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RIZICI U NASTAJANJU - EHO CRNIH LABUDOVA

Rezime

Uzlazni trend novih poslovnih mogućnosti koje su sobom donele tehnologije u nastanku značajno je doprineo oporavku globalne ekonomije poslednjih godina. Savremenom tehnologijom podržan globalni rast međutim, iznedrio je i generisao novi talas složenih, međusobno povezanih i veoma promenljivih rizika, koji jasno upozoravaju na neizvesnosti koje nastaju u ekonomskom okruženju. Pažljiv i kontinuiran monitoring ovih rizika postao je imperativ za poslovne subjekte u funkciji zaštite poslovanja preduzeća i banaka.

Ključne reči: rizici u nastajanju, izloženost, neizvesnost, osiguranje

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EMERGING RISKS - THE WAVE OF BLACK SWAN EVENTS

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Summary

The rising trend of new business opportunities, triggered by the emerging technologies, has substantially contributed to the recovery of the global economy in recent years. The global growth supported by modern technology, however, has also generated a new wave of complex, mutually intertwined and rather changeable risks, which are unambiguously warning against the uncertainties arising in the economic environment. A thorough and continuous monitoring of these risks has become an imperative for business entities in the function of protecting the operations of enterprises and banks.

Keywords: emerging risks, exposure, uncertainty, insurance

JEL: G31, G81

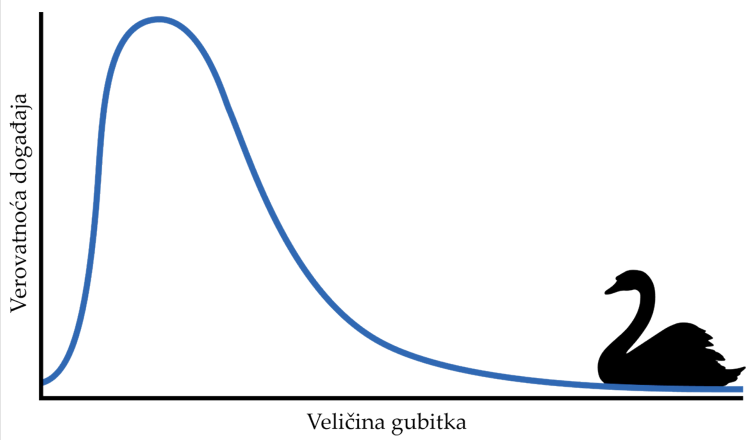
Poslednjih godina u fokusu savremenog poslovnog sveta našli su se rizici u nastajanju ili rizici budućnosti. Reč je o novom talasu složenih rizika koje karakteriše ubrzani rast u savremenim uslovima poslovanja, globalna dimenzija i visoka korelisanost sa drugim rizicima, što najčešće rezultira gubicima velike vrednosti. Procena visine očekivanih i neočekivanih gubitaka koje mogu uzrokovati rizici u nastajanju veoma je teška, obzirom da su njihovi dometi najčešće nepoznati ili teško predvidivi. Put ispred krive u neočekivano sa neželjenim posledicama potvrdio je da efikasno delovanje na planu upravljanja ovim rizicima zahteva širok nivo odgovornosti, integrisani pristup i razvoj jasno razumljive kulture upravljanja rizicima unutar organizacije. Endrju Kendrik, predsednik ACE Group, globalnog lidera u oblasti osiguranja i reosiguranja, ogranka za Evropu, u izveštaju za 2015. izjavio je da su mnogi poslovni subjekti potražili odgovore od svojih eksternih partnera u oblasti industrije osiguranja, koje su videli kao ključne u rešavanju pitanja njihove izloženosti prema rizicima u nastajanju. Ipak, zaključio je da je instrument osiguranja samo prvi nivo odbrane i da će menadžeri rizika imati ključnu ulogu u obezbeđenju uspešnog oporavka njihovih organizacija od krize i obezbeđenju planova za vanredne situacije, neophodnih za rast u jednom veoma povezanom, kompleksnom i visoko rizičnom svetu.

Put ispred krive u neočekivano

Tehnološki progres u brojnim poslovnim aktivnostima, kao inicijalni i vodeći generator rizika u nastajanju, značajno je doprineo njihovoj kompleksnosti, dao im je globalnu dimenziju i potvrdio da priznati imperativi u upravljanju rizicima, u smislu širokog nivoa odgovornosti i visoke kulture upravljanja, u slučaju rizika u nastajanju, postaju urgentni.

Visokom uzlaznom trendu rasta rizika u nastajanju, delom je doprinela i činjenica da je savremeni svet u značajnoj meri osvojio upravljanje klasičnim, materijalnim rizicima, otvarajući tako prostor za rast izloženosti velikoj porodici nefinansijskih rizika, kojoj pripadaju i rizici u nastajanju.

Teorija rizičnog događaja Crni labud



Generisan ubrzani rast rizika u nastajanju u savremenim uslovima poslovanja, što potencijalno znači visoku izloženost privrede i banaka mogućim gubicima u sadašnjem i budućem periodu, postao je ključni izazov za menadžere rizika u bankama i kompanijama, ali i za menadžere u industriji osiguranja, da procene i kreiraju kredibilne modele upravljanja. Na ovom putu suočavaju se sa brojnim izazovima i problemima.

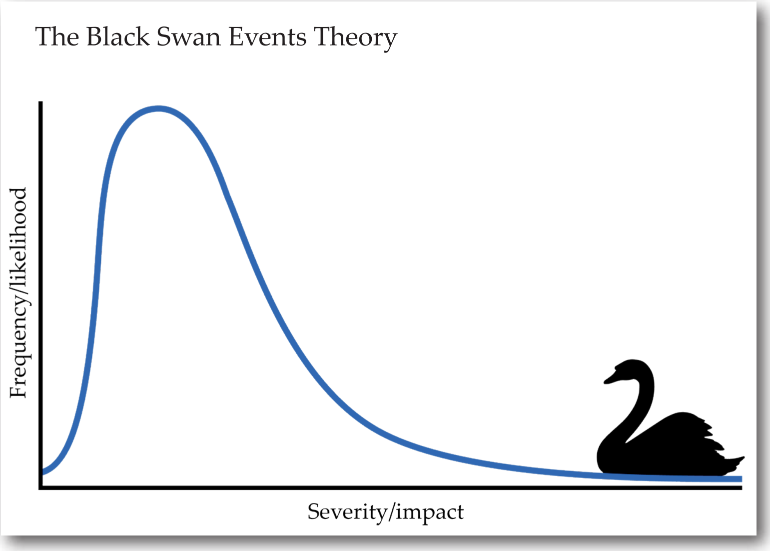
Rizici u nastajanju su rizici iz grupe nefinansijskih rizika, kod kojih generalno veza sa gubitkom prihoda najčešće nije direktna i vidljiva, a njihov horizont, koji je u skladu sa njihovim karakteristikama, najčešće je neizvestan. Osim toga, ograničeni istorijski podaci o ovim rizičnim događajima i visini gubitaka kojima je rezultirala njihova realizacija, kao i njihova povezanost sa drugim rizicima, takođe veoma otežavaju izradu ovih modela.

U pokušaju da definišu i identifikuju rizike u nastajanju, menadžeri rizika ih prepoznaju kao nove i teško predvidive u pogledu jačine delovanja, posledica ili gubitaka koje uzrokuju, ali i kao rizike kojima nije moguće upravljati tradicionalnim metodama. Metaforično ih nazivaju crnim labudovima, ili nepoznatom nepoznanicom, obzirom da najčešće ne postoje prethodna iskustva o njihovom postojanju, samim tim ni svest o nepoznavanju ovih rizika. Crni labud kao metafora za rizike u nastajanju

Emerging risks or future risks have in recent years been in the focus of the contemporary business world. These risks refer to a new wave of complex risks characterized by an accelerated growth in contemporary business conditions, global dimension and high correlation with other risks, often resulting in large value losses. The assessment of expected and unexpected losses that may be caused by emerging risks is extremely challenging, given that their amplitude is typically unknown and difficult to predict. The road ahead of the curve to the unexpected with undesired consequences confirmed that the efficient action in terms of managing these risks requires a broad level of commitment, an integrated approach and the development of a clearly understood risk management culture across the organization. Andrew Kendrick, President of ACE European Group, a global leader in insurance and reinsurance, in the 2015 report stated that many business entities sought answers from their external partners in the insurance industry, whom they saw as crucial in solving the issue of their exposure to emerging risks. However, he concluded that the insurance instrument is only the first level of defense and that risk managers would play a key role in ensuring a successful recovery of their organizations from the crisis and in providing contingency plans, the prerequisite of growth in an ultra-connected, complex and high-risk world.

Ahead of the Curve to the Unexpected

Technological progress in numerous business activities, as the initial and leading generator of emerging risks, has substantially contributed to their complexity, giving them the global dimension and confirming that the recognized imperatives in risk management, in terms of the broad level of commitment and top management culture, are becoming urgent when speaking of emerging risks. The steep growing trend of emerging risks has partially been caused by the fact that the modern world has to a significant degree mastered the management of classic, material risks, thereby generating room for the increasing exposure to the large family of non-financial risks, which includes emerging risks as well.



The accelerated growth of emerging risks in the modern business environment, which implies a high exposure of the economy and banks to potential losses in the present and in the future period, has become the key challenge for risk managers in banks and companies, but also for risk managers in the insurance industry, to assess the risks and create the credible risk management models. On this road they have to face numerous challenged and problems. Emerging risks belong to the group of non-financial risks, whose link to the loss of income is usually indirect and invisible, while their horizon, in line with their general characteristics, is most frequently uncertain. Moreover, what additionally hinders the preparation of these models is the limited historical data about these risk events, the amount of losses resulting from their occurrence, and their connection to other risks.

In the attempt to identify and define emerging risks, risk managers recognize them as new and unpredictable in terms of their strength, consequences or caused losses, and as risks which are impossible to be managed by means of the traditional methods. Metaphorically, they are referred to as the black swans, or the unknown unknowns, given that there are usually no previous experiences about their existence, and thus no awareness about not prepoznat je u pesmi latinskog pesnika Juvenala o „vrlo retkoj ptici na zemlji sličnoj crnom labudu" ili u novije vreme u knjizi Nasima Nikolasa Taleba, „Crni labud", u kojoj je crni labud metafora za događaje van finansijskog tržišta. Tako je teorija rizičnih događaja *crni labud* postala metafora za događaje koji su neočekivani, teško predvidivi, i sa vrlo velikim negativnim posledicama.

Rizici budućnosti

U pokušaju da obuhvati i sistematizuje ove rizike, stručna javnost vođena različitim kriterijumima ponudila je više klasifikacija rizika u nastajanju. Široku i obuhvatnu klasifikaciju koja objedinjuje i grupiše osnovne i najvažnije karakteristike ovih rizika dao je Guy Carpenter & Company, globalni lider u pružanju posredničkih usluga u oblasti rizika i reosiguranja. Ova klasifikacija poznaje sledeće osnovne kategorije rizika u nastajanju:

- ***Rizici tehnologije - Technological risks***. Ovu grupu rizika čine novi rizici koje generišu visoko razvijene naučne discipline i nova tehnologija. Neizvesnost u pogledu mogućih negativnih posledica njihove realizacije, kao glavna karakteristika ovih rizika, potiče od primene nove tehnologije u formi novih proizvoda i usluga. Razlozi visoke neizvesnosti baziraju se na nedovoljnom poznavanju ovih rizika, vrlo često i zbog nedostatka svesti o njihovom postojanju, nedovoljnom iskustvu o mogućim posledicama i veličini gubitaka u slučaju njihove realizacije, ali i na izostanku njihove interakcije sa raspoloživim sistemima za apsorbovanje rizika.

  Po rezultatima istraživanja u 2015. koje je sproveo ACE Group, globalni lider u oblasti osiguranja i reosiguranja[1], rizici novih tehnologija su po svim karakteristikama na samom vrhu grupacije rizika u nastajanju. U ovu kategoriju rizika spadaju: *rizici biotehnologije i genetičkog inženjeringa* (genetski modifikovani organizmi), *rizici nanotehnologije* (interdisciplinarne nauke koja uključuje fiziku, hemiju, nauku o materijalima i širok skup inžinjerskih disciplina, a proučava fizičke, hemijske i biološke osobine molekula i atomskih čestica), *rizici sajber tehnologije* (sajber napadi), rizici smart tehnologije (robotizovana vozila u saobraćaju, rizici mobilne telefonije) ili *rizici tehnologije u oblasti hemijske industrije* (elektronska cigareta na primer).

  Dobar primer rizika koje generišu nove tehnologije su genetski modifikovani proizvodi. Reč je o novim proizvodima biotehnologije i genetičkog inženjeringa čiji je cilj kontrolisana proizvodnja genetički izmenjenih organizama i klonova. Novi proizvodi nastali su kao rezultat promena u genomu, putem rekombinacije roditeljskih gena u potomku, kao što su promene u broju hromozoma, ili još složenije u njihovoj strukturi, na nivou gena ili grupe gena. Razvoj ove tehnologije imao je humane ciljeve - povećanje rodnosti i kvaliteta poljoprivrednih kultura, poboljšanje kvaliteta prehrambenih proizvoda i rešavanje problema gladi u svetu. Istovremeno međutim, ova savremena tehnologija generisala je sledeće rizike u nastajanju:

  Rizik ugrožavanja ljudskog zdravlja u nastajanju. Mnogi GMO tehnologiju smatraju potencijalnom i sasvim realnom opasnošću po čoveka i njegovu okolinu, jer stvara organizme čiji je uticaj na čovekovo zdravlje nedovoljno ispitan. Pacovi hranjeni GM kukuruzom kraće žive ili više oboljevaju od tumora.

  Po osnovnoj kategorizaciji rizika, u ovom slučaju reč je o operativnom riziku u nastajanju, kategorija - rizik tehnologije, potkategorija rizik ljudskog faktora sa potencijalno mogućom globalnom dimenzijom rizika u nastajanju i visokom neizvesnošću u pogledu mogućih negativnih posledica.

  Rizik koncentracije u nastajanju. Primer rizika koncentracije u nastajanju koji je generisan novim GMO proizvodima na tržištu su

1 ACE Group je globalni lider u oblasti osiguranja i reosiguranja. Reč je o multinacionalnoj kompaniji koja je prisutna u 54 zemlje sveta, sa bilansnom veličinom od 154 biliona dolara na kraju 2015. godine. Podaci navedeni u tekstu o rizicima u nastajanju korišćeni su iz istraživanja koje je uradila ACE European Group 2015.godine u saradnji sa Longitude Research. Anketirano je 500 menadžera rizika iz 27 industrija u 25 evropskih zemalja.

knowing these risks. The black swan metaphor for emerging risks was recognized in a poem by the Latin poet Juvenal about "a rare bird in the earth and most similar to a black swan", or more recently in *The Black Swan* by Nassim Nicolas Taleb, in which this is a metaphor for the events outside the financial market. Thus, the black swan events theory became the metaphor for events that are unexpected, difficult to predict, and with extremely negative consequences.

Risks of the Future

With a view to encompassing and systematizing these risks, the professional public offered several emerging risks classifications guided by the different criteria. A broad and comprehensive classification which gathers and groups the main and most important characteristics of these risks was provided by Guy Carpenter & Company, the global leader in intermediation services in the field of risk and reinsurance. This classification distinguished between the following emerging risks categories:

- ***Technological Risks.*** This group of risks includes new risks generated by highly developed scientific disciplines and new technologies. Uncertainty in terms of the potential adverse consequences of their occurrence, as the main characteristic of these risks, arises from the implementation of new technologies in the form of innovative products and services. The reasons behind the high uncertainty are based on the insufficient knowledge about these risks, quite frequently the complete lack of awareness about their existence, the inadequate experience about the potential consequences and the amount of losses in the case of their occurrence, as well as the absence of their interaction with the available risk absorption systems.

  Based on the results of the 2015 research conducted by ACE Group, a global leader in insurance and reinsurance[1], the risks related to new technologies are, according to all of their characteristics, at the very top of the emerging risks group. This category of risks includes: *biotechnology and genetic engineering risks* (genetically modified organisms), *nanotechnology risks* (interdisciplinary science including physics, chemistry, materials science and a broad range of engineering related disciplines, studying the physical, chemical and biological features of molecules and atoms), *cyber technology risks* (cyber-attacks), *smart technology risks* (robotized transportation vehicles, mobile telephony risks), or *chemical industry technology risks* (for instance, the electronic cigarette).

  A good example of risks generated by new technologies is related to genetically modified products. These new products of biotechnology and genetic engineering are aimed at the controlled production of genetically modified organisms and clones. The new products have resulted from the changes introduced to genomes, by recombining the parents' genes in their offspring, such as the changed number of chromosomes, or at the even more complex level in their structure, at the level of a gene or a group of genes. The development of this technology originally had humane goals, i.e. to increase the birthrate and the quality of agricultural produce, to improve the quality of food products and solve the problem of famine in the world. At the same time, however, this modern technology generated the following emerging risks:

  Emerging human health risk. The GMO technology is considered by many to be potentially and actually dangerous for people and their environment, because it generates organisms whose effect on human health has been insufficiently investigated. The rats fed by GM corn have been recorded to live shorter or suffer from more tumors.

  According to the main risk classification, this would be an emerging operational risk, category - technological risk, subcategory -

1 ACE Group is a global leader in insurance and reinsurance. It is a multinational company present in 54 countries worldwide, with the balance sheet size amounting to 154 billion dollars at the end of 2015. The data used in the text about emerging risks are taken from the research conducted by ACE European Group in 2015 in cooperation with Longitude Research. The survey involved 500 risk managers from 27 industries in 25 European countries.

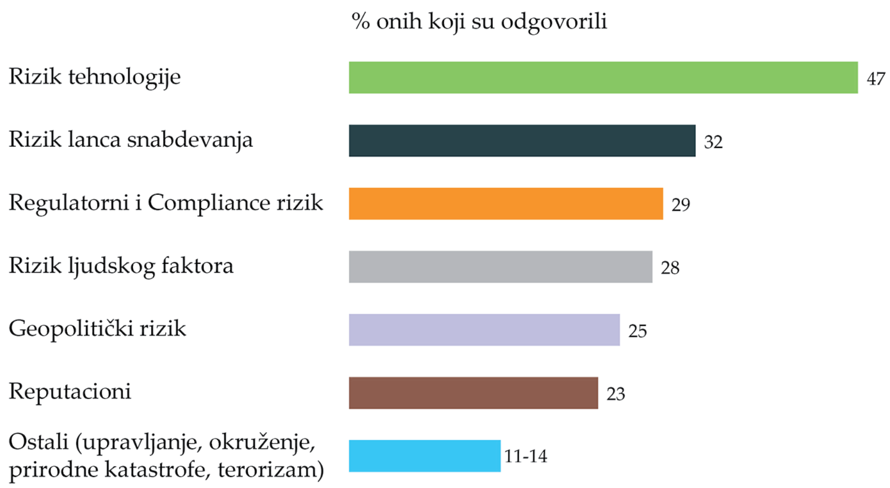
podaci koji ukazuju da samo šest korporacija smeštenih u SAD ili Evropi kontrolišu 98% tržišta GM kultura i 70% svetskog tržišta pesticida, kao i da 6 korporacija poseduje 54% američkih biljnih biotehnoloških patenata. Deset korporacija snabdeva semenom 33% svetskog tržišta u poređenju sa hiljadama kompanija pre 20 godina. Dakle, reč je o riziku koncentracije, koji ima globalnu dimenziju i čije su moguće negativne posledice nepoznate.

Rizik eksternih prevarnih radnji u nastajanju. Ovaj rizik generiše ilegalni uvoz GM semena u pojedine zemlje koje imaju slabe mehanizme kontrole ili nemaju odgovarajuću zakonsku regulativu. Reč je o operativnom riziku u nastajanju, kategorija eksterne prevarne radnje.

Ipak, najveća zabrinutost menadžera kada je reč o novim tehnologijama, odnosi se na *rizike sajber tehnologije,* zbog toga što procenjuju da ovaj rizik u nastajanju ima potencijalno najveći finansijski uticaj na njihovo poslovanje. Sajber napadi su najveći i najsnažniji izvor ovih rizika, pa je i opreznost menadžera već rezultirala velikim investicijama u sisteme obezbeđenja i kontrole.

Prema istraživanjima koja je u 2015. sprovela ACE Group, globalni lider u oblasti osiguranja, rizici tehnologije su na samom vrhu u grupi rizika u nastajanju. Oni izazivaju najveću zabrinutost menadžera kada je posao u pitanju (43% ispitanih), imaju najveći finansijski uticaj na poslovanje (47% ispitanih), na njih se troši najviše vremena i sredstava od svih rizika u nastajanju. Po mišljenju menadžera rizika uloga osiguranja je od najvećeg značaja kada su u pitanju ove izloženosti. U strukturi rizika tehnologije, najveću zastupljenost imaju hakerski napadi sa 33%, zatim sistemski propusti sa 30%, ali i rizik napretka u digitalnoj tehnologiji za postojeće poslovne modele sa učešćem od 29%.

Rizici u nastajanju koji imaju najveći finansijski uticaj na poslovanje



Izvor: Emerging Risks Barometer 2015, ACE Group

Posmatrano iz ugla bankarske industrije, rizici sajber tehnologije koji se manifestuju kao sajber napadi na informacione sisteme banaka prepoznati su kao najznačajnije izloženosti za koje banke već izdavajaju veoma velika sredstva. Banke su najčešće izložene direktno ovom riziku, ali i indirektno preko rizika lanca snabdevanja (robom, potrebnim finansijskim sredstvima i potrebnom logistikom) u nastajanju. Sajber napadi mogu dovesti u rizičnu poziciju bilo koji deo lanca snabdevanja privrednog subjekta, a sajber rizici generisati set agregiranih izloženosti prema partnerima, spoljnim pružaocima usluga (autsorsing kompanijama), kreditorima (bankama).

Uprkos ozbiljnim i opsežnim preventivnim merama zaštite, koje se preduzimaju u privrednom i bankarskom sektoru, trend sajber napada beleži progresivan rast, a sami rizici su agresivni i globalni, obzirom na rastuću zavisnost globalne ekonomije od elektronskog trgovanja i cloud computinga. Prema izveštaju Svetskog ekonomskog foruma za 2015. godinu, Foruma o globalnim rizicima, smatra se da se sajber napadi danas događaju daleko iznad proseka u pogledu verovatnoće i jačine napada. Brojni primeri potvrđuju prethodnu konstataciju. U Velikoj Britaniji koja je sajber napade prepoznala people risk with a potential global dimension of an emerging risk and high uncertainty in terms of its potential ramifications.

Emerging concentration risk. An example of the emerging concentration risk generated by the new GMO products at the market are the data indicating that only six corporations located in the USA or Europe control 98% of the GM products market and 70% of the global pesticides market, as well as that 6 corporations own 54% of the US biotechnological patents. Ten corporations provide the seed for 33% of the global market compared to the thousands of companies 20 years ago. In other words, the world is facing the concentration risk, which has its global dimension and whose potential ramifications are unknown.

Emerging external fraud risk. This risk is generated by the illegal import of the GM seed into certain countries with poor control mechanisms or no appropriate laws and regulations. This is an emerging operational risk, category external fraud.

Nevertheless, the highest concern of risk managers when it comes to the latest technologies refers to the cyber technology risks, because they estimate this emerging risk to have the potentially largest financial impact on their business operations. Cyber-attacks are the biggest and most powerful source of these risks, and the cautiousness of risk managers has already resulted in major investments into security and control systems.

According to the research conducted in 2015 by ACE Group, a global leader in insurance, technological risks are at the very top of the emerging risks. They cause the highest concern among risk managers when it comes to business (43% of the respondents), they have the biggest financial impact on business operations (47% of the respondents), and they occupy the largest amounts of time and resources compared to other emerging risks. According to the opinion of risk managers, the role of insurance is of utmost importance when it comes to these exposures. In the structure of technological risks, the biggest portion is taken up by hacking attacks (33%), followed by systemic oversights (30%), and the risk of digital technology progress concerning the existing business models (29%).

Source: Emerging Risks Barometer 2015, ACE Group

From the perspective of the banking industry, the cyber technology risks manifested as cyber-attacks on the banks' information systems have been recognized as the most significant exposures in respect of which the banks already allocate huge amounts of funds. Banks are usually exposed to this risk directly, but also indirectly through the emerging supply chain, finance and logistic risks. Any segment of a business entity's supply chain may be exposed to a risky position via cyber-attacks, while cyber risks generate a set of aggregate exposures towards the partners, external service providers (outsourcing companies), and creditors (banks).

Despite the serious and wide-ranging preventive measures of protection, undertaken in the economic and banking sector, the trend of cyber-attacks has been kao najznačajnije rizike sa kojima se zemlja suočava, u firmi Talk Talk, lideru u branši, kriminalci su došli u posed ličnih podataka klijenata u 2015. i iskoristili ih da ukradu hiljade funti. Ili u 2014. hakeri su orobili Oregone France onlajn potrošački portal klijenata i ukrali preko milion podataka iz arhive o potrošačima.

Grupi rizika tehnologije, osim rizika novih tehnologija i njihovih proizvoda, pripadaju i *veoma složeni rizici sistemskog karaktera* koji potiču od tehnoloških sistema koji su višestruko povezani i sistemski zavisni. To znači da ove sistemske rizike ne generiše neposredno rizik tehnologije, već rastuća interakcija rizika tehnologija sa drugim vrstama rizika, što može rezultirati visokim neočekivanim gubicima. Ovi rizici javljaju se u oblasti energetike, transporta, komunikacija, informacione tehnologije.

- ***Rizici koji tek dobijaju konačan oblik - Crystalizing risks***. Rizike u nastajanju ne čine samo novi rizici koji su produkt savremenih tehnoloških rešenja, već to mogu biti i rizici generisani u prošlosti, ali koji u savremenom trenutku dobijaju konačan oblik i počinju intenzivno da deluju, ostavljajući za sobom značajne negativne posledice. Primeri ovakvih rizika u nastajanju su *rizik industrijske tehnologije* (primer *upotrebe azbesta u zemljama u razvoju*), *rizici prehrambene tehnologije (primer rizika uticaja aluminijuma* na zdravlje ljudi) ili, kao jedan od vodećih, *rizik lanca snabdevanja (robom, potrebnim finansijskim sredstvima i logistikom).*

Rizik upotrebe azbesta u zemljama u razvoju je primer rizika koji je generisan u prošlosti, ali dobija konačan oblik u novijem periodu. Azbest kao prirodni materijal jedno vreme bio je visoko rangiran kao dobar materijal zbog otpornosti na visoke temperature. Udisanje azbestne prašine međutim, može da prouzrokuje azbestozu - plućnu bolest ili galopirajući rak pluća, zbog čega je upotreba ovog materijala zabranjena u razvijenim zemljama. Zabrana upotrebe azbesta u razvijenim zemljama međutim, podstakla je još agresivniji pozitivni marketing ovog prirodnog materijala u zemljama u razvoju, što je uz skromne sisteme za zaštitu zdravlja i teškoće na blagovremenoj detekciji plućnog maligniteta uzrokovanog azbestom u ovim zemljama, rezultiralo posledicama koje su više nego zabrinjavajuće. Statističke procene daju surov prikaz broja ljudi koji će do 2020. godine u zemljama u razvoju oboleti i umreti zbog izlaganju azbestu.

Sličan primer rizika u nastajanju koji dobija konačan oblik je *rizik upotrebe kancerogenog aluminijuma* koji se koristi u prehrambenoj i kozmetičkoj industriji u takozvanim antiperspirant formulama. Istraživanje objavljeno 2012. u časopisu „Journal of Applied Toxicology" identifikovalo je primarni oblik aluminijuma, aluminijum hlorid, koji se koristi u kozmetici, kao metal koji ima sposobnost da pretvara zdrave ćelije u kancerogene. Osim toga, studija objavljena u časopisu „Journal of Inorganic Biochemistry" 2013. potvrđuje da izlaganje aluminijumu može povećati migracije i invazivna svojstva ljudskih ćelija raka dojke. Ovo otkriće veoma je značajno jer ukazuje na rizik u nastajanju koji rezultira rakom dojke uzrokovanim širenjem tumora, a ne prisutnošću primarnog tumora na dojci.

U oba primera reč je o rizicima koji su već bili poznati, ali su u međuvremenu dobili punu dimenziju, i sve karakteristike rizika u nastajanju (potencijalno moguća globalna dimenzija i visoka neizvesnost u pogledu mogućih negativnih posledica). Po osnovnoj kategorizaciji rizika, reč je o operativnim rizicima u nastajanju, kategorija - rizik ljudskog faktora.

Vodeći rizik iz grupe rizika u nastajanju koji dobijaju konačni oblik je *rizk lanca snabdevanja robom, potrebnim finansijskim sredstvima i logistikom (Supply Chain Risk).* Ovaj rizik zauzima visoko drugo mesto u celoj grupi rizika u nastajanju prema istraživanjima iz 2013. ali i prema najnovijim istraživanjima. Osim toga, reč je i o riziku u nastajanju kome su podjednako izloženi privredni subjekti i bankarske industrije širom sveta, kao vodeći finansijeri u lancu snabdevanja.

recording a progressive growth, the risks themselves being aggressive and global, given the increasing dependency of the global economy on e-commerce and cloud computing. According to the 2015 Global Risks Report of the World Economic Forum, cyber-attacks are today considered to be way above the average in terms of their probability and strength. Numerous examples confirm the previous statement. In Great Britain, which has recognized cyber-attacks as the most significant risk that the country is facing, the Talk Talk company, a leader in its field, got its databases hacked, granting the criminals access to the personal data of its clients in 2015, subsequently used to steal thousands of pounds. Likewise, in 2014 the hackers attacked Oregone France's online consumer portal and stole over a million pieces of data from the clients' archives.

In addition to the risks related to new technologies and their products, the group of technological risks also includes the *extremely complex systemic risks* arising from the technological systems which are intertwined and systemically dependent in multiple ways. This means that these systemic risks are not generated directly by technological risks, but by the increasing interaction of technological risks with other types of risks, which may result in major unexpected losses. Such risks occur in the field of energy, transport, communication, information technologies.

- ***Crystalizing Risks.*** Emerging risks do not simply refer to the new risks resulting from modern technological solutions, but also to the risks generated in the past, acquiring their final shape and starting to have an intense impact in the contemporary moment, leaving considerable adverse consequences behind them. The examples of such emerging risks are *industrial technology risks* (e.g. *the usage of asbestos in the developing countries*), *food industry risks* (e.g. *the effect of aluminium on human health*), or, among the leading ones, *supply chain, finance and logistic risks*.

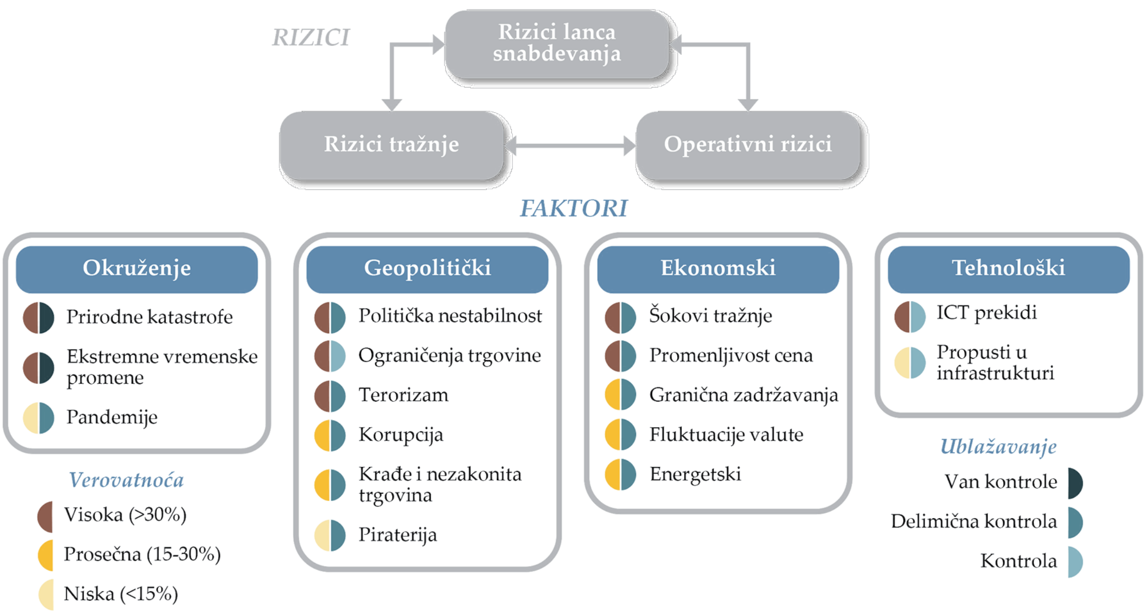
The risk of using asbestos in the developing countries is an example of a risk generated in the past, yet getting its final shape in the recent times. As a raw material, asbestos was for a while highly ranked as a solid material due to its resistance to high temperatures. Inhaling asbestos dust, however, can cause asbestosis, a lung disease, or the galloping lung cancer, which is why the usage of this material has been banned in the developed countries. Nevertheless, the banned usage of asbestos in the developed countries only triggered an even more aggressive positive marketing of this raw material in the developing countries, which, in combination with the modest healthcare systems and difficulties in the timely detection of lung cancer caused by asbestos in these countries, has led to some disturbing consequences. The relevant statistical estimates provide a harsh review of the number of people to suffer and die from asbestos-related diseases by 2020.

A similar example of emerging risks getting their final shape is the risk of using carcinogenic aluminium in food and cosmetics industries, in the so-called antiperspirants formulas. A research published in 2012 in the *Journal of Applied Toxicology* identified the primary form of aluminium, i.e. aluminium chloride, used in cosmetics industry, as the metal having the ability to turn healthy cells into cancerous ones. Moreover, a study published in the *Journal of Inorganic Biochemistry* in 2013 confirmed that the exposure to aluminium can boost the migration and invasive properties of the human breast cancer cells. This discovery is very significant given that it highlights the emerging risk resulting in breast cancer caused by the tumor expansion, and not by the existence of the primary breast tumor in the first place.

Both of these examples illustrate the risks that were already known, but have in the meantime grown to their full proportions and gained all the characteristics of emerging risks (the potential global dimension and high uncertainty in terms of potential ramifications). According to the main risk categorization, these emerging risks are operational, category - people risk.

The leading risk in the group of crystalizing emerging risks is the *supply chain risk*. This risk holds the high second place in the entire group of emerging risks according to the 2013

Faktori rizika lanca snabdevanja



Izvor: adapted from Manuj, I. and J.T. Mentzer, (2008) "Global supply chain risk management strategies", International Journal of Physical Distribution & Logistics Management, Vol. 38, No. 3, pp. 192-223. World Economic Forum (2012)

Širenje kompanija na nova tržišta, složene mreže snabdevača, finansijera i partnera koji se uključuju u posao, učinili su da lanac snabdevanja postane značajan faktor globalnog privrednog rasta, ali i ključni izvor rizika. Značaj ovog rizika u nastajanju koji se kristalizuje u potpunosti poslednjih nekoliko godina, najbolje ilustruje ne samo njegova globalna dimenzija, već i intenzitet njegovog delovanja. Rizici lanca snabdevanja nakon velikih poplava u Indiji i Pakistanu 2014. uzrokovali su gubitke u vrednosti od 12 milijardi dolara.

Uloga menadžera rizika u upravljanju ovim rizicima, prema rezultatima istraživanja koje je sprovela ACE Group u 2015. veoma je porasla u poslednje tri godine, što je potvrdilo 71% anketiranih, dok je 73% izjavilo da su povećali svoj uticaj kroz selekciju snabdevača/partnera.

Banke kao kreditori indirektno su izložene rizicima lanca snabdevanja preko nosilaca ovih izloženosti (korporacija). Zbog toga što su rizici u nastajanju visoko korelisani sa drugim rizicima, pa jedan gubitak može pokrenuti lanac drugih, rizik lanca snabdevanja može potencijalno generisati izloženost banaka prema finansijskim rizicima, odnosno, rezultirati posledicama u vidu rasta NPL-a i gubitaka zbog nenaplaćenih potraživanja.

- ***Rizici sa potencijalno velikim negativnim posledicama - Aggravating risks*** su rizici koji uzrokuju gubitke velike vrednosti i već su dobro poznati. Neizvesnost u pogledu njihovog dometa u smislu učestalosti i veličine gubitaka koje uzrokuju, klasifikuje ih u grupu rizika u nastajanju. Primeri ovih rizika su *rizici klimatskih promena, pandemija, megagradova, alergije na antibiotike, geopolitički rizici ili rizici terorističkih napada.*

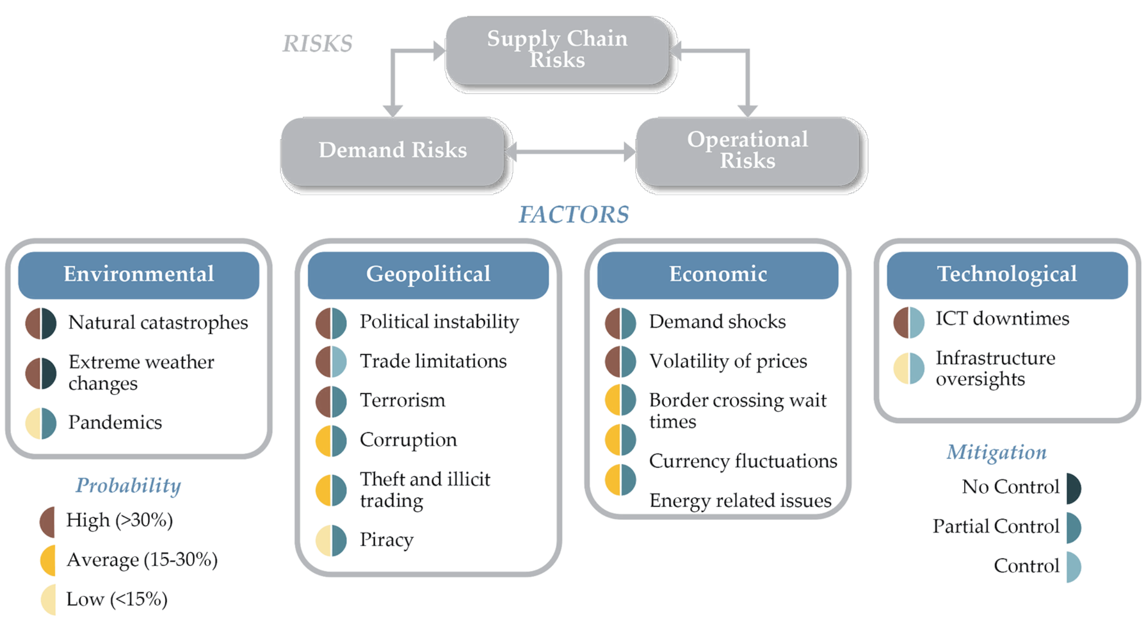
  Osim neizvesnosti, globalizacija je nekim rizicima iz ove grupe dala takvu dimenziju da ih je veoma teško kvantifikovati, što smanjuje mogućnost da se kreiraju kredibilni modeli upravljanja.

Upravljanje rizicima u nastajanju

Prema osnovnoj kategorizaciji rizika, najbrojniji su rizici u nastajanju iz velike porodice operativnih rizika, kao i strateški rizici. Ove dve kategorije rizika prema dosadašnjim iskustvima beleže najviši trend rasta i procene su da će on takav biti i u budućem periodu. Kao i svi operativni rizici, i rizici u nastajanju nisu ekskluzivitet bilo finansijskog ili privrednog sektora, već prožimaju sve segmente privrednog i finansijskog poslovanja. Niži trend research and some recent studies. Moreover, this emerging risk equally concerns business entities and banking industries worldwide, including the major financiers in the supply chain.

a chain of other losses, the supply chain risk may potentially generate the banks' exposure to financial risks, i.e. result in consequences such as the increased NPLs and losses from outstanding claims.

Supply Chain Risk Factors



Source: adapted from Manuj, I. and J.T. Mentzer, (2008) "Global supply chain risk management strategies", International Journal of Physical Distribution & Logistics Management, Vol. 38, No. 3, pp. 192-223. World Economic Forum (2012)

The expansion of companies into the new markets and the complex networks of suppliers, financiers and partners joining the business have made the supply chain a significant factor of the global economic growth, but at the same time a key source of risk. The importance of this emerging risk crystalizing in the last few years is best illustrated not only by its global dimension, but also by the intensity of its impact. Following the major floods in India and Pakistan in 2014 the supply chain risks caused the losses worth 12 billion dollars.

The role of risk managers in managing these risks, according to the results of the research conducted by ACE Group in 2015, has rather grown in the past three years, which was confirmed by 71% of the respondents, whereas 73% stated that they had increased their influence through the selection of suppliers/partners.

As creditors, banks are indirectly exposed to the supply chain risks via the carriers of these exposures (i.e. corporations). Due to the fact that emerging risks are highly correlated with other risks, hence a single loss can trigger

- ***Aggravating Risks.*** These are the risks causing large value losses and are already very familiar. Uncertainty in terms of their frequency and size of the caused losses is what classifies them into the group of emerging risks. The examples of such risks include the *climate change risk, the risk of pandemics, megalopolises, antibiotics allergies, geopolitical risks and risks of terrorist attacks*. In addition to uncertainty, globalization has caused some of the risks from this group to be rather difficult to quantify, which lowers the possibility for the creation of relevant credible management models.

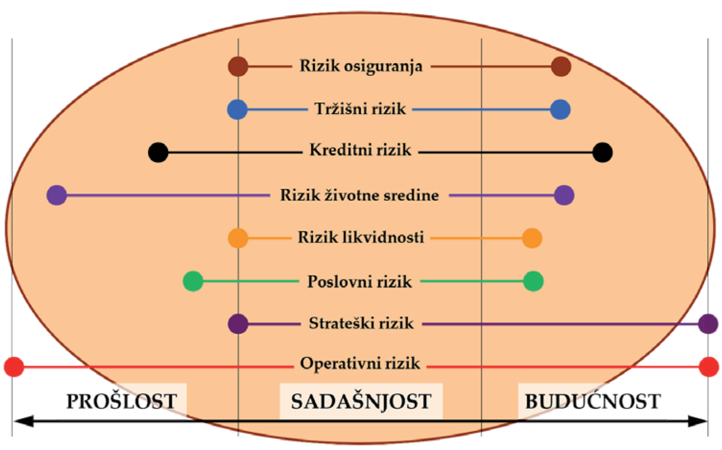
Emerging Risk Governance

According to the main risk categorization, the most numerous emerging risks are from the large family of operational risks, followed by strategic risks. These two risk categories, based on the experiences so far, record the highest upward trends, and the assessments are that this will continue in the future as well.

rasta beleže rizici u nastajanju registrovani u drugim osnovnim kategorijama rizika, kao kreditni rizici, tržišni rizici, poslovni rizici ili rizici osiguranja u nastajanju.

Neophodnost upravljanja rizicima u nastajanju suočila je menadžere rizika sa ograničavajućim faktorima u kreiranju okvira za upravljanje ovim rizicima. Za većinu rizika u nastajanju ne postoje prethodna iskustva, a u nekim slučajevima ni svest o nepoznavanju ovih rizika („nepoznate nepoznanice“) ili svest o neprepoznavanju progresivnog rasta izloženosti prema nekim iz ove grupe rizika. Ovakva ograničenja veoma otežavaju kreiranje kredibilnih modela upravljanja.

Rizici u nastajanju



Source: The Risk Universe, Issue 15, 2013

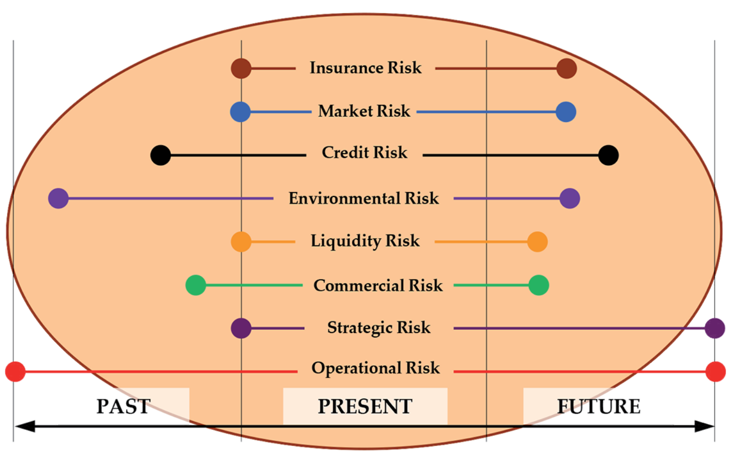
Međunarodni savet za upravljanje rizicima (International Risk Governance Council - IRGC), nezavisna fondacija koja okuplja naučnike i eksperte, prilikom kreiranja okvira za upravljanje rizicima u nastajanju, na samom početku suočila se sa dve dileme - da li postoje dodatne mogućnosti za upravljanje ovim rizicima koje mogu doprineti proaktivnoj proceni izloženosti, u odnosu na konvencionalne metode upravljanja, koje se takođe baziraju na određenim formama predviđanja. Druga dilema odnosi se na pitanje kako se može efikasno delovati na neizvesnost u budućem periodu. Odgovori na ova pitanja su tri stuba na kojima je kreiran IRGC okvir za upravljanje rizicima:

- postojanje tipologije različitih nivoa neizvesnosti sa kojima se menadžeri rizika mogu suočiti,
- scenario planiranje i strateško planiranje koji moraju biti daleko ispred konvencionalnih pristupa, s obzirom na to da rizici u nastajanju potiču iz složenih i međusobno povezanih sistema i
- razvoj i primena sistematskog procesa upravljanja rizicima u nastajanju kojima se omogućuje donošenje strateških odluka, što podrazumeva timski rad i postojanje koordinatora koji zajedno sa timom olakšava interakciju pri izboru opcija upravljanja rizicima u nastajanju, vrednuje tehničke okvire i pristupe usvojene za vreme procesa, vrši monitoring primenjenih rešenja.

Like all operational risks, emerging risks are not exclusively related to either the financial or economic sector, instead permeating all segments of the economic and financial business operations. Somewhat lower growth trends have been recorded by the emerging risks in other main risk categories, such as credit risks, market risks, commercial risks or insurance risks.

The necessity of managing the emerging risks has brought risk managers face to face with the limiting factors in the creation of the framework for managing these risks. For most emerging risks there are no relevant previous experiences, and in some cases there is not even the awareness about not knowing these risks (the so-called "unknown unknowns") or the awareness about not recognizing the progressive growth of exposures towards some of the risks from this group. Such limitations to a large degree hinder the creation of credible governance models.

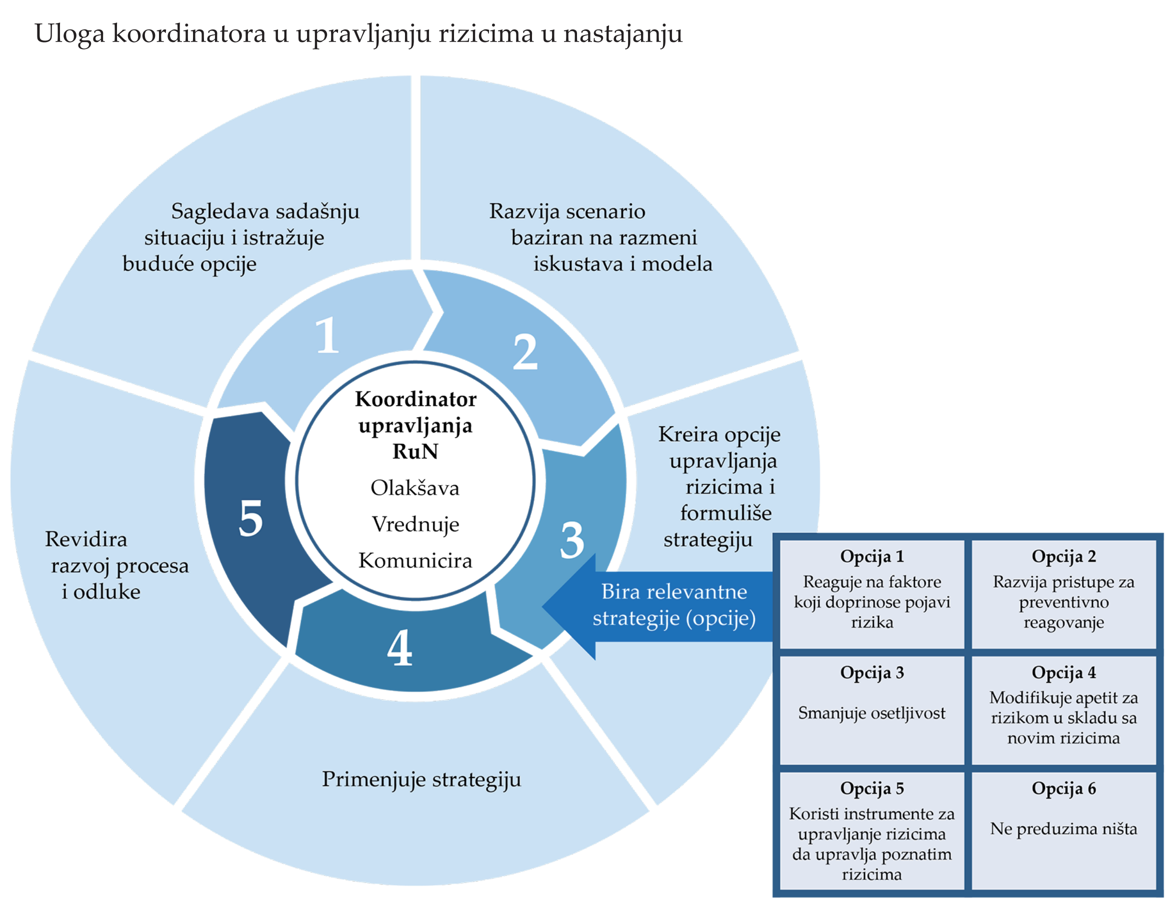
Emerging Risks



Source: The Risk Universe, Issue 15, 2013

The International Risk Governance Council (IRGC), an independent foundation gathering scientists and experts, at the very beginning of creating the emerging risks governance framework faced the two dilemmas. The first one was whether there are any additional capabilities for managing these risks that could contribute to the proactive exposure assessment, in comparison with the conventional risk management, also based on certain forms of prediction. The second dilemma referred to the question of how to effectively deal with uncertainties related to the future. The responses to these questions are the three pillars based on which the IRGC emerging risks governance framework is created:

- The existence of a typology of the various levels of uncertainty that risk managers can face;
- Scenario planning and strategic foresight which must go beyond the conventional approaches given that emerging risks arise from complex and interrelated systems; and
- Development and deployment of a systematic process of emerging risks governance to support strategic decision-making, which implies team work and the existence of conductors who, in cooperation with the team, facilitate interaction in choosing the options for emerging risks governance, validate technical frameworks and approaches adopted during the process, and monitor the implemented solutions.



Izvor: IRGC Emerging Risk Governance Guidelines, Guidance for the Governance of Unfamilliar Risks

Menadžeri rizika i akademici veoma su angažovani na rešavanju pitanja upravljanja rizicima u nastajanju. Rezultat ovih aktivnosti su različiti okviri za upravljanje rizicima u nastajanju - Framework of the European Union Agency for Network and Information Security (ENISA), Framework of the European Food Safety Authority (EFSA), the Swiss Re SONAR (Systematic Observation of Notions Associated with Risks) System, European Committee Workshop Agreement on Managing Emerging Technology Related Risk (DIN CWA 16649), Dutch National Institute for Public Health and the Environment (RIVM) framework.

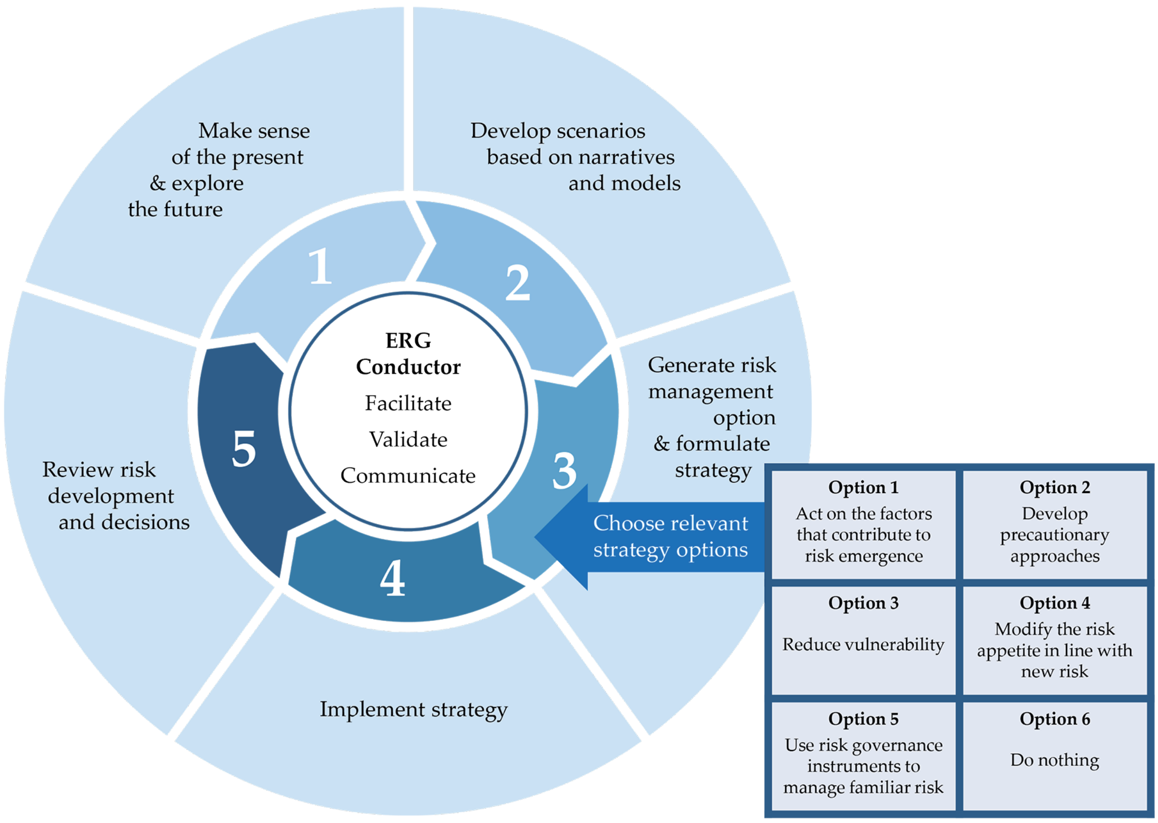
Rizici u nastajanju i finansijske institucije

Bankarske industrije pažljivo prate ove izloženosti i preventivno izdvajaju i ulažu značajna sredstva zaštite od rizika u nastajanju.

Rizici sajber tehnologije prepoznati su u bankarskoj industriji kao najznačajniji iz grupe rizika u nastajanju i kao rizici prema kojima postoji direktna izloženost. Ovo zapažanje potvrđuje i statistika. U Izveštaju o globalnim rizicima Svetskog ekonomskog foruma iz marta 2015. navodi se da se rizici sajber napada razmatraju kao rizici sa verovatnoćom događaja i jačinom delovanja iznad proseka. Osim toga, potencijalni oblik svakog novog sajber napada, kao i ciljevi napada nisu poznati, što ovim napadima i riziku koji nose daje posebnu dimenziju.

Rizici lanca snabdebanja robom, potrebnim finansijskim sredstvima i logistikom iz grupe rizika u nastajanju, koji poslednjih godina dobijaju konačnu formu i veoma snažan negativni efekat, nalaze sa na visokom drugom mestu kada su u pitanju bankarske industrije. Uticaj ovog rizika na banke je indirektan zbog toga što su rizici u nastajanju visoko korelisani sa drugim rizicima, pa gubitak u bilo kom delu lanca snabdevanja privrednih subjekta može pokrenuti lanac drugih. U tom nizu, rizik lanca snabdevanja može potencijalno generisati izloženost banaka prema finansijskim rizicima, odnosno rezultirati posledicama u vidu rasta NPL-a i

The Role of Conductors in Emerging Risk Governance



Source: IRGC Emerging Risk Governance Guidelines, Guidance for the Governance of Unfamilliar Risks

Practitioners and academics in the field of risk management have been very active in solving the issues related to emerging risk governance. The result of these activities are various frameworks for managing the emerging risks, such as: the Framework of the European Union Agency for Network and Information Security (ENISA), the Framework of the European Food Safety Authority (EFSA), the Swiss ReSONAR (Systematic Observation of Notions Associated with Risks) System, the European Committee Workshop Agreement on Managing Emerging Technology Related Risks (DIN CWA 16649), the Dutch National Institute for Public Health and the Environment (RIVM) Framework, etc.

Emerging Risk and Financial Institutions

Banking industries closely monitor these exposures and preventively allocate and invest substantial funds to protect themselves from emerging risks.

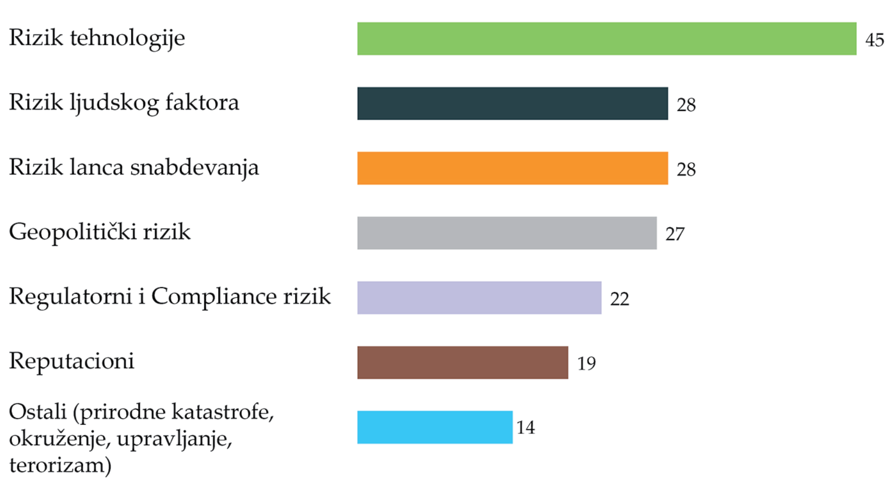
Cyber technology risks have been recognized in the banking industry as the most significant emerging risks and as the risks towards which there is a direct exposure. This observation has been confirmed by the relevant statistics. The Global Risks Report of the World Economic Forum from March 2015 states that cyber-attack risks are considered to be the risks whose probability of occurrence and impact power are above the average. Moreover, the potential form of each new cyber-attack, as well the objectives of that attack, are unfamiliar, which gives these attacks and the accompanying risk a special dimension.

The emerging *supply chain, finance and logistic risks,* which have in the recent years acquired their final form and a rather powerful adverse effect, hold the high second place when it comes to banking industries. The impact of these risks on banks is indirect, because the emerging risks are highly correlated with other risks, hence a loss in any segment of the business entities' supply chain may trigger a wave of other losses. In this process, the supply chain risk may potentially generate the banks' exposure gubitaka zbog nenaplaćenih potraživanja.

Izloženost banaka međutim postoji i kada je reč o širokom spektru drugih rizika iz grupe rizika u nastajanju koji se javljaju u privrednom sektoru. Pozicija kreditora ili finansijera projektnih ulaganja kreira indirektne izloženosti banaka prema rizicima u nastajanju preko nosilaca ovih izloženosti (korporacija). Gubitak generisan bilo kojim rizikom u nastajanju kod privrednog subjekta može rezultirati povećanom izloženošću banke kao kreditora prema finansijskim rizicima, u vidu rasta NPL-a i gubitaka zbog nenaplaćenih potraživanja.

Kompanije za osiguranje u Evropi i SAD takođe su veoma dobro prepoznale značaj zaštite od dolazećeg talasa rizika u nastajanju i vrlo ambiciozno razmatraju mogućnosti ublažavanja izloženosti korporacija i banaka prema ovim rizicima. Cilj njihovog nastupa na tržištu je da instrumentom osiguranja obuhvate što širi spektar rizika u nastajanju. U tom smislu, pažljivo prate i analiziraju kretanje ovih rizika i aktivni su u traženju modela osiguranja.

Očekivanja menadžera rizika od industrije osiguranja u kreiranju novih instrumenata



Izvor: Emerging Risks Barometer 2015, ACE Group

Prema istraživanjima koja je u 2015. sprovela ACE grupacija, osam od deset osiguranika odgovorilo je da je osiguranje važan instrument zaštite tehnologije (82%) i strategije upravljanja rizicima lanca snabdevanja (80%).

Uloga osiguranja kada su u pitanju rizici u nastajanju, prema odgovorima ispitanika, najvažnija je kada je reč o izloženostima rizicima tehnologije (45%), rizicima ljudskog faktora i rizicima lanca snabdevanja (28%). Odmah nakon toga slede geopolitički rizik, regulatorni i komplajans rizik.

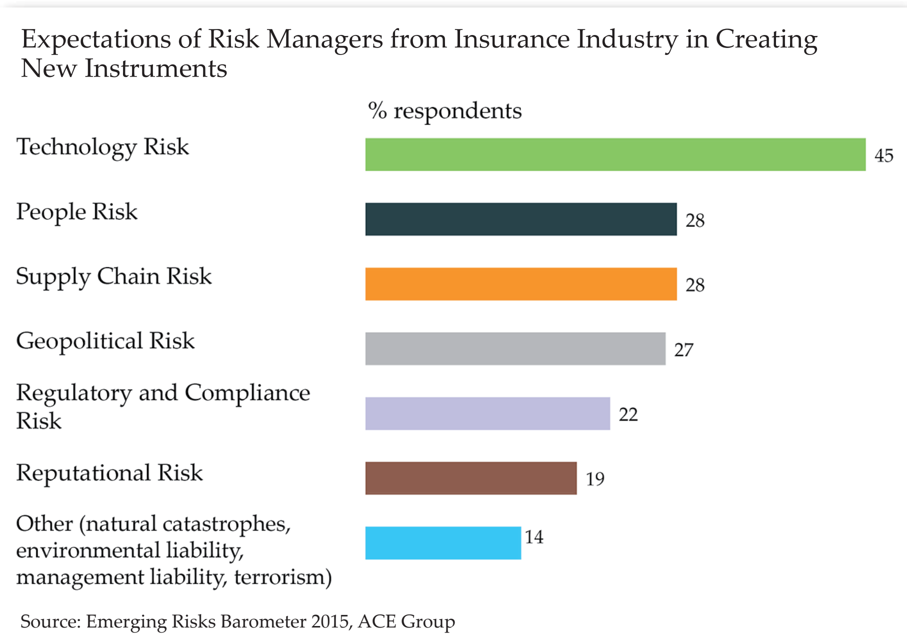
Sledeći ovu listu prioriteta kada su u pitanju izloženosti privrednih subjekata i banaka koji osiguranje prepoznaju kao prvi korak u liniji odbrane od rizika u nastajanju, industrije osiguranja razvijaju nove modele osiguranja koji imaju određene specifičnosti za svaku kategoriju vodećih rizika u nastajanju. Vlade Velike Britanije i Sjedinjenih Američkih Država pokrenule su 2015. godine opsežne studije čiji je cilj bio da se istraži uloga koju osiguranje može imati u ublažavanju izloženosti prema riziku sajber napada. Ovim je dat snažan podsticaj industriji osiguranja da traži kvalitetna i održiva rešenja primenom instrumenata osiguranja kada su rizici tehnologije u pitanju. U slučaju rizika lanca snabdevanja u nastajanju osiguravači su shvatili da moraju razvijati politike koje su mnogo više povezane sa brokerima, kako bi prevazišli tradicionalno odvojene linije poslovanja i postigli odgovarajuću efikasnost instrumenata osiguranja.

Umesto zaključka - upravljanje neizvesnošću

Donošenje odluka u uslovima neizvesnosti najbolje pokazuje koliko je upravljanje rizicima u nastajanju složen proces, koji i sam generiše rizike u smislu kvaliteta donetih odluka. Menadžeri rizika nemaju veliku mogućnost izbora. Rizici u nastajanju su produkt oporavka globalne ekonomije, pratilac razvoja savremenih tehnologija i njihove primene u poslovnom procesu. Dakle, neodvojivi deo poslovnog napretka. U tom kontekstu, od njih se očekuje da razviju neke nove sposobnosti u smislu osećaja za rizike u nastajanju, da naprave tipologiju očekivanih neizvesnosti različitih nivoa i da formiraju baze towards the financial risks, i.e. result in a growth of NPLs or losses from outstanding claims.

However, banks are also exposed to a broad range of other emerging risks occurring in the economic sector. Their position as creditors or financiers of project investments creates their indirect exposures towards the emerging risks via the carriers of these exposures (i.e. corporates). The loss generated by any emerging risk for a business entity may result in the increased exposure of the bank as the creditor towards the financial risks, in the form of growing NPLs or losses due to uncollected receivables.

Insurance companies in Europe and the USA have lucidly recognized how important it is to protect themselves from the upcoming wave of emerging risks and they have been rather ambitiously considering the possibilities for mitigating the exposures of corporates and banks towards these risks. The goal of their market approach is to use a certain insurance instrument to cover the broadest possible range of emerging risks. To this end, they have been carefully monitoring and analyzing the trends of these risks, actively seeking the proper insurance models.



Source: Emerging Risks Barometer 2015, ACE Group

According to the 2015 research conducted by ACE Group, eight in ten respondents said that insurance is an important part of protecting their technology (82%) and supply chain risk management strategy (80%).

The role of insurance when it comes to emerging risks, according to the respondents, is most important in respect of the exposures to technological risk (45%), people risk and supply chain risk (28%). These are followed by geopolitical risks, regulatory and compliance risks.

Following this list of priorities when it comes to the exposures of business entities and banks, and recognizing insurance as the first step in the protection from emerging risks, insurance industry has been developing new insurance models with the relevant specificities for each category of the major emerging risks. In 2015 the governments of Great Britain and the United States of America launched some comprehensive studies with the aim of investigating the role that insurance may have in mitigating the exposures towards the cyber-attack risk. This has strongly encouraged the insurance industry to seek high-quality and sustainable solutions by deploying insurance instruments against the technological risks. As far as the emerging supply chain risks as concerned, insurance companies realized that they must develop policies much more related to brokers, in order to overcome the traditionally separated business lines and achieve the desired efficiency of insurance instruments.

Instead of the Conclusion - Managing Uncertainty

Decision-making in times of uncertainty is the best illustration of how complex a process emerging risks governance is, the process which in itself generates some risks in terms of the quality of the made decisions. Risk managers do not have much choice. Emerging risks are the product of the global economy's recovery, the result of the modern technologies' podataka o poznatim rizicima u nastajanju. Da rade na kreiranju okvira za upravljanje rizicima u nastajanju, koji će sadržati nove pristupe strategiji i operativnom procesu upravljanja, kao i merenju izloženosti ovim rizicima. Ovakav zahtev koji se postavlja pred menadžere rizika nije pitanje izbora, već imperativ, s obzirom na to da je primena konvencionalnih metoda upravljanja poznatim rizicima neadekvatna kada je reč o rizicima u nastajanju. Imperativ je postao i hitan imajući u vidu rastući trend izloženosti rizicima u nastajanju i potencijalnu izloženost velikim gubicima. To znači da upravljanje rizicima u nastajanju zahteva širok nivo odgovornosti, integrisani pristup i razvoj jasno razumljive kulture upravljanja rizicima unutar organizacije, visok nivo komunikacije između pojedinih organizacionih delova i celine, i saradnju menadžera rizika sa nezavisnim ekspertima.

Raspoloživa opcija u procesu kreiranja nove funkcije upravljanja rizicima u nastajanju je osiguranje od ovih izloženosti. Korporacije i banke prihvatile su ovu opciju, ali samo kao prvi korak u ublažavanju izloženosti prema rizicima u nastajanju. Na glavnoj liniji odbrane mogu i moraju ostati samo menadžeri rizika.

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development and their implementation in the business process. Thus, an inseparable part of the business progress. In this context, risk managers are expected to develop some new capabilities in terms of anticipating the emerging risks, creating a typology of the expected uncertainties at various levels and forming the databases about the known emerging risks. Moreover, they need to work on generating the emerging risk governance frameworks, which should contain some new approaches to the risk management strategy and operational process, as well as to the measurement of exposures to these risks. This request that risk managers are facing is not a matter of choice, but an imperative, given that the implementation of conventional methodologies for managing the known risks becomes inadequate when dealing with emerging risks. What is more, the imperative has become urgent, bearing in mind the growing trend of emerging risks exposures and potential exposures to major losses. This means that the emerging risk governance requires a broad level of commitment, an integrated approach and the development of a clearly understood risk management culture across the organization, along with the high level of communication between specific organizational units and the organization as a whole, and the cooperation of risk managers with independent experts.

The available option in the process of creating the new function of emerging risk governance is insurance from such exposures. Corporates and banks have accepted this option, but only as the first step in mitigating the emerging risks exposures. It is risk managers who can and must remain the main line of defense.