontcover&hl=hu&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](https://books.google.hu/books?id=eYWcAQAQBAJ&printsec=frontcover&hl=hu&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false).

shown that geographical location has a major impact on the evolution of a country's foreign policy.

Dario Caldara and Matteo Iacoviello decided on analysing news items as a method of setting up a geopolitical risk index. They used the frequency of occurrence of keywords related to different geopolitical events to establish their index (Caldara–Iacoviello, 2022).

Today, models of linguistic data analysis are increasingly used to measure geopolitical risks. Those models can process and analyse huge amounts of texts. Thus, most indexes measuring geopolitical risks are, in fact, based on the analysis of news items, for instance, the Blackrock geopolitical risk index, or Matteo Iacoviello's and Dario Caldara's (2022) geopolitical risk index. The latter was also used in this study, because based on a transparent methodology it offers geopolitical indexes covering different countries going back several decades. In addition, geopolitical effects may be visualised with a much simpler indicator, i.e., geographical distance, since geopolitics, obviously, describes a geographical situation. In the same way, the countries belonging to different regions (communities, alliances) can be marked separately using the relevant theories.

Similarly to Caldara and Iacoviello (2022) and Minesso et al (2022), the ECB also established an index based on news analysis to quantify geopolitical risks.

When measuring geopolitical risks or building any kind of model one can face a major problem. Although the presence of geopolitical risks on capital markets can be felt, their statistical explanatory power remains weak. The risk alone is difficult to be separated from other confounder variables, cf., Eichengreen et al. (2019; 2021).

The ECB (2022), as well as Federle et al (2022) used geographical distance as the basis. Using a similar approach makes it obvious that the effects of a war impact the capital markets of the neighbouring countries heavily, but the effect will disappear or will diminish in time. This is supported by the ECB 2022 analysis as well as our own analysis made in 2023 (Grébel–Pesuth, 2023).

Consequently, a factor to be interpreted as a kind of geopolitical risk premium may appear on capital markets from time to time (ECB, 2022). On the other hand, events related to geopolitical risks may trigger a bigger sudden impact since those markets usually price such risks to a lesser extent. Market turbulence, however, can be dangerous for financial stability.

## 2 CLASSICAL GEOPOLITICS AND THE MODERN AGE

Major geopolitical theories have been offered since the 19<sup>th</sup> century, such as ‘marine power’ by Alfred Thayer Mahan (1890) or the Mackinder (1904) and Heartland theories. Although international relations have diversified over time, the relevant theories can still be used to identify the so termed collision zones in which geopolitical risks can be higher or war conflicts can arise.<sup>3</sup>

Combining theory with the present gives us the relevant geographical regions that investors and companies should pay attention to. Control of maritime trade routes is a priority. On the other hand, the Central and Eastern European region can be identified as a sensitive geographical area on the basis of continental power. Unfortunately, this was highlighted by the Russian-Ukrainian conflict, the impact of the war that broke out in early 2022 and the subsequent sanctions have also affected the financial system, and banks with larger exposures in the region have also seen increased risks, and profitability of subsidiary banks in the countries concerned has also declined, with increased non-performing loans and higher provisioning.

A geopolitical risk index prepared by the world’s largest fund manager BlackRock has identified geopolitical fragmentation and business competition as major risks. The situation is characterised by the formation of competing geopolitical and economic blocs, which is a deviation from expanding globalism. The trend is augmented by the war in Ukraine, and the strategic competition between the US and China, which promote national security and resilience as opposed to economic efficiency. The shift may accelerate a realignment of global supply chains. The countries tend to focus on national interests in their alignments, which may affect investment strategies and patterns of economic growth (BlackRock, 2023). Looking back at the recent past, no major changes can be detected in key risks. Based on the Blackrock analysis, the following Table is a summary of the 10 most important geopolitical risks and their probability:

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3 For more detail on the relevant theories, cf our paper: Grébel, Sz.–Pesuth, T. (2023). Gondolatok a geopolitika és a tőkepiacok kapcsolatáról [Thoughts on the Relationship of Geopolitics and Capital Markets]. *Köz-Gazdaság – Review of Economic Theory and Policy*, 18(2), 15–33. <https://doi.org/10.14267/RETP2023.02.02>

**Table 1**  
**Key geopolitical risks**

Geopolitical event	Probability in December 2022	Probability in December 2023	Short description
Fragmentation of global technology	high	high	Because of the US-China strategic competition, technological fragmentation increases both in scale and scope
Cyber-attacks	high	high	Cyber-attacks cause disturbance in critical – physical and digital – infrastructure
Russia-NATO conflict	high	high	The US and the EU responded to Russia's aggression in Ukraine with financial, energy and technology sanctions. There is a likelihood of either intentional or unintentional escalation between Russia and the NATO.
Terrorist attacks	medium	high	Terrorist attacks and economic disruptions of commerce
Political crises on emerging markets	medium	medium	The ripple effect of the crisis in Ukraine on the political systems and institutions of emerging markets.
USA-China strategic competition	medium	high	China launches military action against Taiwan or uses force on the South-China Sea to enforce her interests.
Tensions in the Gulf area	medium	high	Iranian nuclear negotiations collapse, tensions escalate increasing the risk of a regional conflict.
North Korean conflict	medium	medium	North Korea continues nuclear armament and carries out provocative actions.
Deadlock in climate policy	medium	medium	Industrialised countries fail in efforts of carbon neutralisation.
Fragmentation in Europe	low	low	Energy crisis, inflationary pressure, populism gaining ground

Source: Blackrock Geopolitical Risk Dashboard (2022; 2023), authors' own design

### 3 GEOPOLITICAL RISKS AND THE BASEL REGULATIONS

Regulations are key when analysing the issues affecting the banking sector. Because of its operation and embeddedness in the economy, it is a highly regulated industry, so a historical and qualitative discussion of regulatory issues side by side with quantitative models is important in discussing financial issues.

The Basel regulations are the key elements of regulating the international banking system. The Basel Committee on Banking Supervision was established in 1974 and has been continuously developing banking rules ever since. Milestones include Basel I (1988), which introduced minimum capital requirements for banks based on risk (BIS, 2014).

The Basel framework is a key element in the regulation of the international banking system. The Basel Committee on Banking Supervision (BCBS) was established in 1974 and has been developing the rules for banks ever since. Milestones include Basel I (1988), which introduced minimum capital requirements for banks based on risk (BIS, 2014).

Basel II (2004) continued to develop regulations, increased capital requirements and used a more differentiated approach in considering risks. Basel III (2010) introduced even stricter rules for capital requirements and liquidity to strengthen the financial system and reduce the risk of financial crises. The Basel banking regulations continue to develop in response to the changes and challenges of the financial system. The Committee collaborates with international financial institutions to increase stability and improve effectiveness. Innovations and improvements aim to achieve the sustainable operation of the financial sector and to ensure financial stability in the global economy. The following *Table 2* is a summary of how the focus of banking risks historically changed (BIS, 2014).

**Table 2**  
**Evolution of measuring risk types in BCBS regulatory packages**

Risk types / Regulatory package	Basel I (1988)	Basel II (2004)	Basel III (2010)
Loans	yes	yes	yes
Operations	no	yes	yes
Market	no	yes	yes
Liquidity	no	no	yes
System	no	no	yes

*Source:* authors' own design

The Basel regulations have triggered major changes in banks' risk management. Their objective is to improve the stability of the financial system and to boost banks' risk management practices by preparing them better how to manage different types of risks and to make them more resilient. One can see that earlier regulatory packages including their risk measuring methods are continuously finetuned, and upgraded (for instance, the differentiation of capital requirements) considering the banks and their environment (including, among others, institutional changes, liquidity, technology, etc.).

Although country risk including political risk has already been part of the Basel regulations (BIS, 2006), geopolitical risks have a wider interpretation. They are quite difficult to measure, as – in line with their definition – they are subject to countries' geographical location and foreign policy rather than to the credit rating of any given country. According to the Basel regulations, country risk means the situation in which the sovereign borrowers of a given country cannot or are unwilling, or other borrowers are unable to satisfy their liabilities abroad because of reasons beyond the usual credit risks (BIS, 1982).

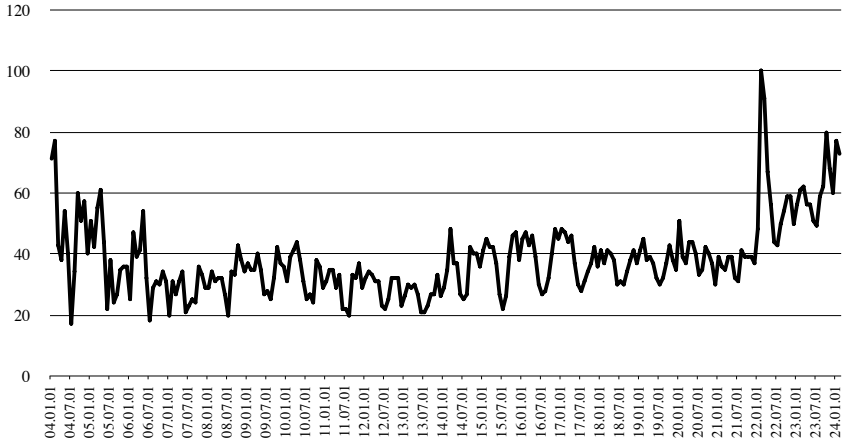
Country risk is often indicated by the CDS premium of a country or by the HIS Global Insight country risk index. In addition, geopolitical risks are worth considering for capital investments. In this analysis, for instance, Pap and Homolya (2017) underline that different risk indexes often move together (Pap–Homolya, 2017). With that in mind, this paper presents an alternative methodology to measure geopolitical risks.

To sum up, the evolution of the Basel regulations represent ongoing efforts to strengthen the global system in response to a continuously changing financial environment and crises. Despite their improvement, ensuring their effectiveness continues to be a challenge in order to prevent future financial crises and to manage systemic risks. As regards risk management, Dimitrios V. Siskos emphasises that the Basel regulations must also deal with unforeseen risks in addition to the foreseen ones targeted by Basel III (Siskos, 2019).

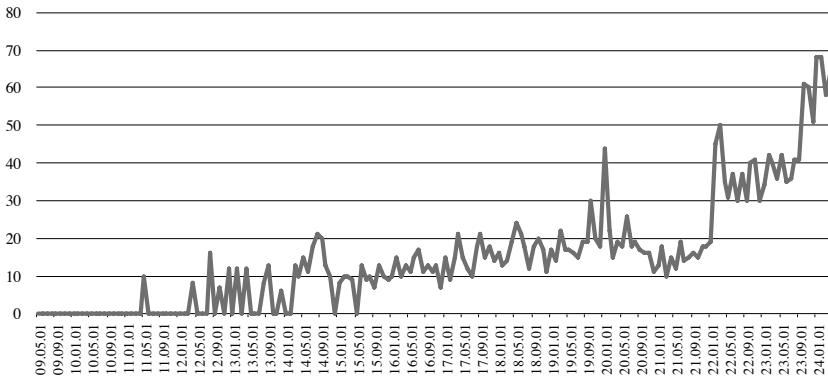
Geopolitical risks can be one of the unseen risks. Historically, they occur less frequently, but their impact on banking profitability and systemic financial stability may be significant.

Geopolitics as a risk factor has taken the foreground recently. Clearly, the conflicts of recent years, particularly the Russian-Ukrainian one, play a part there. Analysing corporate reports provides a picture quite similar to the data of Google Trends.



**Chart 1****Global evolution of searches linked to geopolitics based on Google Trends<sup>4</sup>**

Source: Google Trends

**Chart 2****Global evolution of searches linked to geopolitics based on Google Trends**

Source: Google Trends

4 The figures on the Chart are not absolute search volumes, as Google Trends normalise the data by their own methodology on a scale of 0-100. So, the ratio reflects the number of searches for a given term compared to the total of Google searches.

In line with Google searches, *Charts 1* and *2* illustrate the emphasis on geopolitics and how geopolitical risks have been growing recently. Geopolitical risk is more emphatic than geopolitics, but there is a definite common trend regarding similar terms.

#### 4 DATA AND METHODOLOGY

In this paper, geopolitical risks are measured by counting their occurrence in news items and reports. Rather than using general news sources, we have selected a more specific source, namely, corporate reports. Based on the US, China, Japan and the Stoxx Europe 600 Banks index, as well as analysing the quarterly and flash reports of listed banks in the region, it is obvious geopolitics has been increasingly important. Analysing corporate reports provides good visual demonstration.

Using the Bloomberg Terminal Document Search function, we summarised the terms and phrases linked to geopolitics in banks' flash reports. Like in the Google search, one can find how many times a given word occurs in each document. Since the documents are corporate reports, one can assume keywords refer to factors exerting significant impact on corporate operations. We used the reports of over 60 banks in Europe going back in time to 2004. The data series show the frequency of occurrence by banks and at sectoral level. As for the US, China and Japan, the reports of 100-100 banks were available. Documents available in English were included in the analysis. Analysing the data from 2004 it is obvious that the frequency of occurrence has increased over the past years and a peak is seen for 2022 and 2023. Note that 2023 figures may include 2022 annual reports since their publication was in H1 of 2023. Since the reports include past data and their frequency is not as high as, for instance, daily news items, their analysis is more suitable for analysing the past than forecasting. However, the Bloomberg database offers the keywords of over 200 topics for search in different documents. *Tables 3* and *4* illustrate the occurrence of the keywords identified as well as the number of corporate reports in the databases broken down by regions.

**Table 3**  
**Number of corporate reports examined in given regions**

Region	No of documents
USA	4258
Europe	1990
Asia	3119

Source: Bloomberg

**Table 4**  
**Keywords in analysis and their frequency of occurrence**

Keywords	Total occurrence		
	USA	EU	Asia
OUTBREAK	45603	4367	6497
CRISIS	13601	3654	6497
CONFLICT	12269	2449	9857
WAR	12269	2448	19841
GEOPOLITICS	4729	1435	2453
TENSIONS	1377	688	1147
INVASION	737	354	93

*Source:* Bloomberg

In the study, two databases were used. In one, we were looking for keywords we identified, and its findings are presented on Charts 2, 3 and 4. Other terms can also be identified in the reports, which was also useful to be presented in Table 5 to visualise other topics appearing in banking reports though this paper focused on presenting geopolitical risks.

#### 4.1 Analysis

The following keywords were used:

- Conflict
- War
- Crisis
- Outbreak
- Geopolitics
- Tensions
- Invasion

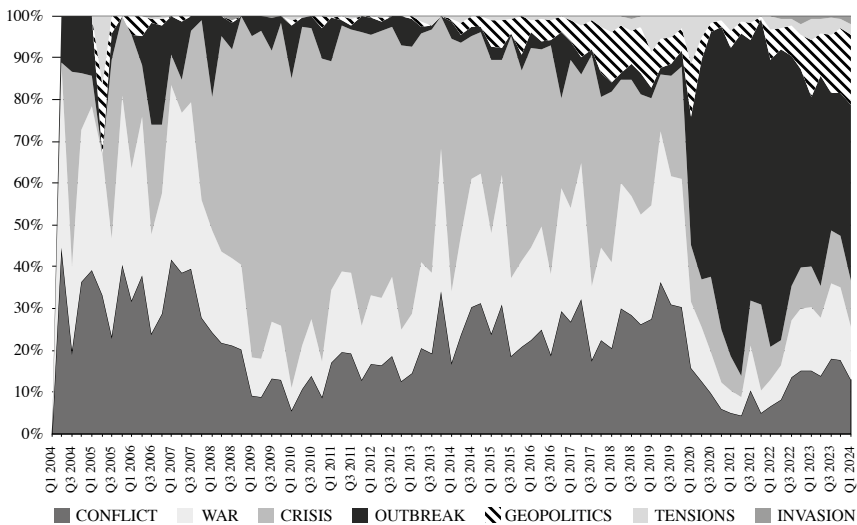
In addition to geopolitics, the term ‘outbreak’ referring to the Corona virus pandemic was also included in the study, since searches had shown that the term ‘geopolitics’ was less important in the Asian banking sector. Naturally, the term can also be used in another context. Keywords were searched and counted in the documents including their different forms (e.g., geopolitics, geopolitical). The terms referring to the Corona virus pandemic operate as a kind of control, while it can be seen in some regions if the pandemic or geopolitical risks were in focus

over the past years. The banking sectors of three large countries/regions, Europe, the United States and China, Hong Kong and Japan of the Asian countries were included in the study to illustrate how significant geopolitics, or the pandemic were in the corporate reports of the regions. The three regions are separately analysed below. Unfortunately, the availability of data limited the focus of a global study, because no appropriate data were available from Africa or Latin America. However, the size of their capital markets render the above countries and regions globally decisive. Also, the banks in the stock market indexes of the countries have global exposure, therefore considering geopolitical risks may be significant.

**Asia**

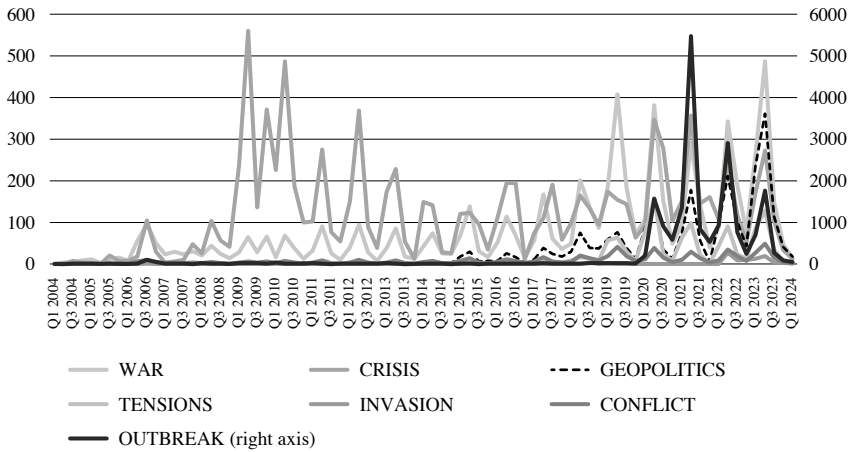
Looking at the time series since 2004 one can see the term ‘crisis’ has stood out in the reports of banks after the 2008 crisis. Obviously, this is not a surprise, as the effects of the 2008 crisis continued to affect the banking sector for years and decades. It is striking, however, that the incidence drops significantly after the outbreak of the coronavirus epidemic and clearly epidemic-related terms dominate the searched terms in corporate reports. Although its effect has fallen back over the past quarters, it still occurs in corporate reports. The database covered 3119 documents of 100 companies in the above countries.

**Chart 3**  
**Frequency of occurrence of keywords in Asia**



Source: Bloomberg, own design

**Chart 4**  
**Number of occurrence of keywords in Asian data**



Source: Bloomberg

Geopolitics (striped line), on the other hand, and terms referring to war are not among the major topics as the words go, although the trend is increasing. One cannot say the keywords are not mentioned in connection with events of a global impact. As time goes on, more and more information is available, so the number of occurrences of keywords also increases. Based on the correlation matrix provided, one can find here the highest number of correlating pairs of keywords and their correlation coefficients. Cyber-attacks and environmental issues have a high positive correlation at 0.932. Loan loss provisions also show a high positive correlation at 0.923. Provisioning for consumer spending and loan loss have a high positive correlation at 0.918. Capital expenditure and expenses, write-offs have a high positive correlation at 0.979. Economic slowdown strongly correlates both with capital expenditure and expenses and write-offs at correlation coefficients of 0.910-es and 0.927, respectively. Climate exposure strongly correlates with environmental issues at a correlation coefficient of 0.866. COVID-19 has shown noticeable positive correlation with environmental issues (0.818) and relatively strong negative correlation with consumer spending (0.600), which indicates that consumer spending usually fell back as COVID-19 increased. A shortage of chips correlates least with economic slowdown (0.438) and fees and write-offs (0.484), which is an indication that those factors are linked to the shortage of chips to a lesser degree than other factors in the matrix. Individual correlations, however, do not necessarily mean a cause-and-effect relationship. One would expect high correlation in the case of some terms, such as COVID-19 and loan loss provisions.

**Table 5**  
**Evolution of correlation of different topics on the data series studied**

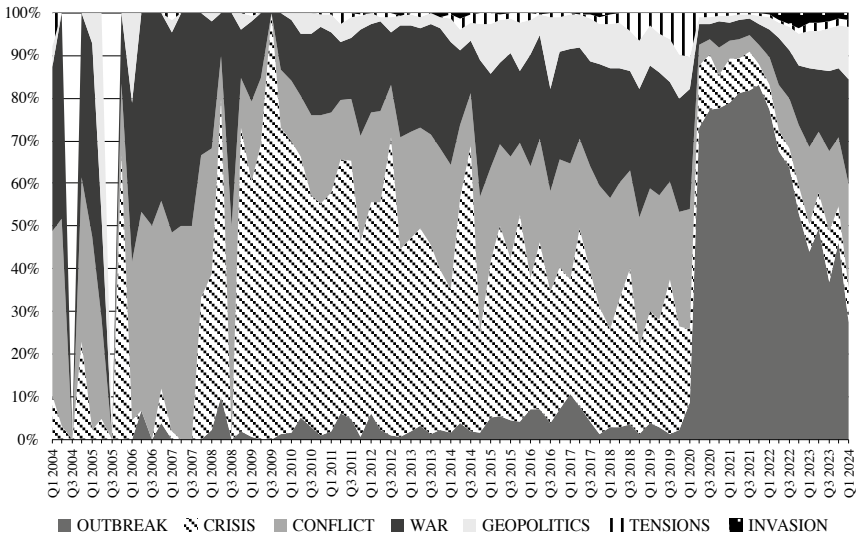
	Charges, Writedowns	Environment Issues	Capital Expenditures	Economic Slowdown	COVID-19	Loan Loss Provisions	Consumer Spending	Climate Exposure	Cyber Attacks	Consumer Confidence	Job Cuts	Chip Shortages
Charges, Writedowns	1.000											
Environment Issues	0.915	1.000										
Capital Expenditures	0.979	0.908	1.000									
Economic Slowdown	0.927	0.856	0.910	1.000								
COVID-19	0.687	0.818	0.660	0.683	1.000							
Loan Loss Provisions	0.932	0.926	0.923	0.881	0.753	1.000						
Consumer Spending	0.893	0.808	0.887	0.857	0.600	0.918	1.000					
Climate Exposure	0.695	0.866	0.716	0.646	0.874	0.789	0.636	1.000				
Cyber Attacks	0.806	0.932	0.768	0.751	0.857	0.863	0.708	0.875	1.000			
Consumer Confidence	0.771	0.611	0.750	0.700	0.482	0.757	0.834	0.540	0.551	1.000		
Job Cuts	0.730	0.636	0.687	0.748	0.602	0.742	0.783	0.501	0.632	0.746	1.000	
Chip Shortages	0.484	0.654	0.509	0.438	0.667	0.557	0.461	0.871	0.658	0.442	0.288	1.000

Source: Bloomberg, own design

**United States**

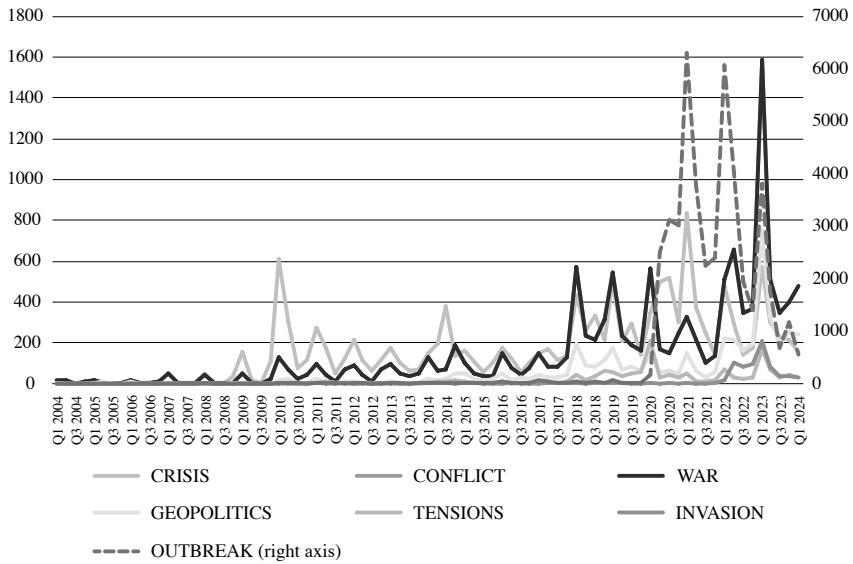
The data series studied also prove the Corona virus pandemic was in the focus of corporate reports in the US, but – unlike in Asia – its weight has been diminishing over the past quarter years to be replaced with geopolitical risks and the related terms. The terms ‘geopolitics’ and ‘war’ marked in light grey and black, respectively, have gained momentum. The shift can be observed in the number and rate of their occurrences too. Looking back into the past, however, the trend of having ‘crisis’ in the foreground after the 2008 crisis was common with Asia.

**Chart 5**  
**Frequency of occurrence of keywords in the United States**



Source: Bloomberg, own design

**Chart 6**  
**Number of occurrence of keywords in US data**



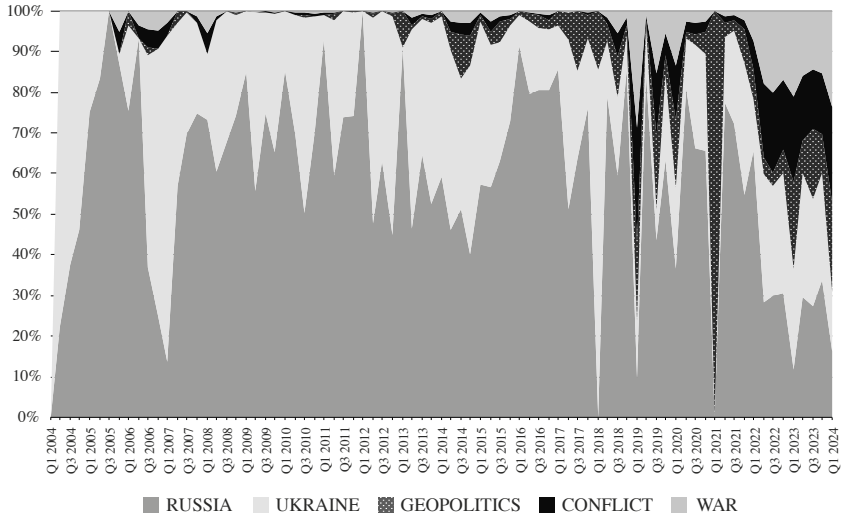
Source: Bloomberg

**Europe**

We focused on the impact of the Russian-Ukrainian conflict for analysing the European banks. The findings prove the frequency of terms linked to geopolitics have been on the rise recently. Russia was almost always mentioned frequently in the period studied, and an increase can be spotted after the 2014 conflict. The terms ‘conflict’, ‘geopolitics’, and ‘war’ have clearly been increasing.

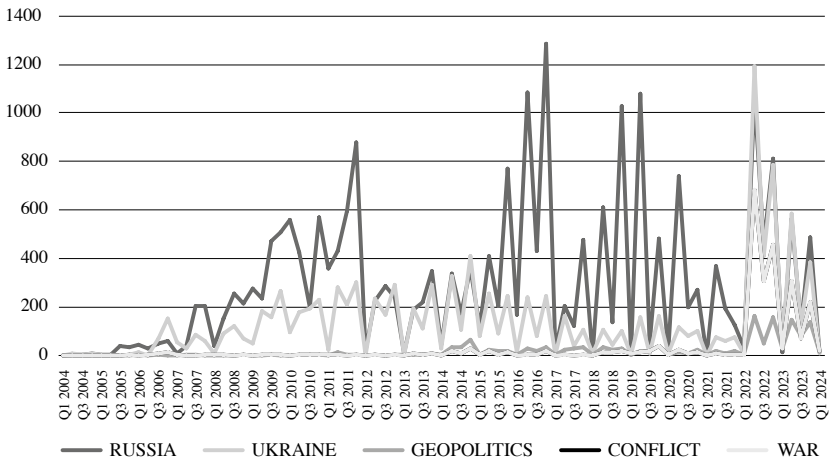


**Chart 7**  
**Frequency of occurrence of keywords in Europe**



Source: Bloomberg, own design

**Chart 8**  
**Number of occurrence of keywords in European data**



Source: Bloomberg

Potential analyses of different keywords have been presented above which allow to outline the trends corresponding to different topics. Evidently, a corporate report will discuss many other topics as well, but this study is mainly focused on geopolitics. Any other risks or environmental effects can become part of another study. Based on the above trends, the next step is to create an index focusing on one key word, geopolitics, because it would allow the comparison of the trends of different regions.

#### 4.2 Geopolitical risk index and geopolitical risk detection index

We have different amounts of data by countries and regions, so regional data cannot be easily compared. Using the methodology of Caldara and Iacoviello (2022), it is worth to create an index of their frequency of occurrence. Caldara and Iacoviello built their index in line with the occurrence of keywords in newspapers as follows:

The GPR index is the quotient of the number of articles describing events related to geopolitical risks and the total number of articles studied. In this paper, corporate reports are available, so the total number of occurrences can be better approximated with the number of companies studied by regions. Based on this analysis, we called our index 'geopolitical risk detection index' (GRD), since it differs from the GPR index in its methodology. For instance, the data series studied consists of 100 companies in the US and the same holds for Asia.

$$GRD = \frac{K}{count(C)} \quad (1),$$

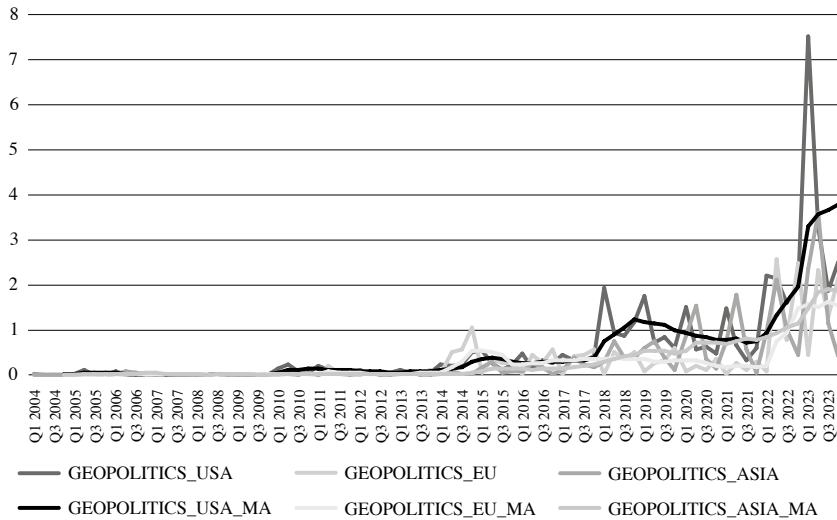
where

- GRD: geopolitical risk detection index
- K: number of keywords in the documents
- C: number of companies

The resulting geopolitical detection index can be compared for different countries based on their corporate reports. A number lower than one in the risk detection index means a term linked to geopolitics only occurs in a few percent of the reports, while a number higher than one shows it is mentioned more often, on average, within a report. The basic assumption, obviously, is the more frequently a term is mentioned the more important it is in a report. To compare regions, we gathered the terms relating to geopolitics and used them only to build the risk indexes.

The resulting geopolitical risk detection indexes presented on a long time series look as follows:

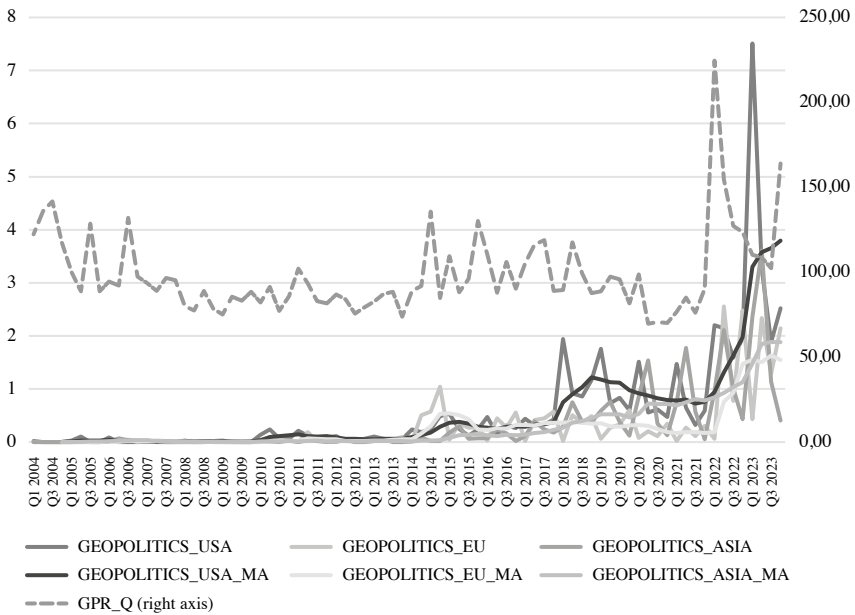
**Chart 9**  
**Geopolitical risk detection indexes presented from the reports**



Source: authors' own calculation from Bloomberg data, own design

In the three regions, the number of occurrences of the terms linked to geopolitics alone were taken into consideration to build the GRD index. Quarterly data were quite varied, so we also calculated a four-quarter moving average for the risk index. A steep rise can be seen beginning from 2022, while there is also a peak in the data series in 2014 mainly with the banks of the European Union. The geopolitical risk index created according to corporate reports were compared to the GPR index built by Caldara and Iacoviello. As mentioned above, information appears delayed in corporate reports (lags), while the GPR index includes data of a higher frequency. Using Caldara and Iacoviello's database, we studied the evolution of the GPR index trying to find an answer to the question how much geopolitics-related terms in corporate reports move together with the GPR index.

**Chart 10**  
**Geopolitical risk detection indexes based on corporate reports**  
**and the GPR index**



Source: own design

There are peaks in the GPR index at similar times, but the lag (lags) effect must be noted in the corporate reports. A more accurate picture can be achieved by analysing the correlation matrix of the geopolitical risk indexes adding the lags for the past 4 quarters. That will show a correlation of about 40-50 percent exists among the risks indexes if one goes back to some quarters.

**Table 6**  
**Correlation matrix of the different geopolitical risk indexes**

GEOPOLITICS_USA	1.00																					
GEOPOLITICS_USA_1	0.62	1.00																				
GEOPOLITICS_USA_2	0.49	0.62	1.00																			
GEOPOLITICS_USA_3	0.55	0.46	0.61	1.00																		
GEOPOLITICS_USA_4	0.79	0.67	0.60	0.66	1.00																	
GEOPOLITICS_EU	0.49	0.71	0.55	0.61	0.45	1.00																
GEOPOLITICS_EU_1	0.70	0.54	0.69	0.72	0.40	0.40	1.00															
GEOPOLITICS_EU_2	0.54	0.69	0.44	0.70	0.78	0.35	0.74	1.00														
GEOPOLITICS_EU_3	0.71	0.51	0.72	0.36	0.62	0.28	1.00															
GEOPOLITICS_EU_4	0.37	0.72	0.51	0.74	0.55	0.29	1.00															
GEOPOLITICS_ASIA	0.75	0.88	0.44	0.32	0.70	0.57	0.49	1.00														
GEOPOLITICS_ASIA_1	0.43	0.76	0.89	0.46	0.55	0.61	0.54	0.61	1.00													
GEOPOLITICS_ASIA_2	0.49	0.42	0.76	0.89	0.59	0.60	0.42	0.25	1.00													
GEOPOLITICS_ASIA_3	0.80	0.47	0.43	0.76	0.85	0.59	0.44	0.55	0.68	1.00												
GEOPOLITICS_ASIA_4	0.63	0.83	0.47	0.43	0.70	0.46	0.49	0.63	0.27	1.00												
GPR_Q	0.38	0.25	0.20	0.33	0.32	0.31	0.30	0.15	0.29	0.15	1.00											
GPRindex	0.38	0.25	0.20	0.33	0.32	0.31	0.30	0.15	0.29	0.15	0.99	1.00										
l_GPRindex	0.38	0.28	0.22	0.32	0.30	0.35	0.33	0.16	0.28	0.16	0.98	1.00	1									

*Source: own design*

## 5 CONCLUSIONS

Based on the above, it can be concluded that the analysis of company reports yields similar results to the geopolitical risk indices published so far, but that risk indices can also be produced sector-specifically. In the banking sector, these risks may be of particular interest. The trend in the reports of recent years shows that geopolitics has become increasingly important in the reports, and from a regulatory point of view, geopolitical risks are even mentioned in stress tests because of their impact on the macroeconomy.

Although measuring geopolitical risk is a difficult task, there are several examples of risk indexes in the literature, and major financial sector institutions such as BlackRock have their own risk indexes. All this confirms the importance of geopolitics and the growing importance of risk measurement. Measuring the risks may, eventually, lead to their inclusion in the regulatory framework too.

In this paper we have tried to build a geopolitical risk index using the corporate reports of the banking sector based on an analysis of keywords in them. The resulting geopolitical risk index correlates with other geopolitical risk indexes, which renders it suitable to be used for further historical analyses regarding the connection between geopolitical risks and the banking sector. As seen from the key findings, a kind of geopolitical risk index can be set up using another methodology, which will not only search for terms in the available news items but also in corporate reports. This geopolitical risk perception index also shows a correlation with other geopolitical risk indexes.

## REFERENCES

- BIS (1982): Management of Banks' International Lending (Country Risk Analysis and Country Exposure Measurement and Control (March 1982). <https://www.bis.org/publ/bcbsc122.pdf>.
- BIS (2006): Basel Committee on Banking Supervision International Convergence of Capital Measurement and Capital Standards. <https://www.bis.org/publ/bcbs128.pdf>.
- BIS (2014): A brief history of the Basel Committee. Bank for International Settlements, <http://www.bis.org/bcbs/history.pdf> (downloaded at 17.02.2024).
- BlackRock (2021): Gauging Geopolitics. <https://www.blackrock.com/us/individual/insights/blackrock-investment-institute/geopolitical-risk-framework> (downloaded at 18.02.2024).
- BlackRock (2021): Geopolitical Risk Dashboard. <https://www.blackrock.com/corporate/literature/whitepaper/geopolitical-risk-dashboard-december-2021.pdf> (downloaded at 18.02.2024).
- BlackRock (2022): Geopolitical Risk Dashboard. <https://www.blackrock.com/corporate/insights/blackrock-investment-institute/interactive-charts/geopolitical-risk-dashboard> (downloaded at 18.02.2024).

- BlackRock (2023): Geopolitical Risk Dashboard. <https://www.blackrock.com/corporate/insights/blackrock-investment-institute/interactive-charts/geopolitical-risk-dashboard> (downloaded at 18.02.2024).
- Caldaro, D. – Matteo, I. (2018): Measuring Geopolitical Risk. *International Finance Discussion Papers*, 1222R1, 2018.02.07., [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3117773](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3117773).
- Caldara, D. – Matteo, I. (2022): Measuring Geopolitical Risk. *American Economic Review*, 112(4), 1194–1225, <https://www.aeaweb.org/articles?id=10.1257/aer.20191823>.
- Castree, N. – Kitchin, R. – Rogers, A. (2013): *A Dictionary of Human Geography*. Oxford University Press, [https://books.google.hu/books?id=eYWcAQAQBAJ&printsec=frontcover&hl=hu&source=gbs\\_ge\\_summary\\_r&cad=#v=onepage&q&f=false](https://books.google.hu/books?id=eYWcAQAQBAJ&printsec=frontcover&hl=hu&source=gbs_ge_summary_r&cad=#v=onepage&q&f=false).
- Dijkink, G. (2009): Geopolitics and Religion. In Kitchin, R. – Thrift, N. [eds.] (2009): *International Encyclopedia of Human Geography*, 453–57. Oxford: Elsevier.
- EBA (2023): EU Wide Stress Test Results. [https://www.eba.europa.eu/sites/default/files/document\\_library/Risk%20Analysis%20and%20Data/EU-wide%20Stress%20Testing/2023/Results/1061373/Presentation%20on%202023%20stress%20test%20results.pdf](https://www.eba.europa.eu/sites/default/files/document_library/Risk%20Analysis%20and%20Data/EU-wide%20Stress%20Testing/2023/Results/1061373/Presentation%20on%202023%20stress%20test%20results.pdf).
- EKB (2007): *Financial Stability Review*. <https://www.ecb.europa.eu/pub/pdf/other/financialstabilityreview200712en.pdf>.
- EKB (2009): *Financial Stability Review*. <https://www.ecb.europa.eu/pub/pdf/fsr/financialstabilityreview200912en.pdf>
- EKB (2023): *Financial Stability Review*. <https://www.ecb.europa.eu/pub/financial-stability/fsr/html/ecb.fsr202311~bfe9d7c565.en.html>.
- Eichengreen, B. – Mehl, A. – Chițu, L. (2019): Mars or Mercury? The Geopolitics of International Currency Choice. *Economic Policy*, CEPR; CES; MSH, 34(98), 315–363. [https://www.researchgate.net/publication/344726720\\_Mars\\_or\\_Mercury\\_The\\_geopolitics\\_of\\_international\\_currency\\_choice](https://www.researchgate.net/publication/344726720_Mars_or_Mercury_The_geopolitics_of_international_currency_choice).
- Eichengreen, B. – Mehl, A. – Chițu, L. (2021): Mars or Mercury Redux: The Geopolitics of Bilateral Trade Agreements. *The World Economy*, 44(1), January 2021, 21–44. <https://doi.org/10.1111/twec.13018>.
- Federle, J. – Meier, A. – Müller, G. – Sehn, V. (2022): Proximity to War: The stock market response to the Russian invasion of Ukraine. CEPR Discussion Paper 17185, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4060222](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4060222).
- Grébel, Sz. – Pesuth, T. (2023): Gondolatok a geopolitika és a tőkepiacok kapcsolatáról [Thoughts on the Relationship of Geopolitics and Capital Markets]. *Köz-Gazdaság – Review of Economic Theory and Policy*, 18(2), 15–33. <https://doi.org/10.14267/RETP2023.02.02>.
- Mackinder, H. (1904): The Geographical Pivot of History. *The Geographical Journal*, 23(4), 421–437. [https://ndisc.nd.edu/assets/422105/mackinder\\_1904\\_heartland\\_article\\_17\\_pages.pdf](https://ndisc.nd.edu/assets/422105/mackinder_1904_heartland_article_17_pages.pdf).
- Mahan, A. (1890): *Influence of Sea Power Upon History, 1660–1783*. Boston: Little, Brown and Company. <https://www.gutenberg.org/files/13529/13529-h/13529-h.htm>.
- MNB (2023): Pénzügyi Stabilitási Jelentés (2023. november) [Financial Stability Report November 2023]. <https://www.mnb.hu/kiadvanyok/jelentesek/penzugyi-stabilitasi-jelentes/penzugyi-stabilitasi-jelentes-2023-november>.
- Pap, M. – Homolya, D. (2017): Az országgockázatok mérése és kezelése [Measuring and managing country risks]. *Biztosítás és Kockázat*, 4(3), 12–30. <https://mabisz.hu/wp-content/uploads/2018/08/biztositas-es-kockazat-4-efv-3-szam-2-cikk.pdf>.
- Siskos, D. V. (2019) What Is the Role of Basel III in Creating Sufficient Risk Management in the Banking Sector?, <https://ssrn.com/abstract=3439267> or <http://dx.doi.org/10.2139/ssrn.3439267>.