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KREDITNI RIZIK I KREDITNI DERIVATI

Rezime

Kreditni rizik je jedan od preovlađujućih rizika u finansijama i poslovanju, i izloženost kreditnom riziku je prisutna u skoro svim finansijskim transakcijama. Tokom proteklih nekoliko godina značajno se povećao obim i primena tehnika i instrumenata za transfer kreditnog rizika. Kreditni derivati predstavljaju novu kategoriju derivata i najnovije učesnike na finansijskom tržištu. Uvedeni su kako bi se otklonila neadekvatnost tradicionalnih mehanizama za transfer kreditnog rizika, i da bi se zaštitile banke i druge institucije od gubitaka koji nastaju usled neizvršenja obaveza. Svi kreditni derivati imaju određene zajedničke karakteristike. Kreditni derivati se javljaju u različitim oblicima, i postoji više načina na koji mogu da se grupišu u različite kategorije. Razvoj tržišta kreditnih derivata predstavlja odgovor na rastući značaj upravljanja kreditnim rizikom, i svaki od učesnika na ovom tržištu ima različite motive za primenu kreditnih derivata. S jedne strane, kreditni derivati donose prednosti, dok, s druge strane, nose skrivene opasnosti i rizike.

Ključne reči: kreditni rizik, transfer kreditnog rizika, kreditni derivati

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CREDIT RISK AND CREDIT DERIVATIVES

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Summary

Credit risk is one of the predominant risks in finances and business, and the credit risk exposure is present in almost all financial transactions. During the last several years, the scope and application of the credit risk transfer techniques and instruments have substantially increased. Credit derivatives are a new category of derivatives and the latest participants on the financial market. They were introduced in order to eliminate inadequacy of traditional credit risk transfer mechanisms, with the aim of protecting banks and other institutions from losses incurred due to defaults. All credit derivatives have certain common characteristics. Credit derivatives appear in different shapes and forms, and there are several ways of classifying them in different categories. The development of the credit derivatives market is a response to the growing importance of the credit risk management and every participant in this market has a different motivation for applying credit derivatives. On the one hand, credit derivatives are bringing benefits, while on the other hand they carry concealed hazards and risks.

Key words: credit risk, credit risk transfer, credit derivatives

JEL: G21, G32

Karakteristike kreditnog rizika

Kreditni rizik predstavlja rizik od neispunjenja obaveze dužnika da u vremenski ugovorenim rokovima i u punom iznosu izmiri svoje obaveze prema poveriocima. To je rizik da u finansijskoj transakciji partner neće ispuniti svoju ugovorom preuzetu kreditnu obavezu zbog čega potraživanje neće biti realizovano na dan dospeća po njegovoj punoj knjigovodstvenoj vrednosti.

To je jedan od preovlađujućih rizika u finansijama i poslovanju. Prisutan je uvek kada se očekuje da drugo preduzeće izvrši plaćanje ili da ispuni ugovorene obaveze, i predstavlja verovatnoću nastanka gubitka usled neizvršenja obaveza ili stečaja drugog preduzeća. Na kreditni rizik treba obratiti pažnju ukoliko se preduzeću duguje novac ili ukoliko to preduzeće mora da se osloni na drugo preduzeće da izvrši plaćanja njemu ili u njegovo ime.

Kreditni rizik se često smatra jednosmernim rizikom, zato što nastaje kada druga ugovorna strana preduzeću duguje novac ili izvršenje obaveza. Nastaje uvek kada je kreditor izložen gubitku od strane korisnika kredita, druge ugovorne strane, ili dužnika koji ne ispunjava dugovne obaveze kako je ugovoreno. Za kreditore koji obezbeđuju sredstva putem kredita, transakcija, ili tržišta kapitala, kreditni rizik je prisutan u svim njihovim poslovnim aktivnostima i sastavni je deo praktično svakog proizvoda i usluge koja se pruža.

Kreditni rizik nastaje usled aktivnosti pozajmljivanja, investiranja i davanja kredita i odnosi se na povrćaj pozajmljenog novca ili isplate od prodane robe. Upravljačka tela u bankama prilikom svakodnevnog poslovanja prave kompromise između visine rizika i visine stopa prinosa. Rizik gubitka nastaje usled mogućnosti da plasirana sredstva ne budu vraćena kroz amortizaciju kredita. Gubitak može biti kompletan, a može biti i delimičan ukoliko se deo sredstava ipak amortizuje.

Pored toga, kreditni rizik obuhvata smanjenje kreditnog rejtinga preduzeća, što podrazumeva pad pozicije preduzeća na rejting listi. Međutim, pad rejtinga ne podrazumeva i gubitak sredstava, mada implicira povećanje mogućnosti gubitka. Na primer, smanjenje

kreditnog kvaliteta emitenta hartija od vrednosti predstavlja izvor rizika jer dovodi do smanjenja tržišne vrednosti hartija od vrednosti koje preduzeće poseduje. Takođe, pomeranje faktora rizika u pravcu njegovog rasta, povećava i očekivani tržišni prinos, što je bitan parametar kod sekjuritizacije kredita i kreditnih derivata. Kreditni gubitak može da nastane i usled nemogućnosti ispunjenja obaveza ili izvršenja plaćanja po ugovorima vezanim za kreditne derivate.

Kreditni rizik se povećava usled produženja roka isteka, roka saldiranja ili roka dospeća. Internacionalni regulatorni organi skraćanjem roka saldiranja za određene hartije od vrednosti pokušavaju da smanje sistemski rizik. Takođe, kreditni rizik se povećava usled povećanja kamatnih stopa ili pogoršanja opštih ekonomskih uslova. Verovatnoća neizvršenja ugovorenih obaveza se povećava i u slučaju kada je preduzeće akumulisalo velike gubitke, kada duguje drugim ugovornim stranama, ili kada kreditori ili druge ugovorne strane u preduzeću imaju finansijske probleme ili su bankrotirali.

Kreditni rizik i metode koje se koriste za upravljanje kreditnim rizikom zavise od veličine i kompleksnosti izloženosti riziku. Finansijske institucije, kao što su banke, investicioni dileri, poverenička društva, osiguravajuće kompanije, i kreditne unije, imaju visoku stopu izloženosti kreditnom riziku usled činjenice da je njihova glavna uloga da obezbeđuju kredite i obavljaju transakcije.

Glavne karakteristike kreditnog rizika su sledeće:

- Kreditni rizik je sistemski rizik, odnosno na njega utiče opšta ekonomska klima i zato je visoko cikličan. Kreditni rizik veoma zavisi od ekonomskih ciklusa: povećava se tokom recesije, a smanjuje se tokom ekspanzije.
- Kreditni rizik je specifičan rizik, u smislu da se menja u skladu sa specifičnim događajima koji utiču na korisnike kredita. Na kreditni rizik vezan za korisnika kredita ili drugu ugovornu stranu direktno utiču njegove karakteristike: veličina, korporativna strategija, događaji koji utiču na nju, promene u neposrednom ekonomskom okruženju, itd.
- Nasuprot drugim tržišnim rizicima, blisko

Credit risk characteristics

Credit risk is a risk of an obligor defaulting in servicing liabilities on contracted terms and conditions, and a failure of settling in full his obligations to creditors. It is a risk of counterparty in a financial transaction failing to fulfil contractual credit liability where as a result the claim will not be settled on maturity date in its full book value.

This is one of the predominant risks in finance and business. It is present always when it is expected for the other company to effect payment or settle its contractual obligation, and represents a probability of loss due to default or bankruptcy of the other company, Credit risk should be especially monitored if the company has outstanding claims, or if that company must rely on the counterparty company to effect payment either to the company itself, or on its behalf.

Credit risk is often regarded as a one-way risk, as it emerges when the other contracting party owes the company money or execution of an obligation. It appears always when the creditor is exposed to loss from the credit beneficiary, the other contracting party, or an obligor defaulting on his liability to service debt as contractually agreed upon. For creditors securing funds through credits, transactions, or capital market, credit risk is present in all of their business activities and is a component part of practically every product and service that is offered.

Credit risk is present in borrowing, investing and credit lending activities and pertains to the repayment of the borrowed money, or payment for goods sold. Managing bodies in banks are inclined to compromise on daily basis in their operations, when deliberating risks versus returns. Risk from losses appears when there is a possibility that the funds invested may not be returned through credit amortisation. Loss may be in full, or it may be in part if some funds are amortised.

In addition, credit risk entails downgrading of the company credit rating, which in turn undermines company position on the rating list. The fall in rating, however, does not necessarily imply loss of funds, although it does involve higher loss possibility. Credit quality

downgrading of securities issuer, for example, is regarded as a source of risk as it causes fall in the market value of securities held by the given company. In addition, the shift in the risk factor in the direction of its growth increases the anticipated market yield, which is an important parameter in credit and credit derivatives securitisation. Credit loss may occur also due to inability to service liabilities, or make payments per credit derivatives-linked contracts.

Credit risk grows when the expiry date, settlement date, or maturity date is extended. International regulatory authorities are trying, by shortening settlement date for certain securities, to lower systemic risk. Concurrently, credit risk grows when interest rates are raised or general economic climate deteriorates. Probability of default in servicing contracted liabilities grows in case a company has accumulated large losses, or when it owes money to other contracting parties, but also in cases when creditors or other contracting parties are facing financial problems in the company, or have gone bankrupt.

Credit risk and methods used for the credit risk management depend of the size and complexity of risk exposure. Financial institutions, such as banks, investment dealers, trust institutions, insurance companies, and credit unions have a high rate of credit risk exposure due to the fact that their main role is to provide credit facilities and make transactions.

The main characteristics of the credit risk are the following:

- Credit risk is a systemic risk, i.e. it is a risk impacted by the global economic climate, and thus it is highly cyclic. Credit risk is highly dependent on the economic cycles: it grows during recession, and falls during expansion.
- Credit risk is a special type of risk in that it changes according to specific events which are impacting credit beneficiaries. Credit risk linked with credit beneficiaries or the other contracting party (counterparty) is directly impacted by its characteristics: size, corporate strategy, events impacting it, changes in the immediate economic environment, etc.
- Contrary to the other market risks, it is closely connected with the business

je vezan za uspeh u poslovanju i strukturu kapitala korisnika kredita, i ima asimetričnu distribuciju profitabilnosti ("teški" repovi). U osnovne vrste kreditnog rizika spadaju:

- Rizik neizvršenja obaveza - rizik da emitent obveznice ili korisnik kredita neće vratiti celokupan iznos neizmirenog duga. Ovaj rizik može biti ceo - ukoliko nijedan iznos kredita ili obveznice neće biti vraćen, ili delimičan - ukoliko će određeni deo početnog duga biti vraćen.

Prilikom merenja rizika neizvršenja obaveza, investitori koriste analize izvršene od strane rejting agencija koje obavljaju kreditnu analizu emitovanih hartija od vrednosti i emitenata i pružaju svoje zaključke u vidu kreditnog rejtinga.

- Rizik pogoršanja kreditnog rejtinga dužnika - predstavlja rizik da će rejting agencije (Standard & Poor's, Moody's Investors Services, ili Fitch Ratings) smanjiti kreditni rejting emitenta na osnovu izvršene procene tekuće sposobnosti emitenta da ostvaruje dobit u odnosu na njegovu sposobnost da otplati dugove u trenutku kada dospevaju. To je rizik da će kreditni rejting emitenta ili emitovane hartije od vrednosti biti umanjen, što će dovesti do povećanja kreditnog spreda.

Ponekad se sposobnost emitenta da izvrši plaćanja kamate i glavnice značajno i nepredviđeno izmeni usled nastupanja neočekivanih događaja. To podrazumeva veliki broj idiosinkratičnih događaja koji su specifični za korporaciju ili privredu, uključujući nesrećne slučajeve, promenu regulatornih tela, preuzimanje preduzeća ili korporativno restrukturiranje, kao i korporativnu proneveru i nezakonito ponašanje. Taj rizik se zove rizik od neizvršenja obaveze plaćanja zbog nastupanja nepredviđenog događaja, i dovodi do smanjenja kreditnog rejtinga emitenta od strane rejting agencija.

- Rizik promene kreditnog spreda - predstavlja ostvarenje gubitka ili goreg rezultata od očekivanog od strane emitovanih hartija od vrednosti zbog povećanja kreditnog spreda. To je rizik da će se spred iznad referentne kamatne stope povećati za neizmirenu dugovnu obavezu. Rizik promene kreditnog

spreda i rizik pogoršanja kreditnog rejtinga dužnika se razlikuju u tome što se rizik pogoršanja kreditnog rejtinga dužnika odnosi na specifičnu, zvaničnu kreditnu ocenu datu od strane nezavisne rejting agencije, dok se rizik promene kreditnog spreda odnosi na reakciju finansijskih tržišta na očekivano pogoršanje stanja kredita.

Tradicionalni instrumenti i tehnike transfera kreditnog rizika

Različite tehnike transfera kreditnog rizika se već duže vreme upotrebljavaju na finansijskim tržištima. Tokom proteklih nekoliko godina značajno se povećao obim i primena instrumenata za transfer kreditnog rizika. U faktore koji su doprineli razvoju instrumenata i tehnika za transfer kreditnog rizika spadaju: veća pažnja banaka i drugih finansijskih institucija usmerena na proces upravljanja rizicima; oprezniji pristup investitora u dostizanju ciljne kombinacije između prinosa i rizika; pojačana težnja banaka i drugih velikih finansijskih institucija da što bolje upravljaju kreditnim rizikom na portfolio nivou; nastojanja tržišnih posrednika da maksimiziraju svoje prihode od provizija i naknada; generalno nizak nivo aktivnih kamatnih stopa, koji primorava finansijske učesnike da na tržištu traže alternativne izvore prihoda, razvijajući nove vrste finansijskih instrumenata; i povoljne okolnosti za arbitražu koje se javljaju usled različitih regulatornih zahteva u pogledu visine kapitala potrebnog za poslovanje različitih finansijskih preduzeća.

Tokom dužeg vremenskog perioda, banke su razvile različite tradicionalne instrumente i tehnike za transfer kreditnog rizika, od kojih u glavne spadaju sledeće:

- Osiguranje obveznica - tehnika koja podrazumeva da emitenti obveznice mogu da plate premiju trećem licu, koje će u slučaju neizvršenja od strane emitenta obezbediti isplatu kamate i glavnice, kao što je naznačeno u obveznici. Kao rezultat toga, rejting obveznice se povećava do nivoa rejtinga osiguravača; shodno tome, kreditni rejting osiguravača mora da bude blizu najvišeg rejtinga. Zahtevana premija za osiguranje obveznice je mera procenjenog

success and structure of capital of the credit beneficiary, and has an asymmetric profitability distribution (“fat tails”).

The basic types of credit risk are the following:

- Risk of default - risk that the bond issuer or credit beneficiary will not repay the entire amount of outstanding debt. This risk may be total - if no credit amount or bond amount will be repaid, or partial - if a certain part of the initial debt is repaid.

In measuring defaulting risk, investors are using analyses made by the rating agencies that publish credit analysis of securities issued and of the issuers, and offer their findings regarding credit rating.

- Risk of obligor’s credit rating downgrade - risk that the rating agencies (Standard & Poor’s, Moody’s, Investors Services, or Fitch Ratings) will lower credit rating of the issuer on the basis of forecasts for future capabilities of the issuer to make profit in respect to his ability to repay debts at their maturity. This is a risk that the credit rating of the issuer, or of the security issued, will be downgraded, thus causing growth in credit spread.

At times, the ability of the issuer to pay interest and principal may substantially and suddenly change when unexpected events occur. This implies a large number of idiosyncratic events which are specific for the given corporation or economy, including accidents, change in regulatory bodies, company take-over, or corporate restructuring, but also corporate fraud and unlawful conduct. This risk is called defaulting risk due to unforeseen events, and causes the rating agencies to downgrade issuer’s credit rating.

- Risk of change in the credit spread - risk of incurring losses or poorer result than the expected one from the securities issued due to the growth in the credit spread. This is a risk that the spread will grow above the reference interest rate on outstanding debt liability. Risk of change in the credit spread and the risk of deterioration of the debtor’s credit rating differ in the fact that the debtor’s credit rating deterioration pertains to a specific, official credit rate given by the

independent rating agency, while the risk of change in the credit spread pertains to the reaction of financial markets on the expected deterioration of the credit status.

Traditional credit risk transfer instruments and techniques

Different credit risk transfer techniques have been in use for some time now on the financial markets. During the last few years, there was a substantial growth in scope and application of the credit risk transfer instruments. Factors that have enhanced development of credit risk transfer instruments and techniques are the following: greater focus of banks and other financial institutions on the process of risk management; a more prudent approach of investors to reaching targeted return/risk combinations; enhanced strive of banks and other financial institutions to manage better credit risk at a portfolio level; attempts by market intermediaries to maximise their commissions and fees revenues; a generally low level of active interest rates forcing financial players to search on the market for alternative sources of revenues by developing new types of financial instruments; and favourable circumstances for arbitration which appear due to different regulatory requirements regarding the amount of regulatory capital prescribed for business operations of different financial companies.

Over a longer time period, banks have developed various traditional instruments and techniques for the credit risk transfer, the main among them being the following:

- Bond insurance - a technique which designates that bond issuer may pay premium to a third person, who in case of default by the issuer shall secure payment of interest and principal, as stated on the bond. As a result, the bond rating is upgraded up to the level of the insurance provider rating; consequently credit rating of the insurer must be close to the highest rating. The required premium for bond insurance is a measure of default risk assessed by the issuer. Sovereign bonds are almost never insured. Issuers are buying insurance of municipal bonds in order to protect bond buyers.

rizika neizvršenja od strane emitenta.

Državne obveznice skoro nikada nisu osigurane. Emitenti kupuju osiguranje municipalnih obveznica da bi zaštitili kupce obveznica. Otprilike je jedna trećina svih novih municipalnih obveznica osigurana, najčešće upotrebom procedure koja podrazumeva plaćanje premije prilikom kupovine obveznice.

- Garancije su instrument za ublažavanje izloženosti kreditnom riziku. Garancija od strane trećeg lica, koje ima bolji kreditni rejting od druge ugovorne strane, smanjuje izloženost kreditnom riziku prilikom obavljanja transakcija.

Garancija je bilateralni ugovor prema kom je lice koje preuzima rizik (garant) dužno da izvršava obaveze u korist lica koje transferiše rizik (poverilac). Izvršenje obaveze se javlja u slučaju kada treća strana (dužnik) u ugovoru sklopljenom između dužnika i poverioca ne izvršava obaveze. Garant je dužan da izvrši dužnikove obaveze ukoliko dužnik nije u mogućnosti da ih izvrši, dok su iznosi koji doppevaju za plaćanje ograničeni na gubitke koji su vezani za izloženost riziku. Garancije blisko prate prirodu i sadržaj ugovora sklopljenog između poverioca i dužnika. Garancije su fleksibilni instrumenti za transfer kreditnog rizika jer mogu da budu dizajnirani tako da pokrivaju specifične transakcije ili izloženosti riziku.

- Kolateral - kolateralizacija je najstariji oblik zaštite kreditora od mogućih gubitaka. Kolateral se već duže vreme koristi u cilju zaštite prilikom sklapanja kreditnih ugovora i predstavlja jednu od najčešće korišćenih tehnika za transfer rizika. Kolateral služi kao zaštita kreditoru od rizika neizvršenja obaveza od strane korisnika kredita, do kog dolazi ukoliko korisnik kredita ne izvrši plaćanje kamate i glavnice kako je predviđeno kreditnim ugovorom. Ukoliko korisnik kredita ne izvrši ugovorene obaveze, dužan je da preda imovinu koja je založena kao kolateral, i u tom slučaju kreditor postaje vlasnik kolaterala. Gotovina i državne hartije od vrednosti predstavljaju osnovni oblik kolaterala, a takođe se koriste i korporativne obveznice i obične akcije. Visina ostvarenih gubitaka banke ili nekog

drugog preduzeća u slučaju neizvršenja najčešće zavisi od stepena likvidnosti i vrednosti kolaterala koji je u funkciji zaštite kredita; vrednost kolaterala može biti vrlo promenljiva, i na nekim tržištima se smanjuje sa povećanjem verovatnoće nastanka neizvršenja obaveza.

- Rani raskid - odnosi se na situacije u kojima kreditori i korisnici kredita uspevaju da postignu međusobni dogovor da u slučaju nastanka predviđenog događaja (koji je najčešće preciziran u klauzuli ugovora), kao što je na primer smanjenje kreditnog rejtinga, prekinu obavljanje transakcija korišćenjem srednjih tržišnih kotacija.
- Prenos prava i obaveza - odnosi se na mogućnost prenosa pozicije druge ugovorne strane na treće lice, u slučaju smanjenja kreditnog rejtinga. Prenosom postojeće pozicije, preduzeće koje inicira tu aktivnost pokušava da smanji celokupnu izloženost kreditnom riziku druge ugovorne strane. U nekim slučajevima prenos prava i obaveza se primenjuje kada preduzeće ima sumnje vezano za mogućnost nastavka poslovanja druge ugovorne strane, dok se u drugim slučajevima koristi da bi se oslobodile kreditne linije ili izvršila diversifikacija portfolija sa ciljem da se omogući dodatno poslovanje sa istom ugovornom stranom.
- Neting - predstavlja standardnu klauzulu u vanberzanskim derivatnim ugovorima. Prilikom upotrebe netinga, iznosi koji treba da budu razmenjeni između dve ugovorne strane se prebijaju, i na taj način se znatno smanjuje izloženost riziku i jedne i druge ugovorne strane. Ukoliko se pravilno koristi, neting može znatno da umanjii kreditni rizik finansijske institucije, i zbog toga predstavlja jedan od najvažnijih instrumenata za transfer kredinog rizika.

Bilateralne neting ugovore, koji predstavljaju dogovor dve ugovorne strane da saldiraju svoje bilateralne obaveze, uglavnom između dve finansijske institucije, koriste mnogi učesnici na deviznim tržištima. Umesto da se vrše pojedinačna saldiranja između ugovornih strana, sva plaćanja za određeni dan i valutni par se sabiraju i samo se isplaćuje neto iznos.

Pojedinačni neting ugovori ne mogu u potpunosti da štite učesnike na tržištu ukoliko plaćanja treba da budu izvršena u različitim

Approximately one third of all the new municipal bonds are insured, most often by applying the procedure which implies payment of premium during purchase of a bond.

- Guarantees are instruments for the credit risk exposure mitigation. Guarantees by a third party that is having better credit rating than the counterparty are lowering credit risk exposure during execution of transactions.

Guarantee is a bilateral contract where a person taking over the risk (guarantor) undertakes to comply with obligations in favour of the person transferring the risk (creditor - guarantee). Execution of the obligation appears in case the third party (obligor) in the contract concluded between the obligor and the creditor fails to comply with his obligations. Guarantor must fulfil obligor's obligations if the obligor is unable to service them himself, while the amount due for payment is limited to losses linked with the risk exposure. Guarantees are following closely the nature and substance of the contract drawn between the creditor and obligor. Guarantees are flexible instruments for the credit risk transfer as they may be so designed as to cover specific transactions or risk exposure.

- Collateral - collateralisation is the oldest form of creditor protection from possible losses. Collateral has been in use for some time now for purpose of protection in contracting credit deals and is one of the most frequently used risk transfer techniques. Collateral serves as protection for creditor from the risk of default by the credit beneficiary that occurs when the credit beneficiary defaults on payment of interest and principal as stipulated in the credit agreement. If the credit beneficiary should default on contractual obligation, he must surrender his property pledged as collateral, and in that case creditor becomes the owner of such collateral. Cash and sovereign securities are the basic form of collateral, but corporate bonds and common stocks may also be used.

The amount of incurred losses of a bank or some other company in case of default most

often depends on the degree of liquidity and value of collateral which is in the function of credit protection; value of collateral may be very volatile, and in some markets it falls with the growth of probability of default.

- Early termination - pertains to situations when creditors and credit beneficiaries succeed in reaching mutual agreement designating that in case of occurrence of an unforeseen event (which is most often specified in the contract clause) such as, for instance, fall in the credit rating, the contracting parties shall terminate further transactions using middle market quotations.
- Transfer of rights and obligations - pertains to the option to transfer position of the counterparty on to a third person in case of downgrade in credit rating. Transfer of the current position is the way in which company initiating this activity is trying to lower its total credit risk exposure to the counterparty. In some cases, transfer of rights and obligations is applied when a company has doubts in the capability of the counterparty to continue with its business, while in other cases it is used to free credit lines or make diversification of portfolio with the objective of allowing additional business with that same counterparty.
- Netting - is a standard clause in the over-the-counter derivatives contracts. When netting is applied, the amounts to be exchanged between the two contracting parties are netted, and in this way risk exposure is substantially lowered both for the one and for the other contracting party. If netting is correctly used, it may substantially reduce credit risk of the financial institution and thus it is one of the most important instruments for the credit risk transfer.

Bilateral netting contracts, which are an agreement between the two contracting parties to settle their bilateral liabilities, mainly between the two financial institutions, are applied by many players on the foreign currency markets. Instead of making individual settling between the contracting parties, all payments due on a certain day and the currency (exchange) par are summed up and only the net amount is paid.

Individual netting contracts can not fully

valutama, zbog toga što obe ugovorne strane mogu da vrše plaćanja. Međutim, plaćanja će biti manja nego što bi inače bila bez netinga, i samim tim se značajno smanjuje izloženost riziku.

- Poravnanje sa tržištem. Ugovorne strane se u nekim prilikama dogovore da tržišnu vrednost transakcije učine transparentnom, a zatim da izvrše transfer bilo koje izmene u vrednosti sa strane koja ostvaruje gubitke na stranu koja ostvaruje dobitke tokom transakcije. Poravnanje sa tržištem predstavlja jednu od najefikasnijih tehnika transfera kreditnog rizika, i, u većini slučajeva, može praktično da eliminiše kreditni rizik. Međutim, ona zahteva usavršene sisteme monitoringa i internet kontrole.
- Put opcije. Veliki broj put opcija koje se nalaze u okviru korporativnih dužničkih hartija od vrednosti pružaju investitorima zaštitu od rizika neizvršenja, na taj način što investitor ima pravo otkupa pre datuma dospeća po unapred ugovorenoj ceni (npr. po nominalnoj ceni).
- Sindicirani krediti - predstavljaju privremene aranžmane između banaka, i odnose se na situaciju u kojoj u grupi od nekoliko banaka svaka pozajmljuje određenu sumu korisniku kredita u istom trenutku i u iste svrhe. Primenom ove tehnike banke dele kreditni rizik velikih kredita koje obezbeđuju korisnicima kredita. Banke koje učestvuju u sindiciranim kreditima međusobno sarađuju čak iako su inače konkurenti. Banke učesnice u sindiciranim kreditima najčešće daju velike kredite koje pojedinačne banke ne bi bile u stanju da samostalno obezbede. Glavne banke u sindiciranim kreditima snose najveći deo rizika a takođe dobijaju i najveći deo provizija.
- Racioniranje kredita - staro je koliko i bankarsko poslovanje, ali nije isključivo vezano za bankarstvo. Osnovni princip racioniranja kredita je da se kredit odobrava u situacijama kada je omogućena najpoželjnija razmena rizika i prinosa. To podrazumeva dodelu viših kamatnih stopa rizičnijim transakcijama u cilju nadoknade zbog preuzimanja dodatnog rizika. Takođe, podrazumeva se i racioniranje konačnog

iznosa odobrenog kredita između korisnika kredita sa različitim iznosima kreditnog rizika.

- Diversifikacija - predstavlja tehniku upravljanja rizikom, koja je vezana za hedžing, i koja kombinuje različite vrste investicija u okviru portfolija. Odnosi se na preraspodelu rizika na veći broj investicija radi umanjenja rizika. Diversifikacija izloženosti riziku, koja se odnosi na transakcije između ugovornih strana kao i na transakcije u različitim privrednim granama i zemljama, je jedan od najosnovnijih načina smanjenja rizika u kreditnom portfoliju. Krajnji rezultat dobro izvršene diversifikacije je izbalansirani rizični profil koji nije zgusnut, i koji samim tim nije sklon veoma velikim gubicima prilikom neizvršenja obaveza druge ugovorne strane.
- Kreditni limiti - pomažu prilikom upravljanja izloženosti ukupnom riziku druge strane koji nastaje usled finansijskih i poslovnih aktivnosti. Upotreba limita podržava principe diversifikacije. Limiti se koriste u upravljanju kreditnim rizikom kao i prilikom upravljanja aktivom. Finansijske institucije koje obavljaju transakcije koriste limit-pozicije da bi ograničile veličinu dozvoljenih otvorenih pozicija u transakcijama i visinu potencijalnog gubitka. Limiti za učesnike u transakcijama se uglavnom određuju na osnovu iskustva, performanse, merenja i modeliranja rizika, kao i prema dozvoljenom stepenu rizika određene institucije. Najviše se upotrebljavaju dnevni limiti tokom radnog dana i kratkoročni limiti za otvorene pozicije i transakcije na inostranim tržištima.
- Posredovanje - javlja se u situacijama kada institucija konstruiše poseban derivat za krajnjeg korisnika, ali ne obavlja transakciju direktno sa krajnjim korisnikom, već umesto toga izvršava transakciju preko treće strane - posrednika. Velike finansijske institucije obično imaju funkciju posrednika. Prilikom obavljanja transakcija koje uključuju posrednika, institucija koja inicira transakciju gubi određen iznos svog profita, koji se prosleđuje posredniku. Do posredovanja dolazi ukoliko institucija

protect players on the market if payments are to be made in different currencies, as both of the contracting parties may effect payments. Payments will be lower, however, than would be in the case without netting, and hence this substantially reduces risk exposure.

- Market settlement. Contracting parties in some circumstances may agree to make the market value of a transaction transparent, and then to make a transfer of any change in value by the side incurring losses on to the side acquiring profit during that transaction. Market settling is one of the most efficient techniques for the credit risk transfer, and in most cases it may practically eliminate credit risk. It requires, however, sophisticated monitoring and internet control systems.
- Put option - A large number of put options which are to be found in the corporate debt securities are offering investors protection from default risk, in the way that the investor has the right to redeem them prior to the maturity date, at an in advance contracted price (for example, at nominal price).
- Syndicated loans - are temporary arrangements between banks and pertain to the situation where in a group of several banks, every one of them, is lending a certain sum to a credit beneficiary at the same time and for the same purpose. Application of this technique allows the banks to share credit risk of large loans which they provide for their credit beneficiaries. Banks participating in the syndicated loans are mutually cooperating even though they may be otherwise competitors. Banks participants in syndicated loans most often are granting large loans, which as individual banks they would not be able to provide themselves alone. The main banks in the syndicated loans are bearing the major part of risk, but are also receiving the major part of commissions.
- Credit rationing - is as old as the banking business itself, but is not characteristic for banking alone. The basic principle of credit rationing is for the credit to be approved in a situation when the most favourable exchange of risk for yield is possible. This means allocation of higher interest rates to risky transactions as a compensation for

additional risk undertaken. Concurrently, this means rationing of the final amount of credit approved between credit beneficiaries with different amounts of credit risk.

- Diversification - is a risk management technique linked with hedging, which combines different types of investments within any given portfolio. It pertains to the redistribution of risk on to a higher number of investments for purpose of reducing risk. Diversification of risk exposure, which pertains to the transaction between the contracting parties, and also to transactions in different industrial branches and countries, is one of the basic forms of reducing risk in a credit portfolio. The ultimate result of a well conducted diversification is a well-balanced risk profile which is not dense, and in this way is not prone to very high losses in case of default of the counterparty.
- Credit limits - are helping in managing total risk exposure of the counterparty, which occurs from financial and business activities. The use of limits acts in support of the diversification principles. Limits are used in credit risk management and also in assets management. Financial institutions engaged in transactions are using limit positions in order to limit the size of allowed open positions in transactions and the amount of potential loss. Limits for participants in transactions are mainly set on the basis of experience, performances, measurements and risk modelling, and also according to the allowed degree of risk for any given transaction. Most frequently used are daily limits during a working day and short-term limits for open positions and transactions on foreign markets.
- Intermediation - appears in situations when an institution designs a particular derivative for the final beneficiary, yet it is not conducting transactions directly with that final beneficiary, but is instead conducting transaction through a third party - intermediary. Large financial institutions usually hold the function of an intermediary. In conducting transactions which engage an intermediary, institution which has initiated given transaction is losing certain amount of its profit, which is forwarded to the

koja je inicijator ne želi direktno da stupi u kontakt sa krajnjim korisnikom ili ako više ne poseduje dovoljni kreditni kapacitet da bi poslovala sa krajnjim korisnikom (ukoliko su kreditni limiti institucije dostigli maksimum). Takođe, do posredovanja može da dođe i zbog regulatornih i poreskih potreba. Posredovanje može unapred da se ugovori (pre početka transakcije) ili tokom trajanja transakcije.

Novi instrumenti i tehnike upravljanja kreditnim rizikom

Tehnike transfera kreditnog rizika kao što su prodaja kredita, sekjuritizacija i kreditni derivati predstavljaju finansijsku inovaciju koja je imala veliki uticaj na bankarsko poslovanje, kao i na celokupni finansijski sektor. Ti instrumenti su omogućili transfer i hedžing kreditnog rizika, i na taj način su uticali na to da banke smanje izloženost kreditnom riziku, smanje zahteve u pogledu visine kapitala potrebnog za poslovanje, prihvate nove metode davanja kredita, i povećaju likvidnost.

U nove instrumente i tehnike upravljanja kreditnim rizikom spadaju sledeće:

- Prodaja kredita - predstavlja bankarsku inovaciju koja omogućava transfer kreditnog rizika kroz prodaju osnovnog kredita. Kod prodaje kredita, banka obezbeđuje kredit, i zatim trećoj strani prodaje novčane tokove vezane za kredit, bez eksplicitne ugovorne obaveze, garancije, osiguranja, ili drugog vida povećanja kreditnog boniteta hartija od vrednosti, i na taj način uklanja kredit iz bilansa stanja banke.

Postoje tri osnovne vrste prodaje kredita: učešća, ustupanje potraživanja, i novacije, koje se razlikuju u stepenu transfera prava i obaveza. Učešća daju pravo kupcu da primi (u celosti ili delimično) buduća plaćanja koja će biti ostvarena na osnovu ugovora, ali ne transferišu prava i obaveze koji su vezani za originalni ugovor, i na taj način omogućavaju da se očuva odnos sa korisnikom kredita. Ustupanje potraživanja premešta direktan odnos dužnika i poverioca sa banke na kupca kredita zajedno sa pravima prodavca; u nekim slučajevima, u skladu sa ugovorom, korisnik kredita

mora da se složi sa prodajom. Novacija u potpunosti transferiše sva prava i obaveze i podrazumeva nov ugovor koji se sklapa između kupca i korisnika kredita; u praksi, putem novacija prodavac se u potpunosti gubi i na njegovo mesto dolazi novi učesnik. Trenutno, zbog visokih troškova monitoringa i rizika vezanih za učešća, i pravnih troškova vezanih za novacije, najveći broj prodaja kredita se javlja u obliku ustupanja potraživanja.

- Sekjuritizacija - tehnika pretvaranja bankarskih kredita u hartije od vrednosti. Pod sekjuritizacijom kredita podrazumeva se konkretna operacija transformacije bankarskih kredita u obveznice emitovane na bazi tih kredita.

U tradicionalnom bankarstvu, krediti ostaju u aktivi banke sve do konačne likvidacije i u tom smislu oni predstavljaju oblik nelikvidne aktive banaka, a pogotovo onda kada su krediti dati s dužim rokovima. Iz tog razloga se javila potreba da banke transformišu jedan deo svojih kredita u vrednosne papire, odnosno obveznice. Na bazi određene količine kvalitetnih kredita banaka formiraju se pulovi sredstava na osnovu kojih se vrši emisija visoko kvalitetnih obveznica. Nakon transformacije kredita u obveznice može se izvršiti poboljšanje kvaliteta novih finansijskih instrumenata, uključivanjem banaka i drugih finansijskih institucija kao garanta po osnovu emitovanih hartija od vrednosti. To je hibridna finansijska forma koja kombinuje klasičan bankarski kredit s karakteristikama korporativnih obveznica. Prednost navedenog je u tome što su obveznice likvidne na tržištu kapitala, podležu proceni rejting agencija i imaju poboljšanu i diversifikovanu strukturu rizika, dok su bankarski krediti nelikvidni do roka dospeća, ne podležu vrednovanju rejting agencija i banke same snose rizik. Sekjuritizacija kredita je počela u SAD-u sa hipotekarnim kreditima za stanove koje su odobravale državne finansijske institucije. Na bazi pulova tih hipoteka kreirane su obveznice koje su imale državnu garanciju. Time se stvorio sistem u kome su hipotekarni krediti preko emitovanih obveznica mogli da budu prodati raznim investitorima.

intermediary. Intermediation takes place when the institution which is the initiator does not wish to make contact directly with the final beneficiary or when it no longer holds sufficient loan capital in order to do business with the final beneficiary directly (if the credit limits of the institution have reached their maximum level). Concurrently, intermediation may also take place for regulatory and tax purposes. Intermediation may be contracted in advance (prior to the start of transaction), or during the execution of the transaction.

New credit risk management instruments and techniques

Credit risk transfer techniques, such as credit default swaps, securitisation and credit derivatives, are financial innovations that have had great influence on the banking business, and even on the entire financial sector. These are the instruments that have allowed for the credit risk transfer and hedging, having thus impacted the banks to reduce their credit risk exposure, lower requirements for capital required for business operations, accept new methods for credit approval, and boost liquidity.

The new credit risk management instruments and techniques are the following:

- Credit default swap - is a banking innovation allowing for the credit risk transfer to be made through sale of the underlying credit. In credit default swaps bank is providing credit facility, and thereupon sells cash flows connected with the credit facility to a third party, without any explicit contractual obligation, guarantee, or any other form of enhancing credit rating of securities, being able in this way to remove credit from its balance sheet.

There are three basic types of credit default swaps: participation, assignment of claim (receivables), and novations, which differ in the degree of transfer of rights and obligations. Participation grants a buyer the right to receive (in full or in part) future payments to be effected on the basis of a contract, but does not transfer the rights and obligations pertaining to the original contract, and in this way allow preservation

of the relationship with the credit beneficiary. Assignment of claim transfers the direct creditor/debtor relationship from the bank to the credit buyer together with rights and obligations of the seller; in some cases, if so contracted, credit beneficiary must give his consent for the swap. Novation is a full transfer of all the rights and obligations and implies a new contract to be drawn between the buyer and the credit beneficiary; in practice, through novation, the seller completely disappears and in his stead a new participant emerges. At present, due to high costs of monitoring and risks linked with participation, but also legal costs with respect to novations, the largest number of credit swaps appears in the form of claims assignment.

- Securitisation - is a technique of transforming banking credits into securities. Credit securitisation implies a concrete operation of transforming banking credits into bonds issued on the basis of underlying credits. In traditional banking, credits remain present within bank assets up to the final liquidation, and in that sense they stand as a form of non-liquid bank assets, especially when credits are granted long-term. For this reason the need was felt for the banks to transform one part of their credits into securities, i.e. bonds. On the basis of a certain quantity of high-quality credits, banks may engage in forming a pool of funds to serve for the issuance of high-quality bonds. After transformation of credits into bonds an enhancement of quality of the new credit instruments may be done, by engagement of banks and other financial institutions in the role of guarantors on the grounds of the securities issued. This is a hybrid financial form which combines a classic banking credit with characteristics of corporate bonds. The advantage of this venture is that bonds acquire higher liquidity on the capital market, that they are subject to the assessment by the rating agencies, and that they have an enhanced and diversified risk structure, while the banking credits remain non-liquid until their maturity, they are not subject of assessment by rating agencies, and the banks alone bear all the risks.

U kasnijem periodu došlo je i do emisije obveznica na bazi kredita građanima za kupovinu automobila, kredita na osnovu kreditnih kartica, trgovinskih i industrijskih korporacija.

Prednost sekjuritizacije kredita je povećanje likvidnosti banaka - bilansi banaka postaju likvidniji i banke imaju veće mogućnosti prilagođavanja svojih portfolija. Sekjuritizacija kredita deluje i u pravcu povećanja profitabilnosti banaka, prvenstveno putem smanjivanja zahtevane stope kapitala u odnosu na ukupne kreditne plasmane. Prodajom kredita uz posredovanje obveznica smanjuje se rizik kamatne stope za banke, jer banke transferišu rizik fiksnih kamatnih stopa na krajnje investitore koji preuzimaju rizik. Jedna od prednosti je i smanjenje kreditnog rizika, jer putem tržišnih procesa dolazi do poboljšanja kvaliteta kredita.

- Osiguranje od kreditnog rizika - vrsta osiguranja vezana za hartije od vrednosti i obveznice koja pokriva iznose kamate i glavnice u slučaju neizvršenja od strane emitenta. To je u stvari vrsta polise osiguranja koja pruža zaštitu od rizika neplaćanja (do određene sume) od strane dužnika.

Monolinijske osiguravajuće kompanije garantuju blagovremenu otplatu glavnice i kamate u slučaju neizvršenja od strane emitenta. Osiguranje od kreditnog rizika predstavlja tehniku transfera kreditnog rizika, kojom se rizik neizvršenja prenosi sa vlasnika obveznice na osiguravajuće kompanije. Vlasnici obveznica ostaju izloženi samo nesistemskom riziku da će doći do neizvršenja i od strane monolinijskih osiguravajućih kompanija. Te osiguravajuće kompanije se zovu monolinijske jer pružaju usluge samo jednoj industriji.

Većini monolinijskih osiguravajućih kompanija je dodeljen AAA rejting, a rejting agencije naplaćuju kapitalne troškove u skoro svakoj transakciji. S obzirom na to da su ti troškovi vezani za rejting dužnika, monolinijske osiguravajuće kompanije ne obezbeđuju kreditno osiguranje za obveznice koje nemaju visok investicioni rejting ili koje imaju visoku izloženost riziku, u cilju izbegavanja rizika neizvršenja obaveze

plaćanja zbog nastupanja nepredviđenog događaja. U strukturnom finansiranju, one najčešće prodaju zaštitu upotrebom finansijskih garancija ili portfolio kreditnih derivata kod najstarijih tranši sa AAA rejtingom.

- Kreditni derivati - predstavljaju najnoviju grupu instrumenata za upravljanje (smanjenje ili eliminisanje) izloženosti kreditnom riziku. To su finansijski instrumenti čija je glavna uloga transfer kreditnog rizika između dve ugovorne strane. Nastali su kao posledica tražnje finansijskih institucija za instrumentom hedžinga i diversifikacije kreditnog rizika. Oni omogućavaju korisnicima da prilikom obavljanja transakcija odvoje kreditni rizik od tržišnog rizika, i da izvrše njegov transfer. Kreditni derivati su vanberzanski finansijski instrumenti čija je isplata vezana za određeni kreditni događaj.

Karakteristike kreditnih derivata

Kreditni derivati su uvedeni da bi se otklonila neadekvatnost tradicionalnih tehnika i instrumenata transfera kreditnog rizika, i da bi se zaštitile banke i druge institucije od gubitaka koji nastaju usled neizvršenja obaveza. Nastali su kao odgovor na zahteve finansijskih institucija, uglavnom banaka, za pronalaženjem instrumenta za hedžing i diversifikaciju kreditnog rizika, sličnom onima koja se već primenjuju kod kamatnih i valutnih rizika.

Od kada su kreditni derivati uvedeni na finansijsko tržište 1993. godine, banke, druge finansijske institucije i korporacije su mogle efikasnije da upravljaju kreditnim rizikom. Kreditni derivati izoluju i odvajaju kreditni rizik od drugih vrsta rizika kao što su tržišni i operativni rizik. S obzirom na to da su omogućili efikasan, fleksibilan i jednostavan način transfera kreditnog rizika, smatra se da su kreditni derivati veoma moćni instrumenti.

Svi kreditni derivati imaju sledeće karakteristike, bez obzira na to o kojem tačno instrumentu je reč:

- Referentni subjekat - predstavlja jednog emitenta (ili više emitenata) čija neizvršenja dovode do nastupanja kreditnog događaja. Referentni subjekat može biti korporativni,

Credit securitisation started in the USA with the housing mortgage loans granted by the government financial institutions. Based on pools of such mortgage loans, bonds were created backed by the state guarantee. Consequently, system was created where mortgage loans, through the issued bonds, could be sold to different investors. In the latter period what followed was the issuance of bonds based on retail loans granted for purchase of cars, credit card based loans, consumer loans, and industrial corporate loans.

Credit securitisation benefit is enhanced bank liquidity - banks' balance sheet becomes more liquid and banks gain broader options for adjustment of their portfolios. Credit securitisation acts in the direction of growth of banks profitability, primarily through lowering of the required capital adequacy rate in respect to the total credit placements. Credit sale through bonds intermediation reduces interest rate risk for banks, as the banks are able to transfer fixed interest rate risk on to the final investors who are taking over the risk. One of the advantages is also lowering of the credit risk, as through the market processes an enhancement of the credit quality occurs.

- Credit risk insurance - is a type of insurance linked with securities and bonds, which covers interest sums and principal amounts in case of default by the issuer. Actually, this is a form of an insurance policy offering protection from the risk of default (up to a certain amount) by the obligor.

Mono-line insurance companies can guarantee timely repayment of principal and interest in case of default by the issuer. Credit risk insurance is a technique of credit risk transfer where the risk of default is transferred from the bond holder to the insurance company. Bond holders remain exposed only to a non-systemic risk of a default by the mono-line insurance companies themselves. Such insurance companies are called mono-line ones as they offer their services to one single industry alone.

Most of the mono-line insurance companies are granted an AAA rating, and the rating

agencies are charging capital costs on almost every transaction. Mindful of the fact that those costs are linked with the obligor's rating, mono-line insurance companies do not provide credit insurance for bonds that do not have a prime investment rating, or those that have high risk exposure, in order to avoid default risk for unforeseen event occurring. In structured finance they most often sell protection through the use of financial guarantees, or a credit derivatives portfolio for the oldest tranches with the AAA rating.

- Credit derivatives - are the latest group of instruments to be used for credit risk exposure management (mitigation or elimination). They are financial instruments with the main role to exchange credit risk transfer between two contracting parties. They were designed as a result of demand by financial institutions for a credit risk hedging and diversification instrument. They allow the users during execution of transactions to separate credit risk from the market risk, are to execute its transfer. Credit derivatives are the over-the-counter financial instruments, and their payment is linked with a given credit event.

Credit derivatives characteristics

Credit derivatives were introduced in order to eliminate inadequacy of the traditional credit risk transfer techniques and instruments, and to protect banks and other financial institutions from losses incurred due to default. They were designed as a response to the demand by financial institutions, mainly banks, to have instruments for the credit risk hedging and diversification, similar to the ones already applied on interest rate and currency risks.

Ever since the credit derivatives were introduced on the financial market in 1993, financial institutions and corporations could manage credit risk more efficiently. Credit derivatives are isolating and separating credit risk from other forms of risks, such as the market and operational risks. As they allow for an efficient, flexible and simple way of transferring credit risk, it is believed that credit derivatives are very powerful instruments.

državni ili bilo koja druga forma pravnog subjekta koji se zadužio.

- Referentne obaveze ili referentna aktiva. Referentne obaveze se odnose na aktivu emitovanu od strane referentnog subjekta. Koriste se prilikom određivanja kreditnog događaja i kalkulacije stope nadoknade (koja se koristi kod izračunavanja isplate u slučaju neizvršenja). Mogu da podrazumevaju bilo koje finansijske obaveze referentnog subjekta, kao i da se odnose na poseban spisak određenih obveznica izdatih od strane referentnog subjekta. Najčešće se primenjuju krediti i obveznice.
- Kupac zaštite - subjekat koji traži zaštitu od rizika neizvršenja referentne obaveze. Alternativno se naziva prodavac rizika. U kupce zaštite obično spadaju banke ili finansijski posrednici koji su izloženi riziku kreditne aktive. U tom slučaju glavni cilj kupca zaštite je hedžing kreditnih rizika koji su prisutni u kreditnoj aktivu. Kupovina zaštite pruža mogućnost sintetičkog transfera kredita, i na taj način se izbegavaju problemi vezani za stvarnu prodaju kredita, jer referentna aktiva ostaje kod kupca zaštite. Prema tome, motivacija kupca zaštite je da transferiše rizik držanja izloženosti, bez transferisanja aktive.
- Prodavac zaštite - alternativno se naziva kupac rizika. Motivisan je povećanjem prinosa, ili načinom da ostvari zaradu od sintetičkih izloženosti riziku gde direktno stvaranje portfolija ili nije moguće ili nije podesno. Nije neophodno da stvarno poseduje referentnu aktivu. U transakcijama na vanberzanskom tržištu, u prodavce zaštite spadaju osiguravajuće kompanije, banke, hedž fondovi, investicione kompanije, itd.
- Teorijska vrednost. S obzirom na to da nije neophodno da prodavac zaštite stvarno poseduje referentnu aktivu i da kupac zaštite ne mora da drži referentnu aktivu iste vrednosti na koju je ugovor zaključen, kreditni derivati se zaključuju po teorijskoj vrednosti. Kreditni derivati koriste teorijsku vrednost kao referentnu vrednost prilikom izračunavanja premije za zaštitu koju plaća kupac zaštite i isplata u slučaju neizvršenja koje vrši prodavac zaštite.
- Kreditni događaj - precizno definisan

događaj nastupanja neizvršenja, koji je uglavnom definisan u odnosu na referentnog subjekta i referentne obaveze. Ukazuje na to da je referentni subjekat trenutno (ili će uskoro biti) izložen finansijskim problemima, i dovodi do okončanja kreditnog derivatnog ugovora i transfera isplate u slučaju neizvršenja od prodavca zaštite ka kupcu zaštite.

Kreditni događaji su definisani od strane Međunarodnog udruženja za svopove i derivate (International Swaps and Derivatives Association - ISDA). Kod standardnih kreditnih derivata, postoji šest osnovnih kreditnih događaja:

1. Stečaj. Do stečaja referentnog subjekta dolazi ukoliko postane nesolventan ili je u nemogućnosti da otplati dug. Odnosi se na bilo koji administrativni dokument, izjavu, postupak, ili odluku koja potvrđuje da referentni subjekat više nije u stanju da ispuni svoje obaveze.
2. Neplaćanje. Do neplaćanja dolazi kada referentni subjekat ne izvrši plaćanje po jednoj od svojih obaveza, kao što su obveznica ili kredit.
3. Ubrzanje obaveze. Do ubrzanja obaveze dolazi kada se brzina obaveze referentnog subjekta poveća zbog događaja neizvršenja. Predstavlja rizik da će obaveza referentnog subjekta biti ubrzana, odnosno da će obveznica biti proglašena za odmah dospelu i plativu posle neizvršenja.
4. Neizvršenje obaveze - odnosi se na rizik da referentni subjekat neće izvršiti bilo koju od svojih obaveza.
5. Repudijacija/moratorijum. Repudijacija se odnosi na rizik da referentni subjekat ili država objave moratorijum nad obavezom referentnog subjekta.
6. Restrukturiranje - odnosi se na rizik da će referentni subjekat ugovoriti da neki od njegovih dugova, ili svi njegovi dugovi, budu restrukturirani, što dovodi do negativne promene u njegovom kreditnom bonitetu.

U praksi, stečaj, neplaćanje i restrukturiranje su najčešći kreditni događaji. Ugovorne strane u kreditnom derivatu mogu da izaberu jedan ili više kreditnih događaja. Ukoliko koriste dokumentaciju koja nije u skladu sa

All credit derivatives are having the following characteristics, regardless of which particular instrument is in question:

- Reference entity (party) - is identifying one issuer (or several issuers) whose default causes credit event to occur. Reference entity may be corporate, sovereign, or any other form of legal entity that has engaged in borrowing.
- Reference obligations or reference assets. Reference obligations pertain to the assets issued by the reference entity. They are used in determining credit event and in calculating compensation rate (which is used in calculating payment in case of default). They may comprise any financial obligations of the reference entity, but also refer to a special list of certain bonds issued by the reference entity. Most often they apply to credits and bonds.
- Protection purchaser - entity purchasing protection from defaulting on reference obligation. Alternatively it is called risk seller. Protection purchasers usually are the banks or financial intermediaries who are exposed to the credit assets risks. In this case the main objective of protection purchaser is hedging of credit risks that are embedded in the credit assets.
Protection purchase offers the option of synthetic credit transfer, thus avoiding problems linked with real sale of credit, as the reference assets remain in possession of the protection buyer. Consequently, motivation of protection purchaser is to transfer exposure risk, without transferring assets.
- Protection seller (provider) - alternatively called risk purchaser, is motivated by higher return, or ways to make profit from synthetic risk exposure, where direct portfolio creation is either impossible or not suitable. It is not necessary for him to really own the reference assets. In transactions on the over-the-counter market, protection sellers are insurance companies, banks, hedge funds, investments companies, etc.
- Theoretical value. Mindful of the fact that it is not necessary for the protection seller to own reference assets, and the protection purchaser not having to hold the reference

assets of the same value as contracted, credit derivatives are contracted at a theoretical value. Credit derivatives are using theoretical value as a reference value when calculating protection premium which is paid by the protection purchaser, and the payment in case of default which is made by the protection seller.

- Credit event - is a precisely defined event of default, which is mainly defined in respect to the reference entity and the reference obligation. It refers to the fact that the reference entity is currently (or is soon to be) exposed to financial distress, and causes termination of the credit derivative contract and transfer of payment, in case of default, from protection seller to protection buyer.

Credit events are defined by the International Swaps and Derivatives Association - ISDA. In standard credit derivatives there are six basic credit events defined:

1. Bankruptcy. Bankruptcy of the reference entity occurs in case of its insolvency or inability to repay its debts. It refers to any administrative document, declaration, action, or decision, which ascertain that the reference entity is no longer able to serve its obligations.
2. Default. Failure to pay the amounts due which occurs when the reference entity defaults on payment of an underlying obligation, such as on bonds or credit.
3. Accelerated obligations. Acceleration of obligations occurs when the dynamics of obligation of the reference entity accelerates due to the default event. It is a risk that the obligation of the reference entity will be accelerated, i.e. that the bond will be proclaimed promptly due for payment and payable on default.
4. Obligation default - risk that the reference entity will fail to settle any of its obligations.
5. Repudiation/Moratorium. Repudiation refers to the risk that the reference entity or the government will declare a moratorium on the obligation of the reference entity.
6. Restructuring - refers to the risk of the reference entity to contract restructuring of a part or all of its debt, thus causing negative changes in its credit rating.

In practice, bankruptcy, default, and

definicijama ISDA, mogu sami da definišu kreditne događaje.

- Obaveštenje o nastupanju kreditnog događaja - neopozivo obaveštenje da je nastupio kreditni događaj, koje jedna ugovorna strana kod kreditnog derivata daje drugoj ugovornoj strani.
- Obaveštenje o javno dostupnim informacijama - obaveštenje koje potvrđuje da je kreditni događaj nastupio. U tom obaveštenju mora da bude naveden izvor „javno dostupnih informacija“, koji može da se odnosi na bilo koje internacionalno priznate, objavljene ili elektronski prikazane izvore vesti (na primer: Wall Street Journal, Reuters, ili Bloomberg).
- Ročnost - period u kome je derivatni ugovor na snazi. Rok prestaje istekom određenog vremena ili nastupanjem kreditnog događaja, zavisno od toga šta nastupi ranije. Ročnost kreditnog derivata ne mora da se podudara sa ročnosti osnovne aktive.
- Premija - naknada za kupovinu zaštite koju kupac zaštite plaća prodavcu zaštite tokom ročnosti kreditnog derivata. Ako ne nastupi kreditni događaj, tokom ročnosti ugovora, kupac zaštite plaća premiju a istekom određenog vremena ugovor je završen. Ako nastupi kreditni događaj, prodavac zaštite plaća kupcu zaštite, i ugovor prestaje bez čekanja na istek ročnosti ugovora.
- Isplata u slučaju neizvršenja ili plaćanje zaštite. Isplate u slučaju neizvršenja predstavljaju iznose koje prodavac zaštite mora da plati kupcu zaštite ukoliko je nastupio kreditni događaj. Plaćanje zaštite je paritetna vrednost plus narasla kamata (koja se izračunava na teorijsku vrednost) referentne aktive (kod fizičkog saldiranja) ili razlika između takve paritetne vrednosti plus narasla kamata i tržišna vrednost referentne aktive posle kreditnog događaja (kod novčanog saldiranja). Prema tome, plaćanja zaštite nisu povezana sa stvarnim gubicima koje snosi kupac zaštite.
- Saldiranje - nastaje kada nastupi kreditni događaj. Postoje tri mehanizma saldiranja:
 1. Fizičko saldiranje. Kod fizičkog saldiranja kupac zaštite dostavlja portfolio referentnih obaveza (najčešće obveznica

ili kredita) prodavcu zaštite, a za uzvrat prodavac zaštite plaća kupcu iznos koji je jednak teorijskoj vrednosti transakcije. U ugovoru mogu biti definisane i alternativne emisije referentnog subjekta koje kupac može dostaviti prodavcu, a koje se nazivaju isporučive obveznice. Ukoliko je navedeno više isporučivih obveznica, kupac zaštite će dostaviti najjeftiniju od ponuđenih. Isporučka se obavlja u roku od 30 dana od datuma nastupanja kreditnog događaja. Datum saldiranja će biti ili onaj oko kog su se dogovorile ugovorne strane ili najduži uobičajen period na tržištu.

Ovaj metod saldiranja podrazumeva da kupac zaštite prodaje diskontovane dužničke instrumente (zbog nastupanja kreditnog događaja) po paritetnoj vrednosti. Zbog toga je neophodno da se na početku sklapanja ugovora definiše koje će instrumente (isporučive obveznice) kupac zaštite moći da dostavi prodavcu zaštite u slučaju nastupanja kreditnog događaja.

Prilikom izbegavanja problema vezanih za određivanje tržišne vrednosti referentne obaveze, fizičko saldiranje je pogodnije, jer prodavcu zaštite pruža bolje uslove u ugovoru, s obzirom na to da mu omogućava da direktno pregovara sa administratorima referentnog subjekta. Pored toga, prodavac zaštite može da ima koristi i ukoliko postoji mogućnost da se izvrši naplata potraživanja vezana za neizvršenja osnovne aktive.

Fizičko saldiranje je najčešći metod saldiranja između strana u bilateralnim poslovima, mada je tržište počelo postepeno da preferira novčano saldiranje ili trgovinu sa fiksnom naknadom.

2. Novčano saldiranje. Kod novčanog saldiranja prodavac zaštite kompenzuje kupca zaštite za gubitke koje snosi zbog kreditnog događaja, a nema transfera referentne aktive već ona ostaje kod kupca zaštite. U ovom slučaju, u trenutku saldiranja, prodavac zaštite plaća kupcu zaštite iznos koji je jednak paritetnoj vrednosti (100%) umanjenoj

restructuring are the most frequent credit events. Contracting parties in a credit derivative may select one or more credit events. If they are using documents which are not compliant with the ISDA definitions, they may themselves define credit events.

- Credit event notification - an irrevocable notification that a credit event has occurred, notification forwarded by one contracting party in the credit derivative deal to the other contracting party.
- Notification of publicly available information - notification confirming that a credit event had occurred. This notification must state the source "of publicly available information", which may refer to any international, recognised, published, or in an electronic form presented, news sources (for example: Wall Street Journal, Reuters, or Bloomberg).
- Tenor - is a period when a derivatives contract is in force. Tenor ceases when a certain period of time has elapsed, or when a credit event has occurred, whichever comes earlier. Credit derivative tenor does not have to match tenor of underlying asset.
- Premium - is a fee for protection purchase which the protection buyer must pay to the protection seller during the credit derivative tenor. If a credit event should fail to occur during contract tenor, protection buyer will pay premium, and after a certain time has elapsed, contract shall be terminated. If a credit event has occurred, protection seller shall effect payment to the protection buyer, and the contract shall be terminated forthwith, without awaiting the contract to expire.
- Payment in case of default or protection payment. Payment in case of default designate amounts that the protection seller must pay to the protection buyer in case credit event has occurred. Protection payment is at a par value plus interest accrued (calculated on theoretical value) on the reference asset (in physical settlement), or the difference between such parity value plus accrued interest and market value of the reference asset after the credit event has occurred (in money settlement). Therefore, protection payments are not linked to real

losses suffered by the protection buyer.

- Settlement - takes place when the credit event occurs. There are three settlement mechanisms:

1. Physical settlement/ In physical settlement the protection purchaser is submitting portfolio of reference obligations (most often bonds or credits) to the protection seller, and the protection seller, in turn, pays protection buyer an amount equal to the theoretical value of transaction. Contract may define also alternative issues of the reference entity that the buyer may submit to the seller, and which are designated as deliverable bonds. If several deliverable bonds are quoted, protection purchaser will submit the cheapest one among those offered. Delivery must be made within 30 days from the date of the credit event occurrence. Settlement date will be either the date agreed upon by the contracting parties, or the longest customary period prevailing on the market.

This settlement method designates that the protection purchaser is selling discounted debt instruments (due to the credit event occurrence) at par value. Hence it is necessary, early in the contractual phase, to define which of the instruments (deliverable bonds) protection buyer will be able to submit to the protection seller in case credit event is to occur.

In the attempt to avoid problems linked with determining market value of the reference obligation, physical settlement is more appropriate, as it offers protection seller better contract terms, allowing protection seller to directly negotiate with the administrators of the reference entity. In addition, protection seller may have benefits if there is an option for the collection of receivables to be made, linked with the default in underlying assets.

Physical settlement is the most frequent method for settlement between parties in bilateral deals, although the market has gradually started to prefer money settling, or trade in fixed fees.

za vrednost referentne obaveze nakon neizvršenja. Ova vrednost se određuje korišćenjem kotacija za referentnu obavezu sa sekundarnog tržišta. Lice koje je odgovorno za određivanje tržišne cene se naziva agent kalkulacije. Ukoliko je izabrano, saldiranje se vrši u roku od 5 radnih dana od datuma nastupanja kreditnog događaja.

Proces utvrđivanja cena je ponekad komplikovan, a ova vrsta saldiranja nije jednaka fizičkom saldiranju jer ne postoji najjeftinija isporučiva obveznica, pa samim tim ima manje prednosti za kupca zaštite. Međutim, mnogi investitori ne žele (ili iz regulatornih razloga ne mogu) da primenjuju fizičko saldiranje. U skorije vreme je polako usvojeno rešenje koje podrazumeva primenu procedure novčanog saldiranja na portfoliju obveznica koja kopira karakteristike fizičkog saldiranja.

Postoji nekoliko prednosti primene novčanog saldiranja. Kao prvo, manje administracije je vezano za novčano saldiranje. Takođe, novčano saldiranje ne izlaže kupca zaštite bilo kojim rizicima ukoliko ne bude isporučivih obveznica na tržištu. To može biti od velikog značaja ukoliko dođe do manjka likvidnosti na tržištu, i smanji se vrednost isplate u slučaju saldiranja.

3. Trgovina sa fiksnom naknadom. U ovoj vrsti saldiranja, iznos koji prodavac plaća u slučaju nastupanja kreditnog događaja je unapred određen (50% paritetne vrednosti). S obzirom na to ova vrsta saldiranje se obavlja vrlo brzo.

Vrste kreditnih derivata

Kreditni derivati se javljaju u različitim oblicima, i postoji više načina na koji mogu da se grupišu u različite kategorije.

Tri osnovna načina njihovog grupisanja su sledeća:

- Kreditni derivati koji glase na jedno ime i kreditni derivati koji glase na više imena. Kreditni derivati koji glase na jedno ime podrazumevaju zaštitu od neizvršenja od strane jednog referentnog subjekta. Oni

predstavljaju najrasprostranjeniju vrstu kreditnih derivata i uključeni su u najveći broj transakcija na tržištu. Najpoznatiji kreditni derivati koji glase na jedno ime su: svopovi kreditnih neizvršenja, svopovi ukupnog prinosa i opcije na kreditni spred. Kreditni derivati koji glase na više imena podrazumevaju zaštitu od neizvršenja od strane više referentnih subjekata, kao što je to na primer slučaj kod portfolio bankarskih kredita. Umesto toga da svaka hartija od vrednosti u portfoliju mora da se razmatra zasebno, oni omogućavaju investitorima i emitentima da transferišu deo kreditnog rizika ili ukupan kreditni rizik vezan za portfolio hartija od vrednosti kod kojih može da nastupi neizvršenje obaveza. Najpoznatiji kreditni derivati koji glase na više imena su: korpa svopova sa najvećom verovatnoćom neizvršenja i sintetizovane kolateralizovane dužničke obaveze.

- Kreditni derivati pisani za korporativne referentne subjekte i kreditni derivati pisani za državne referentne subjekte.

Kod kreditnih derivata referentni subjekat može biti korporativni ili državni. Najveća razlika između kreditnih derivata pisanih za korporativne referentne subjekte i kreditnih derivata pisanih za državne referentne subjekte se ogleda u osnovnim karakteristikama tržišta na kojima obavljaju transakcije. Kreditni derivati pisani za referentne subjekte koji nisu državni, posebno oni pisani za korporativne subjekte koji imaju visoki investicioni rejting, se ugovaraju na tržištu koje je znatno veće od tržišta za državne referentne subjekte. Jedan od ograničavajućih faktora tržišta za kreditne derivate pisane za državne referentne subjekte jeste taj što je baza investitora za nedržavni dug bitno veća nego za državni dug. Takođe, modeliranje i kvantifikovanje kreditnog rizika vezanog za državne dužnike može biti komplikovanije nego za korporativne korisnike kredita. Na primer, državni subjekti, posebno u zemljama u razvoju, su podložniji rizicima vezanim za političku nestabilnost nego što je većina korporacija u razvijenim zemljama.

- Kreditni derivati koji zahtevaju finansiranje i kreditni derivati koji ne zahtevaju

2. Cash settlement. In case of cash settlement, protection seller compensates the protection buyer for losses incurred due to the credit event, and there is no transfer of reference asset as it remains with the protection buyer. In this case, at the time of settlement, protection seller pays protection buyer the amount equal to the par value (100%), decreased for the value of the reference obligation after default. This value is determined by using quotation for the reference obligation from the secondary market. Person responsible for determining the market value is called calculation agent. If selected, settling is done within 5 working days from the date credit event has occurred.

The process of pricing is at times complicated, and this form of settlement is not an equivalent to the physical settlement as there is no cheapest bond to be delivered, and thus there are fewer advantages for protection buyer. Many investors, however, do not wish (or are not able for regulatory reasons) to apply physical settlement. Recently, there was a gradual adoption of the solution which implies application of the cash settlement procedure on the bonds portfolio, which is a copy of the physical settling features. There are several advantages in the implementation of cash settlement. Firstly, less administration is involved in cash settlement. In addition, cash settlement does not expose protection buyer to any risks if there should be a shortage of bonds for delivery on the market. This may be of great importance if there should be a shortage of liquidity on the market, and the value of payment to be effected in case of settling should fall.

3. Fixed fee trade. In this type of settlement, the amount that the seller is paying in case of credit event occurrence is determined in advance (50% of the par value). In this light, this type of settlement can be completed promptly.

Types of credit derivatives

Credit derivatives appear in different shapes and forms and there are several ways of classifying them in different categories. There are three basic ways of classification as follows:

- Credit derivatives registered in one name, and credit derivatives registered in several names. Credit derivatives registered in one name designate protection from default by one reference entity. They are the most broadly present type of credit derivatives and include the largest number of transactions on the market. The best known credit derivatives registered in one name are the following: credit default swaps, total return swaps, and credit spread options.

Credit derivatives registered in several names designate protection from default by several reference entities, such as is the case, for example, with banking credits portfolio. Instead of examining separately every security kept in a portfolio, they allow investors and issuers to transfer one part of the credit risk or the entire credit risk linked with the securities portfolio where there is the possibility of default. The best known credit derivatives registered in several names are the following: basket of the highest probability of default swaps, and synthesised collateralised debt obligations.

- Credit derivatives drawn for corporate reference entities and credit derivatives written for sovereign reference entities. In case of credit derivatives, reference entity may be corporate or sovereign. The major difference between credit derivatives written for corporate reference entities and credit derivatives written for sovereign reference entities is reflected in the embedded market characteristics where transactions are taking place. Credit derivatives written for reference entities which are not the sovereign ones, especially those written for corporate entities which are having a higher investment rating, are contracted on the market which is substantially larger than the market for sovereign reference entities. One of the limiting factors of the market for credit derivatives written for the sovereign reference entities is the fact that the investor

finansiranje. Kod kreditnih derivata koji zahtevaju finansiranje, čiji su glavni predstavnici kreditne note, investitor vezan za notu je prodavac kreditne zaštite i unapred vrši plaćanje kupcu zaštite prilikom kupovine note, koje se koristi za saldiranje prilikom nastupanja potencijalnih kreditnih događaja. Kod ove vrste derivata se na početku transakcije kupcu isplaćuje zaštita koja služi kao osiguranje; ukoliko ne nastupi kreditni događaj, isplata se vraća prodavcu zaštite. Samim tim, prodavac zaštite mora da obezbedi sredstva (gotovinu) na početku transakcije da bi mogao da izvrši plaćanje unapred.

Kod kreditnih derivata koji ne zahtevaju finansiranje, čiji su glavni predstavnici svopovi kreditnih neizvršenja, prodavac zaštite ne vrši plaćanje unapred kupcu zaštite. Plaćanje zaštite se vrši po završetku transakcije prilikom nastupanja kreditnog događaja (ukoliko postoji kreditni događaj). U suprotnom se plaćanje uopšte ne vrši. Kupac zaštite je izložen većem riziku da druga ugovorna strana neće ispuniti obavezu, odnosno riziku da prodavac zaštite neće biti u mogućnosti da izvrši predstojeće plaćanje. U najvažnije kreditne derivate koji ne zahtevaju finansiranje takođe spadaju: svopovi ukupnog prinosa i opcije na kreditni spread.

Dugi način klasifikovanja kreditnih derivata je u tri osnovne kategorije, u zavisnosti od njihovih mehanizama rada i primene:

- Derivati koji u osnovi imaju mogućnost neizvršenja - predstavljaju veoma značajnu inovaciju na tržištu, s obzirom na to da omogućavaju primenu strategija za obavljanje transakcija i hedžing koje nisu postojale na finansijskim tržištima pre njihovog nastanka. Oni pružaju zaštitu svojim korisnicima od nastupanja kreditnog događaja (ili nastupanja više kreditnih događaja), koji je obično definisan u ugovoru kao neplaćanje od strane referentnog subjekta. Glavni predstavnici ovih derivata su: svopovi kreditnih neizvršenja i kreditne note.
- Derivati koji u osnovi imaju kreditni spread - omogućavaju investitorima da zauzmu poziciju na budućem nivou kreditnog

spread između dve dužničke hartije od vrednosti (uglavnom rizične i nerizične hartije od vrednosti), nezavisno od apsolutne vrednosti kamatnih stopa. Vrednost ovih proizvoda zavisi od razvoja kreditnog spreada vezanog za referentne hartije od vrednosti, ali, za razliku od derivata koji u osnovi imaju mogućnost neizvršenja, nije izričito vezana za nastupanje unapred definisanih kreditnih događaja. Glavni predstavnici ove vrste derivata su opcije na kreditni spread.

- Proizvodi koji omogućavaju sintetičku replikaciju performansi bazne aktive - dozvoljavaju investitorima da sintetički replikuju ekonomsku performansu izloženosti kreditnom riziku, bez obaveze da kupe referentni instrument. Za uzvrat, ugovorna strana koja sintetički prodaje svoju izloženost hedžuje kreditni rizik bazne aktive. Glavni predstavnici ove vrste derivata su svopovi ukupnog prinosa.

Razvoj tržišta kreditnih derivata

Razvoj tržišta kreditnih derivata predstavlja odgovor na rastući značaj upravljanja kreditnim rizikom. Tržište kreditnih derivata je izuzetno poraslo, u prilično kratkom vremenskom periodu, i razvilo se od malog ogranka kreditnog tržišta u jedno od najznačajnijih na svetskom nivou.

Prvobitno su identifikovane tri glavne faze razvoja tržišta kreditnih derivata:

- Zaštitni proizvod
Prva faza je trajala od kraja 1980-ih do početka 1990-ih godina, a za nju su karakteristični pokušaji banaka da delimično eliminišu izloženost kreditnom riziku. Kreditni derivati su nastali i razvili se početkom 1990-ih godina, usled činjenice da su se brokeri na tržištu suočili sa eksponencijalnim rastom vanberzanskih transakcija. Investicione banke koje su imale ulogu posrednika nisu bile zadovoljne tradicionalnim metodama upravljanja kreditnim rizikom. Takođe, sputavalo ih je umereno kapitalisanje i potreba da se svakodnevno vrši poravnanje njihovih portfolija sa tržištem. Prema tome, bili su im potrebni novi instrumenti za upravljanje kreditnim rizikom.

base for non-sovereign debt is significantly larger than the one for the sovereign debt. In addition, modelling and quantification of credit risk linked with the sovereign obligors may be more complicated than for the corporate credit beneficiaries. For example, sovereign entities, especially in the developing countries, are more susceptible to political instability risks than are the majority of corporations in developed countries.

- Credit derivatives requiring funding and credit derivatives not requiring financing. In case of credit derivatives requiring funding, having as their main representatives credit notes, investor linked to a note is the credit protection seller, and is effecting payment in advance to the protection buyer during purchase of the note, which is used for settling in case credit event is to occur. In this type of derivatives, at the start of transaction, buyer is paid protection which serves as insurance; in case credit event should fail to occur, payment is returned to the protection seller. Hence protection seller must secure funds (cash) at the start of transaction in order to be able to make advance payment.

In case of credit derivatives which do not require funding, their main representatives being credit default swaps, protection seller will not make advance payment to the protection buyer. Protection payment is effected at the end of transaction, during credit event occurrence (if credit event is to occur). In the case of contrary, no payment will be made. Protection buyer is exposed to a higher risk of the counterparty defaulting on its obligation, i.e. exposed to the risk that the protection seller will not be able to make the forthcoming payment. Amongst the most important credit derivatives not requiring funding are also the following: total return swaps, and credit spread options.

Another way to classify credit derivatives is to group them into three main categories, depending on their work mechanism and application:

- Derivatives having an underlying option of default - are a very important innovation on the market in view of the fact that they

allow strategies to be applied for making transactions and hedging that were not previously present on the financial markets before they were introduced. They offer protection to their users from credit event occurrence (or occurrence of several credit events), which is usually defined in the contract as a default by the reference entity. The main representatives of these derivatives are the following: credit default swaps, and credit notes.

- Derivatives having an underlying credit spread - allow investors to take up position on the future level of the credit spread between two debt securities (mostly between a risky security and a risk-free one), irrespective of the absolute value of the interest rates. The value of these products depends on the development of the credit spread linked with the reference security, but contrary to the derivatives with underlying option of default, this value is not explicitly linked with the occurrence of in advance defined credit events. The main representatives of this type of derivatives are the credit spread options.
- Products allowing for synthetic replication of the underlying asset performance - allow investors to synthetically replicate economic performance of the credit risk exposure, without obligatory purchase of the reference instrument. In return, contracting party which is synthetically selling its exposure, is hedging credit risk of the underlying asset. The main representatives of this type of derivatives are the total return swaps.

Credit derivatives market development

Credit derivatives market development is a response to a growing importance of the credit risk management. Credit derivatives market has extremely grown over a rather short period of time, and has developed from a small branch of the credit market into one of the most important ones on the world level.

There were three main phases of the credit derivatives market development initially identified:

- Protection product

Iz tog razloga su banke konstruisale svopove kreditnog rizika koji omogućavaju hedžing potencijalnih neizvršenja njihovih klijenata, a s obzirom na to da oni donose više prinose, bile su u mogućnosti da lakše pronađu zainteresovanu drugu ugovornu stranu.

- **Bilateralno tržište**

Druga faza je počela oko 1991. godine i trajala je približno do kraja 1990-ih godina. Tokom ove faze pojavilo se posredničko tržište, na kojem su dileri primenjivali tehnologiju derivata prilikom transfera kreditnog rizika, dok su investitori ulazili na tržišta u cilju pronalaženja i preuzimanja izloženosti kreditnom riziku. U periodu od 1994. do 1995. godine, tržište kreditnih derivata je postalo bilateralno, i na njemu su banke koje su konstruisale te proizvode počele da stupaju u kontakt sa potencijalnim investitorima, i da grupišu proizvode prilagođene njihovim zahtevima vezano za profil rizika i prinosa.

Još jedna inovacija u ovoj fazi je bila pojava sintetičke sekjuritizacije, koja je omogućila širu primenu kreditnih derivata, u okviru strukturnog finansiranja, odnosno kombinovanje derivata sa gotovinskim instrumentima ili sa drugim derivatima u cilju postizanja zahtevanog stepena izloženosti riziku.

- **Tržišni bum**

U periodu od 1996. do 1997. godine, tržište kreditnih derivata se „demokratizovalo“. Treća faza podrazumeva razvoj kreditnih derivata, koji su od nove vrste proizvoda vremenom postali proizvodi sa karakteristikama koje su slične drugim vrstama derivata.

Svopovi kreditnih neizvršenja su se u ovom periodu pojavili i postali najzastupljeniji predstavnici kreditnih derivata, dok je u oblasti strukturnog finansiranja došlo do kombinovanja kreditnih derivata i formiranja arbitražnih kolateralizovanih dužničkih obaveza, konstruisanih u skladu sa zahtevima investitora. ISDA je 1999. godine objavila standardne definicije vezane za kreditne derivate koje su se primenjivale zajedno sa Glavnim ugovorom. Takođe, trgovci su počeli da upravljaju rizikom kroz upotrebu diversifikacije portoflija kreditnih

derivata. Treća lica (regulatorni organi, rejting agencije) su ozbiljnije počela da prate dešavanja na tržištu.

U međuvremenu, identifikovana je još jedna faza razvoja tržišta kreditnih derivata, pa se samim tim može smatrati četvrtom fazom:

- **Afirmisano derivatno tržište**

Ova faza se može posmatrati i kao faza razvoja likvidnog tržišta. Od 1999. -2000. godine, tržište kreditnih derivata je pretpelo znatne strukturne promene, koje su kasnije prouzrokovale sledeća dešavanja:

- Uvođenje evra na tržište kapitala krajem 1999. godine i nastanak pravog kreditnog tržišta na evropskom nivou.
- Uvođenje proizvoda druge generacije (egzotičnih derivata i strukturisanih proizvoda), i povećanje likvidnosti na standardnim tržištima.
- Obavljanje bankarskih transakcija vezanih za arbitražu propisanog kapitala.

Promet i vrste kreditnih derivata su se znatno uvećali, uz istovremeno povećanje broja i raznovrsnosti učesnika u koje su spadale komercijalne banke, osiguravajuće kompanije, i drugi institucionalni investitori (penzioni fondovi, menadžeri aktive, hedž fondovi, itd). Kao rezultat toga, tržište kreditnih derivata je postalo referentno tržište za procenu kreditnog rizika, kako za postojeće emitente tako i za buduće korisnike kredita.

Određeni nedostaci ranije spomenutih definicija ISDA, su doveli do toga da 2003. godine ISDA objavi nove, odnosno dopunjene, standardne definicije vezane za kreditne derivate. Takođe, 2004. godine je započeta trgovina indeksima, koja je nakon toga znatno rasla iz godine u godinu.

U ovoj poslednjoj fazi, uveden je veliki broj hedž fondova, kako na strani kupaca tako i na strani prodavaca. Hedž fondovi koriste kreditne derivate u razne svrhe, koje utiču na povećanje efikasnosti tržišta i utvrđivanja cena, kao i na povećanje likvidnosti.

Učesnici na tržištu kreditnih derivata

Na tržištu kreditnih derivata postoje tri grupe učesnika:

- Krajnji kupci zaštite. To su entiteti koji traže način da hedžuju kreditni rizik kojem su

Phase one lasted until the end of the 1980s and the beginning of 1990s, and it was characteristic for the attempt by banks to partially eliminate credit risk exposure. Credit derivatives emerged and started to develop early in the 1990s due to the fact that brokers on the market were faced with an exponential growth of over-the-counter transactions. Investment banks, which had the role of intermediaries, were not satisfied with the traditional credit risk management methods. In addition, they were constrained by a moderate capitalisation and the need for daily settling of their portfolios with the market. Hence what they needed were some new instrument for the credit risk management.

For this reason, banks constructed credit risk swaps which allowed for hedging of potential defaults by their clients, and mindful of the fact that they were bringing higher returns, they were able to easily find interested contractual counterparties.

- **Bilateral market**

Phase two started by 1991 and it lasted up to the end of 1990s. During this phase what emerged was the intermediaries market where dealers were applying derivative technology on the credit risk transfer, while investors were entering the market with the aim to find and take over credit risk exposures. In the period from 1994 to 1995, credit derivatives market became a bilateral one, where the banks that have constituted those products ventured into establishing contacts with potential investors, and into grouping products adjusted to their requirements regarding risk profile and return.

Another novelty in this phase was the emergence of synthetic securitisation which allowed for a broader application of credit derivatives within the structured funding, i.e. a combination of derivatives with the cash instruments or with other derivatives, for purpose of obtaining the required degree of risk exposure.

- **Market boom**

In the period from 1996 to 1997, credit derivatives market became “democratised”. Phase three saw the development of credit

derivatives which have, from a new type of product, in time, become products with characteristics similar to those of other types of derivatives.

Credit default swaps have emerged in this period and were to become the broadest present representatives of credit derivatives, while in the field of structured funding what occurred was a combination of credit derivatives and formation of arbitrage collateralised debt obligations, constructed in accordance with the investor requirements. ISDA 1999 published standard definitions for credit derivatives which were applied together with the Main Contract. In addition, traders started to manage risk by using credit derivatives portfolio diversification. The third persons (regulatory authorities, rating agencies) gradually and more seriously engaged in monitoring market developments.

In the meantime, another phase of the credit derivatives market development was identified, and thus it may be deemed to be phase four:

- **An affirmed derivatives market**

This phase may be observed also as a development phase of the liquid market. From 1999-2000, credit derivatives market suffered substantial structural changes which have later caused the following developments to take place:

- Introduction of euro on the capital market in late 1999 and the emergence of a real credit market at a European level.
- Introduction of second generation products (exotic derivatives and structured products) and a boost in liquidity on standard markets.
- Execution of banking transactions linked with arbitrage of regulatory capital.

Turnover and types of credit derivatives have substantially grown, with the simultaneous growth in number and diversity of participants including commercial banks, insurance companies, and other institutional investors (pension funds, assets managers, hedge funds, etc.). As a result, credit derivatives market became a reference market for the assessment of credit risk, both for the current issuers but also for the future credit beneficiaries.

izloženi u drugim oblastima poslovanja.

U njih spadaju: komercijalne banke, osiguravajući, penzioni i uzajamni fondovi.

- Krajnji prodavci zaštite. Oni predstavljaju entitete koji traže način da diversifikuju tekući portfolio, i to mogu da učine efikasnije sa kreditnim derivatima. Entitet koji pruža zaštitu traži izloženost određenom kreditnom riziku ili grupi kreditnih rizika.
- Posrednici. U njih spadaju ogranci komercijalnih banaka koji obavljaju poslove investicionog bankarstva i brokerske i dilerske firme koje se bave trgovinom hartijama od vrednosti. Njihova glavna uloga na tržištu kreditnih derivata je da krajnjim korisnicima obezbede likvidnost. Oni obavljaju transakcije za sopstveni račun u potrazi za arbitražnim i drugim prilikama.

U najbitnije učesnike na tržištu kreditnih derivata spadaju: banke, osiguravajuće kompanije, penzioni fondovi, menadžeri aktive i hedž fondovi. Svaki od navedenih učesnika ima različite motive za primenu kreditnih derivata, koji su sumirani u sledećoj tabeli.

Prednosti kreditnih derivata

Kreditni derivati imaju veoma važnu i kontroverznu ulogu na finansijskim tržištima. S jedne strane, kreditni derivati donose prednosti, dok, s druge strane, nose skrivene opasnosti i rizike. Kao glavne prednosti kreditnih derivata se mogu izdvojiti sledeće:

- Razdvajanje tržišnog i kreditnog rizika. Kreditni derivati su omogućili razdvajanje kreditnog rizika od tržišnog rizika, kao i prenos kreditnog rizika na druge učesnike na tržištu. Izdvajanje kreditnog rizika je obično moguće, bez obzira na vrstu aktive u osnovi. Prema tome, kreditni derivati omogućavaju upravljanje i hedžing kreditnim rizikom zasebno od drugih vrsta rizika vezanih za aktivu u osnovi. Kao rezultat toga, ovi derivati omogućavaju investitorima da bolje usklade stvarnu i očekivanu izloženost riziku.
- Trgovina kreditnim rizikom. Druga prednost kreditnih derivata, koja je direktno povezana sa prvom, je činjenica da

Tabela 1. Motivi različitih učesnika za primenu kreditnih derivata

Učesnici na tržištu kreditnih derivata	Razlozi za kupovinu zaštite	Razlozi za prodaju zaštite
Banke	- Upravljanje kreditnim rizikom - Olakšice u pogledu zahteva za kapitalom - Upravljanje bilansom stanja - Nedostatak likvidnosti (motiv finansiranja)	- Geografska / privredna diversifikacija kreditnog portfolija - Eliminisanje troškova hedžinga ostalih kredita - Uvećanje prinosa
Osiguravajuće kompanije	- Smanjenje ili diversifikacija koncentracije finansijskih obaveza u portfoliju osiguranja, bez potrebe za prodajom obveznica	- Diversifikacija - Uvećanje prinosa - Usaglašavanje rokova dospeća finansijskih obaveza
Dileri hartijama od vrednosti	- Posredovanje na tržištu - Upravljanje kreditnim rizikom - Olakšice u pogledu zahteva za kapitalom	- Posredovanje na tržištu - Geografska/ privredna diversifikacija kreditnog portfolija - Eliminisanje troškova hedžinga ostalih kredita
Menadžeri aktive	- Konstruisanje strateške trgovine - Eksploatacija negativnih ocena razvoja kreditnog boniteta	- Eksploatacija pozitivnih ocena kreditnog boniteta (uvećanje prinosa i diversifikacija)
Hedž fondovi	- Eksploatacija negativnih ocena kreditnog kvaliteta - Kombinovanje sa obveznicama ili konvertibilnim obveznicama zbog baznih transakcija	- Eksploatacija pozitivnih ocena kredita

Izvor: Ayadi, Rym, Behr, Patrick. "On the Necessity to Regulate Credit Derivatives Markets", Journal of Banking Regulation 10 (2009) 186.

Certain drawbacks in the already mentioned ISDA definitions encouraged ISDA, in the year 2003, to publish new, i.e. supplemented standard definitions referring to credit derivatives. In addition, in the year 2004, index trading started which was to record substantial year-to-year growth.

In this last phase, a large number of hedge funds were introduced, both on the side of buyers and on the side of sellers. Hedge funds are using credit derivatives for different purposes, which are impacting growth of efficacy of the market and the pricing itself, as well as giving boost to liquidity.

Credit derivatives market participants

On the credit derivatives market there are three groups of participants:

- End-buyers of protection. They are the entities searching for ways to hedge credit risk to which they are exposed in other business fields. They are: commercial banks,

insurance companies, pension and mutual funds.

- End-sellers of protection. They are the entities looking for ways to diversify current portfolio which is possible to be done more efficiently with credit derivatives. The entity providing protection is looking for exposure to a certain credit risk, or a group of credit risks.
- Intermediaries. They are commercial banks affiliations dealing in investment banking, and brokerage and dealer firms engaged in securities trading. Their main role on the credit derivatives market is to secure liquidity to the end users. They conduct transactions for their own account in search for arbitrage and other opportunities.

The most important participants on the credit derivatives market are the following: banks, insurance companies, pension funds, assets managers, and hedge funds. Each one of these participants has a different motivation for the application of credit derivatives, which are summed up in the following table.

Table 1 Motivation of different participants for application of credit derivatives

Credit derivatives market participants	Reasons for protection purchase	Reasons for protection sale
Banks	<ul style="list-style-type: none"> - Credit risk management - Capital requirement benefits - Balance sheet management - Liquidity shortage (motive for financing) 	<ul style="list-style-type: none"> - Geographic/economic credit portfolio diversification - Elimination of other credit hedging costs - Growth of return
Insurance companies	<ul style="list-style-type: none"> - Reduction or diversification of financial liabilities concentration in insurance portfolio, without the need to sell bonds 	<ul style="list-style-type: none"> - Diversification - Growth of return - Matching maturity of financial liabilities
Securities dealers	<ul style="list-style-type: none"> - Market intermediation - Credit risk management - Capital requirement benefits 	<ul style="list-style-type: none"> - Market intermediation - Geographic/economic credit portfolio diversification - Eliminating the costs of other loans' hedging
Assets managers	<ul style="list-style-type: none"> - Strategic trading constitution - Exploitation of negative assessment of credit rating development 	<ul style="list-style-type: none"> - Exploitation of positive assessment of credit rating (growth of return and diversification)
Hedge funds	<ul style="list-style-type: none"> - Exploitation of negative credit quality rating - Combination with bonds or convertible bonds for purpose of basic transactions 	<ul style="list-style-type: none"> - Exploitation of positive credit rating

Source: Ayadi, Rym, Behr, Patrick. "On the Necessity to Regulate Credit Derivatives Markets", Journal of Banking Regulation 10 (2009) 186.

mogu da izdvoje kreditni rizik dužničkog finansijskog instrumenta i transferišu ga trećoj strani. Kreditni derivati omogućavaju transfer kreditnog rizika uz istovremeno zadržavanje vlasništva nad aktivom. Oni bankama omogućavaju da razdvoje kreditni rizik od rizika finansiranja. Prema tome, kreditni derivati uvode mehanizam koji omogućava transfer neželjenog rizika između zainteresovanih strana, od preduzeća koja imaju previše kreditnog rizika, ili pogrešnu vrstu kreditnog rizika, ka preduzećima koja su spremna da preuzmu taj rizik. Takođe, transferom kreditnog rizika sa jednog učesnika na tržištu na drugog, kreditni derivati omogućavaju efikasnije vrednovanje i distribuciju kreditnog rizika između učesnika na tržištu.

- Hedžing kreditnog rizika. Najbolji način hedžinga kreditnog rizika je upotreba instrumenata koji su direktno povezani sa korisnikom kredita, u koje spadaju kreditni derivati. Oni su veoma efikasni instrumenti hedžinga i upravljanja kreditnim rizikom u cilju poboljšanja portfolio diversifikacije. Finansijska institucija čiji je kreditni portfolio previše rizičan može da zaključi ugovor kojim se transferiše deo tog kreditnog rizika na drugo preduzeće, dok se institucija fokusira na unapređenje svog portfolija.

Druge povezane prednosti kreditnih derivata su sledeće:

- Povećana likvidnost kreditnog tržišta. Kreditni derivati pružaju učesnicima na tržištu mogućnost trgovine rizicima kojima ranije skoro uopšte nije moglo da se trguje zbog niskog stepena likvidnosti. Prema tome, oni povećavaju likvidnost tržišta na kojima se trguje dužničkim instrumentima. Određena preduzeća ne emituju javni dug već pozajmljuju novac od banaka. Zahvaljujući kreditnim derivatima, investitorima je omogućen pristup drugim ugovornim stranama ili tržištima koja ranije nisu bila javno dostupna.
- Potencijalno niži transakcioni troškovi - jedna transakcija vezana za kreditne derivate obično može da zameni dve ili više transakcija na promptnoj berzi.

- Rešavanje problema neefikasnosti vezanih za regulatorne barijere. Ovo je od posebnog značaja za banke. Banke odavno koriste kreditne derivate u cilju usklađivanja zahtevane stope kapitala potrebne za poslovanje sa svojim ekonomskim kapitalom, koji služi za pokrivanje neočekivanih gubitaka koji su rezultat kreditnog rizika.
- Povećana transparentnost kreditnog tržišta. Kreditni derivati utiču na poboljšanje transparentnosti prilikom vrednovanja kreditnog rizika. Pre uvođenja kreditnih derivata, utvrđivanje vrednosti kreditnog rizika je bilo komplikovano. Kreditni derivati su vremenom postali likvidniji i obuhvataju širi spektar entiteta, pa će samim tim kreditori i investitori biti u mogućnosti da porede određivanje cena instrumenata kao što su obveznice i krediti sa kreditnim derivatima. Učesnicima na finansijskom tržištu može da koristi bolje razumevanje vrednosti kredita čak iako ne učestvuju u transakcijama sa kreditnim derivatima.

Neke od glavnih prednosti za kupce i prodavce kreditnih derivata su navedene u sledećoj tabeli.

Tabela 2: Prednosti za kupce i prodavce kreditnih derivata

Prednosti za kupce kreditnih derivata	Prednosti za prodavce kreditnih derivata
Veća likvidnost tržišta	Upravljanje rizikom i/ili hedžing investicija
Leveridž investicija	Povećana efikasnost odvajanja kreditnog rizika i vremenski određenog upravljanja rizikom putem duracije
Mogućnost zarade provizija	
Diversifikacija proizvoda osiguranja	Portfolio diversifikacija
Povećana efikasnost kroz razdvajanje hartija od vrednosti u osnovi i/ili robe	Povećani novčani tokovi kapitala

Prednosti kreditnih derivata se mogu razdvojiti na mikroekonomske i makroekonomske, kao što je prikazano u sledećoj tabeli.

Credit derivatives advantages

Credit derivatives play a very important yet controversial role on financial markets. Credit derivatives, on the one hand, bring advantages, but on the other hand they embody hidden risks and hazards. Credit derivatives main advantages are the following:

- Separation between market and credit risk. Credit derivatives allow for a separation to be made between credit risk and market risk, and also credit risk transfer on to the other market participants. Singling out of the credit risk is usually possible regardless of the underlying type of asset. Therefore, credit derivatives are allowing for credit risk management and hedging separately from other forms of underlying asset-linked risks. As a result, these derivatives allow investors to better match real and anticipated risk exposure.
- Credit risk trading. Another credit derivatives advantage, directly linked with the previous one, is the fact that credit risk can be singled out from the debt financial instrument and transferred on to a third party. Credit derivatives allow for the credit risk transfer to be made, while at the same time ownership of the assets remains intact. They allow the banks to separate credit risk from the funding risk. Therefore, credit derivatives are introducing a mechanism which enables transfer of undesirable risk between the interested parties, from a company having an excess of credit risk, or a wrong type of credit risk, to a company ready to take over such a risk. In addition, through the credit risk transfer from one market participant to the other, credit derivatives allow for more efficient valuation and distribution of the credit risk between market participants.
- Credit risk hedging. The best way to hedge credit risk is through the use of instruments that are directly linked with the credit beneficiary, and they are credit derivatives. They are very efficient hedging and credit risk management instruments for purpose of enhancing portfolio diversification. Financial institution holding credit portfolio which is too risky may conclude a contract

transferring one part of that credit risk on to another company, while the institution in question is focusing on upgrading its portfolio.

Other related advantages of credit derivatives are the following:

- Enhanced credit market liquidity. Credit derivatives are offering market participants the opportunity to trade in risks which were previously almost totally inaccessible for trading because of the low level of liquidity. Concurrently, they enhance market liquidity where there is trading in debt instruments. Some companies are not issuing public debt but are borrowing money from banks. Thanks to the credit derivatives, investors are now able to have access to the other counterparties or markets which were previously publicly inaccessible.
- Potentially lower transaction costs - one transaction dealing with credit derivatives usually can replace two or more transactions on a prompt stock exchange.
- Solving problems of inefficiency connected with regulatory barriers. This is especially important for banks. Banks have been using, for a long time now, credit derivatives for purpose of harmonising required capital adequacy rates for business operations with their economic capital, which serves as provisioning for unexpected losses incurred from credit risk.
- Higher credit risk transparency. Credit derivatives are impacting an improved transparency in the credit risk valuation. Prior to the introduction of credit derivatives, determining credit risk value was a complicated job. Credit derivatives have, in time, become more liquid and comprise a broader spectrum of entities, and thus creditors and investors will be in the position to compare pricing of instruments, such as bonds and credits, with credit derivatives. Participants on the financial market may find it useful to have better understanding of the credit value, even if they do not participate in credit derivatives transactions.

Some of the main advantages for buyer and sellers of credit derivatives are presented in the following table.

Tabela 3: Mikroekonomske i makroekonomske prednosti kreditnih derivata

Mikroekonomske prednosti kreditnih derivata	Makroekonomske prednosti kreditnih derivata
Omogućavaju kreditorima i investitorima bolji odabir rizika koje žele da preuzmu, kao i mogućnost transfera rizika koje ne žele.	Mogu da prenesu kreditni rizik na više tržišta i da smanje koncentraciju rizika, na taj način što ga prosleđuju stranama koje žele i koje su bolje pripremljene da preuzmu navedeni rizik.
Dovode do preciznijeg vrednovanja rizika, razdvajanjem kreditnog rizika od drugih rizika.	Upotrebljavaju se u cilju ublažavanja finansijskih šokova u privredi, i samim tim utiču na to da finansijska infrastruktura postane otpornija nego ranije.
Poboljšavaju proces posredovanja kroz povećanje likvidnosti i efikasnosti tržišta.	

Rizici kreditnih derivata

Iako kreditni derivati imaju mnoge prednosti, primena ovih instrumenata podrazumeva različite propratne rizike, koji su uglavnom vezani za činjenicu da je tržište kreditnih derivata novo i nedovoljno istraženo. Kao glavni rizici kreditnih derivata se mogu izdvojiti sledeći:

- Operativni rizik - odnosi se na rizik da će trgovci ili menadžeri koji upravljaju aktivom nerazumno primenjivati kreditne derivate. Do operativnog rizika može doći usled grešaka u procedurama ili ukoliko učesnik na tržištu započinje veliki broj transakcija. Može da se dogodi da trgovac započne transakcije bez zvaničnog ovlašćenja. Takođe, zbog velikog broja transakcija i ljudske greške može doći do zakašnjenja u dokumentovanju transakcija nakon što su ugovorene. S obzirom na to da su kreditni derivati ugovori koji se ne prikazuju na bilansu stanja, može da dođe do prekomerne izloženosti kreditnom riziku, a da to ne bude prikazano na bilansu stanja.
- Rizik da druga strana neće ispuniti obavezu - to je rizik da druga strana u kreditnom derivatnom ugovoru neće izvršiti svoje obaveze. Kupac kreditne zaštite može kupovinom kreditnog derivata da uvede nov oblik kreditnog rizika u portfolio - rizik da druga strana neće ispuniti obavezu. Da bi

kupac kreditne zaštite ostvario gubitak, dve stvari moraju da se dogode: da nastane kreditni događaj vezan za kreditnu aktivu u osnovi, i da prodavac kreditne zaštite ne izvrši svoje obaveze prema kupcu kreditne zaštite.

Rizik da druga strana neće ispuniti obavezu je prisutan u većini finansijskih ugovora, pa je posebno važno da se tom riziku posveti pažnja. U skladu sa rastućom ulogom hedž fondova na tržištu kreditnih derivata, i činjenicom da hedž fondovi za trgovce predstavljaju rizičnu drugu ugovornu stranu, rizik da druga strana neće ispuniti obavezu sve više dobija na značaju.

- Rizik likvidnosti. Kreditni derivati predstavljaju ugovore između dve strane kojima se trguje vanberzanski, i samim tim su nelikvidni.

Oni ne odgovaraju svim učesnicima na finansijskom tržištu, i može da se dogodi da prilikom pokušaja prodaje svoje pozicije ugovorna strana u kreditnom derivatu ne bude u mogućnosti da ostvari pravu tržišnu vrednost.

Iako broj trgovaca i količina transakcija stalno rastu, i dalje su relativno mali. Kao posledica toga, pronalaženje druge strane za okončanje ili saldiranje postojeće transakcije može biti komplikovano, posebno ukoliko postoje nepovoljne prilike na tržištu ili ako ugovor sadrži neobične klauzule.

- Rizik modela i rizik određivanja cena. Što je tržište kreditnih derivata postajalo razvijenije, to su matematički modeli koji se primenjuju za određivanje cena kreditnih derivata postajali složeniji. Kompleksni kreditni derivati podrazumevaju primenu kompleksnih modela za vrednovanje i hedžing. Rizik nastanka gubitka usled primene lošeg modela se zove rizik modela. Spomenuti modeli su zasnovani na složenim pretpostavkama vezanim za ekonomske parametre koji se nalaze u osnovi. Prema tome, cene kreditnih derivata su vezane za pretpostavke modela koji se primenjuje. Veoma je važno da cene kreditnih derivata budu tačno određene da bi odražavale rizik koji se nalazi u osnovi.

Primena kreditnih derivata podrazumeva i

Table 2 Advantages for buyers and sellers of credit derivatives

Advantages for buyers of credit derivatives	Advantages for sellers of credit derivatives
Higher market liquidity	Risk management and/or investments hedging
Investment leverage	Boosted efficiency in separating credit risk and time-limited risk management by duration
Opportunity to earn commission	
Diversification of insurance products	Portfolio diversification
Enhanced efficiency through separation of embedded securities and/or goods	Enhanced capital cash flows

Advantages of credit derivatives can be divided into microeconomic and macroeconomic ones, as presented in the following table.

Table 3 Microeconomic and macroeconomic credit rating advantages

Microeconomic credit derivatives advantages	Macroeconomic credit derivatives advantages
Creditors and investors are allowed to have a better selection of risks that they wish to take on, and also the option to transfer risk that they do not wish to hold.	They can transfer credit risk on several markets and reduce risk concentration by transferring it on to those parties willing to take it on and are better prepared to manage the risk in question.
They cause more precise risk valuation by separating credit risk from other risks.	They are used for mitigation of financial shocks and thus impact financial infrastructure to become more resilient than previously.
They improve intermediation process by increasing liquidity and market efficiency.	

Credit derivatives risks

Although credit derivatives hold many advantages, application of these instruments implies various accompanying risks, which are mainly connected with the fact that the credit derivatives market is a new and not sufficiently explored market. The main credit derivatives risks are the following:

- Operational risk - refers to the risk that traders or managers - managing assets will unreasonably apply credit derivatives. Operational risk may occur due to errors in procedures or if a market participant engages in a large number of transactions. It may happen that the trader would start a transaction without official authorisation. In addition, due to a large number of transactions and human error, there may be delays in documenting transactions after they have been contracted. In view of the fact that credit derivatives are contracts which are not on balance sheet, what may happen are excessive credit risk exposures, not stated in the balance sheet.

- The risk of the counterparty defaulting - is the risk that the counterparty in the credit derivative contract will not service its obligations. Credit protection buyer may introduce, through purchase of a credit derivative, a new form of credit risk in the portfolio - a risk of the counterparty defaulting. For the buyer of credit protection to incur losses, two events have to occur: credit event linked with the underlying credit asset, and the credit protection seller defaulting on his obligation to the credit protection buyer. The risk of counterparty defaulting is present in the majority of financial contracts, and it is especially important for this risk to be paid due consideration. In accordance with the growing role of hedge funds on the credit derivatives market, and the fact that hedge funds are for traders a risky contractual counterparty, the risk of the counterparty defaulting is gaining in importance.

- Liquidity risk. Credit derivatives are contracts between two parties used for over-the-counter trading and hence they are not liquid. They are not suitable for all the financial market participants and it may happen that in an attempt to sell its positions, the contracting party in a credit derivative deal would be unable to achieve real market value. Although the number of traders and the amount of transactions are constantly

sledeće rizike:

- Tržišni rizik. Ukoliko je banka uključena u trgovinu kreditnim derivatima tržišni rizik postaje značajan, s obzirom na činjenicu da je određivanje cene instrumenata funkcija kamatnih stopa, oblika krive prinosa, i kreditnog spreda. Prema tome, tržišni rizik ima veliki uticaj na cenu kreditne zaštite. Tržišni rizik zavisi i od specifičnog kreditnog derivata koji se primenjuje.
- Rizik rejting agencije. Rejting agencije imaju značajnu ulogu na tržištu kreditnih derivata. S obzirom na kompleksnu prirodu kreditnih derivata, mnogi investitori se oslanjaju na rejting agencije da izvrše procenu kreditnog rizika u određenoj transakciji. Jednodimenzionalna priroda tradicionalnih kreditnih rejtinga može da ih učini nedovoljnim za poređenje rizika korporativnog duga i kreditnih derivata, i da primena iste rejting lestvice za oba rizika bude neadekvatna.
- Rizik saldiranja. Kada dođe do neizvršenja obaveza od strane emitenta, mora da se izvrši saldiranje kreditnih derivata vezanih za dug emitenta. Iako je u interesu svih učesnika na tržištu kreditnih derivata da tržište dobro funkcioniše, njihovi interesi se razilaze u situacijama kada treba da se izvrši saldiranje a neki od njih su kupci zaštite, neki prodavci zaštite, neki bi više voleli da dođe do fizičkog saldiranja, a neki do novčanog saldiranja. Problemi mogu nastati i ukoliko treba da se izvrši istovremeno saldiranje velikog broja ugovora.
- Zakonski rizik. Još od samog nastanka tržišta kreditnih derivata, učesnicima je bilo jasno da, ukoliko tržište želi da ostvari uspeh, među prvim pitanjima mora da se reši zakonski rizik. Učesnici na tržištu su zajedno radili na stvaranju i primeni standardizovane dokumentacije vezane za kreditne derivate, sa ciljem da se minimizira uloga zakonskog rizika prilikom određivanja



growing, they still remain relatively small in size. As a consequence, finding the counterparty for completing or netting the existing transaction may be complicated, especially if there are adverse circumstances on the market, or if the contract contains some unusual clauses.

- Modelling risk and pricing risk. As the credit derivatives market developed, so have mathematical models applied on pricing of credit derivatives become increasingly complex. Complex credit derivatives entail application of complex models for valuation and hedging. The risk of losses incurred due to the application of a wrong model is called the modelling risk.

The above mentioned models are based on complex assumptions related to the underlying economic parameters. Concurrently, credit derivatives pricing is related to the model assumptions that are applied. It is very important for the credit

derivative prices to be precisely determined in order to reflect embedded risks.

Application of credit derivatives also implies the presence of the following risks:

- Market risk. If a bank is engaged in credit derivatives trading, market risk becomes significant, in view of the fact that determining the price of instruments is the function of interest rates, yield curve characteristics, and the credit spread. Therefore, market risk has a great impact on the price of credit protection. Market risk depends also on a specific credit derivative which is being applied.
- Rating agencies risk. Rating agencies play an important role on the credit derivatives market. In view of the complex nature of credit derivatives, many investors are relying on the rating agencies to perform assessment of the credit risk in the given transaction. One-dimensional nature of traditional credit rating makes the comparison between a corporate debt risk and a credit derivative risk inadequate, rendering application of the same rating ladder on both of these risks inadequate.
- Settlement risk. In case of defaulting by the issuer, settling of credit derivatives must be made with respect to the issuer's debt. Although it is in the best interest of all the credit derivatives market participants for the market to function properly, their interests diverge in situations when settling is to be done, where some of them are protection buyers, some are protection sellers, and some would rather like to see physical settlement, yet another prefer cash settlement. The problems may arise also if settlement is done simultaneously for a large number of contracts.
- Legal risk. From the very emergence of the credit derivatives market, it was clear to all the participants that if the market was to succeed, among the first questions to be resolved would be the legal risk. Market participants have worked together on the creation and implementation of standardised documentation pertaining to the credit derivatives, with the aim to minimise the role of legal risk in pricing of the contracts.



cena ovih ugovora.

Razvoj tržišta derivata obično prethodi uvođenju zakonske i poreske infrastrukture, a ni kreditni derivati nisu bili izuzetak. Zakonski sistemi se razlikuju u različitim državama, pa samim tim zakon koji je na snazi u jednoj državi ne mora da bude propisan u nekoj drugoj.

U cilju pojašnjenja zakonskih pojmova i omogućavanja standardizacije i daljeg razvoja tržišta kreditnih derivata, potrebno je uvođenje standardizovane dokumentacije, što predstavlja glavni fokus ISDA.

- Informativni rizik - nastaje usled asimetričnosti informacija koje mogu biti prisutne na tržištu kreditnih derivata, gde veliki broj investitora predstavlja neke od

najvažnijih učesnika u svetskoj privredi. Do problema može doći ukoliko korisnik kredita pruži kreditoru privilegovanu informaciju o ceni, koja nije javno dostupna. U skladu sa tom informacijom, kreditor može da izvrši hedžing svoje pozicije.

- Sistemski rizik - rizik da će se, u slučaju neizvršenja od strane jedne finansijske institucije, stvoriti domino efekat koji će dovesti do neizvršenja od strane ostalih finansijskih institucija, i samim tim ugroziti stabilnost finansijskog sistema. Postoje mišljenja da kreditni derivati, preraspoređuju kreditni rizik ali ga zapravo ne umanjuju, i na taj način dovode do povećanja sistemskog rizika.

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Derivatives market development usually precedes the introduction of the legal and taxation infrastructure, and neither was the credit derivatives market an exception. Legal systems differ from state to state hence legal framework in force in one country does not necessarily have to be in place in some other.

For purpose of clarifying legal terms and allowing for standardisation and further development of the credit derivatives market, it was necessary to introduce standardised documentation, which was the main focus of the ISDA.

- Information risk - occurs due to asymmetric information that may be present on the credit derivatives market where a large

number of investors represents some of the most significant players in the world economy. Problems may be encountered if a credit beneficiary offers a creditor some privileged information on the pricing, which is not publicly accessible. Based on such information received, creditor may engage in hedging his position.

- Systemic risk - is a risk that in case of default by one of the financial institutions, a domino effect may be created which would lead to defaulting by the other financial institutions, and thus endanger the financial system itself. There are views that credit derivatives are rearranging credit risk, yet that they are not really reducing it, thus causing an increase in the systemic risk.

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