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Derivatives Markets: Sources of Vulnerability in U.S. Financial Markets

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Abstract:

The paper studies the way in which derivatives markets pose several types of public interest concerns by exposing the U.S. economy to new and greater sources of vulnerability. The first and most obvious concern is the way in which derivatives markets can expansion of risk-taking activity. By enhancing the efficiency of transactions and capital, derivatives can increase both hedging and speculation. Secondly, derivatives markets can also encourage destructive and unproductive activities such as fraud, manipulation, outflanking prudential financial market regulations, manipulate accounting rules and evade taxation. The third concern involves the creation of new credit risk as derivatives contracts are traded in order to shift various types of market risk. The new credit risk, especially in over-the-counter markets (OTC), is not subject to collateral or margin standards or requirements and is not treated in the most economically efficient way for purposes of capital requirements. The fourth concern is the liquidity risk, especially in the interest rate swaps market, which can be suddenly arrested due to creditworthiness problems with one or more major market participant. The last concern is systemic risk which arises from the non-transparent nature of most OTC derivative markets and the strong linkages between derivatives and the underlying asset and commodity markets. The paper will conclude with a proposal for prudential regulatory measures that will address these public interest concerns.

I. INTRODUCTION

Derivatives are financial contracts designed to create pure price exposure to an underlying commodity, asset or event. In general they do not involve the exchange or transfer of principal or title. Rather their purpose is to capture, in the form of price changes, some underlying price change or event. The term *derivative* refers to how the price of these contracts are *derived* from the price of some underlying security or commodity or from some index, interest rate or exchange rate. Examples of derivatives include futures, forwards, options and swaps, and these can be combined with each other or traditional securities and loans in order to create *hybrid instruments* (see Appendix I below for a primer on derivative instruments).

Derivatives play an important and useful role in hedging and managing risk, but they also pose several dangers to the stability of financial markets and thereby the overall economy.

As a testament to their usefulness, derivatives have played a role in commerce and finance for thousands of years. The first known instance of derivatives trading dates to 2000 B.C. when merchants, on what is now called Bahrain Island in the Arab Gulf, made consignment transactions for goods to be sold in India.[1] Similarly dated trading is thought to have occurred in Mesopotamia.[2] Aristotle discussed a case of market manipulation through the use of derivatives on olive oil press capacity in Chapter 9 or his *Politics* some 2,500 years ago.[3] Derivatives trading in an exchange environment and with trading rules can be traced back to Venice in the 12th Century.[4] The Japanese traded futures-like contracts on warehouse receipts or rice in the 1700s. In the U.S., forward and futures contracts have been formally traded on the Chicago Board of Trade since 1849. Today the size of derivatives markets is estimated by the Bank of International Settlements to exceed $115 trillion in outstanding positions on exchanges and OTC markets, and trading volume on exchanges, based on the first six months of 2001, exceeds $550 trillion (see the following tables of BIS data).

Derivatives are useful for hedging the risks normally associated with commerce and finance. Farmers can use derivatives the hedge the risk that the price of their crops fall before they are harvested and brought to market. Banks and thrifts can use derivatives to reduce the risk that the short-term interest rates they pay to their depositors will rise against the fixed interest rate they earn on their loans and other assets. Pension funds and insurance companies can use derivatives to hedge against large drops in the value of their portfolios.

As an indication of the dangers they pose, it is worthwhile recalling a shortened list of recent disasters. Long-Term Capital Management collapsed with $1.4 trillion in derivatives on their books. Sumitomo Bank in Japan used derivatives their manipulation of the global copper market

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[1]) This is the claim made by the Futures Industry Association in their 1984 publication *An Introduction to the Futures Markets 2.* It is cited by Jerry Markham in two instances. Markham, Jerry W. 1994. *"'Confederate bonds,' 'General Custer,' and the Regulationof Derivative Financial Instruments."* Seton Hall Law Review. 1994; and Markham, Jerry W. 1987. *The History of Commodity Futures Trading and Its Regulation.* Praeger Press, New York.

[2]) Swan, Edward J. 1993. *The Development of the Law of Financial Services.* Kluwer Law International. London, United Kingdom. Swan, Edward J. 2000. *Building the Global Market: A 4000 Year History of Derivatives*. Kluwer Law International. London, United Kingdom.

[3]) It is not entirely clear from the available translation whether these derivatives were options or forward contracts.

[4]) Swan, Edward J. 1993. *The Development of the Law of Financial Services.* ????

for ten years prior to 1996. Barings bank, one of the oldest in Europe, was quickly brought to bankruptcy by over a billion dollars in losses from derivatives trading. Both the Mexican financial crisis in 1994 and the East Asian financial crisis of 1997 were exacerbated by the use of derivatives to take large positions involving the exchange rate.

The first danger posed by derivatives comes from the leverage they provide to both hedgers and speculators. Derivatives transactions allow investors to take a large price position in the market while committing only a small amount of capital – thus the use of their capital is leveraged.

Leverage makes it cheaper for hedgers to hedge, but it also makes speculation cheaper. Instead of buying $1 million of Treasury bonds or $1 million of stock, an investor can buy futures contracts on $1 million of the bonds or stocks with only a few thousand dollars of capital committed as margin. The returns from holding the stocks or bonds will be the same as holding the futures on the stocks or bonds. This allows an investor to earn a much higher rate of return on their capital by taking on a much larger amount of risk.

Taking on these greater risks raises the likelihood that the investor makes or loses large amounts of money. If they suffer large losses, then they are threatened with bankruptcy. If they go bankrupt, then the people, banks and other institutions that invested in them or lent money to them will face possible losses and in turn face bankruptcy themselves. This spreading of the losses and failures is known as *systemic risk*, and it is an economy wide problem that is made worse by leverage and leveraging instruments such as derivatives.

Another danger involves transparency. Some derivatives are traded on formal futures and options exchanges which are closely regulated. Other derivatives are traded over-the-counter (OTC) in markets that are almost entirely unregulated. In the OTC markets there is very little information provided by either the private market participants or collected by government regulators. The prices and other trading information in these markets are not made freely available to the public like is the case with futures and options exchanges. Instead that information is hoarded by each of the market participants.

As a result of this lack of information in the OTC market, it substantially reduces the ability of the government and other market participants to anticipate and possibly preempt building market pressures, major market failures, or manipulation efforts.

Yet another danger involves the use of derivatives to evade, avoid, dodge or out-flank financial market regulations designed to improve economic stability. In the cases of this decade's financial crises in Mexico and East Asian, the financial institutions in those countries used derivatives called total rate of return swaps to out-flank financial regulations limiting those institutions exposure to foreign exchange risk. Derivatives can also be used to evade tax laws and manipulate accounting rules my restructuring the flow of payments so that earning are reported in one period instead of another. Foreign exchange derivatives can also be used to improve the ability of speculators to mount an attack on a developing country's exchange rate system. In 1997, speculators employed both foreign exchange derivatives and equity-linked derivatives on Hong Kong's stock market in order to launch their attack on Hong Kong's fixed exchange rate regime. Thus when the Hong Kong monetary authority tried to defend its currency by raising interest rates, the speculators profited when the higher interest rates pushed down the price of stocks.

In sum, the enormous derivatives markets are both useful and dangerous. Current method of regulating these markets is not adequate to assure that the markets are safe and sound and that disruptions from these markets do not spill-over into the broader economy.

There are two very important economic functions or purposes for derivatives markets are: risk shifting and price discovery. Risk shifting is also referred to as risk management and more traditionally as hedging and speculating. Risk shifting can improve the efficiency of the economy by facilitating the transfer of risk from those less will or able to bear to those more willing or able to handle it. Derivatives also improve risk management because of their ability to decompose or disentangle the various sources of risk involved with

The presence of derivatives markets, and more recently their extraordinary growth, raise some important concerns about the vulnerability of the financial sector and the overall economy. As the poet once said, "How to I threaten thee. Let me count the ways."

1) Increases leverages and lowers expense of risk taking
    a) Risk taking is an externality and thus is a market imperfection that is not solved by the market alone
    b) Derivatives make risk shifting, and hence risk taking, cheaper and more efficient.
    c) Derivatives are sometimes used to outflank prudential regulations and taxation.
2) Destructive and Unproductive Activities
    a) Destructively used to commit fraud on the market
    b) Destructively used to manipulate markets and distort price discovery
    c) Unproductively used to outflank prudential regulations
        i) lower capital requirement
        ii) lower collateral and margin requirement
        iii) avoid restrictions on assets and liabilities
    d) Unproductively used to manipulate accounting rules
    e) Unproductively used to avoid or evade taxation.
3) Credit risk
4) Liquidity risk
5) Systemic risk

The following exposition will address each of the points enumerated above. Each of these concerns is linked to one or more concepts of market failure or market imperfections. These are the externality of risk taking, the externality of the information content of prices, the absence of destructive competition and systemic risk.

II. EXPANSION OF RISK TAKING

There is an external diseconomy from the activity of risk taking. It is an inherent property of risk taking in financial markets that it can have a deleterious impact not only on those entities that are not party to the transactions and even those that do not participate in the market.

This is akin to negative external diseconomies such as pollution and congestion.

Markets can discipline internal risk management and the risk-reward relationship for ownership of internalized risk taking activities. Financial markets price securities and other transactions

based on their risk-reward characteristics. Financial markets also produce incentives for risk management through the use of collateral, margin and capital.

Market cannot address and solve the collateral damage of bankruptcy and lesser events such as failure to perform on transactions obligations. This affects not only the immediate counterparties, who are supposed to internalize the credit risk of their counterparties, but also other non-counterparties in the market and others who are not in the market.

In financial markets, risk taking has an externality because bankruptcy affects more than the failing firm. Part of the impact on other firms is anticipated by their holding capital in reserve against just such problems. However, reserve capital is costly and competition between market participants drives them to avoid holding any excess capital. Therefore bankruptcy losses in excess of what they anticipate will adversely impact those firms and in turn the other firms and individuals that do business with them. This is most clearly a problem for "too big to fail" firms. If they are driven to bankruptcy or are unable to perform their usual market functions, then it will have an adverse affect on the overall economy unless the government must steps in to restore market order.

Linkages between the various investors and financial institutions are inherent in financial markets. My risk becomes your risk becomes his and her risk. The ability of market-based competition is limited to discipline market participants against taking on more risk or too much risk. Sometimes competition punishes above normal risk taking as more and more investors decline to do business with the exceptionally risky investor. Other times competition drives down the standard for prudent investing as the competition for capital and customers pushes investors to seek higher returns by moving into riskier investments. Although competitive markets work sometimes, it is the times that they fail which justify the role of the government to provide minimal prudential regulatory standards.

Externality of risk and bankruptcy extends not just to other individual investors but also to the economy as a whole when it strikes key financial institutions such as banks that are critical to clearing payments, dealing in or clearing U.S. Treasury securities, underwriting and dealing in other bonds or interest rate derivatives. The problem is that the cost to the individual for their risk taking is less than the social cost.

Derivatives, especially OTC derivatives, make it worse by reducing transparency.

The externalities inherent in the risk-taking activities in financial markets makes it economically necessary for the government to play a role in setting prudential standards. Competitive markets alone will not do this. This role of the government, though is not justified by some paternalistic motive to protect fools from themselves. Rather it justified by need to protect the rest of us from the fools.

One of the most glaring illustrations of this notion is the failure of LTCM

> "Had the failure of LTCM triggered the seizing up of markets, substantial damage could have been inflicted on many market participants, including some not directly involved with the firm, and could have potentially impaired the economies of many nations, including our own." Alan Greenspan before the House Banking Committee in October, 1998.

Current U.S. regulations are in fact designed to address this externality.

- capital requirements for financial institutions which are calculated based on internalization of counterparty exposure, but which also serve as buffer to other outside disturbances
- restrictions on banks' balance sheets
- segregated accounts
- speculation limits on futures and options exchanges [CFTC just filed charges against a futures trader who exceeded position limit].
- margin requirements on stock transactions and futures and options positions
- exchange trading halts and circuit breakers
- appropriate person limit to certain types of transactions
- regulatory oversight and supervision
- know-thy-customer provisions in securities laws

The following Tables 1 and 2 illustrate the amount of derivatives positions and derivatives trading which is occurring globally in the U.S.

TABLE 1

OUTSTANDING OTC DERIVATIVES

By Instrument
(in billion U.S. $)

	Notional amounts				
	December 1998	June 1999	December 1999	June 2000	December 2000
TOTAL CONTRACTS	80,318	81,462	88,202	94,008	95,199
Foreign exchange contracts	18,011	14,899	14,344	15,494	15,666
Outright forwards and forex swaps	12,063	9,541	9,593	10,504	10,134
Currency swaps	2,253	2,350	2,444	2,605	3,194
Options	3,695	3,009	2,307	2,385	2,338
Interest rate contracts	50,015	54,072	60,091	64,125	64,668
Forward rate agreements	5,756	7,137	6,775	6,771	6,423
Interest rate swaps	36,262	38,372	43,936	47,993	48,768
Options	7,997	8,562	9,380	9,361	9,476
Equity-linked contracts	1,488	1,511	1,809	1,645	1,891
Forwards and swaps	146	198	283	340	335
Options	1,342	1,313	1,527	1,306	1,555
Commodity contracts	415	444	548	584	662
Gold	182	192	243	261	218
Other commodities	233	252	305	323	445
Forwards and swaps	137	127	163	168	248
Options	97	125	143	155	196
Other	10,389	10,537	11,408	12,159	12,313
GROSS CREDIT EXPOSURE	1,567	1,320	1,207	1,105	1,274

* BIS, 2001.

TABLE 2

EXCHANGE-TRADED DERIVATIVES

Notional principal in billions of U.S. dollars
2001* is measured as of end of June, 2001

	1987	1992	1997	1988	1999	2000	2001*
Turnover (four times forth quarter amounts)							
FUTURES							
All markets	230,588	597,154	303,289	302,745	246,092	294,923	425,794
Interest rate	209,206	563,949	285,095	280,040	221,434	271,066	401,990
Currency	7,948	9,284	2,518	2,374	2,422	2,246	2,296
Equity index	13,434	23,921	15,676	20,332	22,236	21,611	21,507
North America	139,541	322,117	143,667	150,743	116,557	148,042	239,231
Interest rate	119,188	301,150	132,975	139,054	103,153	134,493	225,228
Currency	7,852	9,036	2,250	1,948	2,060	1,555	1,808
Equity index	12,501	11,932	8,442	9,740	11,343	11,993	12,194
OPTIONS							
All markets	41,859	130,537	64,189	73,799	55,242	68,558	133,194
Interest rate	21,062	102,136	49,661	58,622	37,182	49,990	107,465
Currency	4,324	5,483	893	375	268	207	246
Equity index	16,474	22,918	13,634	14,802	17,792	18,361	25,483
North America	40,085	86,346	45,929	51,599	36,086	45,932	98,792
Interest rate	19,657	65,817	34,998	41,438	24,174	34,114	81,094
Currency	4,291	5,450	554	261	190	146	169
Equity index	16,138	15,079	10,377	9,900	11,722	11,672	17,529
Open Interest (Notional Amounts, end of year)							
FUTURES							
All markets	520	3,019	7,835	8,342	8,285	8,308	9,545
Interest rate	488	2,913	7,581	8,020	7,914	7,892	9,174
Currency	15	27	42	32	37	74	39
Equity index	18	80	211	291	334	342	332
North America	375	1,658	3,223	3,528	3,552	4,266	5,774
Interest rate	347	1,595	3,083	3,366	3,358	4,053	5,563
Currency	15	25	38	28	32	36	32
Equity index	14	38	103	135	162	178	178
OPTIONS							
All markets	210	1,620	4,568	5,589	5,237	5,817	9,884
Interest rate	123	1,385	3,640	4,624	3,756	4,734	8,327
Currency	60	71	119	49	22	21	24
Equity index	28	164	810	917	1,459	1,061	1,533
North America	203	1,042	3,126	3,833	3,381	3,863	7,228
Interest rate	117	859	2,439	3,124	2,259	3,117	6,075
Currency	59	70	32	18	13	14	16
Equity index	26	113	655	691	1,109	732	1,137

* BIS, 2001.

Derivatives make risk shifting and risk taking more cheap, more efficient and potentially more dangerous. They make it cheaper is several ways.

One, the transactions costs are lower. It is cheaper to buy a stock index future than to buy the market by using the cash market for equities to purchase all the securities in the index. This is obviously more the case for larger indices. Transactions costs on exchange traded derivatives are low compared to even bonds or stocks. Two, the capital costs are lower. Derivatives provide leverage and thus make it cheaper to take on the price risk than by buying or selling the underlying asset or commodity. The cost savings here is essentially that of using less capital in order to execute the transaction or take on and maintain the position. In so far that derivatives transactions are netted, and especially cross-netted, then the margin or collateral required is even smaller and the credit-risk exposure is also smaller. This saves capital both directly by lowering margin or collateral, but it also saves capital indirectly by lowering capital charges due to credit exposure.

Derivatives are a more efficient way to take on risk in the following ways. First, because derivatives can disentangle the various sources or components of risk in a particle asset, commodity or investment, then it is more efficient to take the specific risk that one wants and not have to also acquire the other unwanted components. Second, derivatives markets are sometimes more liquid than the market for the underlying asset or commodity. In that case, it is more efficient as a trading strategy to take on price exposure through a derivatives contract than through a purchase or sale of the underlying item. Third, the derivative may be more efficiently priced.

Derivatives can be a more dangerous way to take on risk because of greater leverage, greater price sensitivity or volatility and because they are sometimes designed to outflank prudential regulations.

+ all pension funds, insurance companies and banks take on risks – both types and amounts – that would not be allowed or discouraged by regulations

III. INCREASE CREDIT RISK

The size of the derivatives market is huge. So big is challenges descriptions akin to description of the size of space. Douglas Adams, author or *The Hitchhiker's Guide to the Galaxy,* tried to say it like this, "Space is big. Really big. You just won't believe how vastly hugely mind-bogglingly big it is. I mean, you may think it's a long way down the road to the chemist, but that's just peanuts to space."

Consider some numbers from the BIS for the end of 2000.
Notice that the amount of credit risk is small in proportion of the total outstanding, but very large in absolute terms.

TABLE 3

CREDIT RISK IN OTC DERIVATIVES

(in billion U.S. $)

	Notional amounts				
	December 1998	June 1999	December 1999	June 2000	December 2000
GROSS CREDIT EXPOSURE	1,567	1,320	1,207	1,105	1,274

* BIS, 2001.

Failure of major financial institutions would undermine payments and settlements system of U.S. economy. Costs of failure would far exceed those to share holdings and even those with direct financial transactions who are holding capital or collateral against those credit exposures.

TABLE 4

U.S. Banks Ranked by Derivatives Positions
Credit Exposure/ Capital

millions U.S. dollars, June 2001

BANK NAME	TOTAL ASSETS	TOTAL DERIVATIVES	BILATERAL NETTED CURRENT EXPOSURE	FUTURE EXPOSURE (NEW RBC ADD ON)	TOTAL EXPOSURE FROM ALL CONTRACTS	TOTAL EXPOSURE / CAPITAL RATIO (%)
CHASE MANHATTAN BANK	412,248	17,376,298	44,015	113,765	157,780	529.2
MORGAN GUARANTY TR	201,033	11,961,778	50,674	106,823	157,497	1,153.3
BANK OF AMERICA NA	563,844	8,248,564	17,395	52,945	70,340	125.5
CITIBANK N A	392,181	5,541,332	23,310	45,188	68,498	182.6
FIRST UNION NATIONAL BANK	227,646	1,605,497	8,172	5,130	13,302	61.2
BANK ONE NATIONAL ASSN	142,293	753,444	3,272	5,261	8,533	63.5
BANK OF NEW YORK	74,128	356,480	1,162	1,020	2,181	30.1
WELLS FARGO BANK NA	125,294	312,064	2,549	925	3,474	25.4
HSBC BANK USA	82,823	287,150	1,923	1,830	3,753	56.7
FLEET NATIONAL BANK	190,714	286,601	1,336	1,343	2,679	11.8
STATE STREET BANK&TRUST	65,691	198,795	2,075	1,860	3,935	112.7
KEYBANK NATIONAL ASSN	76,139	83,895	627	353	980	11.6
NATIONAL CITY BANK	37,172	69,346	463	719	1,183	30.3
MELLON BANK NATIONAL	35,355	64,226	720	401	1,121	27.8
BANKERS TRUST CO	42,662	62,286	1,068	1,372	2,440	36.1
SUNTRUST BANK	98,094	52,054	656	313	969	9.6
PNC BANK NATIONAL ASSN	63,086	49,311	406	185	591	8.5
LASALLE BANK NATIONAL	51,846	43,154	74	411	485	11.0
FIRST TENNESSEE BANK NA	18,258	39,005	138	99	238	14.1
WACHOVIA BANK NATIONAL	67,108	39,472	636	367	1,003	10.8
CHASE MANHATTAN USA	47,827	32,905	100	83	183	3.6
MERRILL LYNCH BANK USA	60,398	31,407	0	134	134	3.6
NATIONAL CITY BANK OF IN	26,413	26,264	154	237	391	20.8
COMERICA BANK	35,835	21,059	366	104	470	10.1
NORTHERN TRUST CO	29,771	16,069	238	141	380	14.4

* Office of Comptroller of the Currency, U.S. Treasury, 2001.

Threat To Liquidity And Pricing Efficiency In Benchmark

EXTERNALITY OF INFORMATION

A second violation of the assumption of non externalities comes from the inherent *externalities of information* that is generated by the price formation process in financial markets. Prices are information, and that information has all three characteristics of an externality: ownership; technical; and public goods. Even some non-price market information, such as volume, open interest, volatility, serves as important externalities to other parts of the economy.

The first characteristic is of ownership externality. Price and market information is like the nectar produced by Meade's apple blossoms and which becomes an externality in the production of honey elsewhere in the economy. Pricing information is used throughout the financial markets in order to price other assets and derivatives, to make forecasts, to make investment decisions about physical investment plant and equipment and so on.

An excellent illustration of this is how the interest rate swaps market produces prices (interest rates) on the term structure of interest rates and this is in turn used as a benchmark for pricing securities in the mortgage backed securities (MSB), asset backed securities (ASB) and corporate bond markets. Similarly, futures prices from a variety of commodities are used by a wide range of investors as an indicator of future inflation.

The *price discovery* process results in the establishment of prices that are used throughout the economy as the basis for forming expectations decisions and making decisions. When the prices in other markets are used in a very direct way to set prices in other markets, this is known as price basing. For example, the prices of many commodities though the U.S. are set by quoting a basis spread above the prices set on the futures exchange. The price of number 2 yellow corn in Iowa might be priced at $0.08 below the near month futures price on number 1 yellow corn traded at the Chicago Board of Trade for delivery along the Southern Illinois River.

This type of externality, known as ownership externality, arises, as in the bee and blossom metaphor, from the absence of ownership rights to the information. The market participants in which the price is discovered derive some private benefit from the information in the price, but the social benefit is larger still. Baumol (1964) defines an externality when A's activities produce a benefit for B such that the marginal social benefit exceeds the private benefit of A, and that A is not compensated by B for that activity. This externality can cause a competitive equilibrium to fail to be Pareto optimal because not enough of A's activities will be produced.

The second characteristic is of technical externality. Product innovation, liquidity and risk shifting transactions in one market affect the efficiency of pricing and trading in other markets. This is much like the ways that production at nearby firms in an industry can generate a skilled labor force that lowers the production costs at firms that employ those skills.

This is best illustrated in financial markets by the way that interest rates derivatives such as futures on Treasury securities traded at the CBOT and futures on eurodollar interest rates traded at the CME. These instruments are an important factor in the ability of interest rate swap markets to maintain liquidity and reduce the risks (and hence bid-ask spreads) of market making trades. Other comparable examples include the role of money markets for the repurchase

agreement (repo) markets and securities lending markets that in turn add so much to the cash markets for Treasury securities and stocks.

The third characteristic is of *public goods externality.* The information contained in financial market prices is like a public good in that the consumption of that information goods does not preclude the consumption by others. It is like knowledge and research.

Grossman (1977, p. 447) makes this point on the way to other, although not contradictory, conclusions, "where all the relevant information is revealed via the price system, it is clear that there are informational externalities." He goes on to explain how if derivatives, or other financial market, prices generate information as an externality then other competing entities can get free information. Grossman's concern is that since social benefit exceeds the private benefit, then this externality will result is insufficient information being produced.

Earlier, Samuelson (1954, 1955) analyzed prices in a competitive equilibrium would fail to generate a Pareto Optimal outcome in the presence of public goods. Public goods are such that all marginal rates of substitution are equal, and not additive, in the aggregation of consumption and production. No price can achieve Pareto optimality, he showed, because a price high enough to induce production would be a price that would result in insufficient distribution and consumption. Bator (1958, p. 371) states this point well, "The set of prices which would induce profit-seeking competitors to produce the optimal bill of goods, would be necessarily inefficient in allocating that bill of goods."

These ideas applied to financial markets illuminate a problem. Private firms tend to hoard certain types of information about themselves and others.[5] Notice that OTC financial market prices are the least distributed. Yet efficient market prices depend upon perfectly informed market participants (investors).

This part of the economic foundation of the need for market transparency. In regards the nature of prices as a public good, prices and non-price market information are crucial to the creation of a *transparent* financial market place. Transparency is considered a fundamental condition to improve market safety and soundness. Yet like other public goods, the social benefit is greater than the private benefit of producing it and so too little is produced and consumed. The result, is that the competitive equilibrium in the unfettered marketplace will result in less than optimal amount of such information.

The private collection and distribution of information is limited for the following reasons. Another private firm lacks any authority or than the offer of cash payment to coax the information from market participants. That firm will also lack the complete faith and trust of market participants to protect the proprietary nature of the information and otherwise limit its distribution accordingly; to not trade ahead by using the information; and to distribute true and honest figures on the market. A private firm cannot easily establish a legacy so that a data series is consistently collected and distributed over a number of years and into the indefinite future. Lastly, the private firm must charge a price sufficient to cover its costs and this limits, often sharply, the distribution of the data and thus does not result in a market that is uniformly well

[5]) Of course there are other types of information that they pay to distribute through such activities as advertising and public relations.

informed. On the other hand, the government can overcome all these limitations and so it is no wonder that the government is responsible for much of the data collection and distribution today.

Policy Response. In recognition of these financial market short-comings, the government has intervened to improve on the situation. The following are instances of government regulation that are not inefficient and ill-conceived restrictions on otherwise efficient activities, but rather are regulatory activations that are designed to improve upon the efficiency of market outcomes.

- detect and deter manipulation and fraud in order to protect the integrity of the information embedded in market prices
- enhance transparency
- reporting requirements to increase the quantity and quality of information available to investors
- all perfectly informed market participants
- collect and help disseminate data
- examine financial institutions and report on their approval

The fact that prices play an important role in markets outside that in which they are established means that there is an externality to those prices. This basic insight is reflected in the laws written to regulate futures markets in the United States. Section 3 of the Commodity Exchanges Act, entitled “The Necessity of Regulation,” states that futures are "affected with a national public interest." "The prices in such transactions are generally quoted and disseminated throughout the United States... for determining the prices to producer and consumer of commodities and the products and by-products thereof and to facilitate the movements thereof in interstate commerce."

Alternatively, when the prices are distorted by fraud or manipulation then the externality is a negative diseconomy and the role is akin to that of inflation.

Moreover, the availability of that information and its integrity is critical. Financial markets have at times been plagued by false reports and rumors. The movie “Trading Places” illustrated the critical importance of a false Department of Agriculture crop report on oranges and hence frozen orange juice. Other problems arise when the information is not equally available to all. Privately collected information tends to be hoarded or narrowly distributed.

The current policy response has been for the U.S. government to take important measures to improve transparency and the production of market information. In response to the market crash in 1929, the Securities Act of 1933 and the Securities Exchange Act of 1934 improved the quantity and quality of market information by requiring public disclosure and quarterly reporting for the public issuance and trading of securities. It also prohibited false reports on the market for securities and futures. Similarly, the prohibition against insider trading is based on the economic rationale that markets are efficient when information is equally available and insider information is the opposite of that. In addition, the government funds research, collects data on market fundamentals and distributes it broadly and cheaply. This includes information on prices, output and even crop forecasts. The rationale is that it gives everyone the same access to information about the economic factors that underlie market performance.

The externality of information that extends its importance beyond its immediate market means that fraud and manipulation are not self-policed by the market and that it is a matter of pubic

interest – not just a problem for those who are defrauded or suffer the losing end of the manipulation – because they threaten the integrity of the markets i.e. of the price discovery process. Keep in mind that manipulation does not have to be grand in the old fashion way, but can consist of small changes in prices. If prices of winter wheat are off only 3 cents a bushel, and we produce and sell at home and for export 1,612 million bushels, then it will be a $48.36 million cut in income for the farmers on the winter wheat crop alone. That same 3 cents applied to the 9.5 billion bushels of corn would affect income by $285 million – almost six times the impact. That would equal 1% of the nation's net farm income for all crops.

Similarly, consider a manipulation of 3 basis points on a new auction of Treasury securities. If the auction was for $12 billion in 30-year bonds, then the mere 3 basis points would raise the cost of borrowing to the government by $3.6 million a year or $43.2 million over the life of the security. If it were paid by the government on all outstanding Treasury securities held by the public, then it would cost the Treasury and hence us as taxpayers $1.1 billion annually.

Other problems arise when the information is not equally available to all. Privately collected information tends to be hoarded or narrowly distributed.

THE COSTLINESS OF INFORMATION

The existing literature focuses on moral hazard and adverse selection. Its concern is that insurers might end up over-insuring because the insurers did not know how much existing insurance the insured had already and or might take-out in the future. In short, the problem is asymmetric information. More recently, this thinking raised the concern about transparency. By contrast, the concern with moral hazard in the context of financial market regulation is not based on the cost of information but rather the fact that it is widely expected that investors will be bailed out in the event of a crisis. Stiglitz and Weiss (1981) show that costly information results in credit rationing in competitive equilibrium and that government regulation, such as usury laws, can actually be Pareto improving. Also, information costs explain why bank deposit insurance, combined with a bank supervisor, is efficient.

The efficient financial market, the Pareto Optimal market outcome, depends on the market participants possessing perfect information or all relevant information about the market. The validity of this assumption is then made all the more reasonable as the price of information declines.[6]

Pareto efficiency assumes that everyone in the market has perfectly complete knowledge of market information. In financial markets, asymmetric or unevenly distributed information is a problem. In order for a market to function efficiently, all market participants have all relevant information about that market. However it is economically unreasonable for all customers of financial institutions to have the time to explore, collect and analyze the information necessary to evaluate all the potentially available banks, brokers, mutual funds, insurance companies and pension funds.

Information is important to the efficient functioning of markets for several reasons. Market participants need to know prices, quantities bought and sold at that price and "quality" issues

[6]) Here the price is presumed to include the total (money and time) cost of locating, purchasing, delivering and absorbing the information.

such transaction terms. Information is also important that it be public and not asymmetric or "insider" information. One problem is with the use of equity swaps by corporate executives to reduce their price exposure on stocks issued as compensation and to manipulate their disclose requirements and tax reporting on those options.[7]

In that context, one of the useful roles of the government in the financial markets is to provide regulatory supervision in order to attest that the financial institution meets the minimum standards for safety and soundness set for that type of financial firm. It does not guarantee against any one firm's difficulties or bankruptcy, but it provides useful information that the firm is well managed, that it is meeting its regulatory requirements, its books are properly audited, and that its earnings are properly reported.

Another related market imperfection is the problem of asymmetric information. This can lead to credit rationing on the part of lenders who cannot obtain sufficient information to prevent adverse selection and cannot restrict (and more to the point enforce restrictions) on all needed constraints on borrowers' behavior to maximize repayment. (Stiglitz and Weiss. 1981)

Interest rate swaps and the U.S. benchmark. The Treasury yield curve serves through financial markets, and the economy at large, as a benchmark for interest rates. Credit markets have historically looked towards the Treasury market when trying to price the yields on corporate bonds, government agency bonds, mortgage-backed securities (MBSs), interest rate swaps and commercial paper. This process of using the market benchmark to price other related products is known as price basing.

In sum, the price discovery process in the Treasury securities markets is being used for price basing in other financial markets. In this way the Treasury market exerts a force in the economy that extends far beyond those buying and selling the securities.

The demise of the Treasury securities market, either from the complete extension of Treasury securities or the withering away of the volume of trading, would leave financial markets without its traditional interest rate benchmark. As a result, these markets are also moving towards adapting the OTC derivatives markets in interest rate swaps as the market benchmark.

The migration in the volume in credit market trading and the rise of a new benchmark will depend on liquidity and that in turn hinges upon dependable market supplies, the homogeneity of the product, creditworthiness and the distribution of product along the yield curve. The Treasury market clearly dominates in each of these categories, but what is the next best? This point was made by Treasury Undersecretary Gensler, "As our share of the market declines, markets will over time adjust, whether it's by re-poing non-Treasury securities or hedging with non-Treasury securities."[8]

The most likely candidate is the swaps market. They are homogeneous, investment grade (and this will rise to AAA once a clearing house is adopted in the U.S.), trading volume is high and bid-ask spreads are low. In addition, there are many liquid maturities along the yield curve.

[7]) Bolster, Paul, Don Chance and Don Rich. 1995. "Equity Swaps and Corporate Insider Holdings: Now You See It – Now You Don't." Working Paper 95-6, Department of Finance, Virginia Tech.

[8]) Remarks on on August 11, 1999. See Appendix 3 elow.

Moreover, there are ready amounts of short-interest – investors do not have to combine reverse repos and cash market sales in order to create short positions.[9]

There are already several indications that the swaps market is the ultimate destination for the market's interest rate benchmark. One, the swaps rates are now quoted as all in rates and not as a spread above the Treasury rate. Two, the swaps rates are regularly quoted on Bloomberg, Reuters, and Prebon broker screens, and the Federal Reserve Board now includes swaps rates in their regular market interest rate releases. Three, when there is a sharp decline in the swaps market volume, traders in the corporate and mortgage markets are widely quoted as saying that they are having trouble pricing their instruments.

There are several salient problems with the rise of the interest rate swap market as the benchmark for U.S. financial markets. One problem is that the market will not only be liquid. One reason is that the market is not free of credit risk like the U.S. Treasury securities market, and as a result it will react, i.e. reduce trading volume or completely freeze-up, in response to credit problems at key dealer or market participant. Another reason is that, also unlike that U.S. Treasury securities market, there are no requirements placed on dealers to make a market. OTC swap dealers are under no mandate or obligation to remain in the market and post and honor bid/ask quotes. They profit from their position as dealers, but they are no obligation to act as a dealer. For these two reasons, the swaps market is not as liquid as the Treasury market.

One well known but less well understood example of this occurred during the failure of Long Term Capital Management. It was a major player in the market, and its $900 billion of swaps was 9% as large as the $10,000 billion by Chase, the largest U.S. bank swaps dealer. When LTCM faced bankruptcy, the swaps market froze up and as a result the markets for mortgages, mortgage and asset backed securities and corporate bonds was disrupted by the inability to price those instruments against a benchmark.

To be completed ….
Another problem is that …

LTCM collapse…

Information as a public good….

DESTRUCTIVE AND UNPRODUCTIVE ACTIVITIES

To be completed ….

Outline for this section
Destructive activities

- Fraud
- Manipulation
  - especially OTC trading in energy markets as witnessed by Tosco suit in September of 2000, Sumitomo copper case

[9]) See Michael Fleming. 2000. The Benchmark U.S. Treasury Market: Recent Performance and Possible Alternatives. New York Federal Reserve Bank Economic Policy Review, Vol. 6, No. 1.

Unproductive activities:

- outflanking prudential regulation
- manipulating accounting standards, and
- evading taxation

RAISE NEW AND GREATER SYSTEMIC RISKS

To be completed ….

CONCLUSION

Prudential regulations for financial markets in advanced capitalist countries

a. Reporting requirements: in order to improve transparency and market surveillance, market participants report transactions information including price, volume, open positions, large trader positions, contract basics. Market price, volume and open interest information should be broadcast to the broad market like current stock prices.
b. Modernize capital requirements: capital requirements should apply to market risk (e.g. foreign exchange and interest rate exposure) and potential future risk as well as credit risk; and capital requirements (and restrictions on asset holdings) should to apply to consolidated balance sheet and off-balance sheet positions.
c. Establish requirements or standards for collateral and margin requirements – these are already in practice futures and options exchanges and the law for U.S. stock purchases
d. Enforcement: enforcement can be enhanced by requiring reporting of transaction as condition for legal enforceability; and require maintenance of audit trail.
e. Require OTC derivatives dealers to act as market-makers by maintaining bid-ask quotes throughout trading day. This obligation compares with the privileges of being a dealers, and is similar to requirements in U.S. Treasury securities markets.
f. "Know thy customer": extend these rules to all financial institutions conducting lending, underwriting, repurchase agreements and securities lending transactions, and all derivatives transactions with entities in developing countries.
g. Modernize accounting rules to account for credit and market value of derivatives exposure, and to properly account for embedded derivatives.
h. Stand-still provisions and other measures included in debt instruments in order to facilitate debt rescheduling and reorganization;

Appendix I

Primer on Derivatives Instruments

Derivatives are financial contracts, but unlike stocks, bonds and bank loans, they do not represent a title to an asset but rather they create pure price exposure.[10]

Forward contract.

The simplest derivative is the forward contract. It is the obligation to buy (sell) a specified quantity of a specified asset (including commodities and loans) at a specified location at a specified price at a specified time in the future. Derivatives contracts always include precise terms for fulfilling the obligation; these terms include the specifications for quantity (the actual or notional principal for pricing the contract), the underlying price (of the commodity, asset or index), location (if delivery is involved), time (final delivery or settlement date) and price.

Consider the case of the farmer entering into a forward contract to sell corn upon harvest. The farmer needs to plant corn in the spring, when the spot price is $3 per bushel, in order to harvest in October when the spot price is unknown. In order to avoid the risk of a price decrease, the farmer could enter into a forward contract to sell 50,000 bushels of "number one yellow corn" to the local grain dealer or grain elevator in October at a price of $3.15 bushel. The farmer would thus be long corn in the field and short corn in the forward market; the grain dealer would be long corn in the forward market. The farmer would thereby hedge his price risk by shifting his long corn price exposure to the grain dealer through the forward contract. The grain dealer could either hold the long price exposure as a speculator or shift the risk by entering into another forward contract – this time as a seller – with either a speculator or an entity such as a food processor that wants to hedge its price exposure to possible future price increases.

Although the grain dealer is likely to have similar contracts with many of the farmers in his local market, and is likely to a have a standard template for each such forward contract, the contracts are deemed to be unique, bilaterally negotiated contracts, and their price is not reported to the market, the press, the government's data collection agency or any government regulator. The forward contract is likely collateralized by the title to the crops. The contract would be settled by the farmer delivering the quantity and quality of corn to the specified location, and by the dealer making a payment to the account of the farmer.

This is an example of a typical commodity forward, but it is not unlike forward contracts for other commodities or assets. There are forwards for Treasury securities in the "when-issued" market, there are forwards for other commodities (including such broad categories as agricultural, metal and oil products) and there are very large and liquid forward markets for foreign exchange. In all these cases, the contracts are very similar in structure to the example above. However, in some forward markets, such as that for oil and foreign exchange, the market prices are widely publicized to the market as well as the press.

Futures.

Futures contracts are like forwards, but they are highly standardized, publicly traded and cleared through a clearing house. The futures contracts traded on organized exchanges in the United States are so standardized that they are fungible –meaning that they are substitutable one for another. This fungibility facilitates trading and results in greater trading volume and greater

[10]) The exceptions to this are foreign exchange forwards and foreign exchange swaps which usually involve the exchange of principal. Non-deliverable foreign exchange forwards are consistent with this distinction.

market liquidity. Liquidity, in turn, improves the way in which all the relevant market information becomes accurately reflected in market prices. This pricing efficiency is the result of the *price discovery* process.

Futures are traded on organized exchanges. In contrast to the privacy of bilateral negotiations, the exchange trading "pits" are very public and multilateral. Trading in the pits involves the very public statement of bid and offer prices known as "open outcry." Open outcry is not only public, but also multilateral because any number of market participants can *hit* a bid, *lift* an offer, or raise or lower the quote. In this environment, all market participants can observe the bid, offer and execution prices and thereby know whether the prices they are agreeing to are the best prevailing market prices. This knowledge is more difficult to ascertain in a bilateral trading environment.

Clearing houses are used to clear futures contracts that are traded on exchanges. Trades from the exchange floor are reported to the clearing house, and the contracts are written anew, or novated, so that the clearing house becomes the counterparty to every contract. In this manner, the clearing house assumes the credit risk of every contract traded on the exchange.

Having the clearing house as a counterparty means that every futures market participant has a top-ranked credit risk as a counterparty. Instead of having to perform a credit evaluation of every actual and potential trading partner, the futures trader has only to evaluate the creditworthiness of the clearing house.

In the case of U.S. futures exchanges, the clearing houses all carry a AAA credit rating. The ability of the clearing house to perform on the contract is based upon the margin accounts of all position holders, the paid-in capital from members of the clearing house, the callable capital of those members, and an emergency line of credit arranged by the clearing house with banks.

The front line defense against contract default is the margin accounts. Although futures contracts are highly leveraged, with the maintenance margin rates ranging from 1666:1 for the Eurodollar contract to 17:1 for the S&P 500 futures (as of the beginning of 2001), the level of margin is generally set so that it would have covered 95% to 98% of the largest daily price movements in the previous six months. The exchange also reserves the right to make intra-day margin calls to protect the integrity of the futures market in the event of an exceptionally large price swing. If a trader fails to meet margin requirements, the exchange reserves the authority to liquidate the trader's positions.

Another implication of novation is that it allows existing positions to be offset or completely liquidated by entering into fungible contracts from the opposite side. For example, an existing long position of 10 contracts can be reduced to 2 by selling or in other words entering into 8 contracts on the short side. The short 8 contracts offset all but 2 of the existing position of 10 contracts.

How do futures contracts work? Consider the example of a farmer hedging by entering into a futures contract to sell October corn at $3 a bushel. The first day the price rises by $0.02 so that the value of the position loses $100 (the two cents times the size of the contract, which is 5000 bushels). The clearing house debits $100 from the farmer's margin account. If the new amount in the account does not fall below the maintenance level, then no further action is required. If the loss were to reduce the level in the account to below the maintenance level, then the farmer would be required to add resources to the account (cash or Treasury securities) until it reached the higher initial margin level. If the price moves in favor of the farmer, then the clearing house credits the farmer's margin account and the farmer is allowed to withdraw excess funds from the margin account. This process of adjusting the margin account to the daily changes in futures prices is known as marking the position to the market value, or "mark to market" for short.

Note that this daily mark-to-market process will generate a cash flow as funds are added to, or drained from, the margin account. These changes, taken in sum, will adjust the final gain or loss on the position to the initial price for which the contract was traded.

Options.

An option contract gives the holder of the option (the long option position) the right to buy (sell) the underlying item at a specific price at a specific time period in the future. In the case of a call option on a stock, which is the type granted as employee stock options, the holder has the right to buy the underlying stock at a specified price – known as the strike or exercise price – at a specified time in the future. If the spot market price of the stock were to exceed the strike price during the time period in which the option could be exercised, then the holder would be able to exercise the option and buy at the lower strike price. The value of exercising the option would be the difference between the higher market price and the lower strike price. If the market price were below the strike price during the period when the call option was exercisable, then the option would not be worth exercising and it would expire and have no market value.

In the case of a put option, the option holder has the right to sell the underlying item at a specified price at a specified time in the future. Imagine a situation in which a farmer has purchased a put option on the price of corn. If the spot price of corn were to fall below the strike price during the period in which the option was exercisable, then the option holder would be able to exercise the option and sell at the higher strike price. In so doing, the farmer has purchased a form of price insurance, so as to sell at a price floor on the price of his corn crop. The value of exercising this put option, which acts like an insurance policy, would be the difference between the higher strike price and the lower market price.

Whereas the holder of the option has the right to exercise the option in order to buy or sell at the more favorable strike price, the writer or seller of the option (short option position) has the obligation to fulfill the contract if it is exercised by the option buyer. The writer of a call option is thus exposed to losses if the price of the underlying item were to rise, and the writer of a put option is exposed to losses if the price of the underlying item were to fall.

A call options writer can hedge by covering the short call option with the underlying item. For example, a company granting stock options to its employees will cover its short call position in either of two ways. The first way is to set aside some of its authorized but unissued stock whose price will offset any cost of fulfilling the short call position. The second way is to borrow money and buy back outstanding shares in the stock market so that any increase in the price of these shares will cover the expense of fulfilling the option. In contrast, a put option writer can hedge by obtaining a short cash or futures market position in the underlying item. For example, a grain dealer selling a put to a farmer can hedge by selling in the futures market.

The price of an option is known as the option premium. It is the same term used for price for insurance policies. What determines the value of an option is the length of time before the option expires and the volatility in the price of the underlying item. Although the specifics of this relationship are more precisely expressed in variants of the Black-Scholes and Binomial options pricing models, the basic economic reasoning is the same. The value of an option serves as an insurance policy against a rise (or fall) in the price of the underlying item, and so it follows that insurance against a highly volatile price is worth more than insurance against a very stable price. This is akin to higher auto insurance rates for risky drivers. The value of an option also increases with the length of time to expiration because a greater maturity means there is more time, and hence greater likelihood, for the option to be exercised at a profit. This is akin to paying more for two years of auto insurance than for one year of auto insurance.

In sum, a call gives the option buyer the right to buy at the strike price, and so the option is profitable if the price goes up. A put gives the option holder the right to sell at the strike price, and so it is profitable if the price goes down. Here is a useful memory device: call up – put down. Farmers can hedge by buying puts on corn. If the price falls the farmer is covered, and if the price rises then the farmer receives the benefit of the higher price. The seller of an option, however, is obligated to pay if the price moves past the strike price.

Interest rate options. Interest rate options provide insurance against rate hikes (caps), rate declines (floors), and both hikes and declines (collars). A cap option has an exercise interest rate that creates an interest rate ceiling to protect against a rate hike, while a floor option has an exercise rate that creates a minimum rate to protect against a fall in interest rates. A combination of the two is called a collar and protects against both rate hikes and rate falls.

Exotic options. These options are not so new, but the rapid growth in these more complicated instruments makes them noteworthy.

One class of more complicated options – known as barrier options – contain knock-in or knock-out provisions. A knock-in option requires that the underlying price or interest rate rise above, or fall below, a critical threshold before the option is exercisable. For example, a knock-in call option might require that the spot price fall below a specified threshold before the option is exercisable, while a put option would require the spot price rise above a specified threshold in order for the option to be exercisable. A knock-out option contains a provision that prevents the option from being exercisable if the underlying interest rate rises above, or falls below, a specified threshold. By reducing the exposure of the option writer, these barrier provisions are designed to lower the option premium in order to reduce the cost of purchasing the option.

Another class of exotic options is called path-dependent options. Also known as "Asian options," these are structured so that the option holder received the best or the average price during the exercise period. This look-back provision means that the options buyer will get the highest exercise price on a call, the lowest on a put, and thus is faced with the dilemma of when to exercise the option and lock-in the benefit. A similar look-back structure grants the option owner the average price over the period in which the option could have been exercised.

Swaps.

Swap contracts, in comparison to forwards, futures and options, are one of the more recent innovations in derivatives contract design. The first currency swap contract was negotiated and entered into in August of 1981, and the counterparties were the World Bank and IBM.[11]

The basic idea in a swap contract is that the counterparties agree to swap two different types of payments. Each payment is calculated by applying some interest rate, index, exchange rate, or the price of some underlying commodity or asset to a notional principal. The principal is considered notional because the swap requires transfer or exchange of principal (except for foreign exchange and foreign currency swaps). Payments are scheduled at regular intervals throughout the tenor or lifetime of the swap. When the payments are to be made in the same currency, then only the net amount of the payments are made.

For example, a "vanilla" interest rate swap is structured so that one series of payments is based on a fixed interest rate and the other series is based on a floating or variable interest rate. A foreign exchange swap is structured so that the opening payment involves buying the foreign currency at a specified exchange rate, and the closing payment involves selling the currency at a specified exchange rate. A foreign currency swap is structured so that one series of payments is

[11]) The design of the swap is thought to have originated from the practice of hedging cross-currency interest rates by making back-to-back loans. See Smithson, Smith and Wilford, 1995.

based on one currency's interest rate and the other series of payments is based on another currency's interest rate. An equity swap has one series of payments based on a long (or short) position in a stock or stock index, and the other series based on an interest rate or a different equity position.

Interest rate swaps are financial instruments used to create future price exposure in interest rates in order to allow hedging and speculation in future interest rates. Payments in an interest rate swap contract are designed to match interest rate payments on bonds and loans. For instance, take the situation faced by a corporation that has borrowed through a variable interest rate loan or a floating rate note.[12] That corporation is exposed to the risk that short-term interest rates will rise during the life of the loan or note. In order to hedge against this exposure, the corporation can enter into an interest rate swap of the same maturity so that the floating rate payments are swapped for fixed rate payments.

A foreign exchange swaps differs from an interest rate swap because the principal is exchanged (due to the fact that the payments, which must be in currency, amount to the "principal" in the transaction). A typical foreign exchange swap begins with a start leg that is indistinguishable from a spot transaction in which one currency is exchanged for another at the present spot rate. The second, or close leg, is a forward transaction at the present forward foreign exchange rate. Thus a foreign exchange swap is essentially the combination of a spot and forward foreign exchange transaction.

Swaps contracts are traded in over-the-counter (OTC) derivatives markets, and are not subject to the Commodity Exchange Act.

Hybrid Instruments or Structured notes.

Structured notes contain features of both conventional credit securities and derivatives. The term "note" usually refers to a public or private credit instrument like a bond, but notes have a maturity between two and ten years. Structured notes are part of a broader class of financial instruments called "hybrid instruments" which contain features of both securities and derivatives. Other hybrid instruments are callable bonds, convertible bonds and convertible preferred stock.

[12]) A floating rate note (FRN) is a two to ten year debt instruments whose interest payments are set each period by a designated short-term interest rate such as LIBOR or the U.S. Treasury bill rate.