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KREDITNI DERIVATI: CDS, TRS, CSO, CLN I CDO

Rezime

Kreditni derivati predstavljaju najnoviju grupu instrumenata za upravljanje (smanjenje ili eliminisanje) izloženosti kreditnom riziku. 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 imaju veoma važnu i kontroverznu ulogu na finansijskim tržištima. Oni su transformisali način na koji finansijske institucije posmatraju, hedžuju i regulišu kreditni rizik, jer su omogućili njegov efikasan, fleksibilan i jednostavan transfer. Rizici koje donose kreditni derivati su uglavnom vezani za činjenicu da je tržište kreditnih derivata novo i nedovoljno istraženo. Kada se pravilno koriste, kreditni derivati predstavljaju sredstvo uspostavljanja finansijske stabilnosti.

U cilju što boljeg razumevanja kreditnih derivata, u radu su opisane glavne karakteristike, mehanizmi funkcionisanja, primene, prednosti i nedostaci glavnih predstavnika kreditnih derivata: svopova kreditnih neizvršenja, svopova ukupnog prinosa, opcija na kreditni spread, kreditnih nota i kolateralizovanih dužničkih obaveza.

Ključne reči: kreditni derivati, svopovi kreditnih neizvršenja, svopovi ukupnog prinosa, opcije na kreditni spread, kreditne note, kolateralizovane dužničke obaveze

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Summary

Credit derivatives are the most recent group of instruments for managing (reducing or eliminating) credit risk exposures. They have occurred as a result of financial institutions' demand for a credit risk hedging and diversification instrument. They enable their users to separate credit risk from market risk, i.e. to transfer credit risk, when conducting a transaction.

Credit derivatives play an extremely important and controversial role on the financial markets. They have transformed the way in which financial institutions monitor, hedge and manage credit risk, because they have enabled its efficient, flexible and simple transfer. The risks entailed by credit derivatives are mostly related to the fact that the credit derivatives market is new and insufficiently explored. When used properly, credit derivatives are a means for establishing financial stability.

In order to provide a better understanding of credit derivatives, this paper elaborates on the main characteristics, mechanisms of functioning, implementation, advantages and disadvantages of the main types of credit derivatives: credit default swaps, total return swaps, credit spread options, credit-linked notes, and collateralized debt obligations.

Keywords: credit derivatives, credit default swaps, total return swaps, credit spread options, credit-linked notes, collateralized debt obligations.

JEL: G23, G32

Uvod

Glavni cilj rada je da pruži detaljnu analizu kreditnih derivata. Kreditni derivati su instrumenti koji su se pojavili 1993. godine i deo su tržišta finansijskih derivata. To su finansijski instrumenti čija je glavna uloga transfer kreditnog rizika između dve ugovorne strane, kao i hedžing i upravljanje kreditnim rizikom. Od njihovog samog nastanka, koristile su ih banke, portfolio menadžeri i korporativni blagajnici, u cilju uvećanja prihoda, trgovine kreditima, u špekulativne svrhe i kao instrumente hedžinga.

Uvođenje finansijske inovacije koja je omogućila diversifikaciju kreditnog rizika, i povećanje efikasnosti i stabilnosti, je dovelo do revolucije na finansijskim tržištima. Tržište kreditnih derivata je izuzetno poraslo, u prilično kratkom vremenskom periodu, i ogroman broj finansijskih institucija je uspeo da održi dobru finansijsku poziciju primenom kreditnih derivata, dok su istovremeno druga preduzeća izgubila čitava bogatstva njihovom upotrebom. Kreditni derivati donose brojne koristi, kao što je činjenica da su omogućili razdvajanje kreditnog rizika od tržišnog rizika, prenos kreditnog rizika na druge učesnike na tržištu, kao i transfer kreditnog rizika uz istovremeno zadržavanje vlasništva nad aktivom. Međutim, kreditni derivati nose i skrivene rizike, od kojih neki utiču na investitore, neki na prodavce kreditnih derivata, a neki na celokupan finansijski sistem, a najvećim delom su vezani za činjenicu da je tržište kreditnih derivata novo i nedovoljno istraženo.

Nakon dužeg perioda izuzetno povoljnih uslova na glavnim finansijskim tržištima u svetu, 2007. godine je otpočela kriza, koja je prvo zahvatila tržište hipotekarnih hartija od vrednosti u SAD-u, a zatim se proširila i na druga finansijska tržišta i zemlje, kao i sa finansijskog na realni sektor, i ubrzo eskalirala do neočekivanih razmera. Kreditni derivati su imali značajnu ulogu u nastanku i širenju tekuće finansijske krize. Smatra se da je izvor krize upravo u problemima koji se vezuju za funkcionisanje najkompleksnijih kreditnih derivata na subprimarnom tržištu hipotekarnih kredita. Kompleksnost i količina kreditnih derivata, za koje se ispostavilo da su

teški za razumevanje, vrednovanje i prodaju, je prouzrokovala različite sistemske rizike. Netačni kreditni rejtinzi hartija koje su dodelile rejting agencije su takođe doprineli nastanku tekuće kreditne krize.

Kreditni derivati su se našli u centru debate oko regulatorne reforme koja je započeta. Nekoliko velikih finansijskih krahova vezanih za upotrebu kreditnih derivata je ubedilo mnoge učesnike da je bolja regulativa kreditnih derivata pozitivan i neophodan razvoj koji će povratiti poverenje i obezbediti zdravu budućnost tržišta.

Rad pruža veliki broj korisnih informacija, koje su navedene sa ciljem da omoguće kompletan uvid u osnovne karakteristike i glavne vrste ovih inovativnih instrumenata, njihov mehanizam funkcionisanja, primenu, prednosti i nedostatke. Cilj je da se omogući što bolje razumevanje ovih instrumenata, kako bi se obezbedila njihova pravilna upotreba, koja može da doprinese ponovnom uspostavljanju finansijske stabilnosti.

Svopovi kreditnih neizvršenja

Svop kreditnih neizvršenja (Credit Default Swap - CDS) je kreditni derivat kojim se najčešće trguje, koji ne zahteva finansiranje, i koji u osnovi ima mogućnost neizvršenja - to znači da je njegova isplata povezana sa nastupanjem ili nenastupanjem kreditnog događaja. To je bilateralni ugovor koji je sličan ugovoru o osiguranju, a osnovna svrha mu je pokrivanje gubitaka po portfolijima hartija od vrednosti ili kredita u slučaju neizvršenja emitenta te finansijske aktive. CDS predstavlja vanberzanski finansijski instrument i ugovor između prodavca i kupca zaštite od rizika neizvršenja obaveza na setu dužničkih obveznica koje emituje specifikirani referentni subjekat. Glavni razlog za njegovu popularnost je to što je CDS najjednostavniji oblik transfera kreditnog rizika među svim kreditnim derivatima, i činjenica da hedžerima i investitorima pruža širok spektar mogućnosti koje prethodno nisu postojale na promptnoj berzi.

Kako su CDS vrsta kreditnih derivata, i ovde se radi o zaštiti referentne aktive, gde kupac zaštite (prodavac rizika) uz jednokratnu ili periodične naknade osigurava svoja

Introduction

The main objective of this paper is to give a detailed analysis of credit derivatives. Credit derivatives are instruments which appeared back in 1993, making up a segment of the financial derivatives' market. The main role of these financial instruments is the transfer of credit risk between two contractual parties, along with credit risk hedging and management. Since their origination, these instruments have been used by banks, portfolio managers and corporate accountants, in order to increase their revenues, trade in loans, for speculative purposes and as hedging instruments.

The introduction of financial innovations enabling credit risk diversification, and increasing efficiency and stability, caused a revolution at the financial markets. The credit derivatives market boomed significantly, within a relatively short period, and a huge number of financial institutions managed to maintain their sound financial position by implementing credit derivatives, whereas at the same time some other companies lost entire fortunes due to their implementation. Credit derivatives entail numerous benefits, including the fact that they enable the separation of credit risk from market risk; the transfer of credit risk on other market participants, and the transfer of credit risk while keeping ownership over the underlying assets. However, credit derivatives also incur hidden risks, some of which affect investors, some of which affect credit derivatives sellers, and some of which affect the entire financial system, but most of which are related to the fact that the credit derivatives market is new and insufficiently explored.

Following a longer period of extremely favorable conditions on the major financial markets in the world, the crisis broke out in 2007, first hitting the US sub-prime mortgage market, and then spilling over into other financial markets and countries, spreading from the financial into the real sector, and soon escalating to unexpected proportions. Credit derivatives played a significant role in the origination and spreading of the current financial crisis. The source of the crisis is considered to lie in the problems related to the functioning of the most complex credit derivatives on the sub-

prime mortgage market. The complexity and volume of credit derivatives, which turned out to be difficult to comprehend, evaluate and sell, led to various systemic risks. Inaccurate credit ratings of securities, awarded by rating agencies, also contributed to the outbreak of the current credit crunch.

Credit derivatives thus found themselves in the centre of debate concerning the launched regulatory reform. Several large financial collapses related to credit derivatives usage convinced many participants that sounder regulation of credit derivatives is a positive and necessary path of development, which would restore the confidence and ensure the healthy future of the market.

This paper provides many useful pieces of information, with the objective of enabling complete insight into the basic characteristics and main types of these new instruments, their mechanism of functioning, their implementation, their advantages and disadvantages. The aim is to facilitate the best possible understanding of these instruments, in order to ensure their proper usage, which may contribute to the restoration of financial stability.

Credit Default Swaps

Credit Default Swap - CDS is an unfunded, most frequently traded credit derivative, with the underlying possibility of default, which means that its payment is related to the credit event's occurrence or lack of occurrence. It is a bilateral contract, similar to an insurance contract, whose basis purpose is to cover the losses in respect of securities or loan portfolios in case the issuer of the reference financial asset goes into default. CDS is an over-the-counter financial instrument and an agreement between the seller and the buyer of default risk protection on a set of debt bonds issued by the specified reference entity. The main reason for its popularity is the fact that CDS is the simplest form of credit risk transfer among all credit derivatives, along with the fact that it provides hedgers and investors with a broad array of possibilities which previously did not exist on the spot exchange.

Given that CDS is a type of credit derivative, it is also aimed at protecting the reference assets,

potraživanja po toj aktivi, dok je prodavac zaštite (kupac rizika) obavezan da kompenzira kupca u slučaju nastanka unapred utvrđenog kreditnog događaja.

Rok dospeća CDS ne mora da se podudara sa rokom dospeća referentne aktive, i to često i nije slučaj. Obično referentna aktiva ima duži rok trajanja od CDS. CDS najčešće ima rok dospeća 3, 5 ili 10 godina. Takođe, CDS mogu biti poravnati sa tržištem, a njihova cena dobro reflektuje očekivanja tržišta vezana za verovatnoću neizvršenja dužnika.

Iako se radi o vanberzanskom instrumentu, pa je za očekivati da je njegova unifikacija na nižem nivou, većina CDS su standardizovani i likvidni ugovori. Nakon 2002. godine se beleži stabilan trend standardizacije, koji je povoljno delovao u pravcu pojednostavljenja i boljeg funkcionisanja tržišta. Uvođenje standardizovane dokumentacije Međunarodnog udruženja za svopove i derivate (International Swaps and Derivatives Association - ISDA) za CDS, odigralo je veliku ulogu u razvoju i većoj likvidnosti tržišta CDS. Upotreba Glavnih ugovora ISDA je postala svakidašnja pojava na tržištu, što je dovelo do značajnog smanjenja troškova pripreme i zaključivanja ugovora. Standardizovani ugovor pre svega precizira ugovorne strane, obaveze i prava ugovornih strana, referentnog subjekta, vrste saldiranja, rokove dospeća i šta obuhvata kreditni događaj.

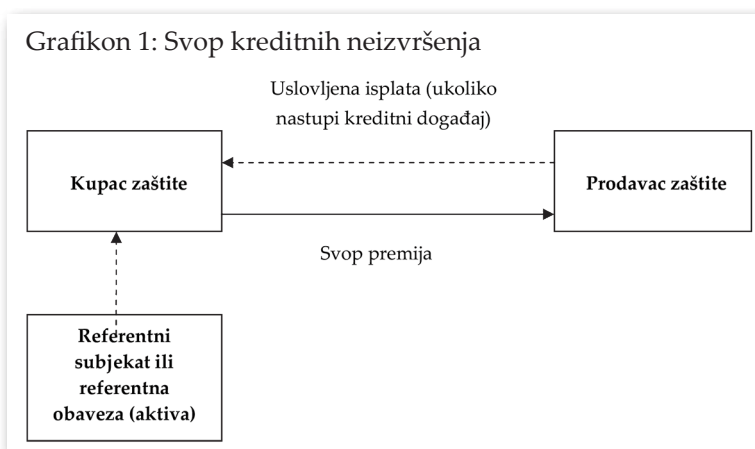
Mehanizam funkcionisanja svopova kreditnih neizvršenja

CDS je bilateralni ugovor u kom prodavac zaštite osigurava kupca zaštite u slučaju nastupanja specifikiranog kreditnog događaja, u ugovorenom teorijskom iznosu, za specifikirani period i za specifikiranu referentnu aktivu (referentni portfolio).

Kupac zaštite se obavezuje da plaća svop premiju (najčešće u vidu periodičnih isplata) prodavcu zaštite, sve do roka dospeća CDS ugovora ili do nastupanja kreditnog događaja, šta god se od toga pre dogodi. Isplate se obično

obavljaju unazad, svakog kvartala, svakih šest meseci, ili svake godine. Zauzvrat, prodavac zaštite se obavezuje da vrši isplatu kupcu zaštite u slučaju nastanka neizvršenja vezanog za referentnu obavezu (aktivu) ili referentnog subjekta; ukoliko ne nastupi kreditni događaj, on ne vrši nikakvo plaćanje.

Ukupne isplate koje vrši kupac zaštite se jednim imenom zovu osnova premije; uslovljena isplata koju će možda morati da izvrši prodavac zaštite se zove osnova zaštite. Na sledećem grafikonu je prikazana osnovna struktura CDS.



Moguće je, a sve češće i jednostavnije, likvidirati ili okončati CDS pre roka dospeća, u cilju izvođenja ili monetizacije tržišne vrednosti pozicije. Uglavnom se likvidiranje CDS pozicije odnosi na dogovor između obe ugovorne strane oko tržišne vrednosti pozicije. Ugovorna strana za koju pozicija ima negativnu tržišnu vrednost usklađeno kompenzuje drugu ugovornu stranu. Alternativno, ugovorna strana može da zatvori svoju poziciju prenosom na treću stranu, ali to uglavnom zahteva zajedničko odobrenje od obe nove ugovorne strane.

Naknada za CDS se plaća kao deo vrednosti ugovora, a sam svop se može strukturisati na jednom finansijskom instrumentu ili na korpi finansijskih instrumenata. Isplata po osnovu CDS ugovora može biti u različitim oblicima, a osnovna determinanta su preference kupca ili obe ugovorne strane. Prema tome, isplata može biti vezana za promenu cene referentne aktive ili neke druge specifikirane aktive, može biti određena fiksno u odnosu na neku ugovorenu stopu oporavka cene aktive, a može biti i isporuka referentne aktive po specifikiranoj ceni.

with the protection buyer (risk seller) for one-off or periodical charges insuring his claims in respect of those assets, and the protection seller (risk buyer) being obliged to compensate the damage to the buyer in case the pre-determined credit event actually occurs.

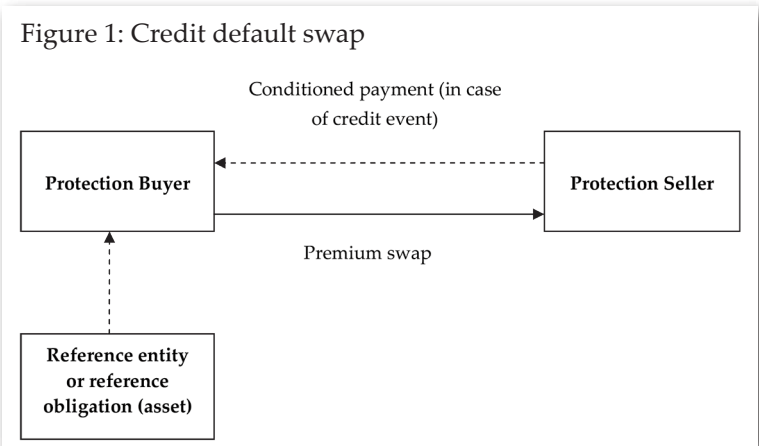
CDS maturity does not have to match the reference asset maturity, as is often the case. Usually the reference asset has a longer maturity than the CDS. The CDS typically has 3-, 5-, or 10-year maturity. Also, CDS can be in line with the market, its price perfectly reflecting the market expectations concerning the debtors' probability of default. Despite being OTC instruments, whose unification should therefore be expected at the lower level, most credit default swaps are standardized and liquid contracts. After 2002, a stable trend of standardization has been recorded, positively influencing the simplification and better functioning of the market. The introduction of standardized documentation of the International Swaps and Derivatives Association - ISDA for CDS played a major role in the development and higher liquidity of the CDS market. The usage of ISDA Master Agreements has become an everyday thing at the market, which has led to considerable cost-cutting in terms of preparing and signing the contracts. The standardized contract, first of all, precisely defines the contractual parties, obligations and rights of the contractual parties, reference entity, types of settlement, maturities and credit events.

Standard Mechanism of Credit Default Swaps

CDS is a bilateral contract in which the protection seller insures the protection buyer in case of the specified credit event, in the agreed theoretical amount, for the specified period and specified reference assets (reference portfolio). The protection buyer commits to paying a swap premium (usually in the form of periodical payments) to the protection seller, until the CDS contract maturity or the credit

event occurrence, whichever comes first. The payments are usually conducted in arrears, on a quarterly, semi-annual or annual basis. In return, the protection seller commits to effecting a payment to the protection buyer in case of default related to the reference obligation (asset) or reference entity. If the credit event does not occur, he effects no payments.

Total payments conducted by the protection buyer constitute the premium leg. The conditioned payment that the protection seller might have to effect constitutes the protection leg. The following figure illustrates the basic CDS structure.



It is possible, and more often simpler, to liquidate or terminate the CDS before the maturity date, in order to effect or monetize the position's market value. The liquidation of a CDS position mostly relates to the agreement between the two contractual parties concerning the position's market value. The contractual party for which the position has a negative market value accordingly compensates the other contractual party. Alternatively, a contractual party can close its position by transferring it to a third party, but it usually requires the joint permission of both new contractual parties.

The CDS compensation is paid as a part of the contract's value, and the swap itself may be structured on a single financial instrument or on a basket of financial instruments. The payment in respect of a CDS contract can take various forms, the main determinant being the preferences of the buyer or both contractual parties. Thus, the payment can be related to the changes in the price of reference assets or some other specified assets; it can be fixed in relation

Prilikom nastupanja kreditnog događaja, CDS ugovor se okončava i dolazi do saldiranja - prodavac zaštite kompenzuje kupca zaštite. Saldiranje može biti novčano ili fizičko, što se odlučuje unapred prilikom zaključivanja ugovora.

Ukoliko nastupanje neizvršenja dovede do fizičkog saldiranja CDS, kupac zaštite isporučuje prodavcu zaštite određeni iznos neizvršenih obveznica referentnog subjekta, u zamenu za njihovu nominalnu vrednost (i pored toga što sada imaju mnogo manju vrednost). Fizičko saldiranje će preferirati prodavac zaštite koji smatra da će čekanjem ili započinjanjem procesa pronalaženja alternativnih rešenja sa emitentom referentne aktive moći da dobije više od cene neizvršenja.

Ukoliko kreditni događaj nastupi kod CDS sa novčanim saldiranjem, relevantna obveznica referentnog subjekta će biti procenjena i prodavac zaštite će platiti kupcu zaštite nominalnu vrednost referentne obaveze (koja je jednaka teorijskom iznosu CDS) umanjenu za njenu tržišnu vrednost (odnosno, kompenzovaće kupca zaštite za smanjenje kreditnog boniteta obveznice). Novčano saldiranje će preferirati kupac zaštite koji još uvek ne poseduje isporučenu aktivu, da bi izbegao potencijalni rizik da će smanjena ponuda izazvati povećanje cena koje može da nastupi prilikom neizvršenja, kao i kupac zaštite koji svop neizvršenja koristi radi kreiranja sintetičke kratke pozicije na kreditu.

Klasifikacija svopova kreditnih neizvršenja

Tržište CDS je doživelo eksplozivan rast i razvoj od 2000. do 2007. godine. U tom periodu su nastale i varijacije CDS, u skladu sa potrebama tržišnih subjekata i razvojem njihovih trgovinskih odnosa.

CDS se može klasifikovati kao:

- CDS koji glasi na jedno ime
CDS koji glasi na jedno ime je najjednostavniji CDS instrument, i podrazumeva jednog referentnog subjekta, koji je najčešće pojedinačna korporacija ili država, ili specifičnu aktivu nekog subjekta. CDS koji glase na jedno ime za korporativne i državne referentne subjekte su sada standardizovani,

iako su povremene transakcije na međudilerskom tržištu česte. Njihov period trajanja je najčešće 5 godina.

- Korpa CDS

CDS ugovori vezani za više vrsta aktive ili za više subjekata se nazivaju korpe CDS, i mogu biti teorijski vezani za beskonačan broj vrsta subjekata i aktive u korpi. Korpa CDS obično podrazumeva između 3 i 5 referentnih subjekata.

Kod najpoznatijeg oblika korpe CDS, a ujedno i kreditnog derivata koji glasi na više imena - korpe CDS sa najvećom verovatnoćom neizvršenja, prodavac zaštite pruža kupcu zaštite kompenzaciju za gubitke vezane za neizvršenje prvog referentnog subjekta u korpi, nakon čega se svop okončava i ne pruža dalju zaštitu. CDS korpe su danas znatno zastupljenije od CDS koji glase na jedno ime, i one uglavnom predstavljaju osnovu za izgradnju drugih složenijih struktura, kao što su finansijski instrumenti iz porodice sintetičkih i strukturisanih proizvoda (npr. sintetizovane kolateralizovane dužničke obaveze).

Primena svopova kreditnih neizvršenja

Osnovne primene CDS se mogu sumirati na sledeći način:

- Hedžing:
 - CDS se mogu koristiti u cilju hedžinga koncentrisanog kreditnog rizika. To je posebno značajno za banke koje žele da hedžuju velike izloženosti riziku na svojim bilansima stanja.
 - Kupovina zaštite preko CDS je privatna transakcija između dve ugovorne strane. Samim tim, banke mogu da preferiraju hedžing kredita preko tržišta CDS zbog poverljivosti.
 - CDS se mogu koristiti za hedžing izloženosti kreditnom riziku tamo gde ne postoji dug kojim se javno trguje na tržištu.
- Investiranje:
 - CDS predstavljaju način preuzimanja kreditnog rizika koji ne zahteva finansiranje. To omogućava upotrebu leveridža i pomaže onima koji imaju visoke troškove finansiranja.

to some agreed rate of recovery of the assets price, and it can also refer to the delivery of reference assets according to a specified price.

In case of a credit event occurrence, the CDS contract is terminated and the settlement ensues - the protection buyer receives compensation from the protection seller. The settlement can be either cash or physical, which is to be determined beforehand, when the contract is being concluded.

In the event of default leading to physical CDS settlement, the protection buyer delivers to the protection seller a certain amount of defaulted bonds of the reference entity, in exchange for their nominal value (despite the fact that their value is substantially lower now). Physical settlement will be preferred by a protection seller who believes that, by waiting or launching the process of finding alternative solutions with the reference assets issuer, he will be able to get more than the default price.

If a credit event occurs with a CDS with cash settlement, the relevant bond of the reference entity will be assessed and the protection seller will pay the protection buyer the reference bond's nominal value (equal to the notional CDS amount), deduced by its market value (i.e. the protection buyer will receive compensation for the reduced creditworthiness of the bond). Cash settlement will be preferred by a protection buyer who still does not own the delivered assets, in order to avoid the potential risk of the reduced offer causing an increase in prices due to default, and by a protection buyer using the default swap in order to create a short synthetic position on a loan.

Classification of Credit Default Swaps

The CDS market recorded a booming growth and development from 2000 to 2007. It was in this period that the CDS variations occurred, in line with the requirements of the market participants and the development of their trade relations.

CDS can be classified into:

- **Single-name CDS**
Single-name CDS is the simplest CDS instrument, which implies one reference entity, typically a single corporation or

government, or the specified asset of an entity. Single-name credit default swaps for corporate and government reference entities have been standardized, although occasional transactions at the inter-dealer market are rather frequent. Their maturity period is usually 5 years.

- **Basket CDS**
CDS contracts related to several types of assets or to several entities are called basket credit default swaps, and, theoretically speaking, can be related to an infinite number of entities and types of assets within the basket. Basket CDS, however, usually entails between 3 and 5 reference entities.

In case of the most famous type of basket CDS, and at the same time a multiple-name credit derivative - basket CDS with the highest probability of default, the protection seller compensates the protection buyer for the losses related to the default of the first reference entity in the basket, after which the swap is terminated and provides no further protection. Basket credit default swaps are today much more frequently used than single-name CDS, and they usually serve as the basis for the development of other, more complex structures, such as financial instruments from the family of synthetic and structured products (for instance, synthetic collateralized debt obligations).

Applications of Credit Default Swaps

The basic implementations of CDS can be summed up as follows:

- **Hedging:**
 - CDS can be used to hedge the concentrated credit risk. This is particularly significant for banks wishing to hedge large risk exposures in their balance sheets.
 - Protection purchase through a CDS is a private transaction between two contractual parties. Therefore, banks may prefer to hedge loans via the CDS market for confidentiality reasons.
 - CDS can be used to hedge credit risk exposures in cases where there is no debt publicly traded on the market.
- **Investment:**
 - CDS is an unfunded way of taking credit

- S obzirom na to da su CDS prilagodljivi vanberzanski ugovori, investitori mogu da usklade izloženost kreditnom riziku sa svojim zahtevima vezanim za rok dospeća i redosled plaćanja.
- CDS se mogu koristiti radi ispitivanja pogoršanja ili poboljšanja kreditnog kvaliteta referentnog kredita.
- Može da se dogodi da investitorima nije dozvoljeno da prodaju određenu aktivu bez pokrića, ali da im je dozvoljeno da kupe zaštitu putem CDS.
- Pomeranja između promptne berze i derivatnih tržišta mogu da učine da CDS postane investicija sa višim prinosom od ekvivalentnog gotovinskog instrumenta.
- Arbitraža:
 - Za veliki broj institucija, kupovina zaštite na tržištu CDS je jednostavnija od prodaje aktive bez pokrića.
 - Trgovci mogu da iskoriste razlike u ceni između promptne berze i tržišta CDS.

CDS omogućava ugovornim stranama da zauzmu dugu i kratku poziciju na kreditnom riziku bez potrebe za inicijalnim finansiranjem. Kupci zaštite prvenstveno koriste CDS da bi kupili osiguranje od neizvršenja. CDS omogućavaju kupcima zaštite - bankama i drugim vlasnicima kreditnih instrumenata, da anonimno hedžuju svoju izloženost kreditnom riziku koja se odnosi na određene dužnike. Prema tome, dok kreditni instrumenti mogu da ostanu na bilansu stanja vlasnika - što posebno može biti od značaja za banke, u cilju očuvanja poslovnih odnosa - povezani kreditni rizik se transferiše na prodavca zaštite putem CDS ugovora. Takođe, CDS se koriste kao zaštita portfolija korporativnih obveznica, kredita komercijalnih banaka, municipalnih obveznica, različitih hipotekarnih finansijskih instrumenata, kao i državnih obveznica.

Banke mogu da koriste CDS za trgovinu kreditnim spreadovima po korporativnim i državnim obveznicama sa tržišta u razvoju, bez potrebe za kupovinom ili prodajom tih obveznica. Na primer, određena banka može da kupi CDS i profitira u slučaju neizvršenja ili pogoršanja kreditnog rejtinga emitenta referentne finansijske aktive. Ukoliko uspe da pronađe drugu voljnu ugovornu stranu za tu transakciju na tržištu, banka će ostvariti dobitak

u tom slučaju jer će moći da proda CDS uz dobit. To se događa zato što osiguranje za referentnu aktivu postaje skuplje zbog nastanka kreditnog događaja. Inicijalni kupac CDS ne mora da poseduje referentnu obveznicu na osnovu koje je emitovan taj CDS ugovor.

Sa druge strane, prodavci zaštite koriste CDS kao dodatni izvor prihoda. Oni vide tržište CDS kao mogućnost za povećanje prinosa na njihove portfolije i diversifikaciju njihove izloženosti kreditnom riziku. Sve dok ne nastupi kreditni događaj koji je definisan u ugovoru, prodavac zaštite prima periodične isplate.

CDS razdvajaju kreditni rizik i vlasništvo nad finansijskim instrumentima, i dovode do disperzije rizika među tržišnim subjektima. Pozicija prodavca zaštite je autentičnija kreditna pozicija u odnosu na konvencionalno vlasništvo nad obveznicom. To je slučaj zato što je, za razliku od CDS, vrednost obveznica znatno osetljivija na promene tržišnih kamatnih stopa. S obzirom na to da referentne obaveze obično uključuju sve starije neosigurane obaveze iz referentne aktive, CDS su nezavisni od ročnosti, rizika prevremene naplate i opoziva vezanih za tu referentnu aktivu.

CDS je najzastupljeniji kreditni derivatni proizvod u pogledu teorijskih neizmirenih iznosa, kao i učešća u ukupnoj aktivnosti na tržištu kreditnih derivata. CDS omogućavaju sintetički transfer kreditnog rizika referentnog subjekta koji je u osnovi ugovora na drugu ugovornu stranu, odnosno bez prodaje referentne aktive. CDS su često kotirani i ugovarani instrumenti, a služe i kao osnova za izgradnju kompleksnih instrumenata koji glase na više imena.

U skorije vreme, tržište CDS je postalo indikator rizičnosti dužničkih finansijskih instrumenata. Spread koji se nudi po CDS (spread iznad referentne kamatne stope) vrši funkciju pokazatelja rizičnosti dužničkih hartija od vrednosti i kredita komercijalnih banaka. Što je taj raspon viši, to je finansijski instrument rizičniji, pa je samim tim osiguranje koje se nudi po CDS ugovorima skuplje. Na taj način, učesnici na tržištu dobijaju vrlo jasan i ažuran signal koji se odnosi na rizičnost i cene tih finansijskih instrumenata, što utiče na povećanje efikasnosti i transparentnosti finansijskih tržišta.

risk. This enables the usage of leverage and helps those with high costs of finance.

- Given that credit default swaps are adjustable over-the-counter contracts, investors can match their credit risk exposures to their requirements related to maturity and payment schedule.
- CDS can be used for the purpose of examining potential deterioration or improvement of the reference loan's creditworthiness.
- It may happen that the investors are not allowed to sell certain assets without coverage, but that they are allowed to buy protection through a CDS.
- Movements between the spot exchange and derivatives markets may result in a CDS becoming an investment with a higher return than the equivalent cash instrument.
- Arbitrage:
 - For a large number of institutions, purchasing protection at the CDS market is simpler than selling assets without coverage.
 - Traders can take advantage of the differences in prices between the spot exchange and the CDS market.

CDS enables the contractual parties to take both long and short position on credit risk without the need for initial funding. Protection buyers use credit default swaps primarily to purchase insurance against default. CDS enables protection buyers - banks and other credit instrument owners - to anonymously hedge their credit risk exposure in respect of certain debtors. Therefore, while credit instruments may remain in the owner's balance sheet - which may be particularly important for banks, for the sake of maintaining business relations - the underlying credit risk is transferred to the protection seller by means of a CDS contract. Moreover, credit default swaps are used as a protection of corporate bond portfolios, commercial banks' loans, municipal bonds, various mortgage financial instruments, and government bonds.

Banks can use CDS to trade in credit spreads on corporate and government bonds from the developing markets, without the need to

purchase or sell those bonds. For instance, a certain bank can buy a CDS and profit in the event of default or deterioration of credit rating of the reference financial assets' issuer. If the bank succeeds in finding another willing contractual party for the concerned market transaction, it would yield profit in the given case, because it would be able to sell the CDS with a gain. This happens because insurance for the reference assets becomes more expensive due to the credit event occurrence. The initial CDS buyer does not have to own the reference bond on the basis of which the CDS contract was issued in the first place.

On the other hand, protection sellers use CDS as an additional source of income. They view the CDS market as a possibility to increase revenues on their portfolios and diversify their credit risk exposures. As long as the contractually defined credit event does not actually occur, the protection seller receives periodical payments.

Credit default swaps separate the credit risk and ownership over financial instruments, resulting in a dispersion of risks among market participants. The position of the protection seller is a more authentic credit position compared to the conventional ownership of a bond. This is the case because the value of bonds is, as opposed to a CDS, substantially more sensitive to the fluctuations of market interest rates. Given that reference obligations usually include all senior uninsured obligations from the reference assets, credit default swaps are independent of maturity, prepayment risk, and cancellations in respect of the concerned reference assets.

CDS is the prevailing credit derivative product in terms of notional defaulted amounts, and in terms of its share in overall activities on the credit derivatives market. Credit default swaps enable the synthetic transfer of credit risk from the underlying reference entity to the other contractual party, without the sale of reference assets. Credit default swaps are often quoted and arranged instruments, and are also used as the basis for development of more complex, multi-name instruments.

Recently, the CDS market has become an indicator of riskiness of debt financial instruments. The spread offered by a CDS

Prednosti svopova kreditnih neizvršenja

S obzirom na činjenicu da CDS imaju širok spektar primene, oni donose velike prednosti i kupcima i prodavcima kreditne zaštite. U glavne prednosti CDS spadaju sledeće:

- CDS su ugovori, i samim tim prava i obaveze svake ugovorne strane mogu biti dogovorene između ugovornih strana. To omogućava kreiranje neograničenih varijacija u odnosu na osnovni tip CDS ugovora (npr. korpa CDS).
- CDS se primenjuju u cilju razdvajanja odluka vezanih za finansiranje od odluka vezanih za preuzimanje kreditnog rizika. Kupovina osiguranja, akreditiva, garancija, i nekih drugih instrumenata, predstavlja relativno neefikasne strategije transfera kreditnog rizika, uglavnom zato što one ne razdvajaju upravljanje kreditnim rizikom od aktive koja je povezana sa rizikom.
- Propratna dokumentacija kod CDS je pojednostavljena i standardizovana. ISDA priprema i objavljuje standardizovani oblik dokumenata, koja se zatim modifikuju i prilagođavaju posebnim potrebama različitih transakcija. To omogućava da razumevanje CDS bude lakše i brže, i na taj način smanjuje transakcione troškove.
- CDS ne zahtevaju finansiranje, pa samim tim prodavac zaštite nema obavezu da položi teorijsku vrednost ugovora na račun u korist kupca zaštite. To omogućava prodavcu zaštite da investira tu sumu negde drugde, i na taj način ostvari prinos.
- S obzirom na činjenicu da ne zahteva finansiranje, CDS omogućava jednostavnu upotrebu leveridža u transakcijama (može biti zahtevan određen kolateral). To predstavlja prednost za institucije sa visokim troškom finansiranja. Takođe, CDS omogućavaju značajnu fleksibilnost kada je reč o leveridžu; ukoliko ga uopšte želi, korisnik može da definiše zahtevani stepen leveridža u kreditnoj transakciji. Iz tog razloga je kredit privlačan za hedž fondove i druge nebankarske institucionalne investitore. Pored toga, investitori mogu da izbegnu administrativni trošak vezan za dodelu i servisiranja kredita.

- CDS su prilagodljivi. Na primer, njihov rok dospeća može da se razlikuje od ročnosti kredita.
- CDS unapređuju fleksibilnost kod upravljanja rizikom, zato što banke mogu lakše da umanje kreditni rizik nego prodajom kredita. Takođe, nije potrebno da se krediti uklone sa bilansa stanja.
- CDS su efikasno sredstvo kojim banke mogu da oslobode svoj kapital.
- CDS donose likvidnost na kreditno tržište, jer su privukli nebankarske igrače u sindikovane kredite.
- CDS može da razdvoji odnos sa klijentima od donošenja odluka. Referentni subjekat čiji se kreditni rizik transferiše ne mora da bude obavešten o CDS transakciji.
- CDS su omogućili finansijskim institucijama da na znatno jednostavniji i jeftiniji način učestvuju na globalnom finansijskom tržištu. Umesto otvaranja sopstvenih filijala ili akvizicije tuđih, finansijske institucije mogu uz kompenzaciju da garantuju za različite gubitke tuđih portfolija finansijske aktive. Samim tim, obe strane ostvaruju korist: subjekti koji prodaju to osiguranje ostvaruju kompenzacije, a s obzirom na činjenicu da to osiguranje manje košta, osigurani mogu da oslobode svoj regulatorno vezani kapital i da ga iskoriste za poslovnu ekspanziju.

Nedostaci svopova kreditnih neizvršenja

Glavni nedostatak CDS je činjenica da, kao i svi derivati, za obe ugovorne strane kreiraju rizik da druga strana neće ispuniti obavezu. Rizici koje preuzimaju kupac zaštite i prodavac zaštite nisu simetrični. Za kupca zaštite, rizik je vezan za korelaciju između referentnog subjekta u ugovoru i prodavca zaštite. Rizik koji snosi kupac zaštite je da ta oba entiteta istovremeno neće izvršiti obaveze. U tom slučaju prodavac zaštite ne bi bio u mogućnosti da kompenzuje kupca zaštite. Upravo zbog toga je izuzetno važno da u CDS transakciji rizik prodavca zaštite ne bude suviše korelisan sa referentnim subjektom.

Prodavac zaštite snosi rizik vezan za premiju koju bi trebalo da isplati kupac zaštite. Teorijski iznos rizika koji on preuzima je jednak

(spread above the benchmark interest rate) functions as an indicator of riskiness of debt securities and commercial banks' loans. The higher the spread, the riskier the financial instrument, which also increases the price of insurance offered by CDS contracts. Thereby, market participants get an unambiguous and up-to-date signal concerning the riskiness and price of the relevant financial instruments, which leads to increased efficiency and transparency of the financial markets.

Advantages of Credit Default Swaps

Given the fact that credit default swaps have a wide range of application, they bring major advantages to both credit protection buyers and sellers. The main advantages of CDS include the following:

- Credit default swaps are contracts, implying that the rights and obligations of each contractual party can be agreed between the concerned contractual parties. This enables the creation of limitless variations to the basic type of CDS contract (for example, basket CDS).
- Credit default swaps are used in order to separate the decisions concerning finance from the decisions concerning credit risk taking. Purchasing insurance, letters of credit, guarantees, and some other instruments, is a relatively inefficient strategy of credit risk transfer, mostly because it does not separate credit risk management from the risk-related assets.
- Accompanying documentation in respect of CDS has been simplified and standardized. ISDA prepares and publishes the standardized forms of documents, which are then modified and adjusted to the special needs of various transactions. This facilitates the easier and quicker understanding of CDS, thereby reducing transaction costs.
- Credit default swaps are unfunded derivatives, meaning that the protection seller is not obliged to deposit the theoretical value of the contract onto the account in the name of the protection buyer. This enables the protection seller to invest that amount somewhere else, thereby yielding revenue.
- Given the fact that it is unfunded, the CDS enables a simple usage of leverage

in transactions (some collateral may be required). This is beneficial for institutions with high costs of finance. Moreover, credit default swaps enable substantial flexibility when it comes to leverage; if he wants it at all, the beneficiary can define the requested level of leverage in a credit transaction. This is what makes the credit so attractive for hedge funds and other non-banking institutional investors. In addition, investors can avoid the administration costs regarding credit allocation and servicing.

- Credit default swaps are adjustable. For instance, their maturity can differ from the loan maturity.
- Credit default swaps enhance flexibility in risk management, because it is easier for banks to mitigate credit risk by resorting to them than by selling the concerned loan. Furthermore, loans do not need to be removed from the balance sheet.
- Credit default swaps are an efficient means for banks to free up their capital.
- Credit default swaps bring liquidity into the credit market, because they attract non-banking players into syndicated loans.
- CDS can separate client relationship from decision-making. The reference entity whose credit risk is being transferred does not have to be informed about the CDS transaction.
- Credit default swaps have enabled financial institutions to participate in the global financial market in a considerably simpler and cheaper way. Instead of opening their own branches or acquiring the branches of other parties, financial institutions can, for a proper compensation, guarantee for various losses of other parties' financial assets portfolios. Thus, both sides yield benefits: the entities selling this kind of insurance receive compensations, and given the fact that such insurance costs less, the insured can free up their regulatory bound capital and use it for their business expansion.

Disadvantages of Credit Default Swaps

The main disadvantage of CDS is the fact that, like all derivatives, for both contractual parties they generate the counterparty risk.

zbiru svih premija koje bi trebalo da dobije sve do roka dospeća CDS. Ukoliko kupac zaštite prestane da plaća premiju CDS, prodavac može da okonča ugovor.

Većina institucionalnih investitora prevashodno želi da investira svoju gotovinu, ili nije u mogućnosti da obavlja transakcije sa derivatima iz regulatornih razloga, pa u tom slučaju, činjenica da su CDS vanbilansni proizvodi predstavlja njihov nedostatak. Samim tim što su vanbilansni proizvodi, CDS su neregulisani, što znači da je komplikovano saznati pojedinosti vezane za određenu transakciju. Na primer, korisnik kredita nema način da bude siguran da li je bankar koji je ugovorio transakciju i dalje glavna ugovorna strana ili prosto zastupa nekoga drugoga. S obzirom na činjenicu da je tržište CDS u velikoj meri neregulisano, ne postoji određeno regulatorno telo koje bi nadgledalo ovo tržište i postaralo se da prodavac osiguranja ima potrebna sredstva za pokrivanje nastalih gubitaka. Upravo bi se tu i mogli tražiti razlozi kraha CDS tržišta u 2007. godini.

Pored toga, određena regulatorna tela su istakla činjenicu da, iako hedžuje kreditni rizik neizvršenja obaveza, CDS zapravo neće: hedžovati rizik od širenja kreditnog spreda, u potpunosti preneti prednosti sužavanja kreditnog spreda, u potpunosti hedžovati pogoršanje kreditnog kvaliteta, u potpunosti preneti prednosti poboljšanja kreditnog kvaliteta, ili hedžovati druge promene u vrednosti prouzrokovane drugim faktorima tržišnog rizika. Iz tog razloga, neka regulatorna tela pružaju samo delimične olakšice u pogledu zahteva za kapitalom, ukoliko ih uopšte i pružaju, za obveznice i kredite hedžovane upotrebom CDS.

Svopovi ukupnog prinosa

Svop ukupnog prinosa (Total Return Swap - TRS) je kreditni derivat koji glasi na jedno ime i koji ne zahteva finansiranje, i spada u grupu proizvoda koji omogućavaju sintetičku replikaciju performansi bazne aktive. To je jedan od glavnih instrumenata koji koriste banke i druge finansijske institucije za upravljanje svojom izloženosti kreditnom riziku. TRS je bilateralan finansijski ugovor,

i predstavlja transakciju u kojoj ugovorne strane menjaju ukupan prinos jedne vrste aktive ili korpe različitih aktiva u zamenu za periodične novčane tokove bazirane na referentnoj kamatnoj stopi (obično LIBOR) i odgovarajućem rasponu iznad nje, kao i garanciju za bilo kakve kapitalne gubitke. Iako su slični običnim svopovima, kod TRS se zamenjuje ukupan prinos - novčani tokovi plus kapitalna apresijacija (ili depresijacija), dok se kod običnog svopa zamenjuju samo novčani tokovi. Novčani tokovi TRS nisu isključivo vezani za nastupanje kreditnog događaja, već se tim ugovorom između ugovornih strana transferiše i rizik od promena kamatnih stopa.

Rok dospeća TRS ne mora da bude isti kao rok dospeća referentne aktive, i zaista to je retko kad i slučaj - kod najvećeg broja TRS, rok dospeća svopa je dosta kraći od roka dospeća aktive u osnovi. TRS najčešće imaju rok dospeća od 6 do 24 meseca, ali se mogu ugovoriti i na duži vremenski period.

Referentna aktiva koja može postati predmet TRS može podrazumevati sledeće:

- Obveznice (sa izraženim kreditnim rizikom)
- Kredite
- Referentni portfolio koji se sastoji od selektiranih obveznica i kredita
- Tržišni indeks koji predstavlja segment tržišta obveznica
- Tržišni indeks akcija

TRS je specifičan u odnosu na druge kreditne derivate zbog toga što plaćanja između ugovornih strana zavise od tržišne vrednosti referentne aktive, kao i od promena koje su rezultat nastanka kreditnog događaja. Kod TRS, ugovorne strane ne transferišu vlasništvo nad aktivom, što smanjuje transakcione troškove i omogućava fleksibilnost ugovornim stranama. Zbog tih osobina su TRS pogodni za upotrebu leveridža.

Glavna razlika između TRS i CDS je to što CDS obezbeđuje zaštitu od specifičnih kreditnih događaja. TRS pruža zaštitu od gubitka vrednosti nezavisno od uzroka, bilo da je u pitanju neizvršenje, širenje kreditnog spreda ili nešto drugo, odnosno izdvaja i kreditni rizik i tržišni rizik.

The risks undertaken by the protection buyer and the protection seller are not symmetrical. For the protection buyer, the risk is linked to the correlation between the reference entity in the contract and the protection seller. The risk incurred for the protection buyer is that both these entities will simultaneously fail to honour their obligations. In that case the protection seller would not be able to compensate the protection buyer. This is why it is of utmost importance for the protection seller in a CDS transaction not to be too correlated with the reference entity.

The protection seller bears the risk concerning the premium to be paid by the protection buyer. The notional level of risk that he undertakes equals the sum of all premiums that he should receive by the end of CDS maturity. If the protection buyer stops paying the CDS premium, the seller can terminate the contract.

Most institutional investors primarily want to invest their cash, or are not in the position to perform derivatives transactions due to regulatory limitations, in which case the fact that credit default swaps are off-balance sheet products represents another drawback. Being off-balance sheet products, credit default swaps are unregulated, which implies that it is complicated to discover any specificities related to a certain transaction. For instance, there is no way for a loan beneficiary to be certain about whether the banker who arranged the transaction is still the main contractual party or simply acts as somebody else's representative. Given the fact that the CDS market is largely unregulated, there is no specified regulatory body that would supervise this market, making sure that the protection seller possesses the required funds to cover the ensued losses. This is exactly where the reasons for the CDS market crunch from 2007 could be sought.

Moreover, certain regulatory bodies underlined the fact that, even though it hedges credit default risk, a CDS actually does not: hedge the risk of credit spread widening; fully utilize the benefits of credit spread narrowing; fully hedge creditworthiness deterioration; fully utilize the benefits of creditworthiness improvement; hedge other changes in value caused by other market risk factors. Therefore, some regulatory bodies provide only partial

facilities in terms of capital requirements, if at all, for bonds and loans hedged by means of a CDS.

Total Return Swaps

Total Return Swap - TRS is an unfunded, single-name credit derivative, from the group of products enabling synthetic replication of the performance of an underlying asset. It is one of the main instruments used by banks and other financial institutions to govern their credit risk exposures. TRS is a bilateral financial contract, representing a transaction in which contractual parties exchange total revenues on one type of asset or a basket of different types of assets for periodical cash flows based on a benchmark interest rate (typically LIBOR) and the appropriate spread above it, along with a guarantee for any kind of capital losses. Although similar to regular swaps, total return swaps exchange total revenues - cash flows plus capital appreciation (or depreciation), whereas the regular swaps exchange only cash flows. TRS cash flows are not exclusively linked to the credit event occurrence; instead, the contract also transfers interest rate risk between contractual parties.

TRS maturity does not have to be the same as the maturity of the reference asset, and actually this is rarely so - in most total return swaps, the swap maturity is much shorter than the maturity of the underlying asset. Total return swaps most often have from 6- to 24-month maturity, but can also be arranged for a longer period of time.

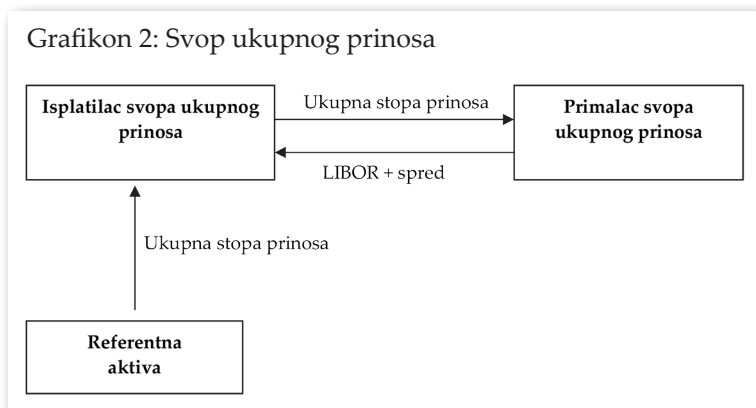
Types of reference assets that can become the subject of TRS include the following:

- Bonds (incurring prominent credit risk);
- Loans;
- Reference portfolio consisting of selected bonds and loans;
- Market index representing a segment of the bond market;
- Stock market index.

TRS is specific in comparison with other credit derivatives because the payments between contractual parties depend on the market value of the reference asset, and on the changes occurring as result of the credit event occurrence. In a TRS, contractual parties do not transfer the ownership over assets, which

Mehanizam funkcionisanja svopova ukupnog prinosa

TRS predstavlja svop u kojem jedna ugovorna strana vrši periodične isplate flotirajuće stope drugoj ugovornoj strani u zamenu za ukupan prinos ostvaren na referentnoj aktivi (ili aktivi u osnovi). Glavne ugovorne strane su isplatilac ukupnog prinosa, odnosno prodavac svopa, i primalac ukupnog prinosa, odnosno kupac svopa (investitor). Ukupni prinos referentne aktive podrazumeva sve odlive novčanih sredstava kao i kapitalnu apresijaciju ili depresijaciju referentne aktive. Flotirajuća stopa je referentna kamatna stopa (najčešće LIBOR) plus ili minus spread. Na sledećem grafikonu je prikazana pojednostavljena struktura TRS.



Isplatilac ukupnog prinosa je zakonski vlasnik referentne aktive i drži referentnu aktivu na svom bilansu stanja. On dobija isplate flotirajuće stope i isplaćuje ukupnu stopu prinosa. Isplatilac ukupnog prinosa zauzima kratku poziciju na tržišnom riziku i kratku poziciju na kreditnom riziku referentne aktive. Isplatilac ukupnog prinosa je kupac zaštite, jer mu TRS omogućava kompenzaciju u slučaju negativne performanse referentne aktive. Samim tim, glavni razlog zašto isplatilac ukupnog prinosa započinje transakciju TRS je hedžing od rizika pada vrednosti i neizvršenja referentne aktive.

Primalac ukupnog prinosa (investitor) nije zakonski vlasnik referentne aktive. TRS je vanbilansna transakcija za primaoca TRS i referentna aktiva se ne pojavljuje na njegovom bilansu stanja. Primalac ukupnog prinosa ima sintetičku dugu poziciju na tržišnom riziku i sintetičku dugu poziciju na kreditnom riziku

referentne aktive. TRS obezbeđuje određenom investitoru prednosti novčanih tokova vezanih za hartiju od vrednosti bez istovremenog posjedovanja te hartije od vrednosti. On vrši isplate flotirajuće stope i dobija ukupnu stopu prinosa. Primalac ukupnog prinosa je prodavac zaštite jer ga TRS izlaže negativnoj performansi referentne aktive. TRS su pogodni za upotrebu leveridža, što povećava njihovu atraktivnost za sofisticirane individualne investitore i hedž fondove. Samim tim, to je glavni razlog zašto se primaoci ukupnog prinosa odlučuju na započinjanje transakcija TRS.

Prilikom dospeća, ukoliko ne nastupi neizvršenje referentne aktive, primalac ukupnog prinosa dobija poslednji kupon, zajedno sa razlikom između tržišne vrednosti

referentne aktive prilikom dospeća TRS i tržišne vrednosti referentne aktive na početku TRS transakcije. Ukoliko ta razlika ima negativnu vrednost, primalac ukupnog prinosa taj iznos plaća isplatiocu ukupnog prinosa. Kao posledica toga, TRS kopira ne samo tok kretanja kupona referentne aktive već takođe i kapitalni dobitak ili gubitak koji bi ostvario investitor koji bi zaista kupio referentnu

aktivu na početku TRS i prodao je prilikom dospeća TRS.

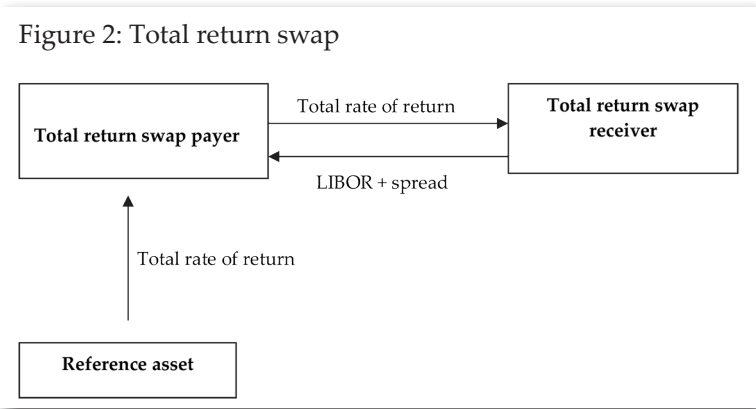
Ukoliko dođe do neizvršenja referentne aktive pre roka dospeća, primalac ukupne stope prinosa snosi rizik. U slučaju neizvršenja referentne aktive, isplatilac ukupne stope prinosa dobija od primaoca kompenzaciju za tržišni i za kreditni rizik referentne aktive. Saldiranje može biti novčano ili fizičko. Primalac može izvršiti neto isplatu razlike između cene referentne aktive na početku transakcije - ili cene na poslednjem resetovanju (ako je tako ugovoreno), ukoliko to dolazi kasnije - i cene referentne aktive u vreme neizvršenja. Alternativno, primalac ukupne stope prinosa može da prisvoji isporuku referentne aktive u neizvršenju i plati inicijalnu ili poslednju resetovanu cenu (ukoliko ona postoji) referentne aktive isplatiocu ukupne stope prinosa. Na taj način se okončava transakcija TRS i ugovor za relevantnu referentnu aktivu.

reduces transaction costs and enables flexibility to the contractual parties. These characteristics make TRS suitable for the usage of leverage.

The main difference between TRS and CDS lies in the fact that CDS provides protection against the specific credit event. TRS, on the other hand, provides protection against the loss of value regardless of the cause, no matter if it is default, credit spread widening or something else, i.e. it transfers both credit risk and market risk.

Standard Mechanism of Total Return Swaps

TRS is a swap in which one contractual party effects periodical payments of a floating rate to the other contractual party in exchange for the total return achieved in respect of the reference asset (or the underlying asset). The main contractual parties are the total return payer, i.e. the swap seller, and the total return receiver, i.e. the swap buyer (investor). Total return of the reference asset implies all cash outflows, along with the capital appreciation or depreciation of the reference asset. The floating rate is the reference interest rate (typically LIBOR) plus or minus the spread. The following figure illustrates the simplified TRS structure.



The total return payer is the legal owner of the reference asset, holding the reference asset on his balance sheet. He receives the floating rate payments and pays out the total rate of return. The total return payer assumes the short position on the market risk and short position on the credit risk of the reference asset. The total return payer is the protection buyer, because TRS enables him the compensation in the event of negative performance of the reference asset.

Thus, the main reason for the total return payer to launch a TRS transaction is the hedging against the risk of depreciation and default of the reference asset.

The total return receiver (investor) is not the legal owner of the reference asset. TRS is an off-balance sheet transaction for the TRS receiver, and the reference asset does not appear in his balance sheet. The total return receiver holds the long synthetic position on the market risk and the long synthetic position on the credit risk of the reference asset. For the specified investor TRS generates the benefits of securities-related cash flows, without the investor actually owning the concerned securities. He conducts the floating rate payments and receives the total rate of return. The total return receiver is the protection seller, because TRS exposes him to the negative performance of the reference asset. Total return swaps are suitable for the usage of leverage, which increases their attractiveness in the eyes of sophisticated individual investors and hedge funds. This is, therefore, the main reason for total return receivers to opt for launching a TRS transaction.

Upon maturity, if there is no default on the reference asset, the total return receiver gets the last coupon, together with the difference between

the market value of the reference asset upon the TRS maturity and the market value of the reference asset at the beginning of the TRS transaction. If this difference happens to be negative, the total return receiver pays the concerned amount to the total return payer. As a result, TRS copies not only the movements of the reference asset coupons, but also the capital gain or loss that the investor would have yielded

had he actually purchased the reference asset at the TRS commencement and sold it upon the TRS maturity.

In case of default on the reference asset before maturity, the total return receiver bears the risk. In the event of default on the reference asset, the total return payer receives from the receiver the compensation for the market risk and the credit risk of the reference asset. The settlement can be either cash or physical. The

Sa aspekta isplatioca TRS, svi novčani tokovi se poništavaju do spreda iznad referentne kamatne stope. Zbog toga, profit isplatioca TRS je jednak spredu pomnoženom sa vrednošću TRS. Uz to, isplatilac TRS je dobro hedžovan u ovakvim transakcijama. On nema otvorenu rizičnu poziciju osim rizika da investitor neće ispuniti ugovorne obaveze. Samim time, isplatilac TRS ostvaruje raspon iznad odabranog tržišnog indeksa (referentne kamatne stope) na gotovo bezrizičnoj poziciji. Sa druge strane, primalac TRS dobija ukupan kreditni prinos na rizičnu aktivu bez potrebe angažovanja sopstvenog kapitala za kupovinu te aktive. U skladu sa tim, ova vrsta svopova je dobila ime „iznajmljivanje bilansa stanja” zbog toga što referentna aktiva ostaje na bilansu stanja isplatioca TRS po njegovim troškovima finansiranja.

Primena svopova ukupnog prinosa

TRS su se prvobitno koristili u međubankarskim transakcijama, u slučajevima kada jedna banka prekorači svoje bilansne limite a druga ima raspoloživ bilans stanja. TRS omogućava banci koja je prekoračila limite na bilansu stanja da sa njega otkloni aktivu, a da istovremeno nad njom zadrži ekonomsko vlasništvo. Te transakcije TRS su obično bile velike, odnosile su se na veoma likvidnu aktivu, često su nastajale kada je jedna banka prodavala aktivu drugoj banci (uz ponovan otkup na kraju ugovora), i obično su obuhvatale vremenski period manji od 3 meseca. Sa aspekta banke koja ima raspoloživ bilans stanja, TRS je predstavljao transakciju iznajmljivanja bilansa stanja.

Od skora, TRS više koriste hedž fondovi. TRS obezbeđuje hedž fondu ekonomsku izloženost referentnoj aktivi, a ne podrazumeva i njeno istovremeno finansiranje.

TRS se takođe koristi da bi obezbedio investitoru ekonomsko vlasništvo nad aktivom, koju inače taj investitor ne bi mogao da kupi. Na primer, ukoliko aktiva u određenoj zemlji može zakonski da bude isključivo u vlasništvu rezidenata te države, u tom slučaju domaća banka bi mogla da kupi aktivu i obezbedi ekonomsko vlasništvo (i finansiranje) primenom TRS.

Investitori sa relativno visokim troškovima finansiranja mogu koristiti TRS ugovore u cilju

sintetičkog posedovanja aktive uz potencijalno smanjenje nepovoljnog finansiranja. TRS se mogu primenjivati radi efikasnog hedžinga i korišćenja povoljnog finansiranja.

Pored toga, mogu se izdvojiti tri sledeće primene TRS:

- Menadžeri koji upravljaju aktivom koji koriste TRS zbog pogodnosti upotrebe leveridža.
- Menadžeri koji upravljaju aktivom koji koriste TRS kao efikasnije transnacionalno sredstvo za primenu portfolio menadžment strategije.
- Bankarski menadžeri koji koriste TRS kao efikasno sredstvo za transfer kreditnog rizika i kao sredstvo smanjenja kapitalnih troškova.

U transakciji TRS, isplatilac drži referentnu aktivu, ali transferiše sve rizike vezane za aktivu na primaoca ukupnog prinosa. Taj transfer rizika se može obaviti anonimnim putem bez obaveštavanja o referentnom entitetu, i ta odlika može biti posebno atraktivna za banke koje žele da umanje izloženost riziku određenih klijenata bez rizikovanja da eventualno ugroze bankarske odnose.

U TRS ugovoru, rizik da druga strana neće ispuniti obavezu može biti umanjen primenom kolateralnih i neting sporazuma koji su česta pojava kod drugih vanberzanskih derivatnih ugovora.

S obzirom na činjenicu da rok dospeća TRS ugovora ne mora da se podudara sa rokom dospeća referentne aktive, TRS ugovori se mogu koristiti prilikom kreiranja aktive koja ispunjava zahteve pojedinih investitora.

TRS se takođe mogu koristiti kao sredstvo arbitraže strukture kapitala, koja predstavlja dogovor kojim investitori iskorišćavaju pogrešne procene kod prinosa dobijenih na dve različite vrste kredita koje daje isti emitent.

TRS se sve više koriste kao sintetički instrumenti ugovora o ponovnom otkupu, i to ih najčešće primenjuju investitori koji žele da kupe izloženost kreditnom riziku vezanom za određenu aktivu, bez istovremene kupovine te same aktive. TRS koji ima funkciju sintetičkog repo instrumenta se najčešće preuzima da bi prouzrokovao privremeno uklanjanje aktive sa bilansa stanja.

receiver can conduct a net payment of the difference between the reference asset price at the beginning of the transaction - or the price as of the last reset (if so agreed), if this comes later - and the reference asset price at the time of default. Alternatively, the total return receiver can assume the delivery of the defaulted reference asset, and pay the initial or last reset price (if any) of the reference asset to the total return payer. Thereby is the TRS transaction terminated, along with the contract for the relevant reference asset.

From the perspective of the TRS payer, all cash flows below the spread above the reference interest rate are annulled. Thus, the profit of the TRS payer equals the spread multiplied by the TRS value. In addition, the TRS payer is well hedged in such transactions. He does not have any open risky positions other than the risk that the investor will fail to honour his contractual obligations. Thus, the TRS payer achieves the spread above the selected market index (benchmark interest rate) on an almost risk-free position. On the other hand, the TRS receiver gets the total credit return on risky assets without needing to engage his own capital to purchase the concerned asset. In line with this, this type of swaps have been nicknamed “balance sheet rental”, given that the reference asset stays on the TRS payer’s balance sheet in respect of his costs of finance.

Applications of Total Return Swaps

Total return swaps were originally used in interbank transactions, in cases when one bank exceeds its balance sheet limits, and the other has an available balance sheet. TRS enables the bank which has exceeded its balance sheet limits to remove assets from it, at the same time keeping its economic ownership over it. Such TRS transactions were usually large, concerning extremely liquid assets, and frequently took place when one bank was selling its assets to another bank (with a repurchase upon contract’s expiry), and usually encompassed a time period shorter than 3 months. From the perspective of the bank with the available balance sheet, the TRS was a balance sheet rental transaction.

Since recently, total return swaps have been increasingly used by hedge funds. TRS

enables the hedge fund economic exposure to the reference asset, without implying its simultaneous financing.

TRS is also used to provide an investor with economic ownership over certain assets, that the concerned investor could not have purchased otherwise. For instance, if assets in a certain country can legally be owned only by that country’s residents, a domestic bank could buy the assets and ensure economic ownership (and financing) by means of a TRS.

Investors with relatively high costs of finance can resort to TRS contracts with a view to synthetic ownership of assets, with the potential reduction of unfavorable financing. Total return swaps can also be applied in order to achieve efficient hedging and utilization of favorable financing.

In addition, the following three applications of the TRS are worth mentioning:

- Asset managers using TRS due to its suitability for leverage;
- Asset managers using TRS as a more efficient transnational instrument for the implementation of a portfolio management strategy;
- Bank managers using TRS as an efficient instrument for credit risk transfer and a means of capital costs reduction.

In a TRS transaction, the payer holds the reference asset, but transfers all risks related to that asset to the total return receiver. This transfer of risk can be conducted anonymously without any notifications about the reference entity, which characteristic may be particularly attractive for banks wishing to reduce their exposure to risk incurred by certain clients, without risking a potential jeopardy of their business relations with those clients.

In a TRS contract, the counterparty risk can be mitigated by means of collateral and netting agreements, which are often used in other over-the-counter derivative contracts.

Given the fact that the TRS contract maturity does not have to match the reference asset maturity, TRS contracts can be used when creating assets meeting the requests of certain investors.

TRS contracts can also be used as instruments of capital structure arbitrage, i.e. an arrangement in which investors exploit the

Prednosti i nedostaci svopova ukupnog prinosa

Primena TRS donosi nekoliko prednosti u poređenju sa kupovinom referentne aktive:

- Primalac ukupnog prinosa ne mora da finansira kupovinu referentne aktive; umesto toga, on plaća kompenzaciju isplatiocu ukupnog prinosa u zamenu za dobijanje ukupnog prinosa na referentnu aktivu.
- Prilikom nabavke aktive, investitor može da iskoristi prednost pronalaženja najbolje cene koju nudi isplatilac ukupnog prinosa.
- Primalac ukupnog prinosa može postići istu ekonomsku izloženost diversifikovanoj korpi finansijske aktive u jednoj svop transakciji, koja bi u suprotnom podrazumevala nekoliko gotovinskih transakcija. Na taj način, TRS je znatno efikasniji način trgovine u odnosu na kupovinu referentne finansijske aktive.
- Investitor koji želi da zauzme kratku poziciju na nekoj finansijskoj aktivi neće imati tako lak zadatak na konvencionalnom tržištu, jer bi morao da pronade drugu voljnu ugovornu stranu koja bi mu pozajmila referentnu aktivu. Primenom TRS, taj nedostatak se efikasno otklanja, jer investitor upotrebom TRS ne mora da dođe u kontakt sa referentnom aktivom. Međutim, to može da bude i loše po čitavo tržište, jer podstiče špekulaciju.

Pored toga, tržište TRS pruža prednosti isplatiocima ukupnog prinosa koje, u praksi, najčešće nisu lako dostupne na promptnoj berzi, kao što je prodaja određenih dužničkih instrumenata bez pokrića, kao i dostupnost dužničkih instrumenata koji inače ne mogu lako da se kupe na promptnoj berzi.

Nedostaci TRS dolaze do izražaja ukoliko ga menadžer koji upravlja aktivom koristi radi ostvarenja kreditne zaštite. Kod TRS primalac ukupnog prinosa je izložen i kreditnom riziku i riziku promene kamatne stope. Na primer, kreditni spread može da se smanji (što dovodi do povoljnog kretanja cena vezanih za referentnu aktivu), ali taj dobitak može biti izjednačen sa povećanjem nivoa kamatnih stopa.

Opcije na kreditni spread

Opcija na kreditni spread (Credit Spread Option - CSO) je kreditni derivat koji glasi

na jedno ime, koji ne zahteva finansiranje, i koji u osnovi ima kreditni spread. CSO daje kupcu pravo ali ne i obavezu da plati ili primi određeni kreditni spread za dati period. One ne zavise od nastanka događaja neizvršenja referentnog subjekta, jer kretanje spreadova može da bude vezano za druge faktore pored kreditnih događaja.

CSO su instrumenti za transferisanje i akumuliranje kreditnog rizika. One omogućavaju investitorima da zauzmu pozicije na budućim kreditnim spreadovima između dve hartije od vrednosti. U te svrhe se najčešće koriste kreditni spreadovi između nerizičnih (npr. državne obveznice) i rizičnih hartija od vrednosti (npr. korporativne obveznice). CSO su finansijski proizvodi zasnovani na kompenzaciji onih tržišnih subjekata kojima treba zaštita od kreditnog rizika. Kupac CSO prima gotovinske tokove ukoliko se definisani kreditni spread između dva benčmarka raširi ili suzi.

U CSO ugovoru sledeće stvari moraju biti precizirane: da li je opcija kol ili put, rok dospeća opcije, cena izvršenja ili spread izvršenja, da li je CSO evropska (jedan datum izvršenja), američka (kontinualni rok važenja) ili bermudska (više datuma izvršenja). Premija na opciju se obično plaća unapred, ali može i da se pretvori u raspored regularnih plaćanja. Kao i kod drugih kreditnih derivata, saldiranje CSO može biti novčano ili fizičko.

Put opcije na kreditni spread kupuju institucije koje očekuju pogoršanje kreditnog kvaliteta emitenta - što se odražava na širenje kreditnog spreada obveznica preduzeća u odnosu na nerizični benčmark. Prodavci put opcija na kreditni spread očekuju očuvanje stabilnosti/poboljšanje kreditnog kvaliteta emitenta, i one generišu prihod na premiju ukoliko se to obistini (u suprotnom, mogu prodavati putove kao sastavni deo upravljanja rizikom kreditnog portfolija). Nasuprot tome, kol opcije na kreditni spread kupuju institucije koje očekuju poboljšanje kreditnog kvaliteta emitenta. Da bi se kupila ili prodala kreditna opcija, targetirani kredit mora da poseduje dužničku hartiju od vrednosti kojom se trguje i koja može biti upotrebljena kao referentna veličina; u najboljem slučaju bi trebalo da bude dovoljno likvidna da bi obezbedila realnu procenu tržišne vrednosti.

incorrect estimates of returns yielded on two different types of loans granted by the same issuer.

Total return swaps have been increasingly used as synthetic instruments in repurchase agreements, in which case they are usually applied by investors wishing to purchase an exposure to credit risk related to certain asset, without at the same time purchasing the concerned asset. A TRS in the function of a synthetic repo instrument is typically undertaken in order to cause temporary removal of assets from the balance sheet.

Advantages and Disadvantages of Total Return Swaps

The application of TRS brings several benefits in comparison with the actual purchase of the reference asset:

- The total return receiver does not have to finance the reference asset purchase; instead, he pays the compensation to the total return payer in exchange for the total return on the reference asset.
- When procuring the assets, an investor can benefit from the possibility of finding the best price offered by the total return payer.
- The total return receiver can achieve the same economic exposure to the diversified basket of financial assets in a single swap transaction that would otherwise require several cash transactions. This way, the TRS is substantially more efficient means of trading compared to purchasing the reference financial asset.
- The investor wishing to take a short position on a certain financial asset would not have an easy task at the conventional market, because he would have to find a willing contractual counterparty that would lend him the reference asset. By applying a total return swap, this drawback gets efficiently removed, given that, using the TRS, the investor does not have to come into contact with the reference asset. However, this could also be detrimental for the entire market, since it encourages speculations.

Furthermore, the TRS market yields benefits for the total return payers which are, in practice, not easily available on the spot exchange, such as

the sale of certain uncovered debt instruments, and the accessibility of debt instruments that are not easily purchased on the spot exchange.

The drawbacks of a total return swap become prominent if an asset manager uses it to achieve credit protection. In a TRS, the total return receiver is exposed both to credit risk and interest rate risk. For example, credit spread can be narrowed (leading to favorable trends of prices related to the reference asset), but this benefit can be set-off by the interest rates growth.

Credit Spread Options

Credit Spread Option - CSO is an unfunded, single-name credit derivative, with an underlying credit spread. CSO offers a buyer the right, but not the obligation, to pay or receive a certain credit spread for the given period. Credit spread options do not depend on the occurrence of default of the reference entity, because the movements of spreads can be linked to other factors other than credit events.

Credit spread options are instruments for transferring and accumulating credit risk. They enable investors to take positions on future credit spreads between two securities. Most frequently used for this purpose are credit spreads between risk-free (e.g. government bonds) and risky securities (e.g. corporate bonds). Credit spread options are financial products based on the compensation of the market entities needing protection against credit risk. A CSO buyer receives cash flows if the defined credit spread between two benchmarks widens or narrows.

The following terms have to be precisely defined in a CSO contract: whether it is a call or a put option; option maturity; strike price or strike spread; whether the CSO is European (single strike date), American (continual duration), or Bermuda (several strike dates). Option premium is typically paid in advance, but can be broken down into a series of regular payments. As with other types of credit derivatives, the settlement of a CSO can be either cash or physical.

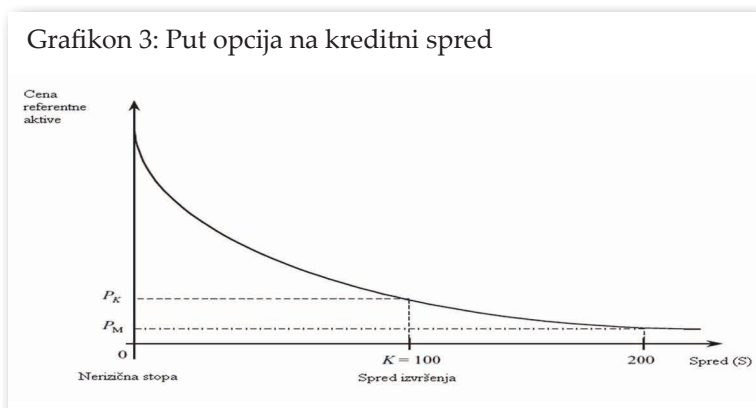
Put credit spread options are purchased by institutions expecting certain deterioration in the issuer's creditworthiness - which reflects on the widening of the corporate bonds credit

Mehanizam funkcionisanja opcija na kreditni spread

Na sledećem grafikonu je prikazan mehanizam funkcionisanja put CSO. Cena izvršenja opcije K iznosi 100 baznih poena. Ukoliko, na dan dospeća, spread na referentnu aktivu iznosi $S = 200$ baznih poena, onda je put opcija na kreditni spread „u novcu“ i može biti izvršena.

Nakon izvršenja, kupac put opcije dostavlja prodavcu referentnu aktivu (po tržišnoj ceni PM) kao zamenu za plaćanje cene iste hartije od vrednosti, koja je ponovo izračunata primenom spreada izvršenja (K), prema tome cena PK , viša od PM na dan izvršenja. Prodavac put opcije plaća PK i dobija hartiju od vrednosti čija je vrednost jednaka PM . Mehanizam je sličan prilikom izvršenja kol opcije na kreditni spread. Takođe, može se ugovoriti novčano saldiranje među ugovornim stranama opcije.

U praksi, kupac kol opcije ostvaruje dobitak ukoliko je spread na referentnu hartiju od vrednosti u okviru izvršenja, dok će kupac put opcije ostvariti profit prilikom uvećanja spreada iznad toga. S druge strane, prodavac kol opcije ostvaruje novac na premiji i nije izložen riziku sve dok spread ne padne ispod izvršenja; dok prodavac put opcije ostvaruje novac sve dok je spread ispod izvršenja.



Primena opcija na kreditni spread

Najčešće primene CSO podrazumevaju sledeće:

- CSO se mogu primenjivati da bi se ukazalo na budući kreditni kvalitet datog emitenta.
- Investitori mogu primenjivati CSO da bi potencijalno povećali prinos svojih portfolija.

- Pored toga što omogućavaju investitorima da zauzmu finansijske pozicije koje reflektuju njihovo mišljenje o očekivanim kretanjima kredita i kamatne stope, CSO koriste banke i druge institucije koje su izložene riziku spreada i kao sredstvo hedžinga (da bi se zaštitile od promene kreditnog spreada).
- Budući korisnici kredita mogu da kupe CSO u cilju ograničavanja svojih budućih troškova kredita.
- CSO se mogu koristiti da bi se ukazalo na volatilnost koja je nezavisna od pravca kretanja spreada u osnovi (CSO omogućavaju investitorima da izraze mišljenje o volatilnosti spreada nezavisno od njihovog mišljenja o pravcu kretanja kreditnog spreada).

Nedostaci opcija na kreditni spread

Od njihovog uvođenja ranih 1990-ih godina do sada, CSO nisu postigle očekivani uspeh. Trgovina i emisija novih CSO je još uvek mala. To može delovati začuđujuće, ako se uzme u obzir činjenica da pružaju značajnu zaštitu portfolio menadžerima na koje u velikoj meri utiču promene nivoa spreada. Razlozi za to su sledeći:

- CSO su kompleksniji instrumenti za vrednovanje i hedžovanje od standardnih proizvoda (npr. CDS).
- Najveći broj emisija obveznica je u velikoj meri nelikvidan, pa su samim tim moguće manipulacije njihovim spreadom. Kada je mali obim trgovine, velika narudžbina može da utiče na spread određene emisije i da dovede do toga da cene CSO dostignu neuobičajene nivoe.
- Najvažnije, popularnost CDS može da objasni ograničeni uspeh CSO. Moguće je hedžovati značajan deo kretanja kreditnog spreada zauzimanjem pozicija u CDS. CDS su jeftiniji od CSO, i čak iako hedžovi koje CDS omogućava mogu biti nesavršeni, obično investitori njih preferiraju zbog povoljnije cene.

spread in relation to the risk-free benchmark. The sellers of put credit spread options expect preserved stability/improvement of the issuer's creditworthiness, and they generate income on the premium if this comes true (otherwise, they can sell put options as an integral part of the credit portfolio's risk management). As opposed to this, call credit spread options are purchased by institutions expecting improvement in the issuer's creditworthiness. In order to buy or sell a credit option, the targeted loan has to possess the debt securities which are traded and which can be used as benchmark values; at best, they should be sufficiently liquid to enable a realistic market value assessment.

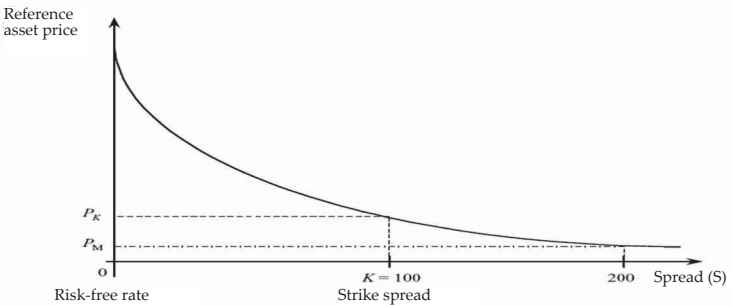
Standard Mechanism of Credit Spread Options

The following figure illustrates the mechanism of a put CSO. The strike price of the option K amounts to 100 basis points. If, on the maturity date, the reference asset spread amounts to $S = 200$ basis points, the put credit spread option is then "in the money", and can be exercised.

After exercising, the buyer of the put option submits the reference asset (at the market price PM) to the seller, instead of paying the price of the same security, which is recalculated by applying the strike spread (K), according to which the price PK is higher than PM on the strike date. The buyer of the put option pays PK and receives the security whose value equals PM . The mechanism is similar to the one implemented when striking the call credit spread option. Also, cash settlement can be agreed between the contractual parties of the option.

In practice, the buyer of a call option yields profit if the spread on the reference security stays within the strike spread, whereas the buyer of a put option yields profit when the spread exceeds the strike spread. On the other hand, the seller of a call option earns money on the premium and is not exposed to risk as long as the spread does not fall below the strike spread; whereas the seller of a put option earns money as long as the spread is below the strike spread.

Figure3: Put credit spread option



Applications of Credit Spread Options

The most typical applications of a CSO include the following:

- CSO can be used to indicate the future creditworthiness of the given issuer.
- Investors can apply CSO to potentially increase the return of their portfolios.
- In addition to enabling investors to hold financial positions reflecting their opinion on the expected movements of loans and interest rates, credit spread options are used by banks and other institutions exposed to the spread risk, and as a hedging instrument (as protection against the credit spread fluctuations).
- The future loan users can purchase a CSO in order to limit their future loan-related costs.
- Credit spread options can also be used to indicate the volatility independent of the underlying spread movements (CSO enables investors to express their opinion on the spread volatility regardless of their opinion on the credit spread movements).

Disadvantages of Credit Spread Options

Since their introduction in early 1990s until today, credit spread options have not achieved the expected success. The trade and issuing volumes of new credit spread options are still low. This may come as a surprise, bearing in mind the fact that they provide considerable protection to portfolio managers, who are largely affected by the fluctuations in spread levels. The reasons for this are as follows:

- Credit spread options are evaluation and

Kreditne note

Kreditne note (Credit-Linked Notes - CLN) su glavni predstavnici kreditnih derivata koji zahtevaju finansiranje, i spadaju u derivate koji u osnovi imaju mogućnost neizvršenja. CLN su obveznični instrumenti za koje investitori plaćaju gotovinom, u zamenu za periodične isplate kamate i celokupni ili delimični iznos inicijalne kupovne cene na kraju perioda ročnosti. U tom smislu, CLN veoma podsećaju na konvencionalne obveznice. Ipak, ključna razlika je u tome što je prinos na CLN eksplicitno vezan za kreditnu performansu referentne aktive ili referentnog subjekta.

Osnovna funkcija CLN je transfer kreditnog rizika sa emitenta na investitora. CLN su razvijene kao alternativa CDS, koja zahteva finansiranje, zbog različitih nedostataka CDS. CLN su zapravo hibridni finansijski instrumenti koji kombinuju izloženost kreditnom riziku sa osobinama konvencionalne obveznice. CLN isplaćuje redovne kuponske iznose; međutim, komponenta kreditnog rizika obično omogućava emitentu da smanji iznos glavnice i/ili kuponske kamate ukoliko nastupi predviđeni kreditni događaj.

Mehanizam funkcionisanja kreditnih nota

Kupac CLN je investitor, koji je prodavac kreditne zaštite, i on treba unapred da obezbedi sredstva kupcu zaštite kada on kupi notu. Dakle, kupac zaštite je emitent note. Ukoliko ne nastupi kreditni događaj tokom ročnosti note, vrednost

note se isplaćuje investitoru istekom predviđenog roka. Sa druge strane, ukoliko nastupi kreditni događaj, onda se na kraju ročnosti investitoru isplaćuje tržišna vrednost note umanjena za njenu nominalnu vrednost. Ta vrednost se redukuje za nominalnu vrednost referentne aktive za koju je CLN vezana. Sam proces će se razlikovati u zavisnosti od toga da li se radi o novčanom ili fizičkom saldiranju CLN.

CLN može direktno da emituje finansijski ili korporativni subjekat, ili mogu da se primene institucije sa specijalnom funkcijom (Special Purpose Vehicle - SPV). SPV zapravo predstavljaju entitete sa visokim kreditnim rejtinima, koji su osnovani posebno da bi emitovali CLN i druge sekjuritizovane proizvode. Prinos na CLN može biti vezan za kreditni rejting, izloženost riziku, finansijsku performansu ili slučaj neizvršenja emitenta (ili specificiranog referentnog subjekta).

Kao što je to slučaj kod CDS, kreditne note mogu biti određene fizičkim ili novčanim saldiranjem. Ukoliko nastupanje kreditnog događaja dovede do fizičkog saldiranja CLN, nota se likvidira. Prilikom dospeća, kupac zaštite isporučuje referentnu aktivu ili aktivu sa liste utvrđene aktive za isporuku, a prodavac zaštite prima vrednost originalnih kupovnih prihoda umanjениh za vrednost aktive koja je isporučena.

Ukoliko nastupanje kreditnog događaja dovede do novčanog saldiranja CLN, prilikom dospeća note prodavac zaštite prima razliku između vrednosti inicijalnih kupovnih prihoda i vrednosti referentne aktive u vreme nastupanja kreditnog događaja.

hedging instruments more complex than the standard products (for instance, CDS).

- The majority of bond issuances are highly illiquid, which generates the possibility for manipulating their spread. When the volume of trade is low, large orders can affect the spread of a certain issuance, causing the CSO prices to reach unexpected levels.
- Most importantly, the popularity of CDS can explain the limited success of CSO. It is possible to hedge a substantial part of credit spread movements by taking positions in a credit default swap. Credit default swaps are cheaper than credit spread options, and even though the hedges enabled by CDS may be imperfect, they are, nevertheless, usually preferred by investors due to their more favorable price.

Credit-Linked Notes

Credit-Linked Notes - CLN are the main representatives of funded credit derivatives, and fall into the category of derivatives with the underlying possibility of default. Credit-linked notes are bond instruments for which investors pay in cash, in exchange for periodical payments of interest, and total or partial amount of the initial purchase price on the maturity date. In this sense, credit-linked notes are rather similar to conventional bonds. Still, the key difference lies in the fact that the CLN return is explicitly linked to the credit performance of the reference asset or the reference entity.

The basic CLN function is to transfer credit risk from the issuer to the investor. Credit-linked notes were developed as a funded alternative to CDS, due to the various CDS drawbacks. Credit-linked notes are actually hybrid financial instruments combining credit risk exposure with the features of a conventional bond. A credit-linked note disburses regular coupon amounts; however, the credit risk component usually enables the issuer to reduce the principal and/or coupon interest amount in case of the predicted credit event.

Standard Mechanism of Credit-Linked Notes

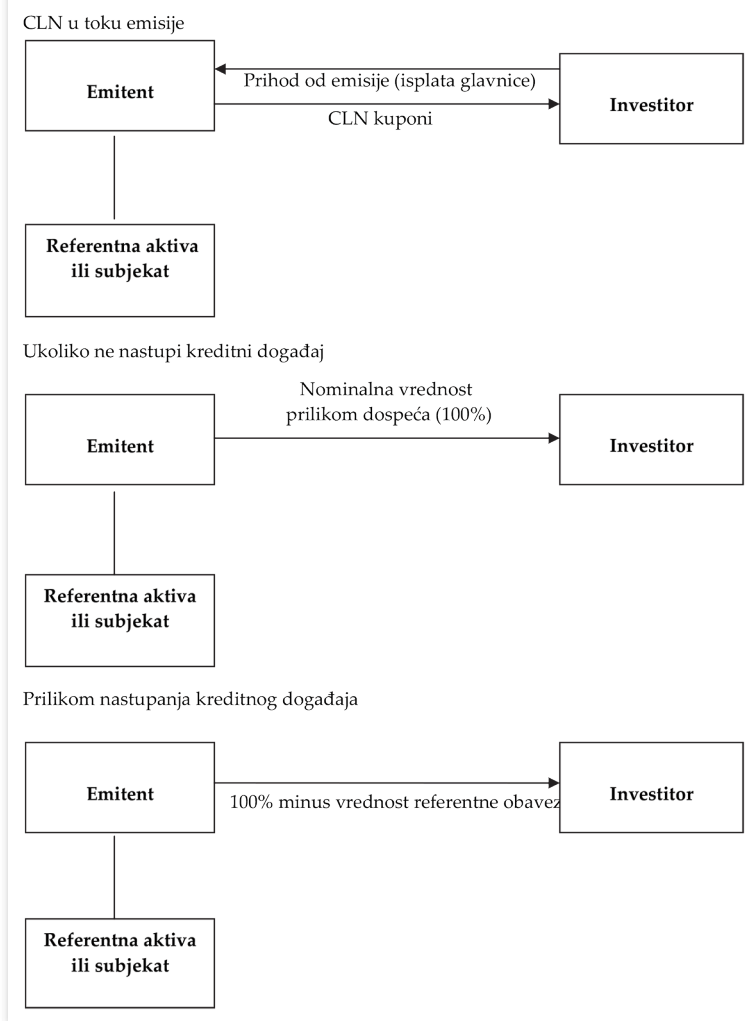
A buyer of CLN is an investor, acting as the credit protection seller, who is supposed to provide advance funds for the protection buyer when he purchases the note. This means that the protection buyer is the note issuer. If the credit event does not occur during the note's duration, the value of the note is paid out to the investor upon the expiry of the defined deadline. On the other hand, in case of the credit event occurrence, upon maturity the investor gets paid the market value of the note reduced by its nominal value. This value is reduced by the nominal value of the reference asset to which the CLN is linked. The process itself will differ depending on whether the CLN settlement is cash or physical.

CLN can be directly issued by a financial or corporate entity, or via a Special Purpose Vehicle (SPV). SPVs actually represent entities with high credit ratings, specially established to issue credit-linked notes and other securitized products. The CLN return can be linked to credit rating, risk exposure, financial performance or default of the issuer (or the specified reference entity).

As is the case with CDS, credit-linked notes can be settled through either cash or physical settlement. If the credit event occurrence results in a physical settlement of CLN, the note is liquidated. Upon maturity, the protection buyer delivers the reference asset or an asset from the list of deliverable assets, whereas the protection seller receives the value of original purchase income reduced by the delivered asset value.

If the credit event occurrence results in a cash settlement of CLNs, upon maturity the protection seller receives the difference between the value of initial purchase income and the reference asset value at the time of the credit event occurrence.

Grafikon 4: Struktura novčano realizovane kreditne note



Primena i prednosti kreditnih nota

CLN najčešće koriste korisnici kredita radi zaštite (hedžovanja) od kreditnog rizika, ili investitori koji žele da povećaju kvalitet prinosa na svoja potraživanja. Kao i CDS, i CLN se koriste u strukturisanim kreditnim proizvodima, u različitim kombinacijama, a njihova fleksibilnost je uticala na povećanje i širu primenu sintetizovanih kolateralizovanih dužničkih obaveza i drugih hibridnih kreditnih proizvoda.

Osnovna prednost CLN je činjenica da investitorima pružaju alternativu u odnosu na tradicionalno tržište obveznica. CLN omogućavaju prepakivanje novčanih tokova derivatnih instrumenata u hartije od vrednosti koje mogu da budu kupljene ili prodane na tržištu. CLN unapređuju diversifikaciju tržišne baze investitora, jer omogućavaju pristup investitorima sa gotovinom

tržištu CDS. To znači da CLN generalno kupuju investitori koje privlače prednosti CDS, ali, pri tome, ne mogu direktno da obavljaju transakcije svopova zbog kreditnih, operacionalnih i regulatornih ograničenja. CLN uspešno prevazilaze taj problem. Prema tome, mnoge institucije koje ne mogu da investiraju u vanbilansne kreditne derivate mogu da investiraju u CLN zato što one ostaju na bilansu stanja investitora. Isto tako, za razliku od prvobitnih oblika CLN - gde se jednoimeni CDS prepakuje u CLN - struktura može uzeti i znatno složeniji oblik gde CLN može biti vezan za mezaninsku tranšu kolateralizovane dužničke obaveze.

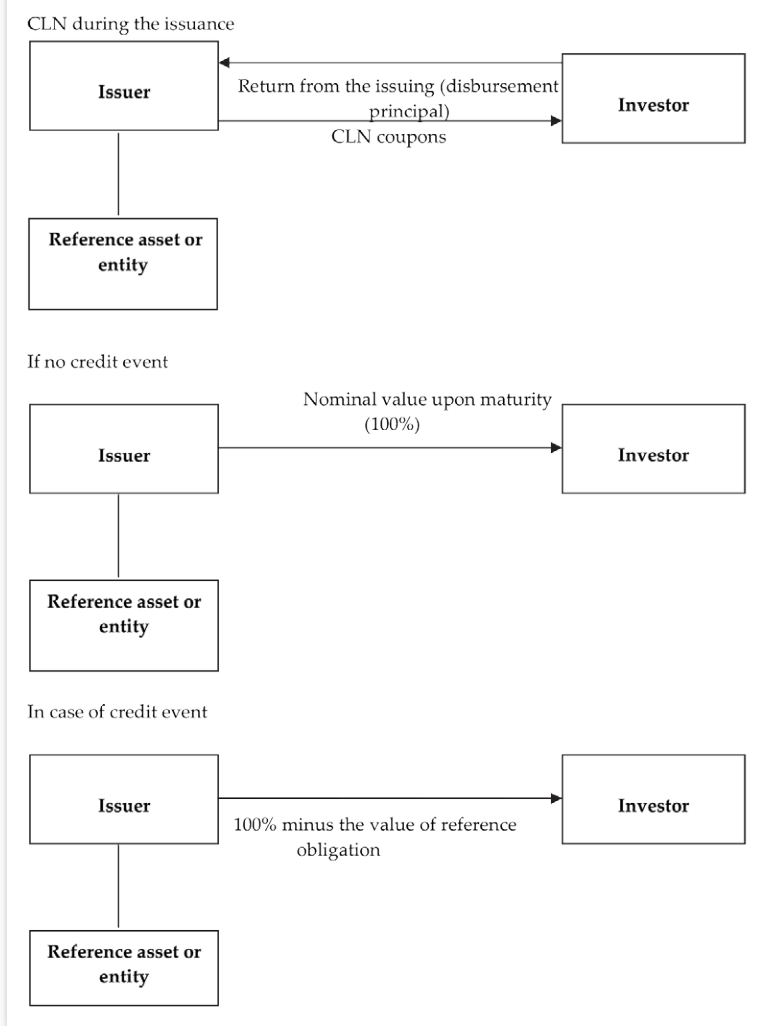
Takođe, CLN mogu da doprinesu povećanju likvidnosti određene aktive, koja bi inače bila nelikvidna, ili da kreiraju tržište za aktivu koja inače ne bi postojala u obliku u kojem njom može da se trguje. Na taj način na otvorenom tržištu bez ograničenja može da se trguje CLN

Klasifikacija kreditnih nota

CLN se može klasifikovati kao:

- CLN koja glasi na jedno ime, odnosno standardna CLN
Emisija standardne CLN je vezana za specifičnu obveznicu ili kredit. Investitor koji kupuje takvu notu prodaje kreditnu zaštitu koja podrazumeva specifičnog referentnog subjekta.
- Korpa CLN
Kreditna nota koja je vezana za više od jednog referentnog subjekta se naziva korpa CLN. CLN koji je povezan sa korpom referentne aktive, a koji predstavlja razvoj CLN kao strukturisanog proizvoda, je korpa CLN sa najvećom verovatnoćom neizvršenja. Investitor u CLN prodaje zaštitu vezanu za neizvršenje prvog referentnog subjekta.

Figure 4: Structure of a monetary realized credit-linked note



Applications and Advantages of Credit-Linked Notes

Credit-linked notes are most frequently used by loan users in order to protect (hedge) themselves against credit risk, or investors wishing to increase the quality of returns on their receivables. Just like CDS, credit-linked notes are also used in structured credit products, in various combinations, and their flexibility has influenced the expansion and wider implementation of synthetic collateralized debt obligations and other hybrid credit products.

The main advantage of CLN is the fact that they offer investors an alternative to the traditional bond market. Credit-linked notes enable the cash flows of derivative instruments to be repackaged into securities, which can be purchased or sold at the market. Credit-linked notes enhance the diversification of investors market base, since

Classification of Credit-Linked Notes

- CLNs can be classified into:
- **Single-name CLNs, i.e. standard CLNs**
The issuing of a standard CLN is linked to a specific bond or loan. The investor purchasing such a note sells the credit protection implying a specific reference entity.
 - **Basket CLNs**
A CLN linked to more than one reference entity is called a basket CLN. A CLN linked to a basket of reference assets, and representing the development of a CLN as a structured product, is the basket CLN with the highest probability of default. The investor in CLN sells the protection linked to the default of the first reference entity in line.

they enable access to the CDS market to investors with cash. This means that credit-linked notes are generally bought by investors who are attracted by the CDS advantages, but who, nevertheless, cannot directly conduct swap transactions due to credit, operational and regulatory limitations. CLNs successfully overcome this problem. Namely, many institutions which cannot invest in off-balance sheet credit derivatives can invest in CLNs because they remain on the investor’s balance sheet. Moreover, as opposed to the original forms of CLNs - with single-name CDS being repackaged into CLNs - the structure can take considerably more complex form with a CLN being linked to the mezzanine tranche of a collateralized debt obligation.

Also, CLNs can contribute to the increase in liquidity of a certain asset, that would otherwise be illiquid, or create a market for an asset that otherwise would not exist in a tradable form.

koje su vezane za pul bankarskih kredita, dok stvarna prodaja kredita može da bude izložena određenim ograničenjima.

Glavni razlog zbog kog investitor kupuje CLN je činjenica da, pristajanjem na to da snosi deo kreditnog rizika koji se vezuje za određenu korporaciju ili korpu drugih kredita, imalac CLN će dobiti viši kupon na CLN. Zapravo, vlasnik CLN je prodao kreditno osiguranje emitentu note. Ukoliko se realizuje kreditni događaj, vlasnik CLN mora da se odrekne dela vrednosti kamata i glavnice, kako bih mogao da kompenzira prodavca note. Ukoliko se ne dogodi kreditni događaj, vlasnik note prima premiju osiguranja u obliku više kuponske stope. Investitor u CLN zapravo prodaje kreditnu zaštitu u zamenu za viši prinos na CLN. Radi se o bilansnom dužničkom instrumentu koji svaki investitor može kupiti, a prednost mu je i to što se posredstvom njega može postići specifični rizični profil po meri investitora.

Za razliku od CDS kod kog kupac zaštite preuzima rizik da prodavac zaštite i referentni subjekat istovremeno neće izvršiti obaveze, kod CLN kupac zaštite (emitent CLN) nije izložen riziku da druga strana neće ispuniti obavezu. On ostvaruje likvidnost na početku transakcije, jer prodavac zaštite vrši plaćanja unapred, i isplaćuje je samo ukoliko ne nastupi kreditni događaj. Prema tome, CLN je ekvivalent potpuno kolateralizovanom CDS.

Nedostaci kreditnih nota

Osnovni rizik kupca CLN je da će doći do smanjenja kreditnog rejtinga ili neizvršenja obaveza, i da će samim tim ostvariti niži prinos. Kao drugo, kupac je izložen riziku da druga strana, odnosno emitent, neće ispuniti svoje obaveze. Takođe, postoji korelacioni rizik ukoliko su rizici neizvršenja obaveza CLN emitenta i referentnog emitenta visoko korelisani. Što je veći stepen korelacije, CLN kupac treba da očekuje viši prinos. Vlasnici CLN su izloženi riziku i da CLN emitenti, kao i referentni emitent, neće izvršiti obaveze. Može da se dogodi da ne prime obećane isplate vezane za CDS ukoliko CLN emitent ne izvrši obavezu, i dobijaće manje isplate CLN ukoliko referentni emitent ne izvrši obavezu.

Još jedan nedostatak CLN je činjenica da je

manje likvidna od CDS ili obveznice. Uopšteno, emisije su ograničene na neke desetine miliona dolara i usmerene su ka malom broju kupaca, i, kao rezultat toga, za njih ne postoji stvarno sekundarno tržište. Prema tome, investitor koji želi da napusti CLN poziciju najverovatnije neće imati izbora osim da pita banku koja je emitovala obveznicu koliko bi platila da je otkupi, i na taj način će se izložiti potencijalno neprivačnoj razlici između kupovne i prodajne cene.

Kolateralizovane dužničke obaveze

Kolateralizovane dužničke obaveze (Collateralized Debt Obligations - CDO) su se prvi put pojavile 1988. godine, i predstavljale su prirodan napredak tehnike sekjuritizacije. CDO je zapravo strukturisani finansijski proizvod, i predstavlja aranžman putem koga se prikupljaju sredstva izdavanjem obveznica ili nota, i investiranjem ovako prikupljenih sredstava u portfolio diversifikovane finansijske aktive (npr. obveznica, kredita). Isplate po osnovu te finansijske aktive (kamate) koja se nalazi u portfolio, predstavljaju glavni izvor sredstava iz koga CDO servisira obaveze po svojim emitovanim hartijama od vrednosti (obveznicama ili notama). Ta finansijska aktiva ima ulogu kolaterala za emitovane obveznice ili note, pa su iz tog razloga CDO dobile naziv kolateralizovane dužničke obaveze.

Većina CDO ima portfolio kojim se aktivno upravlja, što podrazumeva angažovanje portfolio menadžera koji dobija proviziju za upravljanje finansijskom aktivom CDO. Strukturu portfolio CDO uglavnom čine: korporativne obveznice, krediti (uključujući i neosigurane kredite za nekretnine), dužničke hartije od vrednosti (obveznice, krediti) suverenih zemalja (obično privreda u razvoju), dužničke hartije od vrednosti na bazi projektnog finansiranja, ili dužničke hartije od vrednosti emitovane na bazi sekjuritizacije neke finansijske aktive.

Tokom 1990-ih, CDO su predstavljale klasu aktive sa najvećom stopom rasta na tržištu hartija od vrednosti podržanih aktivom, zbog različitih karakteristika koje su ih učinile jednako privlačnim i za emitentne i za investitore. Usledio je razvoj sintetizovane kolateralizovane dužničke obaveze (Synthetic

Thus, at the open market one can trade without any limitations with the CLNs linked to a pool of banking loans, whereas the actual sale of the loans can be exposed to certain limitations.

The main reason for an investor to purchase CLNs is the fact that, by accepting to undertake a part of the credit risk related to a certain corporation or a basket of other loans, the CLN holder receives a higher-value coupon on the CLN. In fact, the CLN owner is selling credit insurance to the note's issuer. In case of the credit event occurrence, the CLN owner must give up a part of the interest and principal value, in order to be able to compensate the note seller. In case of no credit event, the note owner receives the insurance premium in the form of a higher coupon rate. The investor in CLNs actually sells credit protection in exchange for higher return on CLNs. It is a balance sheet debt instrument which can be purchased by every investor, its advantage being that it can help achieve the specific risk profile tailored to each investor's needs.

As opposed to CDS in which the protection buyer undertakes the risk of the protection seller and the reference entity defaulting at the same time, in CLNs the protection buyer (CLN issuer) is not exposed to the counterparty risk. He achieves liquidity at the beginning of the transaction, because the protection seller effects payments in advance, and only pays out in case of no credit event. Thus, credit-linked notes are equivalent to fully collateralized credit default swaps.

Disadvantages of Credit-Linked Notes

The main risk for the CLN buyer is that of credit rating deterioration or default, which would cause lower returns. Secondly, the buyer is exposed to counterparty risk. Moreover, there is a correlation risk if the default risks of the CLN issuer and the reference entity are highly correlated. The higher the correlation, the higher return is to be expected by the CLN buyer. CLN owners are exposed to the risk of CLN issuers, and the reference entity, failing to honour their obligations. It might happen that they do not receive promised payments related to the CDS if the CLN issuer defaults, or that they receive lower CLN payments if the reference entity defaults.

Another drawback of credit-linked notes is the fact that they are less liquid than credit default swaps or bonds. In general, their issuances are limited to several dozen million dollars, and are targeted at a small number of buyers, as a result of which there is no real secondary market for them. Therefore, an investor wishing to leave his CLN position will probably have no other choice but to ask the bond issuing bank how much it would pay to repurchase it, thereby exposing himself to the potentially unattractive difference between the purchase price and the selling price.

Collateralized Debt Obligations

Collateralized Debt Obligations - CDOs first occurred in 1988, as a natural step forward in the securitization technique. A CDO is actually a structured financial product, representing an arrangement for the collection of funds by issuing bonds or notes, and by investing thereby collected funds into a portfolio of diversified financial assets (for instance, bonds or loans). The payments in respect of the financial asset (interest) in the portfolio are the main source of finance from which CDO services the liabilities in respect of its issued securities (bonds or notes). The concerned financial asset has the role of collateral for the issued bonds or notes, which is the reason why CDOs were named collateralized debt obligations in the first place.

Most CDOs have an actively managed portfolio, which implies hiring a portfolio manager who receives a fee for managing the CDO financial assets. The structure of the CDO portfolio typically includes: corporate bonds, loans (including the uninsured mortgage loans), debt securities (bonds, loans) issued by sovereigns (usually developing economies), debt securities based on project finance, or debt securities issued on the basis of securitization of certain financial assets.

In the 1990s, CDOs were the type of assets with the highest growth rate on the asset-backed securities market, due to the various characteristics that made them equally attractive both for issuers and for investors. This was followed by the development of Synthetic Collateralized Debt Obligation - SCDO, which uses credit derivatives to construct an asset

Collateralized Debt Obligation - SCDO), koja upotrebljava kreditne derivate prilikom konstruisanja portfolija aktive, pa samim tim predstavlja strukturisani kreditni proizvod.

Po pravilu, svi CDO su zasnovani na kreditnim (dužničkim) i akcijskim (vlasničkim) tranšama, što predstavlja kreiranje više klasa ili tranši hartija od vrednosti koje emituje CDO, sa različitim senioritetom ili prioritetom, odnosno pravima. Sponzor CDO, najčešće velika investiciona banka, aranžira iznos i strukturu pojedinih tranši u paketu CDO, tako da mogu da zadovolje potrebe dobijanja odgovarajućeg kreditnog rejtinga koji dodeljuje rejting agencija i da na taj način privuku investitore različitog profila da ih kupe. Tranširanje predstavlja proces korišćenja portfolio instrumenata i transakcija da bi se napravio reinženjering profila rizika i prinosa pula aktive ili izloženosti kreditnom riziku u višestruke klase rizika sa različitim stepenom prioriteta (senioriteta) u slučaju bankrotstva ili neizvršenja obaveze. To tranširanje je ujedno usmereno na to da se zadovolje preferencije pojedinih kategorija investitora i njihove sklonosti prema riziku.

Pravila određivanja redosleda (prioriteta) plaćanja su poznata kao struktura vodopada i mogu biti prilično komplikovana. Kolateral sačinjen od obveznica ili kredita se dostavlja SPV, koja onda izdaje nekoliko tranši nota. Tranše su podeljene na: seniorsku, srednju i akcijsku tranšu. Te note imaju različite stepene senioriteta ili prioriteta, što znači da tranša koja ima veći senioritet ima prioritet vezan za isplatu kupona i glavnice u odnosu na srednju i akcijsku tranšu. Samim tim, prinos na kolateral se prvo isplaćuje tranšama sa najvećim senioritetom kao kamata na note. Preostali prinos na kolateral se zatim isplaćuje kao kamata na note srednje tranše. Na kraju, preostali prinos se isplaćuje kao kupon na note u akcijskoj tranši.

Posledica toga je da će neizvršenja vezana za osnovni kolateral prvo uticati na isplate kupona i glavnice kod akcijske tranše. Kao rezultat toga, tranša sa najvećom verovatnoćom ostvarenja gubitka obično nije rangirana, zato što podrazumeva velike iznose rizika, i sponzor CDO može da je zadrži. S obzirom na činjenicu da je investitor u akcijskoj tranši najviše izložen mogućem gubitku zbog velike izloženosti riziku neizvršenja, kompenzovan je primanjem većeg

kupona. Srednja tranša obično dobija visok investicioni rejting, a seniorska tranša može dostići i AAA rejting, a s obzirom da ima najmanji rizik, to podrazumeva i najmanji prinos.

Klasifikacija kolateralizovanih dužničkih obaveza

CDO obuhvataju širok spektar proizvoda i trenutno predstavljaju jedan od najdinamičnijih segmenata na tržištu kreditnih derivata. Najčešća podela CDO, prema vrsti finansijske aktive koja čini osnovu portfolija CDO, je na: kolateralizovanu kreditnu obavezu kod koje portfolio CDO čine bankarski krediti, i kolateralizovanu obvezničku obavezu kod koje portfolio CDO čine obveznice.

Razvoj kreditnih derivata je doveo do nastanka sintetizovanih CDO, čije skorašnje varijacije više podsećaju na egzotične derivate nego na transakcije vezane za tradicionalnu sekjuritizaciju. Od nedavno, u CDO spadaju i kolateralizovane obaveze na bazi hartija od vrednosti koje su nastale putem sekjuritizacije (hartije od vrednosti podržane aktivom - ABS, hartije od vrednosti podržane hipotekom - MBS) koje se nazivaju CDO sa strukturnim finansiranjem (npr.: ABS CDO i MBS CDO). Neke CDO su emitovane na bazi ranije izdatih CDO koje čine njihovu portfolio strukturu i nazivaju se CDO na kvadrat (CDO²). Takođe, postoje i CDO na kub (CDO³).

CDO se mogu podeliti na nekoliko različitih vrsta u zavisnosti od:

- Mehanizma transfera rizika: akvizicija hartija od vrednosti - gotovinske CDO ili upotreba derivata - sintetizovane CDO (SCDO). Gotovinske CDO se zasnivaju na akviziciji hartija od vrednosti, pri čemu investitori zaista drže rizičan kolateral. Njih podržavaju dužnički instrumenati na promptnoj berzi. To su prvobitne vrste emitovanih CDO. Kod SCDO investitori su izloženi riziku pula dužničkih instrumenata, ali se ta izloženost kreditnom riziku transferiše primenom kreditnog derivata, umesto kupovinom instrumenata na promptnoj berzi.
- Cilja transakcije (motiva sponzora): arbitraža - arbitražne CDO ili upravljanje bilansom stanja - bilansne CDO. Kod arbitražnih CDO, u motive sponzora

portfolio, hence being a structured credit product.

As a rule, all CDOs are based on credit (debt) and stock (equity) tranches, which leads to the creation of several classes or tranches of securities issued by the CDO, with different seniority or priority, i.e. different rights. The CDO sponsor, typically a large investment bank, arranges the amount and structure of certain tranches in the CDO package, so that they can satisfy the needs for getting the appropriate credit rating awarded by the rating agency, thus being able to attract investors of various profiles to purchase them. Tranching is a process of using portfolio instruments and transactions to re-engineer risk profiles and asset pool returns or credit risk exposures in multiple risk classes with different levels of priority (seniority) in case of bankruptcy or default. The tranching is at the same time directed at satisfying the preferences of certain categories of investors and their risk appetites.

The rules for determining the order (priority) of payment are known as the waterfall payment structure, and can be rather complicated. The collateral in the form of bonds or loans is submitted to the SPV, which then issues several tranches of notes. The tranches are divided into: senior, medium and equity tranche. Those notes entail various levels of seniority or priority, which means that a higher seniority tranche has the priority when it comes to payment of coupons and principal, over the medium and equity tranche. To this end, the return on collateral is first disbursed to top seniority tranches in the form of interest on notes. The remaining return on collateral is then disbursed as interest on junior tranche notes. Finally, the remaining return is disbursed as a coupon on equity tranche notes.

As a result, the defaults related to the basic collateral will first affect the disbursement of coupons and principal in the equity tranche. Consequently, the tranche with the highest probability of loss is typically unrated, because it implies huge risks, and the CDO sponsor can keep it. Given the fact that the investor in the equity tranche is most exposed to potential losses due to the large default risk exposure, he gets compensated by receiving the larger coupon. The junior tranche is usually awarded

a high investment rating, whereas the senior tranche can even reach the AAA rating, which, given the lowest risk it entails, also implies the lowest return.

Classification of Collateralized Debt Obligations

CDOs encompass a wide array of products and are at the moment among the most dynamic segments on the credit derivatives market. The most typical classification of CDOs, according to the type of the CDO portfolio's underlying financial asset, is into: collateralized credit obligations whose CDO portfolio is made up of bank loans, and collateralized bond obligation whose CDO portfolio consists of bonds.

The credit derivatives development has led to the creation of synthetic CDOs, whose recent variations are more akin to exotic derivatives than to transactions related to traditional securitization. Since recently, CDOs also include securities-based collateralized obligations, originated by means of securitization (asset-backed securities - ABS, and mortgage-backed securities - MBS), also known as structured finance CDOs (for instance: ABS CDO and MBS CDO). Some CDOs are issued on the basis of previously issued CDOs making up their portfolio structure, and are called CDOs-squared (CDO²). Also, there are CDOs-cubed (CDO³).

CDOs can be classified into several different types depending on the following:

- Risk transfer mechanism: securities acquisition - cash CDOs or derivatives usage - synthetic CDOs (SCDOs).
Cash CDOs are based on the acquisition of securities, with investors actually holding a risky collateral. They are supported by debt instruments on the spot exchange. These are the original types of issued CDOs.
In case of SCDOs, investors are exposed to the risk of a pool of debt instruments, but this credit risk exposure gets transferred by means of a credit derivative, instead of by purchasing instruments on the spot exchange.
- Objective of the transaction (sponsor's motive):
arbitrage - arbitrage CDOs or balance sheet management - balance sheet CDOs.

spadaju sledeći: (1) dobijanje provizije za upravljanje pulom aktive u osnovi CDO; (2) ostvarenje prinosa u vidu pozitivne razlike (spreda) između prinosa koji CDO ostvaruje na svom portfoliju i prinosa koji se moraju isplatiti na emitovane dužničke hartije od vrednosti CDO. Ova razlika je jednaka razlici između ukupnog prinosa CDO i zbira kamata koje CDO plaća za svaku tranšu i troškova portfolio menadžmenta.

U bilansnim CDO, glavni motiv sponzora je da ukloni aktivu sa svog bilansa stanja. Banke mogu da uklone pojedine stavke sa svog bilansa i transferišu ih u CDO, i na taj način smanje potrebu za regulatornim kapitalom i povećaju svoju likvidnost.

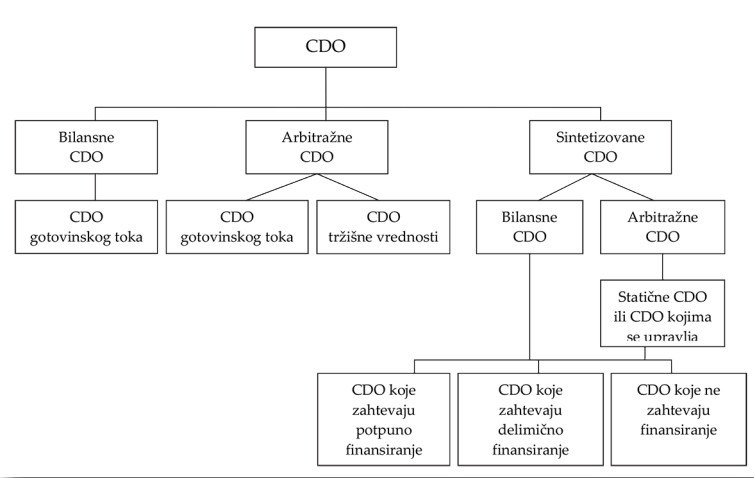
- Menadžment strategija koja se primenjuje kod proizvoda: CDO gotovinskog toka ili CDO tržišne vrednosti.

U CDO gotovinskog toka izvor sredstava za otplatu emitovanih hartija od vrednosti CDO su redovni prinosi od aktive koja čini portfolio CDO.

CDO tržišne vrednosti su tako strukturisane da je prodaja aktive koja čini portfolio CDO glavni izvor sredstava za isplatu obaveza po emitovanim hartijama od vrednosti CDO. Kod ovih CDO, otplata zavisi od tržišne vrednosti finansijske aktive u portfoliju.

Na sledećem grafikonu je prikazana podela CDO.

Grafikon 5: Podela kolateralizovanih dužničkih obaveza



Sintetizovane kolateralizovane dužničke obaveze

Sintetizovana kolateralizovana dužnička

obaveza je klasifikovana kao kreditni derivat. Većina transfera rizika koja se odvija na tržištu kreditnih derivata je u obliku SCDO. Kod SCDO transfer kreditnog rizika se postiže sintetički preko kreditnog derivata, umesto pravom prodajom SPV, pa je iz tog razloga i dobila takav naziv. S obzirom na činjenicu da se kreditni rizik aktive transferiše sa sponzora ili nalogodavca transakcije na investitore primenom kreditnih derivatnih instrumenata, nalogodavac ima ulogu kupca kreditne zaštite, dok su investitori prodavci kreditne zaštite. Obično se rizik transferiše na SPV primenom CDS i/ili TRS. Međutim, aktiva se zakonski ne transferiše na SPV, i ostaje na bilansu stanja nalogodavca. Primenom SCDO, nalogodavac može da dobije regulatorne olakšice u pogledu zahteva za kapitalom i može da upravlja kreditnim rizikom na svom bilansu stanja, ali neće dobijati nikakav vid finansiranja. Prema tome, struktura SCDO omogućava nalogodavcima da razdvoje izloženost kreditnom riziku od zahteva za finansiranje aktive.

Banke su prve počele da upotrebljavaju SCDO 1997. godine. Ti bankarski bilansni ugovori su kao glavni motiv imali hedžing kreditnog rizika, ili redukciju propisanog kapitala, ili te obe stvari. Nakon tih prvobitnih ugovora, ista tehnologija SCDO je upotrebljena za kreiranje tranši CDO sa profilima rizika i prinosa koji su atraktivni investitorima. Ti kasniji ugovori,

koji su motivisani potrebama kreditnih investitora umesto banaka, predstavljaju arbitražne ugovore. U prvobitnom periodu rada tržišta SCDO (1997-1999. godine), skoro svi SCDO su bili bilansni ugovori, ali se arbitražni ugovori danas sve više primenjuju.

Glavna karakteristika SCDO je tranširanje kreditnog rizika. Prvobitni SCDO na tržištu su podrazumevali sve tranše (akcijsku, srednju i seniorsku), a zbir njihovih teorijskih vrednosti je bio jednak teorijskoj vrednosti

referentnog portfolija. U današnje vreme je većina SCDO u obliku CDO sa jednom tranšom, kod kojih se samo jedna tranša strukture kapitala CDO prodaje.

In case of arbitrage CDOs, the sponsor's motives include the following: (1) getting a fee for managing the pool of CDO underlying assets; (2) achieving return in the form of a positive difference (spread) between the return achieved by the CDO on its portfolio and returns to be disbursed in respect of issued CDO debt securities. This difference equals the difference between the total CDO return and the sum of interests paid by the CDO for each tranche and portfolio management costs.

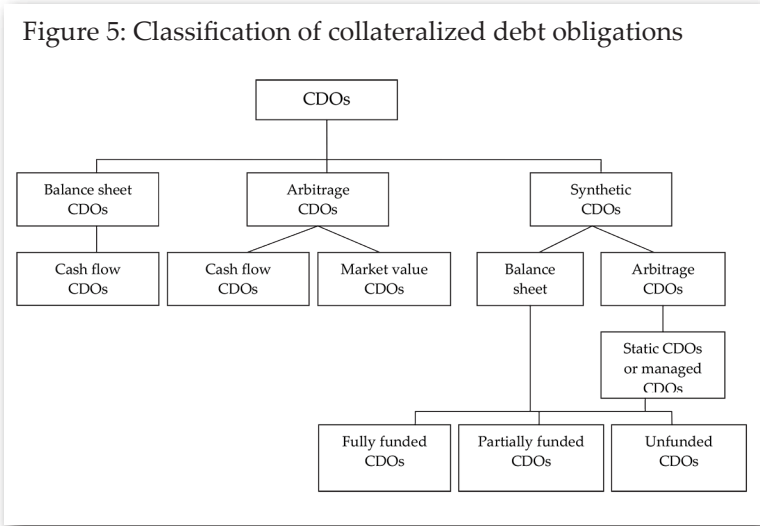
In case of balance sheet CDOs, the main motive of the sponsor is to remove certain assets from his balance sheet. Banks can remove certain items from their balance sheets and transfer them into CDOs, thereby reducing their regulatory capital requirement and increasing their liquidity.

- Management strategy implemented on products: cash flow CDOs or market value CDOs.

In a cash flow CDO the source of funds for the repayment of issued CDO securities are the regular returns on assets making up the CDO portfolio.

Market value CDOs are structured so that the sales of assets from the CDO portfolio accounts for the main source of funds for the repayment of obligations in respect of the issued CDO securities. In case of these CDOs, repayment depends on the market value of the financial assets in the portfolio.

The following figure shows the classification of CDOs.



Synthetic Collateralized Debt Obligations

Synthetic collateralized debt obligation is classified as a credit derivative. Most risk transfers taking place on the credit derivatives market are in the form of a SCDO. In a SCDO credit risk transfer is achieved synthetically through a credit derivative, instead of through a true SPV sale, hence its name. Given the fact that credit risk of assets is transferred from the transaction sponsor or initiator to investors by means of credit derivative instruments, the initiator plays the role of the credit protection buyer, whereas the investors are the credit protection sellers. The risk is typically transferred to an SPV by means of a CDS and/or TRS. However, the assets are legally not transferred to the SPV, staying instead on the initiator's balance sheet. By implementing an SCDO, the initiator can obtain regulatory facilities in terms of capital requirements and can manage the credit risk on his balance sheet, but will not be receiving any form of finance. Therefore, the SCDO structure enables the initiators to separate their credit risk exposure from their asset financing requirements.

Banks were the first to start using SCDOs back in 1997. For those banking balance sheet contracts the main motive was to hedge credit risk, or to reduce regulatory capital, or both. After these original contracts, the same SCDO methodology was used to create CDO tranches with risk and return profiles attractive for investors. Those latter contracts, inspired by the

needs of credit investors instead of banks, represent arbitrage contracts. In the first years of operation of the SCDO market (1997-1999), almost all SCDOs were balance sheet contracts, although arbitrage contracts have been increasingly used today.

The main characteristic of SCDO is tranching of credit risk. The original SCDOs on the market implied all tranches (equity, junior and senior), and the sum of their theoretical values equaled the theoretical value of the reference portfolio.

SCDO mogu da budu razdvojene od sponzorske institucije, i na taj način investitori nisu izloženi kreditnom riziku samog sponzora. Takođe, sintetički aranžman znači da kreditni rizik aktive koja inače nije odgovarajuća za konvencionalnu sekjuritizaciju može da bude transferisan, dok se aktiva zadržava na bilansu stanja. U tu aktivu spadaju: bankarske garancije, akreditivi ili gotovinski krediti koji imaju pravna ili druga ograničenja vezana za sekjuritizaciju. Od nedavno, spektar kolateralala koji se upotrebljava u SCDO transakcijama se povećao, i pored korporativnog kreditnog rizika obuhvata i hartije od vrednosti podržane rezidencijalnom hipotekom, komercijalne hartije od vrednosti podržane hipotekom, tranše CDO, i druge strukturisane finansijske hartije od vrednosti.

SCDO se mogu klasifikovati kao CDO koje ne zahtevaju finansiranje, CDO koje zahtevaju delimično finansiranje, i CDO koje zahtevaju potpuno finansiranje. CDO koja ne zahteva finansiranje se u potpunosti sastoji od CDS. CDO koja zahteva potpuno finansiranje podrazumeva da celokupni kreditni rizik referentnog portfolija može da se transferiše izdavanjem CLN. Podela na CDO koje zahtevaju ili ne zahtevaju finansiranje je vezana za to da li prodavac zaštite za kreditni derivat vrši ili ne vrši plaćanje unapred. Obično deo koji ne zahteva finansiranje ima viši rejting od bilo kog dela koji zahteva finansiranje, pa se iz tog razloga naziva super-stariji svop. Kod CDO koje zahtevaju delimično finansiranje najveći deo kreditnog rizika pula referentne aktive se transferiše putem super-starijeg svopa, koji je CDS. Preostali kreditni rizik se transferiše primenom CLN, koje predstavljaju deo koji zahteva finansiranje.

Mehanizam funkcionisanja sintetizovanih kolateralizovanih dužničkih obaveza

Na sledećem grafikonu je prikazana osnovna struktura SCDO, kod koje se kreditni rizik referentne aktive transferiše na SPV emitenta, a na kraju na investitore, primenom CDS i emisijom CLN. U aranžmanu CDS, transfer rizika se obavlja kako bi se zauzvrat dobila svop premija, koju zatim emitent plaća investitorima. Emisija nota se investira u nerizični kolateral, umesto da se prosledi nalogodavcu, kako bi se razdvojili kreditni rejtinzi nota od rejtinga nalogodavca.

Ukoliko nije osnovan pul kolateralala, smanjenje ocene kreditne sposobnosti sponzora može da prouzrokuje smanjenje kreditnog rejtinga emitovanih nota. Investitori u note se izlažu kreditnom riziku referentne aktive, i ukoliko ne nastupe kreditni događaji ostvariće prinose koji su u najmanju ruku jednaki aktivu kolateralala i CDS premiji. Ako su u pitanju CLN, takođe će ostvariti višak prinosa na osnovu performanse referentnog portfolija. U slučaju da nastupe kreditni događaji, emitent će dostaviti aktivu drugoj ugovornoj strani u svopu i nalogodavcu će isplatiti nominalnu vrednost aktive iz pula kolateralala. Kao što je ranije rečeno, CDS su kreditni derivati koji ne zahtevaju finansiranje, dok su CLN kreditni derivati koji zahtevaju finansiranje i kod njih prodavac zaštite (investitor) finansira vrednost referentne aktive unapred, i ukoliko nastupi kreditni događaj dobija umanjeni prinos.



Today most SCDOs are in the form of a single-tranche CDO, with only one tranche of the CDO capital structure being available for sale.

SCDOs can be separate from the sponsorship institution, which is a way for investors to avoid being exposed to the credit risk of the sponsor himself. Also, the synthetic arrangement means that the credit risk of assets that are otherwise not suitable for conventional securitization can be transferred, while keeping the concerned assets on the balance sheet. These assets include: bank guarantees, letters of credit or cash loans with legal or other limitations regarding securitization. Since recently, the range of collaterals used in SCDO transactions has expanded, and in addition to the corporate credit risk also includes residential mortgage-backed securities, mortgage-backed commercial papers, CDO tranches, and other structured financial securities.

SCDOs can be classified as unfunded CDOs, partially funded CDOs and fully funded CDOs. An unfunded CDO fully consists of credit default swaps. A fully funded CDO implies that the total credit risk of the reference portfolio can be transferred by issuing credit-linked notes. The division into funded and unfunded CDOs is related to whether the protection seller does or does not conduct advance payment for the concerned credit derivative. Typically, the unfunded segment has a higher rating than any other funded segment, which is why is called a super-senior swap. In case of partially funded CDOs, the largest part of the credit risk of the reference assets pool is transferred by means of a super-senior swap, which is a CDS. The remaining credit risk is transferred by means of a CLN, representing the funded segment.

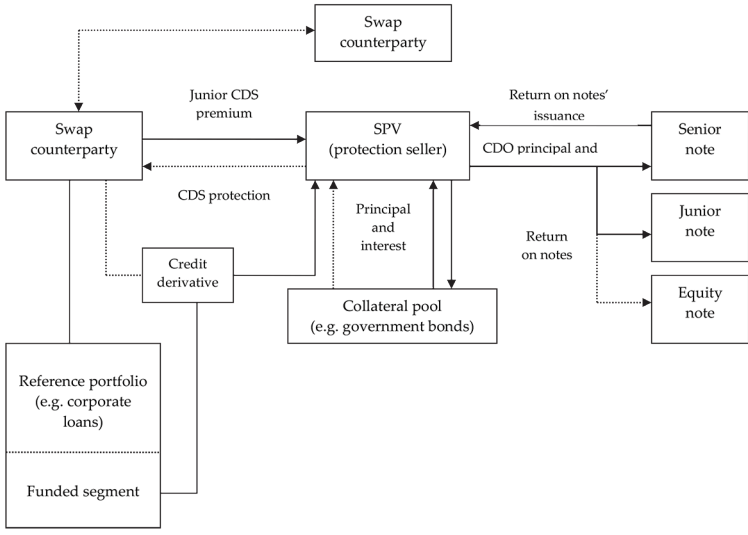
Standard Mechanism of Synthetic Collateralized Debt Obligations

The following figure illustrates the basic SCDO structure, in which the reference asset's credit risk is transferred to an SPV issuer,

and ultimately to investors, by means of a CDS, and a CLN issuance. In a CDS arrangement, the transfer of risk is conducted in order to get a swap premium in exchange, which is then to be paid by the issuer to investors. The issuance of notes is invested in risk-free collateral, instead of being forwarded to the initiator, in order to separate the credit ratings of notes from the ratings of the initiator.

If a pool of collaterals does not get established, the poorer creditworthiness assessment of the sponsor can cause a downgraded credit rating of the issued notes. Investors in notes expose themselves to the reference asset's credit risk, and, in case of no credit events, they yield returns which are at least equal to the assets of the collateral and the CDS premium. In case of CLN, they also yield a surplus of returns based on the reference portfolio's performance. In case of credit events occurrences, the issuer submits the assets to the other contractual party in the swap transaction, and pays out to the initiator the nominal value of assets from the pool of collaterals. As was explained earlier, credit default swaps are unfunded credit derivatives, whereas credit-linked notes are funded credit derivatives, in which the protection seller (investor) finances the reference asset's value in advance, and, in case of the credit event occurrence, receives the reduced return.

Figure 6: Structure of a synthetic collateralized debt obligation



Prednosti sintetizovanih kolateralizovanih dužničkih obaveza

Uvođenje sredstava za sintetičku sekjuritizaciju je nastupilo kao posledica specifičnih zahteva sponzorskih institucija, i SCDO imaju određene prednosti, u koje spadaju sledeće:

- Brzina implementacije: SCDO može brže da bude postavljena na tržište od gotovinske CDO, vremenski period od početka do završetka transakcije može biti samo 4 nedelje, a prosečni vremenski period izvršenja je 6 do 8 nedelja, dok je kog ekvivalentnog gotovinskog CDO 3 do 4 meseca.
- Struktura SCDO je pojednostavljena i ne podrazumeva kompleksne vodopade.
- Troškovi kupovine zaštite su uglavnom manji zato što postoji mali deo, ili uopšte ne postoji, koji zahteva finansiranje i cena kreditne zaštite je manja od jednakog iznosa finansijske obaveze vezane za notu.
- Ne postoji zahtev za finansiranje super-starijeg dela.
- Velikom broju referentnih subjekata je CDS često jeftiniji od gotovinske obveznice sa istim imenom u osnovi.
- Upotreba kreditnih derivata je prouzrokovala veću fleksibilnost kako bi se prilagodili određenim zahtevima vezanim za kreditni rizik.
- Širi spektar referentne aktive može biti uključen, i može podrazumevati nepovučene kreditne linije, bankarske garancije, i derivatne instrumente kod kojih bi u gotovinskim transakcijama postojala sporna pitanja zakonske prirode kao i ona vezana za pravu prodaju.
- Transakcioni troškovi, kao što su pravne provizije, mogu biti manji s obzirom na činjenicu da nije neophodno uspostavljanje SPV.
- Banke mogu da održe odnose sa klijentima čiji krediti zapravo ne moraju da se prodaju sa bilansa stanja sponzorskog entiteta.
- Sintetička aktiva eliminiše rizik od promene kamatne stope i rizika prevremene naplate kod gotovinske aktive i na taj način može da pojednostavi mere koje primenjuju inostrani investitori u cilju hedžinga rizika od kursnih promena upotrebom svopova.

Primena kolateralizovanih dužničkih obaveza

CDO imaju širok spektar primene na finansijskim tržištima i uglavnom su klasifikovane u skladu sa krajnjim ciljevima svojih sponzora. CDO su postale vrlo popularni proizvodi za upravljanje kreditnim rizikom. Banke i finansijske institucije upotrebljavaju CDO u cilju diversifikacije svojih izvora finansiranja, kod upravljanja portfolio rizikom, i radi dobijanja regulatornih olakšica u pogledu zahteva za kapitalom.

Glavna namena bilansnih CDO je uklanjanje aktive sa bilansa stanja kreatora u cilju smanjenja zahtevane visine kapitala potrebnog za poslovanje i povećanja kapitalne dobiti.

Institucije vezane za emisiju arbitražnih CDO mogu da pokušaju da uvećaju svoj prinos na aktivu u osnovi na taj način što će postati investitori sa najvećom verovatnoćom ostvarenja gubitka (akcijski investitori) u novokreirane strukture. U arbitražnom CDO, glavne akcijske investitore predstavljaju osiguravajuća preduzeća, menadžeri koji upravljaju aktivom, i određene banke.

Takođe, CDO mogu da kreiraju likvidnost za inače nelikvidnu aktivu. Većina bankarskih kredita je nelikvidna. Nakon procesa sekjuritizacije, lakše može da se trguje osnovnim karakteristikama rizika tih kredita, zato što note koje izdaju SPV mogu da budu kupljene i prodate na tržištu. Pored toga, CDO omogućavaju, kroz proces tranširanja, kreiranje nove aktive sa specifičnim profilima koji bolje mogu da odgovaraju zahtevima pojedinaca i toleranciji institucionalnih investitora na rizik.

Osnovni razlog za upotrebu sintetizovanih CDO je činjenica da ne zahtevaju ni od sponzorske banke da proda kredite iz referentnog portfolija i ukloni ih sa bilansa stanja niti od SPV da pronalazi izvor kredita i hartija od vrednosti na različitim tržištima. SCDO omogućava bankama da anonimno prodaju kreditni rizik vezan za kredite koje drže u svojim finansijskim knjigama. Drugi razlog za upotrebu SCDO se odnosi na bankarske potrebe za hedžingom potencijalne izloženosti riziku kroz nepovučene kreditne aranžmane.

Advantages of Synthetic Collateralized Debt Obligations

The introduction of instruments for synthetic securitization came as a result of the specific requests of sponsorship institutions, given that SCDOs offer certain advantages, including the following:

- **Swiftness of implementation:** SCDO takes less time for being placed at the market than cash CDO; the time period from the commencement to the finalization of a transaction can be only 4 weeks, and the average time of enforcement 6 to 8 weeks, whereas in the case of the equivalent cash CDO it is 3 to 4 months.
- The SCDO structure has been simplified and does not imply the complex waterfall payments.
- The costs of protection purchase are usually lower because there is a small funded segment, if at all, and the credit protection price is lower than the equal amount of the financial obligation related to the concerned note.
- There is no request for financing the super-senior segment.
- A large number of reference entities often find CDS cheaper than the cash bond with the same underlying name.
- The usage of credit derivatives has led to higher flexibility in terms of adjusting to the certain credit risk related requirements.
- A wider range of reference assets may be included, and may also imply unutilized credit lines, bank guarantees, and derivative instruments in respect of which cash transactions might cause some debatable issues of legal nature, along with issues related to the real sale.
- Transaction costs, such as legal fees, may be lower given the fact that it is not necessary to establish an SPV.
- Banks can maintain relations with the clients whose loans do not actually have to be sold off the sponsorship entity's balance sheet.
- Synthetic assets eliminate the interest rate risk and prepayment risk in respect of cash assets, thereby simplifying the measures applied by foreign investors with a view to hedging FX risk by means of swaps.

Applications of Collateralized Debt Obligations

CDOs have a wide array of applications on the financial markets and are mostly classified according to the ultimate objectives of their sponsors. CDOs have become extremely popular products for credit risk management. Banks and financial institutions use CDOs to diversify their sources of finance, to manage portfolio risk, and to obtain regulatory facilities in terms of capital requirements.

The main application of balance sheet CDOs is to remove assets from the creator's balance sheet in order to reduce the required amount of working capital, and to increase capital gains.

Institutions related to the issuance of arbitrage CDOs can attempt to increase their return on underlying assets by becoming investors with the highest probability of loss (equity investors), investing into newly created structures. In arbitrage CDOs, the main equity investors are insurance companies, asset managers and certain banks.

Also, CDOs can generate liquidity for otherwise illiquid assets. Most bank loans are illiquid. Following the securitization process, it is easier to trade in basic characteristics of risks incurred by such loans, because the notes issued by SPVs can be purchased and sold on the market. Moreover, CDOs enable, through the tranching process, the creation of new assets with specific profiles, which can better suit the requests of individuals and the risk tolerance of institutional investors.

The principal reason for using synthetic CDOs lies in the fact that they neither require the sponsorship bank to sell the loans from its reference portfolio, thereby removing them from the balance sheet, nor do they require the SPV to find the source of loans and securities on different markets. SCDO enables banks to anonymously sell the credit risk related to the loans they hold in their financial books. The second reason for using SCDO refers to the banks' needs for hedging potential risk exposures through unutilized loan arrangements.

Nedostaci kolateralizovanih dužničkih obaveza

Kod CDO, glavni uzrok neizvesnosti je performansa osnovnog portfolija, zato što zavisi od rizika vezanog za različita kreditna neizvršenja. Neizvršenje ima dvostruki efekat na strukturu CDO: (1) Iznos aktive se smanjuje, pa se samim tim smanjuje i količina kapitala; (2) Budući tokovi prihoda se smanjuju, što dovodi do smanjenja u dividendama koje se isplaćuju investitorima vezanim za akcijsku tranšu.

Drugi uzrok neizvesnosti je dinamično upravljanje portfolijom. Menadžer CDO može da obavlja transakcije vezane za osnovni portfolio aktive, i te transakcije mogu imati isti uticaj kao i neizvršenje, jer neto vrednost ili dobitak koji portfolio ostvaruje mogu da se umanje. U slučaju da se ostvari dobitak, problem se više odnosi na uobičajeno korporativno poslovanje. Ili može biti isplaćen u vidu dividendi (što dovodi do toga da stariji kreditori ne ostvaruju nikakve dobitke) ili dodat kapitalu CDO (u tom slučaju će profit deliti akcionari i kreditori putem višeg nivoa podređenosti).

Portfolio menadžment za CDO je regulisan raznim pravilima, koja su uglavnom utvrđena u saradnji sa rejting agencijama. Menadžer mora da se pridržava zadatih kriterijuma, koji se odnose na kvalitet kreditnog portfolija, njegovih različitih sektora, njegovog profila ročnosti, maksimalne dozvoljene godišnje stope trgovine, itd. Kada rejting agencija analizira CDO i dodeljuje rejting za stariji dug, pridržavanje pravila predstavlja jedan od ključnih faktora za dobijanje povoljne ocene.

Portfolio menadžeru je dozvoljeno da menja portfolio tokom datog perioda reinvestiranja, koji obično traje između 5 i 7 godina. Pored toga, menadžer ima značajnu

fleksibilnost prilikom obavljanja transakcija. To dinamično upravljanje ima značajan uticaj na performansu CDO, i teško je predvideti izbor menadžera. Kao posledica toga, specifično iskustvo menadžera, pogotovo vezano za upravljanje CDO, je ključni aspekt kvaliteta menadžera CDO i veoma je značajno za procenu buduće performanse transakcije.

Glavni rizici investitora u SCDO su sledeći:

- Kreditni rizik koji je prisutan u referentnoj aktivi

Suština SCDO je transfer kreditnog rizika, i investitori (prodavci zaštite) zahtevaju izloženost riziku kreditne performanse referentne aktive. Prema tome, investitori preuzimaju kreditni rizik te aktive, nezavisno od toga da li su u pitanju obveznice, strukturisani proizvodi kao što su ABS i MBS, krediti, ili druga aktiva.



Disadvantages of Collateralized Debt Obligations

When it comes to CDOs, the major cause of uncertainty is the performance of the underlying portfolio, due to its dependence on the risk related to various credit defaults. Default has a double effect on the CDO structure: (1) The amount of assets is decreasing, causing the amount of capital to decrease as well; (2) The future return flows are dwindling, which leads to lower dividends to be paid out to equity tranche investors.

The second reason behind this uncertainty is the dynamic portfolio management. A CDO manager can conduct transactions related to the underlying asset portfolio, with such transactions having the same impact as default, because the net value or profit yielded by the portfolio can be reduced. If profit is achieved, the problem

to a larger extent refers to regular corporate business. It can either be disbursed in the form of dividends (which leads to senior creditors being bereft of any gains), or can be allocated into CDO capital (in which case the profit is divided among shareholders and creditors according to the higher levels of subordination).

CDO portfolio management is regulated by means of various rules, which have been mostly determined in cooperation with rating agencies. A manager must adhere to the set criteria, referring to the quality of credit portfolio, its various sectors, its maturity profile, maximum allowed annual rate of trading, etc. When a rating agency analyzes the CDO and awards a certain rating to the senior debt, adhering to the rules is one of the key factors for getting a favorable assessment.

A portfolio manager is allowed to change his portfolio during the given period of investment, which typically lasts between 5 and 7 years. Moreover, the manager is granted substantial flexibility when conducting transactions. This dynamic management considerably impacts the CDO performance, and it is difficult to predict the manager's choice. As a result, the specific experience of the concerned manager, especially when it comes to CDO management, is the key aspect of the CDO manager's quality, being extremely significant for the assessment of the concerned transaction's future performance.

The main risks for investors into SCDOs are the following:

- Credit risk incurred by the reference asset;

The point of SCDO is to transfer credit risk, and investors (protection sellers) must have an exposure to the risk of the reference asset's credit performance. Therefore, investors undertake the concerned asset's credit risk, regardless of whether that



- Pravne sporne tačke vezane za definiciju kreditnog događaja

Drugi rizik se odnosi na konflikt interesa, zato što u većini SCDO sponzor transakcije, koji zapravo kupuje zaštitu, takođe ima zadatak da odredi kada je nastupio kreditni događaj. Od presudne važnosti je da se definiše šta tačno spada u kreditni događaj. Što je obuhvatnija definicija kreditnog događaja, to je veći rizik da će doći do neslaganja između kupca zaštite i prodavca zaštite. Prema tome, pored definicija ISDA,

ti događaji bi trebalo da budu što preciznije definisani i u pravnoj dokumentaciji.

Takođe, verovatnoća ostvarenja gubitaka može biti veća za sintetizovanu notu sa specifičnim rejtingom od obične note istog referentnog subjekta, zato što kreditni rejting emisije obveznica neće odražavati sve kreditne događaje koje je ISDA definisalo.

- Kreditni rizik da druga strana neće ispuniti obavezu koji je vezan za CDS i koji transferiše kreditni rizik strukturi CDO.

Literatura / References

1. Anson, Mark, Fabozzi, Frank, Choudhry, Moorad, Chen, Ren-Raw. Credit Derivatives: Instruments, Applications and Pricing. Hoboken: John Wiley & Sons, Inc., 2004.
2. Banks, Erik. The Credit Risk of Complex Derivatives. Hampshire: Palgrave Macmillan, 2004.
3. Bomfim, Antulio. Understanding Credit Derivatives and Related Instruments. San Diego: Elsevier Academic Press, 2005.
4. Bruyere, Richard, Cont, Rama, Copinot, Regis, Fery, Loic, Jaeck, Christophe, Spitz, Thomas. Credit Derivatives and Structured Credit: A Guide for Investors. Chichester: John Wiley & Sons Ltd., 2006.
5. Chaplin, Geoff. Credit Derivatives: Risk Management, Trading & Investing. Chichester: John Wiley & Sons Ltd., 2005.
6. Choudhry, Moorad. An Introduction to Credit Derivatives. Oxford: Elsevier Butterworth-Heinemann, 2004.
7. Choudhry, Moorad, Joannas, Didier, Landuyt, Gino, Pereira, Richard, Pienaar, Rod. Capital Market Instruments: Analysis and Valuation. Hampshire: Palgrave Macmillan, 2010.
8. Committee on the Global Financial System. "Credit Risk Transfer" www.bis.org. (2003) 33.
9. Crouhy, Michel, Galai, Dan, Mark, Robert. The Essentials of Risk Management. New York: The McGraw-Hill Companies, Inc., 2006.

implies bonds, structured products like ABS and MBS, loans, or other types of assets.

- Legally disputable points related to the credit event definition;

The second risk refers to the conflict of interest, because in most SCDOs the transaction sponsor, who is, in fact, purchasing protection, also has the task to determine when the credit event actually occurred. It is of utmost importance to define precisely what counts as a credit event. The more comprehensive credit event definition, the higher the risk that some disagreement would ensue between the protection buyer

and the protection seller. Thus, in addition to ISDA definitions, these events should also be defined as precisely as possible in the legal documentation.

Moreover, the probability of yielding losses may be higher for a synthetic note with specific rating than for a regular note of the same reference entity, because the credit rating of a bonds' issuance would not reflect all credit events defined by ISDA.

- Counterparty credit risk related to the CDS, transferring the credit risk to the CDO structure.

10. De Servigny, Arnaud, Renault, Olivier. Measuring and Managing Credit Risk. New York: The McGraw-Hill Companies, Inc., 2004.
11. Eales, Brian, Choudhry, Moorad. Derivative Instruments: A Guide to Theory and Practice. Oxford: Butterworth-Heinemann, 2003.
12. Fabozzi, Frank, Davis, Henry, Choudhry, Moorad. Introduction to Structured Finance. Hoboken: John Wiley & Sons, Inc., 2006.
13. Gibson, Michael. "Understanding the Risk of Synthetic CDOs" www.federalreserve.gov (2004) 1-27.
14. Kapor, Predrag. „Strukturni finansijski instrumenti - CDO, CDS, SCDO, CLN i ABCP“ Poslovna politika br. 3-4 (2008.) 31, 33.
15. O'Kane, Dominic. "Credit Derivatives Explained" Lehman Brothers Structured Credit Research (2001) 33-34, 55-56.
16. Tavakoli, Janet. Collateralized Debt Obligations & Structured Finance: New Developments in Cash and Synthetic Securitization. Hoboken: John Wiley & Sons, Inc., 2003.
17. Wagner, Niklas. Credit Risk: Models, Derivatives and Management. Boca Raton: Chapman & Hall/CRC, 2008.