



INSTITUTO POLITÉCNICO NACIONAL
ESCUELA SUPERIOR DE ECONOMÍA
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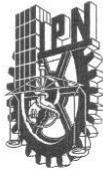


**CAUSAS DE LA CRISIS FINANCIERA MUNDIAL
2007-2009.
EVIDENCIA DESDE ESTADOS UNIDOS.**

**TRABAJO
QUE PARA OBTENER EL GRADO DE
DOCTOR EN CIENCIAS ECONOMICAS**

PRESENTA

BILAL AZIZ



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SECRETARÍA DE INVESTIGACIÓN Y POSGRADO

ACTA DE REVISIÓN DE TESIS

En la Ciudad de México D.F., siendo las 09:00 horas del día 28 del mes de septiembre del 2011 se reunieron los miembros de la Comisión Revisora de Tesis, designada por el Colegio de Profesores de Estudios de Posgrado e Investigación de SEPI ESE-IPN para examinar la tesis titulada:
Causas de la crisis financiera mundial 2007-2009. Evidencia desde Estados Unidos.

Presentada por el alumno:

AZIZ

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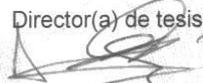
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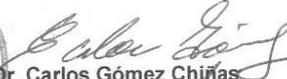
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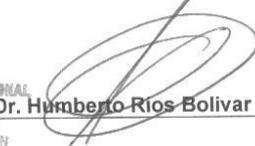
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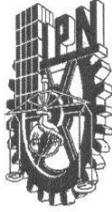

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“Yet it is also true that small events at times have large consequences, that there are such things as chain reactions and cumulative forces. It happens that a liquidity crisis in a unit fractional reserve banking system is precisely the kind of event that can trigger — and often has triggered — a chain reaction. And economic collapse often has the character of a cumulative process. Let it go beyond a certain point, and it will tend for a time to gain strength from its own development as its effects spread and return to intensify the process of collapse. Because no great strength would be required to hold back the rock that starts a landslide, it does not follow that the landslide will not be of major proportions.”

*Milton Friedman and Anna Schwartz (1960)
A Monetary History of the United States, 1867-1960*

As we approach the last decade of the twentieth century, our economic world is in apparent disarray. After two secure decades of tranquil progress following World War II, in late 1960s the order of the day became turbulence—both domestic and international. Bursts of accelerating inflation, higher chronic and higher cyclical unemployment, bankruptcies, crunching interest rates, and crises in energy, transportation, food supply, welfare, the cities, and banking were mixed with periods of troubled expansions. The economic and social policy synthesis that served us so well after World War II broke down in the mid-1960s. What is needed now is a new approach, a policy synthesis fundamentally different from the mix that results when today’s accepted theory is applied to today’s economic system.

(Hyman P Minsky, Stabilizing an unstable Economy, 1986)

*“Esta investigación se llevará a cabo con la ayuda de “Secretaria Relación Exterior”
Gobierno de México Y Gobierno de Pakistan. El investigador tiene una beca desde
“SRE” Y Gobierno de Pakistan Para hacer este trabajo de investigación”*

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ABSTRACT

This thesis seeks to explain the Causes of Financial Crisis 2007-2009 with a special focus on the United States of America from where this crisis generated. US Mortgage market is said to be the generating point of this crisis and then it spread to the whole world. Millions of Dollars were lost in the stock exchanges and we have seen an overall panic in the market in whole world. Different govts. came up with the bail out package of Billions of Dollars to save their financial sector. This crisis is said to be the even bigger crisis than the Great Depression of 1929.

This crisis is unique in this way that in history we haven't seen such a bigger impact world wide from any crisis. With the start of the crisis a debate among different circles spread that whether this is a Minsky Moment or not. This thesis is revolving around the causes and Minsky moment.

This thesis covers in detail all the causes from Housing boom to Bubble to the Low interest rates. From rating agencies to the newly introduced financial innovations and from Govt. actions to the greed for earning more and more money in the shortest possible time in the Wall Street all covers in this thesis.

Apart from finding out the real causes behind this crisis there is a comprehensive debate on today's hot issue "whether it's a Minsky moment or not?". I have included all the point of views of top economists of the world on this particular issue and then after deep analysis I came up with my own view point.

Later part of the thesis covers the comprehensive conclusions regarding the real causes and on the Minsky Moment. At the end there is an Econometric analysis of the US economy as a whole and how the crisis affected the US economy. I have taken data of the thirty years and twenty two variables have taken into account. There is a need to have a special look at the US economy from 2007 to 2010 because so much has happened during this time.

RESUMEN

Esta tesis trata de explicar las causas de la crisis financiera 2007-2009, con un enfoque especial en los Estados Unidos de América, lugar donde la crisis tuvo su origen, su mercado hipotecario es considerado como el punto de inicio y luego se extendió a todo el mundo. Millones de dólares se perdieron en las bolsas de valores y hemos visto un pánico general en los mercados financieros del planeta. Para sortear dicha crisis a diferentes gobiernos se les ha ocurrido optar por “la libertad bajo fianza” es decir implementando un paquete de rescate de miles de millones de dólares para rescatar a su sector financiero. Refiriéndose a esta crisis Tobe afirma “ es más grande incluso, que la Gran Depresión de 1929”; ya que a lo largo de la historia, nunca había existido una, que tuviera tal impacto en todo el mundo. Con el inicio de la crisis surgió un debate entre los diferentes círculos de discusión, estableciendo que el clima financiero podría corresponder a un momento Minsky. Este trabajo gira en torno a las causas originarias de la crisis y el momento Minsky.

El documento también trata a detalle las causas del auge de la vivienda y de la burbuja de los tipos de interés bajos; las agencias de calificación a las innovaciones financieras de reciente introducción y de Gobierno y a las acciones codiciosas de ganar más y más dinero en el menor tiempo posible en Wall Street.

Además de mostrar las verdaderas causas de esta crisis, también se presenta el mencionado debate sobre la cuestión del momento Minsky, se han incluido además las opiniones de los principales economistas del mundo y mi propio punto de vista al respecto.

En la parte final del trabajo se presenta un análisis econométrico de la economía de Estados Unidos en su conjunto y cómo la crisis la afectó. Para el estudio se han tomado los datos de los últimos treinta años, así como 22 variables. Es necesario tener una mirada especial en la economía de los EE.UU. desde 2007 hasta 2010, porque han pasado muchas cosas durante este tiempo.

RESUMEN EJECUTIVO

Esta tesis se inicia con la simple definición de las crisis financieras. Como no existe una definición precisa se considera que es el resultado del funcionamiento normal de los sistemas económicos en el curso de los ciclos económicos. Una cosa que es común en todas las crisis es que "todas las crisis son crisis de éxito" (Portes y Vines, 1997). Las crisis financieras frecuentemente se divide en tres generaciones, que son: de primera, de segunda y tercera generación. Ejemplos de primera generación son la crisis rusa de 1998 y la crisis de Argentina en 2001, mientras que los ejemplos de la segunda generación incluyen la crisis mexicana en 1994.

La crisis financiera de 2007-2009, que sacuden el mundo entero es el ejemplo perfecto de la tercera generación. Normalmente, estas crisis se dividen en tres tipos, que incluyen la crisis bancaria, crisis de divisas y la crisis de la deuda. A través del tiempo los economistas han dado distintas teorías. Thorstein Veblen, Wesley Clair Mitchell, Karl Marx, Hyman Minsky, Allen Sinal, Otto Eckstein y Albert Wojnilower han hablado sobre la crisis financiera y los ciclos económicos. Por supuesto, cada uno tiene diferentes puntos de vista. Al igual que Thorstein Veblen da su famosa teoría en 1904 en relación con la crisis financiera. Su teoría de las crisis financieras se basa en los efectos de los movimientos en la tasa de ganancia sobre la extensión del crédito. Karl Marxatada habla sobre la teoría de la crisis financiera con su teoría de la crisis industrial. Minsky plantea su hipótesis de la inestabilidad financiera que se dice ser la columna vertebral de 2007 - 2009. Pero todas tienen un concepto en común refiriéndose a que "Todas las crisis son crisis de éxito" (Portes y Vines, 1997).

La crisis financiera 2007 - 2009 fue la mayor crisis que hemos visto hasta ahora, incluso el impacto de esta crisis era más grande que el de la Gran Depresión de 1929. Pero la cuestión principal es la causa de esta crisis. El mercado hipotecario estadounidense, se dice que es el punto de partida. Pero esto no es la única causa, en

realidad sólo desencadenó la crisis. Hubo otros factores que influyeron directa o indirectamente en este proceso. Las causas originadoras se han dividido en tres categorías, a saber: causas generales, causas técnicas y causas innovadoras.

El auge de la vivienda y la burbuja, son la principales causas generales, las Bajas tasas de interés, el capital ampliamente disponible y los inversionistas internacionales que buscaban poner su dinero en activos inmobiliarios en los Estados Unidos eran requisitos previos para la creación de una burbuja de crédito. Estas condiciones crearon un mayor riesgo, que debería haber sido reconocido por los participantes del mercado, los responsables políticos y los reguladores. Las normas de préstamos hipotecarios se derrumbaron. Casos limitados y documentación en aumento. Deseo de aumentar los préstamos para superar los estándares de crédito. Cuando los precios de la vivienda y las hipotecas cayeron en moratoria, las luces comenzaron a apagarse en Wall Street.

El porcentaje de prestatarios que pagaron sus hipotecas, en tan sólo unos meses, después de tomar un préstamo, casi se duplicó desde el verano de 2006 hasta finales de 2007. Estos datos indican que probablemente se contrataron hipotecas sin tener la capacidad o intención de pagar. Ambiciosos objetivos de la vivienda propia con el deseo de extender el crédito a las familias que se les negó previamente crean desorden en el mercado. Fed cometió graves errores de entender la situación del mercado. Las hipotecas fueron otorgadas a las familias que no eran capaces de pagar en el futuro. La propiedad de la vivienda alcanzó su máximo en la primavera de 2004 y luego comenzó a declinar. A partir de ese momento, se habla de la oportunidad fue trágicamente en desacuerdo con la realidad de un desastre financiero en la fabricación.

Una encuesta realizada por (Case y Shiller, 2003) informa que la gran mayoría de las personas encuestadas en el año 2003 de estaban de acuerdo con la afirmación de que los bienes raíces eran la mejor inversión a largo plazo. La

disminución en las tasas de interés de la hipoteca fue un factor clave en el desencadenamiento de la fase previa de los precios de la vivienda. Muchos prestatarios podrían haber sido motivados por la perspectiva a corto plazo, las ganancias financieras y los inversionistas se volvieron más riesgosos tipos de MBS y estas inversiones crean una burbuja inmobiliaria que finalmente se convierte en el principal motivo de incumplimiento de alto riesgo. Durante la subida del mercado hipotecario en general, el sector de préstamos de alto riesgo, en particular, ha crecido enormemente. De acuerdo con Kregel, en 1999 el Congreso aprobó la Ley Gramm-Leach-Bliley Banco Ley de Reforma según el cual "los bancos de todos los tamaños podían adquirir la capacidad de participar en una gama mucho más amplia de las actividades financieras y para proporcionar una gama completa de productos y servicios sin regulación ". Debido a esto los bancos tienen índices de exceso de liquidez. Esta influencia sobre los bancos, obligaron a buscar fuentes adicionales de inversión. Para este propósito a las hipotecas de alto riesgo se les dio ventaja a causa de las condiciones de facilidad y una mayor rentabilidad de interés. En primer lugar, el exceso de liquidez como resultado de las burbujas de activos, sobre todo en valores de vivienda e hipotecas. Esta burbuja de activos anima a los especuladores a pedir prestado, mientras que el valor de los activos(aumenta) de activos de garantía con sólo a los prestamistas. En segundo lugar, hay claras diferencias en las normas reguladoras y contables para el tratamiento de "fuera de balance-sheet" vehículos financieros y las prácticas de préstamos. El fracaso fundamental de la Reserva Federal para contener el flujo de las hipotecas tóxicas, que se podría haber hecho mediante el establecimiento prudente de préstamos hipotecarios, normas también que contribuyeron a esta crisis. La Reserva Federal fue la única entidad facultada para hacerlo y no lo hizo.

La falta de transparencia y rendición de cuentas fue el factor que hizo que la situación empeorara. El número de informes de actividades sospechosas, los informes

de posibles crímenes financieros presentados por los bancos de depósito y de sus filiales relacionadas con el fraude hipotecario creció 20 veces entre 1996 y 2005 y luego otra vez más se duplicó entre 2005 y 2009. Un estudio sitúa las pérdidas ocasionadas por el fraude en los préstamos hipotecarios entre 2005 y 2007 en \$ 112 mil millones. Esta falta de transparencia en instituciones financieras obligó a los prestatarios interesados a pedir prestado más y más, incluso sin ser sujetos de crédito. El ex presidente de la Fed Paul Volker ha observado que los problemas de la crisis financiera comenzaron con una falta de responsabilidad en los préstamos hipotecarios y el comercio de valores respaldados por hipotecas. Ejecutivos financieros provocaron una proliferación de títulos respaldados por hipotecas sin integridad y se negocian en mercados no transparentes. A parte de la baja calidad de crédito y documentación mínima se han dado casos de fraudes masivos en los préstamos hipotecarios. Según *Financial Times*, 18 de enero 2008, los cinco mayores bancos de inversión Merrill, Goldman Sach, Morgan Stanley, Lehman Brothers y Bear Stearns pagaron al rededor de \$ 66 mil millones en compensaciones en 2007, incluyendo un estimado de \$ 40 mil millones en bonos. A pesar de la disminución de los beneficios de la figura de bonificación, fue más que el año pasado 36 mil millones dólares.

Las instituciones financieras emitidas, compraron y vendieron valores de malas hipotecas. Algunos de los valores nunca fueron examinados e incluso a veces a sabiendas de que estos valores eran defectuosos. Las empresas dependían de decenas de miles de millones de dólares de los préstamos, los cuales tenían que ser renovados cada noche, garantizado por valores hipotecarios subprime, y las grandes empresas y los inversores ciegamente confiados en las agencias de calificación crediticia como árbitros de riesgo. De 1999 a 2008, el sector financiero gastó \$2.7 mil millones en gastos de cabildeo federal, los individuos y comités de acción política en el sector ganaron más de \$ 1 mil millones en contribuciones de campaña. Lo que preocupaba

era la medida en que Estados Unidos se veía privado de la fuerza necesaria y la independencia de la supervisión necesaria para salvaguardar la estabilidad financiera.

De 1978 a 2007, el monto de la deuda en poder del sector financiero se elevó de \$ 3 billones a \$ 36 billones, más del doble como proporción del producto interno bruto. La naturaleza misma de muchas firmas de Wall Street cambió de asociaciones público-privadas relativamente serio a las empresas que cotizan en bolsa tomando clases mayor y más diversa de los riesgos. Para el año 2005, los 10 mayores bancos comerciales de EE.UU. el 55% de los activos de la industria, más del doble del nivel que tuvo lugar en 1990. En vísperas de la crisis en 2006, las utilidades del sector financiero constituían el 27% del total de las ganancias corporativas en Estados Unidos, frente al 15% en 1980. La falta de gobierno corporativo y gestión de riesgos en importantes instituciones financieras fueron causas fundamentales de la crisis. Estas instituciones actuaron de manera irresponsable, tomaron demasiados riesgos, con muy poco capital y dependiendo del financiamiento a corto plazo. Especialmente grandes bancos de inversión y sociedades de control se centraron en las actividades comerciales de riesgo con grandes ganancias.

Titulación y los CDO también contribuyeron en esta crisis. De acuerdo con un estudio realizado por la FDIC el volumen de préstamos de alto riesgo incluidos en las titulaciones de etiqueta privada creció a por lo menos \$ 672 mil millones para fines del año 2006. Aproximadamente el 75 por ciento fueron financiados por las titulaciones. Así, una parte sustancial de las hipotecas subprime son en última instancia, financiados por las titulaciones. Un estudio realizado por (Keys, Mukherjee et al. 2008) muestra que la duplicación del volumen de la titulación es, en promedio asociado con un aumento del 10-25% de la morosidad por defecto en el mercado de la vivienda en gran medida de titulación subprime aumentó en un 50% entre 2005 y 2007, obligando a muchos prestamistas hipotecarios de los negocios y que desencadenó una crisis

financiera que se propagó en todo el mundo. Titulación de activos hipotecarios fue más allá del punto de valor y creación de activos que no eran transparentes.

El enorme aumento de CDO ha sido posible gracias a la expansión del ahorro mundial. La primera ruptura en la confianza del inversor se produjo en 2007, cuando una ola de incumplimientos de pagos hipotecarios afectaron los tramos de CDO. Desde el primer semestre de 2007 para la segunda mitad, la emisión de CDO se redujo en un 50%. Aumento significativo en los índices de morosidad en las hipotecas de alto riesgo, después de mediados de 2005, especialmente en los préstamos que se originaron en el período 2005-06. CDO de las hipotecas subprime fueron el centro de la actual crisis crediticia, ya que una gran cantidad de tramos altos de estos productos de titulación han sido degradados de la calificación de AAA para no grado de inversión. La razón era importante aumento en las tasas de morosidad en las hipotecas de alto riesgo después de mediados de 2005

En el marco de las causas técnicas de mercado, se encuentran los desequilibrios mundiales, el sistema bancario en la sombra, sistema de gestión de riesgos y todas las agencias de calificación crediticia empeoran la crisis.

Mark-to-market de contabilidad contribuye tanto a las burbujas de crédito, que nadie en Wall Street se quejaba porque estaban demasiado ocupados recaudando los bustos de efectivo y de crédito. Las principales críticas contra Mark to Market o FVA es que su uso en la crisis actual ha llevado a una reducción en el valor de los activos de las instituciones financieras, que se tradujo en una contracción severa de sus tasas de capital, lo que obligó a deliberar y vender otros activos en dificultades, lo que alimentó la espiral descendente. Las agencias de calificación crediticia también han contribuido a la crisis financiera. Los tres organismos de calificación crediticia han contribuido, especialmente Moody que es el único con 45.000 valores relacionados con hipotecas clasificados como AAA. Sólo en 2006, Moody puso su triple sello de aprobación en 30

valores relacionados con hipotecas cada día de trabajo. Los resultados fueron desastrosos: 83% de los títulos hipotecarios calificación de triple-A de ese año finalmente se bajó. Fuerzas que actúan detrás de las averías en el Moody, incluyendo los modelos de computadora defectuosa, la presión de las empresas financieras que se paga por las calificaciones, la incesante búsqueda de cuota de mercado, la falta de recursos para hacer el trabajo a pesar de beneficios récord, y la ausencia de sentido de la supervisión pública. Sin la participación activa de las agencias de calificación, el mercado de valores relacionados con hipotecas no podría haber sido lo que se hizo.

La gestión del riesgo no puede haber sido a la altura, ya que muchos de los modelos estándar cuantitativo y usuarios de estos modelos subestimaron la naturaleza sistemática de los riesgos, debido en parte a la complejidad de los productos y a la excesiva dependencia en el análisis cuantitativo, incluyendo las agencias de calificación. Los inversores aprendieron demasiado tarde que muchas evaluaciones de riesgo estaban equivocadas. Los incentivos para vender estos préstamos eran enormes. El resultado fue que las personas sin ingresos documentados se movían en las casas sin nada abajo y sin hacer pagos de la hipoteca, a fin de mantener las comisiones que fluyó. Durante 2005 y 2006, casi todas las solicitudes de hipoteca fueron aceptadas. El mercado de fondos Alt-A (documentación alterna \neg ción) y las hipotecas subprime. No hay prueba de ingresos y no hacia abajo? No hay problema, bienvenido a su nuevo hogar. Incluso para los consumidores que claramente no podían permitirse los pagos mensuales, los bancos y corredores de estructura (y la publicidad \neg tizado) hipotecas en el 1% de interés durante el primer año, (durante el cual el verdadero interés se acumula a los incrementos de hasta un 15% más que el valor de la vivienda en el mercado.) En efecto, los bancos y los corredores de préstamos fueron en contra de una mayor estima "valor de mercado de futuro" que nunca se materializó

Las innovaciones financieras que se consideraban como una bendición se convirtieron en maldición durante esta crisis. Las innovaciones financieras, como lo largo de los derivados extrabursátiles, vehículos de inversión estructural y credit default swaps, contribuyeron durante esta crisis.

Las innovaciones financieras también se convirtieron en una maldición maldición. Estas nuevas innovaciones como los SIV también desempeñaron un papel en la crisis financiera. Hasta finales de 2007, el refinanciamiento de préstamos a corto plazo no había sido un problema para los SIV. Sin embargo, en agosto de 2007, debido en gran parte al temor de que los SIV pueden ser la celebración de grandes cantidades de hipotecas subprime, los bancos y el mercado de papeles comerciales dejaron de prestar SIV a tasas favorables. Los inversionistas creen que los activos de alto riesgo relacionados con valores como Volver de activos no valían la pena. Por lo tanto, los inversionistas no estaban dispuestos a comprar la deuda emitida cada dos a 270 días (o menos) por los SIV con el fin de autofinanciarse. Y con nadie dispuesto a comprar su deuda, las SIV se metieron en grandes problemas. Dado que los SIV no podían pedir prestado más dinero, pero tuvo que pagar préstamos antiguos de espalda que ahora se deben, se vieron obligados a vender parte de sus inversiones a largo plazo para recaudar efectivo. Dado que esta incapacidad para recaudar dinero golpeaba a todos los SIV, al mismo tiempo, un gran número de inversiones a largo plazo llegó a estar disponible para la venta a finales de 2007. El gran número de los tipos de inversiones que estén disponibles los SIV lugar empujó hacia abajo su valor. Este SIV llevó a muchos a perder grandes cantidades de dinero, ya que vendió activos a la pérdida con el fin de pagar sus deudas

Ahora teniendo en cuenta todas estas causas la cuestión principal era qué tanto la hipótesis de la inestabilidad financiera de Minsky (FIH) explica la crisis. A pesar de que la FIH se presentó hace tres décadas y estoy de acuerdo con Wray(2007) que una

ligera modernización de la FIH claramente dirigido a los verdaderamente representa el caso de la actual crisis financiera. Especialmente FIH de componentes como: el desplazamiento, Boom, Euforia, Panico y Busts.

INTRODUCTION

The current tsunami in financial markets, which is believed to have been triggered by the collapse of the subprime housing market, has refocused the ideas of Hyman Minsky (1919–1996), a prominent member of the post-Keynesian school of economics. Many commentators are of the view that Minsky accurately anticipated the current financial crisis. (Wray, 2007, Mcculley, 2008). Some of them called this situation a “Minsky moment” (Whalen 2007, Magnus 2007). He is described as the “obscure economist” who identified highly speculative “Ponzi Finance” as an underlying factor in such crises. But identifying Ponzi finance is not the most important contribution Minsky has made to our understanding of the logic of repeated financial crises under capitalism (Kregel, 2008). Minsky says in his book: “Stabilizing the instable economy”, “The Economic instability so evident since the late 1960s is the result of the fragile financial system that emerged from cumulative changes in the financial relations and institutions over the years following World War II” (Minsky, 1986)

While some main economists are of the view that economic busts are the outcome of various external shocks to the economy and regulatory Flaws on the part of Federal Reserve (Shostak 2008) and Government actions (Taylor 2008). Minsky held that, even in the absence of such shocks, the capitalistic economy has an inherent tendency to develop instability, which culminates in severe economic crises. The key mechanism that pushes the economy towards a crisis is the Economic System, which is not natural. Minsky says in his book “Economic Systems are not natural systems. An economy is a social organization created either through legislation or by an evolutionary process of invention and innovation (Minsky, 1986). The heart of Minsky's framework is Financial Instability Hypothesis (FIH) which says that capitalism is inherently unstable and has self-destructive tendencies.

Financial Crisis 2007-2009 is not generated through only one cause but it was the bunch of many causes. Problem is that so far no comprehensive study or paper has been published on this Financial Crisis 2007-2009 which covers all the causes. This thesis would resolve this problem by focusing on all the causes which generated, Triggered or worsen the crisis. There is one more problem which is going to be resolved in this thesis is whether this is a Minsky Moment or not? From the beginning of the crisis economists are divided on this issue. So This thesis will cover not only the

view point of the main stream economists on the issue of Minsky Moment but after analysis of all the view point I would come up with my view..

Hypothesis of this thesis is that Minsky's FIH clearly covers the Financial Crisis 2007-2009 and that the events has been take place in the same order in which FIH depicts. As FIH says the Displacement, Boom, Euphoria, Panic and Bust we would see the same situation in this crisis also. So it is assumed that the Financial Crisis is a Minsky Moment. It is supposed that the Minsky depict clearly the events in 1960's when very few people were ready to consider it. Minsky's FIH says that, during good times, banks and other intermediaries strive to innovate with regard to the assets they acquire and the liabilities they market. This means that, during good times, financial intermediaries (Minsky labeled them as "merchants of debts") try to lure investors to buy the debt by means of sophisticated innovations. The chase for making more profits causes players in financial markets to place their money in various investments that have very little substance — such as subprime-mortgage-backed securities. What makes these investments attractive is sophisticated packaging and the relatively high rate of return. But, once economic conditions change, the true state of many borrowers comes to the surface and leads to a crisis.

Objective of the thesis is very clear. First of all I have to find out all the cuases of Financial Crisis 2007-2009 whether these are General causes, Technical causes or Innovative Causes. These causes have tobe analyzed empirically. After that from the results of these causes I have to draw conclusions that whether it is a Minsky Moment of not? And Finally I have to come up with comprehensive conclusions.

This thesis is a vital contribution to the literature in this way that so far no effort has been made to bring all the causes of the Financial Crisis on the table at one place. So much has been written on the causes of the financial crisis 2007-2009 but some covers one cause other two causes. All the causes have not been covered in any paper. This thesis not only covers all the causes in detail but discuss the Minsky Moment which is rarely covered and least discussed.

Apart from the introduction the thesis is divided into five big chapters. Chapter 1 includes some definition of the financial crises, some historic background and famous view points of different circles. Also included in this chapter different generation of the crises, different types of the crises, theories about the financial crises and in the later part some discussion about the financial crisis 2007-2009 how it started and proceeded.

Chapter two is about the General Causes of the Crisis. I have divided the causes into three categories. General Causes, technical causes and Innovative causes according to the nature of the cause. Chapter two starts with the Housing bubble and bust, there is a discussion whether the Mortgage market growth was genuine one or it was a bubble and how this lead to the foreclosures and delinquencies. Second cause in the chapter two is high risk mortgage loans and borrowing practices which results in to the excess leverage and then different fraud reporting. Chapter continued with third main cause which is lack of transparency and accountability, how this cause participated in this crisis. Final part of the chapter is covered by securitization and complex issues regarding the financial innovation. Finally a comprehensive look at the Collateralized Debt Obligation (CDO).

Chapter three is about the Technical Causes of the Crisis. Chapter starts with the Mark to Market phenomena. What is mark to market, leverage adjustment, effects and how mark to market participated in this crisis? Second cause in this chapter is Global imbalances, it includes definition, capital inflow to US, US current account deficit, why capital inflow to United States? And finally whether the global imbalance is the cause of the crisis. Third cause in this chapter is Shadow Banking system, what is shadow banking system? and how it participated into the financial crisis? Fourth cause included in this chapter is Risk management System and how this caused the crisis. Finally Credit rating agencies, their scales, conflict of interest and then how these agencies participated in the financial crisis.

Fourth chapter is about the innovative causes. Here we discussed some financial innovations which become curse instead of becoming blessings. Chapter starts with the Over the Counter Derivatives, definition, Global OTC market, counter party liabilities and then its role into the financial crisis. Second innovation included in this chapter is Structural Investment Vehicles and off balance sheet entities, its size, structure, commercial paper and SIV and then how these SIVs caused the crisis. Last innovative cause in this crisis is Credit Default Swaps, their definition, Market, whether this is a bad driver and lastly whether the CDS is blessing or curse?

Last chapter in this thesis is about the Discussion whether this is Minsky moment or not. Chapter starts with the definition of Minsky moment and some historic fact about Hyman Minsky and his Financial Instability Hypothesis. It also includes the view point of different main stream economists on the Minsky moment. It includes Whalen, Kregel, Davidson, Wray and Fazzari's view points. Last thing is conclusions

1

FINANCIAL CRISES

Financial Crises are the result of the normal functioning of the economic and financial systems over the course of the business cycle. Endogenous processes take place near the peak of the expansion phase of the business cycle, in particular, the deterioration of the financial condition of the business sector, which set the stage for a financial crisis (Wolfson, 1994). There is no precise definition of "financial crisis," but a common view is that disruptions in financial markets rise to the level of a crisis when the flow of credit to households and businesses is constrained and the real economy of goods and services is adversely affected. One thing is common in all crises that "All Crises are Crises of Success" (Portes and Vines 1997). The term 'financial crisis' is used too loosely, often to denote either a banking crisis, or a debt crisis, or a foreign exchange market crisis. It is perhaps preferable to invoke it only for the 'big one': a generalized, international financial crisis. This is a nexus of foreign exchange market disturbances, debt defaults (sovereign or private), and banking system failures: a triple crisis, in which the interactions are the key to causality, depth, and persistence (Eichengreen and Portes, 1987). Financial Crises could involve either bank or currency crises or indeed, both of them could take place at the same time (Daianu & Lungu, 2008). (Delargy and Goodhart, 1999) argue that both the late 19th century crises and those in the late 20th were more likely when loose credit conditions in the lending countries were in place. Subsequently, when credit conditions suddenly adversely changed it generated a boom and bust economic cycle.

"The classic explanation of financial crises, going back hundreds of years, is that they are caused by excesses—frequently monetary

excesses—which lead to a boom and an inevitable bust. In the recent crisis we had a housing boom and bust which in turn led to financial turmoil in the United States and other countries” (Taylor, 2008).

The term financial crisis is applied broadly to a variety of situations in which some financial institutions or assets suddenly lose a large part of their value. In the 19th and early 20th centuries, many financial crises were associated with Banking Panics and many recessions coincided with these panics.

1.1: GENERATIONS OF THE CRISES

With regard to the causes, Financial Crises are nowadays, classified into three generation models:

1.1. A: FIRST GENERATION CRISES

Introduced by (Paul Krugman, 1979) and later on worked by Flood and (Garber, 1984) these are mainly concerned with the macroeconomic vulnerabilities. Examples include Russian Crisis 1998 and Argentina Crisis 2001. Factors which can trigger these crises include monetary policy indiscipline, exchange rate overvaluation and trading partner country’s crisis. These crises are highly predictable and according to (Daianu & Lungu, 2008) due to the improved macroeconomic policies at the global level these crises are very rare nowadays.

1.1. B: SECOND GENERATION CRISES

These crises focused on macroeconomic trade-offs and decisions. These crises occur mainly because market participants expect them to materialize. Examples include series of attack on some European currencies within the European Monetary System in 1992-1993 and Mexican crises in 1994. Second generation models are usually built around Kydland-Prescott style 1979 models of policy rules.

1.1. C: THIRD GENERATION CRISES

The Third Generation crises address the balance sheet problems. These explored how problems in the banking and financial system interact with currency crises and how crises can have real effect on the rest of the economy. The frequency of these currency crises has become higher recently as financial markets have become increasingly integrated. (McKinnon & Pill, 1996) suggested that "over borrowing by banks to fund moral hazard lending was a form of hidden government debts. (Chang and velasco, 2000) argue that a currency crisis may cause a banking crisis if local banks have debts denominated in foreign currency. The subprime mortgage crisis is part of the third generation crisis.

1.2: TYPES OF CRISES

There are different types of Financial Crises. These are listed below:

1.2. A: BANKING CRISES

When a bank suffers a sudden rush of withdrawals by depositors, this is called a bank run. Since banks lend out most of the cash they receive in deposits, it is difficult for them to quickly pay back all deposits if these are suddenly demanded, so a run may leave the bank in bankruptcy, causing many depositors to lose their savings unless they are covered by deposit insurance. A situation in which bank runs are widespread is called a systemic banking crisis or just a banking panic. A situation without widespread bank runs, but in which banks are reluctant to lend, because they worry that they have insufficient funds available, is often called a credit crunch. In this way, the banks become an accelerator of a financial crisis.

Examples of bank runs include the run on the Bank of the United States in 1931 and the run on Northern Rock in 2007. The collapse of Bear Stearns in 2008 has also sometimes been called a bank run, even

though Bear Stearns was an investment bank rather than a commercial bank. The U.S. savings and loan crisis of the 1980s led to a credit crunch which is seen as a major factor in the U.S. recession of 1990-91. (Lindgren, Garcia etc. 1996) draw a distinction between banking crisis (systemic episodes) and banking problems, defined as "significant extensive unsoundness short of crisis" (localized crises or non-systemic episodes). Banking crisis refer to evidence of bank runs or other substantial portfolio reallocations, collapsing financial firms, or massive government intervention. (Kunt and Detragiache, 1997) define a banking crisis as an episode of banking distress in which the ratio of non-performing assets to total bank assets exceeds 10 percent and the costs of rescue operations exceed 2 percent of GDP. Banking crises are also frequently identified by events such as bank failure, large-scale bank nationalization, deposit freezes, prolonged bank holidays and bank shutdowns or mergers. They use a sample of 65 countries from 1980 to 1995.

1.2. B: CURRENCY CRISES

A country that maintains a fixed exchange rate may have to suddenly devalue its currency. This often leads to a sudden drop in foreign investments. The Asian currency crisis of 1997-1998 began with Thailand devaluing the baht and developed into most of Southeast Asia and Japan witnessing falling currencies. (Eichengreen, Rose etc., 1996) made an important early effort to develop a method to measure currency pressure and to date currency crises. Their definition of exchange rate pressure is inspired by the monetary model of (Girton and Roper, 1977).

1.2. C: DEBT CRISES

A government may fail to repay its sovereign debt. This often leads to a sudden decline in capital inflows and a spike in capital outflows. Some papers use combinations of debt crisis definitions, others simply make use of single events or measurement of either debt rescheduling or

arrears. For instance (Berg and Sachs, 1988), (Lee, 1991), (Balkan, 1992), (Lanoie and Lemarbre, 1996), and (Marchesi, 2003), have a common definition of a debt crisis using only the concept of debt rescheduling. All studies aim at picking out years in which countries reschedule their external debt.

1.3: THEORIES OF FINANCIAL CRISES

Many economists have offered theories about how financial crises develop and how they could be prevented. There is little consensus, however, and financial crises are still a regular occurrence around the world. Before we going forward it is necessary to have a look on some of these theories:

1.3. A: THORSTEIN VEBLEN

An analysis of financial crises was developed in 1904 by Thorstein Veblen, the founder of institutionalist approach within economics. His theory of financial crises is based upon the effects of movements in the rate of profit upon the extension of credit.

Veblen stresses the central role of profits. For him, profit considerations dominate business decisions, and the degree to which profits are realized can affect the overall economy "Times are good or bad according as the process of business yields an adequate or inadequate rate of profits". He distinguishes between two types of credit: (1) "Deferred payments in the purchase and sale of goods (Trade Credits)" and (2) "Loans or debt-notes, stocks, interest-bearing securities, deposits, call loans, etc." His view is that credit is necessarily employed in business expansions, and that its use inevitable spreads throughout the economy.

1.3. B: WESLEY CLAIR MITCHELL

Like Veblen, Mitchell identifies the Financial Crisis with the liquidation of credit “When the demand for reduction of outstanding credits becomes general, the cycle passes from the phase of prosperity into the phase of crisis”. However, unlike Veblen, Mitchell distinguishes between two possible outcomes of the liquidation process. One is financial Crisis which leads to a down turn in the business cycle, “though without a violent wrench....there is no epidemic of bankruptcies, no run upon banks and no spasmodic interruption of the ordinary business process. The second outcome is a more sever crisis that turns into a financial panic. This likelihood of a panic depends to a significant degree upon whether or not the banks meet the demands placed on them. Mitchell concludes that “The ending of a crisis, whether accompanied by panic or not is the cessation of intense demand for prompt liquidation”.

1.3. C: KARL MARX

Karl Marx’s theory of financial crises is intimately tied to his theory of industrial crises. For Marx, a financial (or money) crisis occurs whenever there is a crisis in the “Real Sector”. The possibility of the latter type of crisis is present whenever the purchase and sale of commodities become separated: “If the crisis appears, therefore, because purchase and sale become separated, it becomes a money crisis as soon as money has developed as means of payment, and this second form of crisis follows as a matter of course, when the first occurs.” Moreover, “The second form is not possible without the first.”

Marx’s theory defines a financial crisis as a “tremendous rush for means of payment” brought about by the abrupt cessation of credit. He stresses that the intense demand for money is for the purpose of meeting payment commitments, not undertaking new investment. He Writes: “In times of crisis, the demand for loan capital, and therefore the

rate of interest, reaches its maximum; the rate of profit, and with it the demand for industrial capital, has to all intents and purposes disappeared. During such times, everyone borrows only for the purpose of paying, in order to settle previously contracted obligations”.

1.3. D: HYMAN P. MINSKY

Hyman P. Minsky has written more about the general topic of financial instability, and what he calls “Financial fragility” than any other modern author. He is clearly one of the leading theorists of financial crises today, and his views have influenced the thinking of many people. Minsky’s research focused on the understanding and explanation of financial crisis. Minsky claimed that in prosperous times, when corporate cash flow rises beyond what is needed to pay off debt, a speculative euphoria develops, and soon thereafter debts exceed what borrowers can pay off from their incoming revenues, which in turn produces a financial crisis. As a result of such speculative borrowing bubbles, banks and lenders tighten credit availability, like right now, even to companies that can afford loans, and the economy subsequently contracts.

Minsky's core model is known as "Financial Instability Hypothesis" (FIH), which simply declares stability is inherently destabilizing. Minsky wrote in 1974, "That the financial system swings between robustness and fragility and these swings are an integral part of the process that generates business cycles."

1.3. E: ALLEN SINAI & OTTO ECKSTEIN

Eckstein and Sinai argue that much business cycle analysis has given insufficient attention to financial factors. They stress that the business cycle is the result of an interrelation of real and financial behavior. Their contribution is of interest principally because they develop a very careful classification of the stages in the post-war business cycle.

Eckstein and Sinai put forward a five stage classification of the business cycle: (1) recovery/expansion; (2) boom; (3) pre-crunch/crunch; (4) recession; and (5) reliquification.

Recovery is the period when output begins to rise after the lower turning point of the cycle, and it continues until the pre-recession level of activity has been reached, the exact timing of which will depend on whether output, employment or some other variable is seen as the most important. This merges into the period of expansion, during which the growth of output, employment and investment results in a rise in the level of economic activity that continues up to the peak of the business cycle. Accumulation refers to a financial process which occurs at the same time as the expansion, and it concerns the acquisition of physical and financial assets, both by households and by businesses. During this stage, financial constraints are minimal, and financial institutions have ample funds which they are eager to lend

The boom occurs during the period of expansion, usually in the final stages, although sometimes it does not continue right up to the end of the expansion. It is a period of unsustainable growth, where the rate of growth is well above the trend rate, and where the levels of output are close to capacity limits.

The pre-crunch period refers to financial developments which occur towards the end of the expansion. It is marked by deterioration in the financial balances of businesses and households, and by an increase in the demand for credit that begins to put upward pressure on the rate of interest.

The crunch is the point at which the tensions of the pre-crunch come to a head and is defined by Eckstein and Sinai as ‘a credit crisis stemming from the collision of an expanding economy with a financial system that has been depleted of liquidity.

Recession is the period of economic contraction which lasts from the peak of the business cycle through to the following trough. Once the decline in output and employment begins, firms are able to reduce their inventories. Eckstein and Sinai consider that fiscal and monetary policy can play an important function in accelerating or delaying the timing of the lower turning point.

Reliquification is the period in which businesses and households reverse the deterioration in their financial balances which occurs in the pre-crunch, crunch, and early stage of a recession. The processes they mention which achieve this mainly refer to businesses: the laying off of workers; drastic cuts in investments in fixed capital; and the dumping of inventories.

1.3. F: ALBERT M. WOJNLOWER

Another economist who has developed an analysis of the post-war US business cycle on the basis of a close study of the financial system's behavior is Albert Wojnilower. Wojnilower's main contribution is a remarkable empirical study of the role of credit crunches in the post-war period, in the course of which he develops a number of theoretical observations.

Wojnilower outlines three main propositions. The first is that the demand for credit is interest inelastic, most especially in the final stages of a business cycle upturn. Based on his own observations, he comes to the conclusion that firms will continue to borrow funds so long as credit is available, irrespective of the rate of interest. Nevertheless, Wojnilower appears to believe that interest payments might be financed by credit, for at one point he argues that a rise in interest rates can lead to an increase in borrowing.

The second of Wojnilower's propositions is that it is interruptions in the supply of credit—'credit crunches'—which are responsible for

downturns in the business cycle. According to Wojnilower, banks attempt to continue providing credit to their larger corporate customers with whom they have a standing relation, and it is therefore lending to the personal sector that suffers first. But once banks curtail their lending to business, many firms are unable to continue their activities on the same scale, and there is consequently a sharp downturn in economic activity.

Wojnilower's third proposition is that following each downturn, both the authorities and the financial institutions took steps to eliminate whatever had been responsible for causing the previous crunch, but that the elimination of such constraints then encouraged an excessive expansion of credit which contributed to a rising level of inflation. Wojnilower therefore believes that credit crunches were an important impetus to the process of financial liberalization, although he also warns that the removal of these constraints has left the financial system open to the possibility of a far more serious.

1.4: FINANCIAL CRISIS 2007-2009

1.4. A: HOW IT IS STARTED & PROCEEDED

The origin of the current financial crisis which is called the "Financial Tsunami" by some leading economists (Lim, 2008), clearly the worst financial Crisis since the Great Depression 1930, is much divided. Some economists believe that the causes of the current crisis go back to the Great Depression of 1930 (Eichengreen, 2008). While others believe that a housing market bubble began in the late 1990s and accelerated in the early-mid 2000s became the root cause of this crisis (Crotty, 2008).

While others have different idea "The classic explanation of financial crises, going back hundreds of years, is that they are caused by excesses—frequently monetary excesses—which lead to a boom and an inevitable bust. In the recent crisis we had a housing boom and bust which in turn led to financial turmoil in the United States and other countries" (Taylor, 2008).

Due to the housing bubble banks and mortgage brokers pushed mortgage sales because they earned fees in proportion to the volume of mortgages they wrote. Wall Street took in \$27 billion in revenue from selling and trading asset-backed securities (Farzad, 2007). Banks earned large fees securitizing mortgages, selling them to capital markets in the form of mortgage backed securities (MBSs) and collateralized debt obligations (CDOs), and servicing them after they were sold. The volume of Mortgage backed securities (MBS) originated and traded reached \$3 Trillion in 2005 in a United States housing mortgage industry of \$10 Trillion (Farzad, Goldstein et al., 2007b).

Since, it was generally believed that banks distributed most of these mortgages to capital markets as asset-backed securities; it was expected that little if any bank risk was involved in the process. Many

large housing developers aggressively pushed mortgages to borrowers in order to boost sales. For Example, Pulte Home (the country's largest developer by market capitalization) provided mortgages for 90% of the houses they built (Lim, 2008).

Institutional investors such as hedge funds and insurance companies demanded these complex, risky products because they were given high - often AAA - ratings by credit ratings agencies, yet they had higher returns than equivalently rated corporate bonds whose yield was constrained by the low interest rates of the era. Demand for high yield products based on mortgages was so great and bank fees so large that banks and brokers began to sell mortgages to those who could not afford them under terms that were bound to trigger large defaults when the housing price bubble evaporated and/or interest rates rose. The whole process was driven by accelerating leverage.

Subprime mortgages simply mean lending to house borrowers with weak credit. Lenders did so by providing teasers like minimal or zero down payment, and low introductory adjustable rate mortgages, as well as lax documentation and credit checks. Between 2004 and 2006, \$1.5 Trillion (15% of total United States housing loans) of subprime mortgages were booked (Brooks and Mitchell, 2007).

Total subprime loans form 25% of the housing mortgage market (Capell, 2007). These subprime loans were fine as long as the housing market continued to boom and interest rates did not rise. When these conditions disappeared the countdown started (Lim, 2008). Home sales peaked in late 2005 and home construction spending and housing prices topped out in early 2006. When the subprime mortgage crisis erupted in mid 2007, the entire building began to collapse. The crisis began in the US, but since mortgage-based financial products had been dispersed around the world, we soon had a global financial crisis.

Some economists believe that the Subprime Mortgage defaults did not cause the financial crisis, it only acted as a trigger (Lim, 2008). This crisis is fundamentally a consequence of three imbalances: Wealth and income imbalance, Current Account imbalance and Financial Sector imbalance (Lim, 2008). While others are of the view that Government actions and interventions caused, prolonged and worsened this financial Crisis (Taylor, 2008).

While subprime defaults were the root causes, the most identifiable event that led to the systematic failure was most likely the collapse on June 20, 2007, of two highly levered Bear Stearns (The fifth-largest investment bank)-managed hedge funds that invested in subprime assets -backed securities (ABSs) and the bankruptcy of the Lehman Brothers (Acharya, Philippon, Matthew et al., 2008). Lehman Brothers (The Forth-largest investment bank) filed for bankruptcy on September 12, 2008. Lehman contained considerable systemic risk and led to the near collapse of the financial system. Lehman Brothers episode revealed “too big to fail” label for the financial institutions.

2

GENERAL CAUSES

“Over a protracted period of good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure in which there is a large weight to units engaged in speculative and Ponzi finance”

(Minsky 1992)

Nearly two years after the outbreak of the credit crisis (which may be dated to early 2007 when major losses were announced by the U.S. subprime-based investors), key issues remain to be resolved. At the most basic level the big question: What caused the crisis? This financial crisis is not the result of only single factor rather it is the combination of many factors. I have tried to sum up all the factors/causes which are behind this crisis. These causes are:

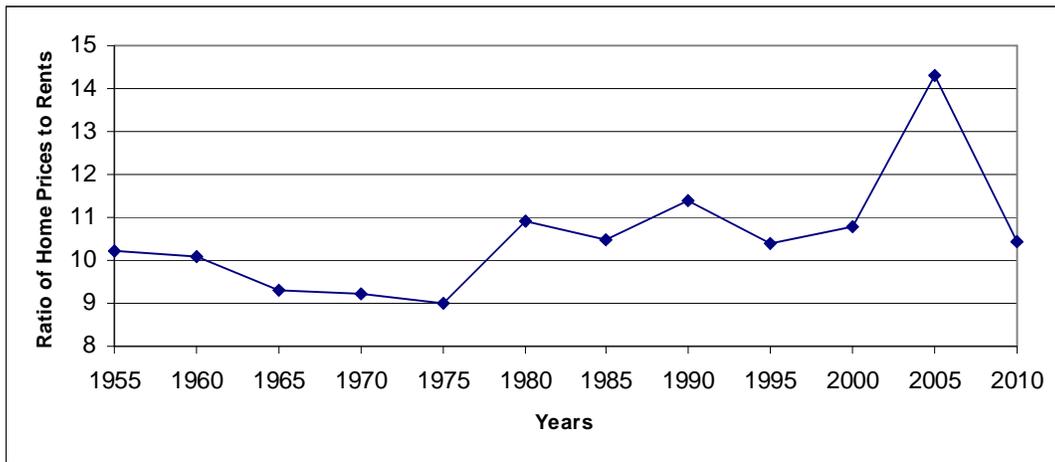
2.1: HOUSING BOOM, BUBBLE & BUST

A housing bubble is a type of economic bubble that occurs periodically in local or global markets. It is characterized by rapid increases in valuation of real property such as housing until they reach unsustainable levels relative to income and other economic elements. The driving force behind the mortgage and financial market excesses that led to the current credit crisis was the sustained rise in house prices and the perception that they could go no where but up (Baily, Litan et al. 2008).

Figure 1 plots data on the ratio of the total value of residential real estate to a measure of the rental value at an annual rate. Equivalent to a price-earnings ratio for equity, data beginning in 1955 make clear how

extraordinary the first five years of the 21st century were. Normally, home prices are between 9 and 11 times the annual level of rent paid. That makes sense, as it implies an average user cost of housing of around 10 percent. But since 2000, prices have skyrocketed, leaving rents in the dust. The price-to-rent ratio peaked at the end of 2006, reaching the rather extraordinary level of 14.5, clearly suggesting the existence of a “bubble” in residential housing. Home prices were at levels far higher than justified by fundamental values (or replacement costs). While in 2010 it fall sharply from 14.5 to 10.42.

Figure-1: Ratio of Home Prices to Rents (From 1955 to 2010)



Self-Made Figure (Data Source OFHEO)

The residential real estate price rise that began in 2000 had a number of important side effects. First, when the value of housing rises, it creates wealth and wealthier people consume more. This consumption-wealth effect is substantial.

The simplest way to convert housing wealth into consumption is to borrow. And this is where, in hindsight, we can find the second sign of trouble. What we see is that as the value of residential real estate rose, mortgage borrowing increased even faster. Since 1995 home equity has

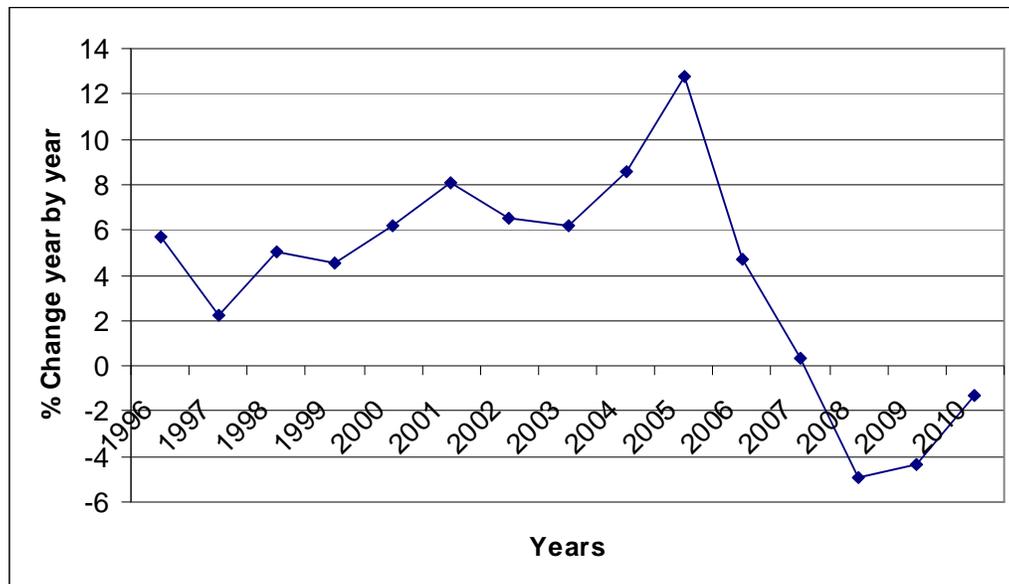
fallen from 58, already far below the 69 percent level a decade earlier, to 52 percent of home value.

To recap, by the beginning of 2007 we can say:

- 1- Home prices were at unprecedented levels.
- 2- Home owners had more leverage than ever before.
- 3- Mortgage quality had declined substantially.

This sets the stage for the crisis (Cecchetti, 2008). House prices in some regions grew rapidly after interest rates declined in 2001. Adjusting for inflation, real U.S. house prices rose 34% during 2000-2005 (they rose 51% if not adjusted), which is more than double any five-year rate in the past 30 years. Specific regions experienced even faster appreciation; in 2004 alone, housing in Miami, Los Angeles, and West Palm Beach appreciated more than 20% and Las Vegas appreciated 35%. Figure 2 shows that the rate of house price appreciation, year over year, reached 13% in 2006, and then plunged to 0.36% by 2007. In 2008 it further fell to -4.93% while in 2009 it is -4.32% and finally in 2010 it fell to -1.27%.

Figure-2: Appreciation of House Prices (1996-2010) (% change annually)



Self-Made Figure (Data Source OFHEO)

A survey held by (Case and Shiller, 2003) report that the overwhelming majority of persons surveyed in 2003 agreed with or strongly agreed with the statement that real estate is the best investment for long-term holders. Respondents expected prices to increase in the future at 6 to 15 percent a year, depending on location.

In 1975 and 1995 real home prices went through two cyclical waves: rising after 1975, falling in the early 1980s and then rising again before falling in the early 1990s. From 1975 until 1995 housing did increase faster than inflation, but not that much faster. After the mid 1990s, however, real house prices went on a sustained surge through 2005 making real estate a great investment opportunity. In 1995-2000 household income per capita rose substantially, contributing to the increase demand.

But what happened after is a constant surge in the housing prices from 1995 to the onwards. The increasing trend regardless of the constant decreasing household per capita income clearly shows a bubble in the housing market. In general experience of the other countries supports the view that the decline in mortgage interest rates was a key factor in triggering the run up of housing prices (Green and Wachter, 2007).

2.1. A: WAS THE BOOM A BUBBLE?

In the aftermath of the housing boom, the question that economists are heatedly debating is how much of the increase in housing prices was due to economic fundamentals, and how much was due to a bubble-a rise in price due to "irrational exuberance" about future price appreciation (Alan Greenspan)

There were also reasons for housing prices to rise based on market fundamentals, however, such as rising incomes and falling mortgages rates (Getter, Jickling et al. 2007). They put mainly two questions: First why did borrowers increasingly use ARMs rather than locking in a

relatively low fixed rate, which would have had no risk of future interest rate increases? And second, why did mortgage lenders and investors not factor in rising rates when estimating the future probability of ARM delinquencies? Outcome of the results suggests that many borrowers might have been motivated by the prospect for short-term financial gains and investors turned to riskier types of MBS and these investments create a housing bubble which ultimately becomes the main reason of Subprime Default.

2.1. B: FORECLOSURE & DELINQUENCIES

The foreclosure rate is the share of mortgages that are in the foreclosure process (inventory). Some analysts prefer to use the new foreclosure starts rate instead, but it is the total inventory in foreclosure that represents the foreclosure problem, especially with regard to its impact on housing starts and prices of homes. Of course the foreclosure rate as defined here could rise simply by slowing down the process of moving mortgages from filing to settlement, but this process is fairly stable and averages slightly over one year. Thus the foreclosure rate is a multiple of the rate of new foreclosures.

From the data above we have seen that the appreciation in the housing sector was not normal. Definitely there was a bubble in the market which then burst and higher delinquencies occurred. High number of delinquencies created the foreclosure problem and ultimately caused the crisis. Federal Reserve should at that time intervene in the market but for some reasons Fed did not act and the problem creates the mess. Low level of foreclosures and delinquencies was most probably from the investor's perception that real state would never go down and always there would be increase in this sector.

Ice started to melt from 2007 when the housing prices takes a lower trend very rapidly and number of Delinquencies and Foreclosures started increase. This unprecedented decline in housing prices shocked

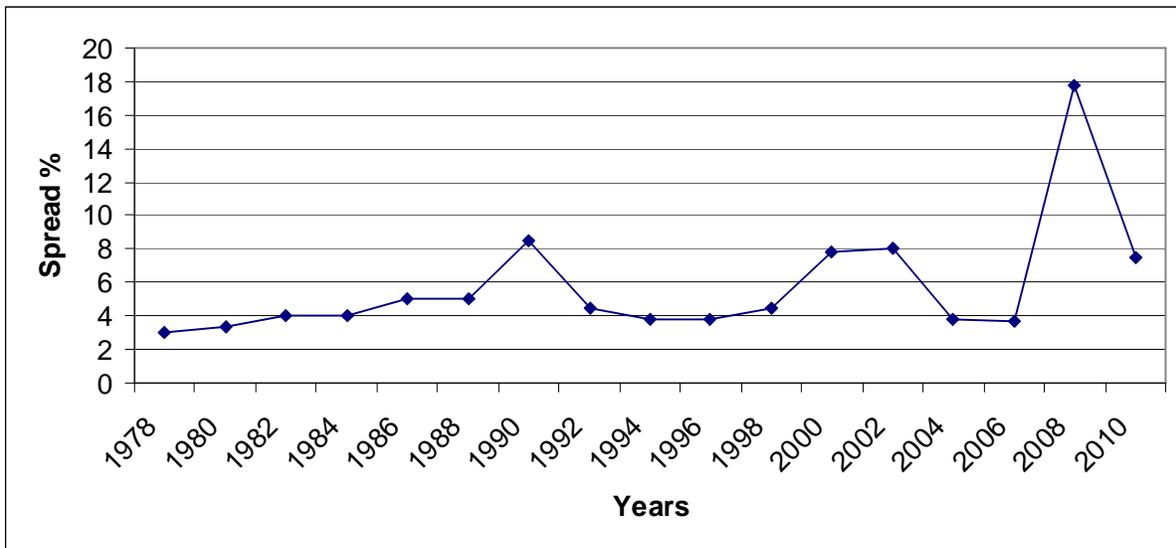
the investors and the sub-prime loan holders which were already facing difficulties in payment of their obligations.

2.2: HIGH RISKS MORTGAGES LOANS & BORROWING PRACTICES

As the interest rates are low and house prices are increasing, the sub prime market prospered. Home price appreciation gave borrowers a confidence that even if they fail to pay their debt they can cover this debt by selling their home in appreciated prices. During that period (which home prices are increasing over time) delinquency rates were too low.

The sub prime mortgage market splitted into parts by ABS (asset backed securities) and CDO's (collateralized debt obligations). Subprime Mortgages amounted to \$35 Billion in 1994, \$160 billion in 1999 and \$600 Billion in 2006.

Figure-3: HISTORIC HIGH YIELD BOND SPREADS (1978-2010)



Self-Made Figure (Data Source OFHEO)

Figure-3 above graphs the high yield bond spread over Treasuries on an annual basis over the period 1978 to 2010. The lowest point of the graph from June 2006, on ward, not visible due to the annual nature of

the data, is 260 basis points on June 12. As long as house prices continued to rise, borrowers in hot markets easily refinanced their loans or sold their homes at a profit, and delinquency rates remained low. Noting low delinquency rates, more loans with lower underwriting standards began to be made. This can be seen in the rapid growth of the subprime mortgage market. In 2005, \$507.9 billion in subprime mortgage loans were pooled and sold as mortgage backed securities (MBS), compared with \$18.5 billion in 1995.

During rise of the overall home mortgage market, subprime lending sector in particular have grown tremendously and played an important role in increasing the percentage of homeownerships and creating wealth. Also the subprime offer other credit spectrums with more choices and flexibility thereby enhancing an aggregate welfare gain (Chinloy and MacDonald, 2005). By 2006 the industry has gone from representing less than 5% of all originations to approximately more than 20% (Liu, 2007).

It is clear that subprime mortgage loans existed after 1998 and then gained a great share closer to 2006. These loans have higher interest rates to compensate the risk posed by the borrowers, most of these ARM(Adjustable rate mortgage), with interest only payment options, penalties for paying off the loan early and low documentations requirements which borrowers need just a little paperwork to borrow the loans.

But why this happen? Why we have seen a tremendous jump in this financial sector. According to Kregel, in 1999 congress approved the Gramm-Leach-Bliley Bank Reform Act according to which “Banks of all sizes gained the ability to engage in a much wider range of financial activities and to provide a full range of products and services without regulatory restraint” (Kregel 2007). (Minsky, 1986) argued that

deregulation allowed increasing risky innovations that made the system more vulnerable.

2.2. A: EXCESS LEVERAGE

According to (Blundell, 2008) Excessive leverage has been the key characteristic, particularly with respect to subprime mortgages and the securities based on them. First, excess liquidity resulted in asset bubbles, particularly in housing and mortgage-based securities. These asset bubbles encouraged speculators to borrow, while the (rising) asset value of collateral comforted the lenders. Second, there were clear gaps in regulatory and accounting standards regarding the treatment of “off-balance sheet” financial vehicles and lending practices.

U.S. households and financial institutions became increasingly indebted or overleveraged during the crisis. This increased their vulnerability to the collapse of the housing bubble and worsened the ensuing economic downturn. From 2003-07, the top five U.S. investment banks each significantly increased their financial leverage which increased their vulnerability to a financial shock. These five institutions reported over \$4.1 trillion in debt for fiscal year 2007, about 30% of USA nominal GDP for 2007.

Lehman Brothers was liquidated, Bear Stearns and Merrill Lynch were sold at fire-sale prices, and Goldman Sachs and Morgan Stanley became commercial banks, subjecting themselves to more stringent regulation. With the exception of Lehman, these companies required or received government support. These seven entities were highly leveraged and had \$9 trillion in debt or guarantee obligations, an enormous concentration of risk, yet were not subject to the same regulation as depository banks.

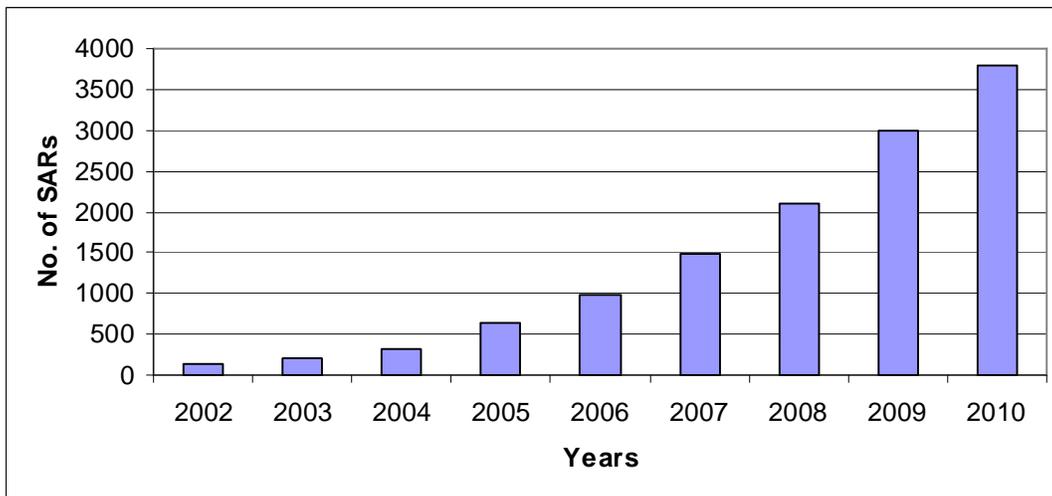
Substantial increase in the leverage ratios of investment banks (the leverage ratio — a measurement of how much the firm was borrowing compared to its total assets) rose sharply, to 33 to 1. In other words, for

every dollar in equity, it had \$33 of debt. The ratios at the other firms also rose significantly. Each of the five largest investment banks took on greater risk leading up to the subprime crisis. This is summarized by their leverage ratio. A higher ratio indicates more risk. From fiscal years 2003-2007, these firms significantly increased their leverage ratios. A ratio of 10-15 is more typical of a conservative bank. These firms had ratios closer to 30. This over-leverage compelled banks to search extra sources of investment. For this purpose sub-prime mortgages were given edge because of easy conditions and higher interest returns.

2.2.B: FRAUD REPORTING

According to a report by Financial Crimes Enforcement Network on Mortgage loan Frauds says, in the year 2006, there has been increase of 44% in Fraud Cases as compared to the preceding year. Report says “Suspected fraud was detected prior to loan disbursements in 31% of the mortgage loan fraud SARs (Suspicious Activity Report) filed between April 1, 2006 and March 31, 2007 compared to 21% during the preceding ten years”. First American Loan performance in 2006 says 56% of the loans were “liar Loans” which borrowers misrepresent information to obtain the mortgage loans. Figure-4 below will give the exact position in this regard

Figure-4: Fraud Reported in Cash-out Refinance Loans (2002 to 2010)



Self-Made Figure (Data Source Financial Crimes Enforcement Network)

(Mian and Sufi, 2008) provide evidence that many of largest increases in house prices 2001-2005 (and subsequently large crashes in prices and foreclosures 2005-07) happened in areas that experienced a sharp increase in the share of mortgages sold off by the originator shortly after origination, a process they refer to as “disintermediation”.

In summary, we can say that the boom in mortgage borrowing was due to low interest rates and easier lending practices. Speculators purchased property in hopes of making money by reselling them later on high rates. The increasingly lax lending standards are characteristic of classic behavior during bubbles. Fraud, lack of due diligence, and deceptive practices occurred on both sides of the mortgage transactions, but as long as house prices continued to rise at a good pace, the whole structure could continue, and even the fraud and deception were buried as people were able to refinance and were unlikely to default on their mortgages and lose the equity (if they had any) that they had built up (Baily, Litan et al. 2008). But as soon as the whole building destroyed the boom in the Mortgage become the bubble and Burst which results in the situation in which we have at this time.

2.3: LACK OF TRANSPARENCY & ACCOUNTABILITY

“Throughout the housing finance value chain, many participants contributed to the creation of bad mortgages and the selling of bad securities, apparently feeling secure that they would not be held accountable for their actions. A lender could sell exotic mortgages to home-owners, apparently without fear of repercussions if those mortgages failed. Similarly, a trader could sell toxic securities to investors, apparently without fear of personal responsibility if those contracts failed. And so it was for brokers, realtors, individuals in rating agencies, and other market participants, each maximizing his or her own gain and passing problems on down the line until the system itself collapsed. Because of the lack of participant accountability, the originate-to distribute model of mortgage finance, with its once great promise of managing risk, became itself a massive generator of risk.”

Statement of John W. Snow before the Committee on Oversight and Government Reform United States House of Representatives October 23, 2008

Former Fed Chairman Paul Volcker has observed that problems of financial crisis began with a lack of accountability in mortgage lending and the trading of mortgage-backed securities. Financial executives spawned a proliferation of mortgage backed securities without integrity and traded them in non-transparent markets. According to (Larson, 2009) CEOs and Boards of Directors failed to be accountable to shareholders and to the public. They took on growing risk, ran reputable companies into the ground and paid themselves fat bonuses. Executives hide dangerously leveraged positions from their shareholders and regulators by keeping risky transactions off Balance sheets and out of view

This attitude of individuals and even companies raises question of lack of transparency and accountability during the financial crisis. One of the essences of a well functioning free market is that the market itself holds players to account simply through who gets to sell their wares & who does not. It appears that this market function has not helpful because Financial Crisis tells us the different story. According to (Larson, 2009) the German multinational firm Siemens recently agreed to fines of over \$1.6 billion to German and American authorities to resolve charges that it had systematically bribed public officials around the world in order to gain billions in government contracts. About one hundred U.S. firms were prosecuted by the Justice Department in 2008 for similar offences. Recently, Halliburton and Kellogg Brown & Root agreed to pay \$579 million in fines related to bribes paid in Nigeria (Larson, 2009).

Federal Bureau of Investigation (FBI) has opened investigations into more than 500 cases of alleged corporate fraud, including 38 that involve important firms and are "directly related" to the national economic crisis. Deputy Director of FBI John Pistole told Congress that 38 companies are significantly large companies, everyone knows about them but he cannot comment publicly. In addition to major corporate

fraud, Pistole testified that the number of mortgage fraud cases investigated by the FBI has risen from 881 in fiscal year 2006 to 1,600 in fiscal year 2008 (Jason, 2009).

According to (Tatom, 2008) The origins of the problem go back to 2004-2006 when a large share of new mortgage loans were made to subprime borrowers, borrowers who had relatively low credit scores and could not qualify for conventional mortgage loans at normal market interest rates (Tatom, John 2008). Many of these loans began to default much earlier than the normal experience from the past (Demyanyk and Hemert, 2008). In fact, some of them went into default without ever making a payment.

Table-1 below provides some statistics of mortgage origination. Annual originations grew from \$2.2 trillion in 2001 to nearly \$4 trillion in 2003 before settling around a figure of about \$3 trillion in the years 2004-06. Of that, subprime originations grew from just \$190 billion in 2001 to \$625 billion in 2005; as a percent of the dollar value of total originations, subprimes grew from 8.6% to 20% of the market. Over the same period, the percent of subprimes securitized increased from 50.4% to 80% which shows a growing trend of securitization.

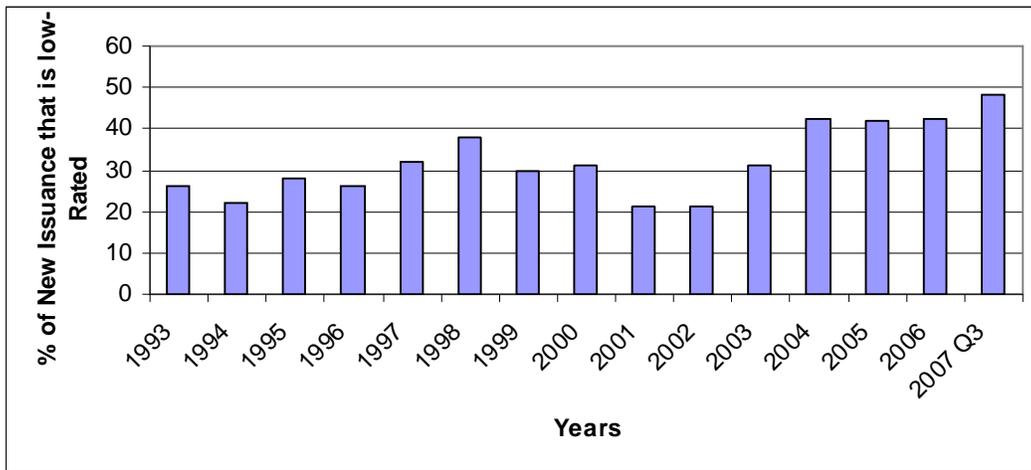
Table-1: Mortgage Origination Statistics

	Totla Mortgage Originations (\$Billions)	Sub Prime Originations (\$ Billions)	Subprime share in Total Originations % of \$ Value	Subprime mortgage Backed Securities (\$ Billions)	% Subprimes Securitized (% of dollar Value)
2001	2215	190	8.6	95	50.4
2002	2885	231	8	121	52.7
2003	3945	335	8.5	202	60.5
2004	2920	540	18.5	401	74.3
2005	3120	625	20	507	81.2
2006	2980	600	20.1	483	80.5

Self-Made Table (Data Source: IMF)

Moreover, poor underwriting practices such as no down payments, no verification of income, assets, and jobs exacerbate the issue much. Over the past several years, the quantity and quality of loans across a variety of markets has weakened in two important ways. In terms of quantity, there was a large increase in lower-rated issuance from 2004 to 2007.

Figure-5: Quality of New Debt Issuance, (1993–2007)



Self-Made Figure (Data Source Standard and Poor's)

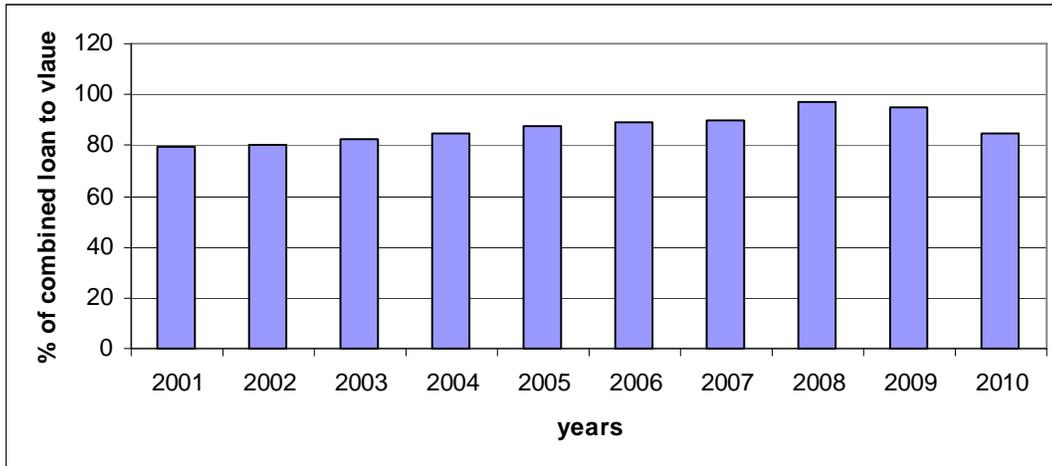
Figure-5 above shows the quality of new debts issued from 1993 to 2007. Most of debts are low rated (B). From 2004 sudden increase in the issuance of low rated loans has been observed from as compared to the past years.

Quality wise we have seen increase in high combined loan-to-value*. Figure-6 below shows the issuance of loans with limited documentation.

* Combined Loan to Value (ratio) (CLTV) is the proportion of loans (secured by a property) in relation to its value. The term "Combined Loan to Value" adds additional specificity to the basic Loan to Value which simply indicates the ratio between one primary loan and the property value. When "Combined" is added, it indicates that additional loans on the property have been considered in the calculation of the percentage ratio. The aggregate principal balance(s) of all mortgages on a property divided by its appraised value or Purchase Price, whichever is less. Distinguishing CLTV from LTV serves to identify loan scenarios that involve more than one mortgage. For example, a property valued at \$100,000 with a single mortgage of \$50,000 has an LTV of 50%. A similar property with a value of \$100,000 with a first mortgage of \$50,000 and a second mortgage of \$25,000 has an aggregate mortgage balance of \$75,000. The CLTV is 75%.

Starting from 2001 and going through 2006 it is visible from the graph that there were dramatic changes in the quantity of the loans during this period.

Figure-6: Combined loan to value (2001 to 2010)



Self-Made Figure (Data Source Paulson and Company)

Table-2 below shows the evolution of underwriting standards for subprime loans. The %age of such loans with adjustable rates rose from 74% to 93% in the years 2001 to 2005. Interest-only loans rose from zero to nearly 38% and the low or no doc share rose from 29% to more than 50%. In other words, the riskiest types of subprimes ARMS and hybrid ARMS were favorites with securitizes. Debt payment to income ration has been increased from almost 40% to 43% while average loan to value ratio has been decreased.

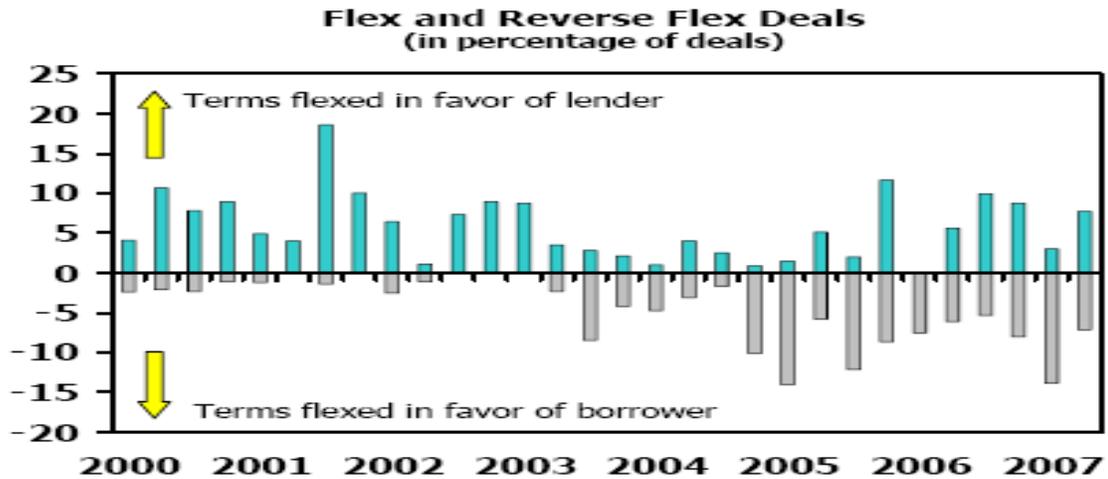
Table-2: Underwriting Standards in Subprime Home-Purchase Loans

Year	ARM Share	Interest-Only Arm Share	Low-No-Doc Share	Debt Payment-to-Income Ratio	Average Loan-to-Value Ratio
2001	73.80%	0.00%	28.50%	39.7	84.04
2002	80.00%	2.30%	38.60%	40.1	84.42
2003	80.10%	8.60%	42.80%	40.5	86.09
2004	89.40%	27.20%	45.20%	41.2	84.86
2005	93.30%	37.80%	50.70%	41.8	83.24
2006	91.30%	22.80%	50.80%	42.4	83.35

Self-Made Figure (Data Source IMF)

Regardless of increase in low quality credit issuance and decrease in quantity there has been a parallel weakening of credit discipline in corporate credit markets, seen in the “flexing” of deals in favor of borrowers. Figure-7 below shows how credit risks have been increased by flex and reverses flex deals. From 2000 to 2002 we have seen terms flexed in favor of lenders while from 2003 to 2007 observed opposite.

Figure-7: Flex and Reverse Flex Deals (2000 to 2007)



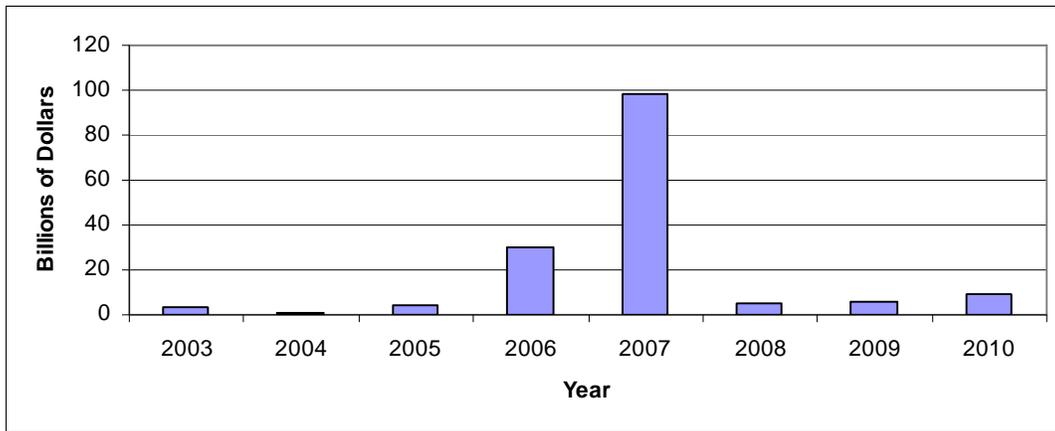
Source: IMF <http://www.imf.org/external/pubs/ft/fmu/eng/2007/charts.pdf>

In 2006 and 2007 a sharp increase has been seen in the volume of Cov-lite* or covenant lite loans. Cov-lite lending is seen as more risky because it removes the early warning signs lenders would otherwise receive through traditional covenants. Figure-8 below shows a tremendous increase in the use of Cov-Lite loans in the years 2006 and 2007. Especially in the year 2007 it was bit lower than \$100 billion marks.

* Covenant lite is financial jargon for loan agreements which do not contain the usual protective covenants for the benefit of the lending party. It has been observed that cov-lite loans simply reflected changes in bargaining power between borrowers and lenders, and followed from the increased sophistication in the loans market where risk is quickly dispersed through syndication or credit derivatives

Low credit quality and easy access to the credit made this possible. Firms looking for customers and eager to increase their share give loans even by compromising basic principles. Loans were granted on the minimum documentation possible and standard of documentation decreased.

Figure-8: volume of Covenant-Lite Loans (2003 to 2010)



Self-Made Figure (Data Source IMF)

The Fed and other regulators generally supported new financial innovations. There may be some truth to both views. On the one hand, credit was widely available across all markets—mortgage, consumer, and corporate loans—with characteristics that suggested poorer and poorer loan quality.

One explanation for deteriorating loan quality is the huge growth in securitized credit. This is because the originate-to-distribute model of securitization reduces the incentives for the originator of the claims to monitor the creditworthiness of the borrower, because the originator has little or no skin in the game.

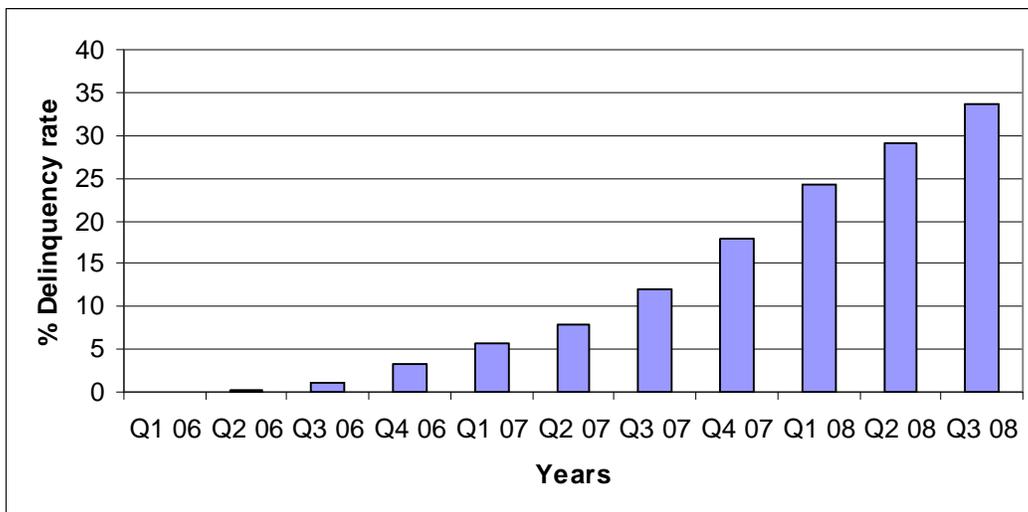
According (Jaffee, 2008) securitization process has created a “moral hazard,” allowing subprime lending risks to be passed in a sequence starting with mortgage brokers, then to lenders, then to securitizes, and ending as risks in investor portfolios. Although it is understandable that

each of these transactors might participate in the chain as long as they were confident they could transfer the risk to the next stage.

Large quantity of risky loans with low quality creates troubles in credit markets. Loans were even given to those persons who don't afford it. It results in a mess in the credit market. Returns on these loans started to shrink and creates problems for the lenders.

Figure-9 below shows the subprime 60 days delinquency rate which is constantly rising from 2006 to 2008. Subprime delinquency has been increase from 0% in 2006 to alarming rate of almost 34%.

Figure-9: Subprime 60 days Delinquency Rate (2006 to 2008)

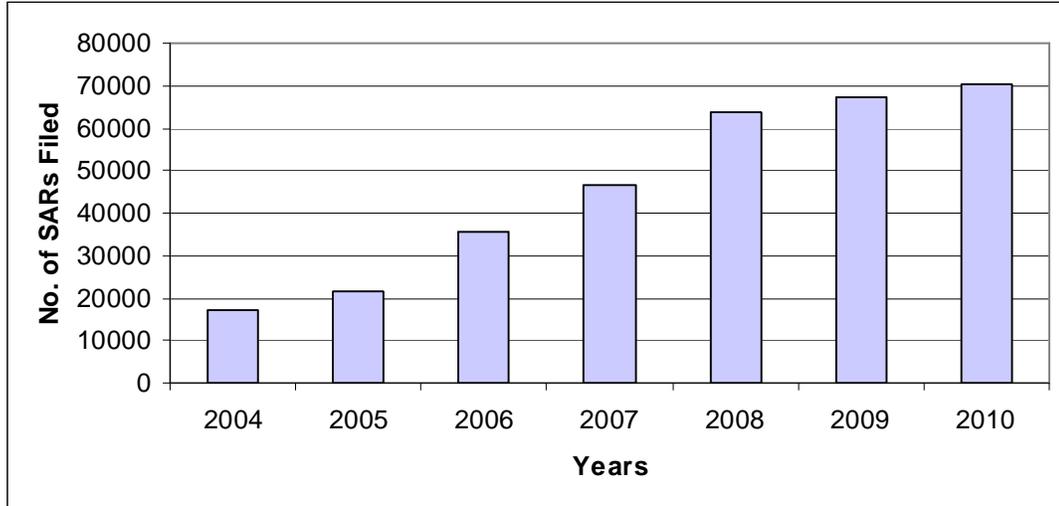


Self-Made Figure (Data Source Johnson and Company loan Performance)

Lack of transparency and accountability in financial institutions motivated borrowers to borrow more and more even if they are not eligible. Apart from the low standard of credit and minimum documentation there have been cases of massive frauds in mortgage loans. Federal Bureau of Investigation (FBI) issued a report on mortgage frauds in financial institutions. According to this report, Suspicious Activity Reports (SARs) from financial institutions indicate an increase in mortgage fraud reporting. There were 63,713 mortgage fraud related SARs filed in Financial Year 2008, a 36-percent increase

from Financial Year 2007. Figure-10 below shows increasing trend of SARs filed from the period 2004 to 2010.

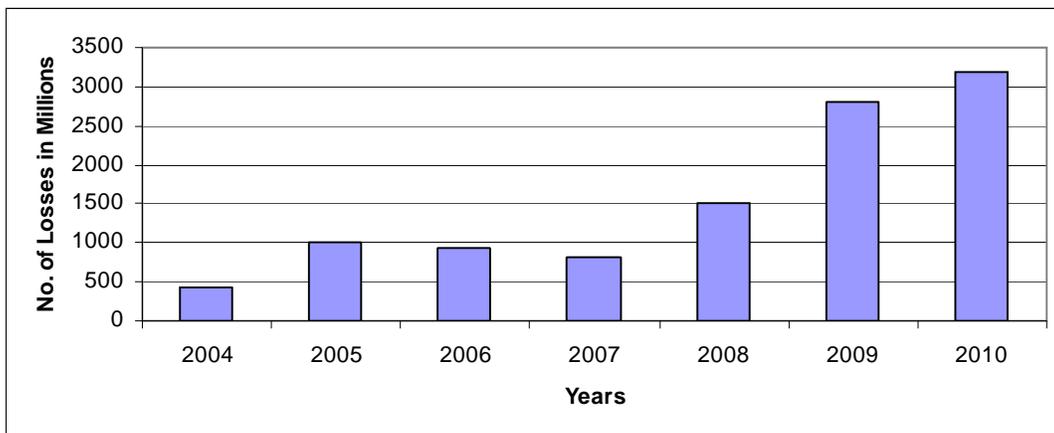
Figure-10: Mortgage Fraud related SAR Financial Year (2004 TO 2010)



Self-Made Figure (Data Source FBI 2008 Mortgage Fraud Report)

In the same period, figure-11 below shows SARs reported losses which are in \$Billions. SARs in FY2008 revealed losses of more than \$1.4 billion, an increase of 83.4 percent from FY2007. Additionally, SAR losses reported in the first six months of FY2009 exceed the same period in FY2008 by \$208 million.

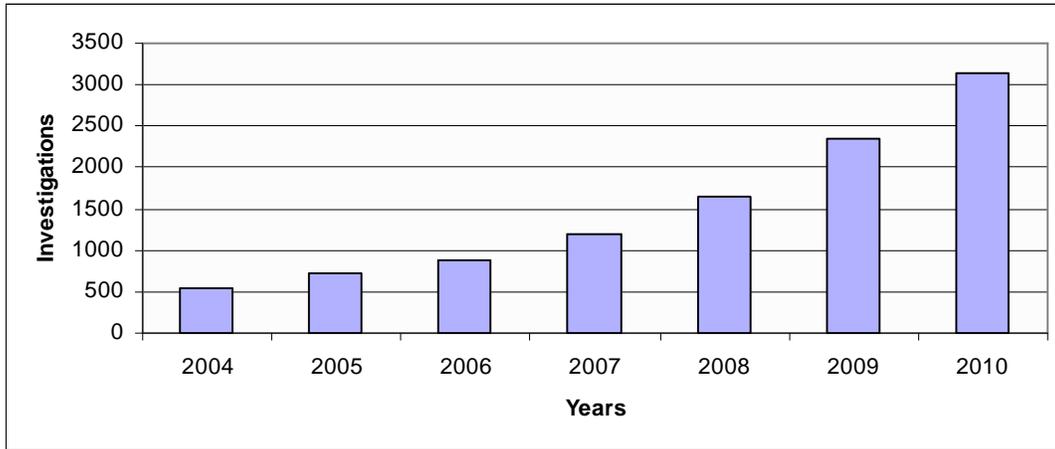
Figure-11: Mortgage Fraud SAR losses (\$ Millions) (From 2004 TO 2010)



Self-Made Figure (Data Source FBI 2008 Mortgage Fraud Report)

FBI mortgage fraud investigations totaled 1,644 in FY2008, a 37% increase from FY-2007 and a 100% increase from FY-2006. Sixty-three percent (1,035) of all pending FBI mortgage fraud investigations as of FY-2008 involved dollar losses of more than \$1 million. Figure-12 below shows the story

Figure-12: Increase in FBI Mortgage Fraud Pending Investigations (2004 To 2010)



Self-Made Figure (Data Source FBI 2008 Mortgage Fraud Report)

According to (Crotty, 2008) main source of investment bank income has recently shifted from traditional activities such as advising on M&As and bringing IPOs to market to fee income from securitization and trading on their own account. Much of the trading is in mortgage-backed securities, which they create and both sell to others and hold in their own trading accounts.

Citigroup was one of the biggest players in the mortgage securitization frenzy having global M&As worth \$3.8 trillion at their peak in 2006, 11% higher than in the super year of 2000 (Crotty, 2008). Goldman Sachs, the number one bank in the M&A business that year, achieved record profits from this sector in 2006. Economist (23rd Dec. 2006) reported that 70% of Goldman's total net income came from gambling with the firm's own capital.

These profits with high risk strategies enabled the firms to reward its executives. Top traders and executives receive sky high bonuses in years in which risk-taking behavior generates high profits. In 2006, Goldman Sachs' bonus pool totaled \$16 billion. Top executives of Wall Street received bonuses up to \$50 million that year (Crotty, 2008).

According to Financial Times 18th January 2008, the five largest investment banks – Merrill, Goldman Sach, Morgan Stanley, Lehman Brothers and Bear Stearns paid out about \$66 billion in compensation in 2007, including an estimated \$40 billion in bonuses. Despite the decline in profit the bonus figure was higher than the \$36 billion last year

These sever lack of transparency and accountability practices generate the mess in which we are now. Strange part of the story is that still no proper accountability has been fixed on any one. For transparency and accountability in future US Govt. has taken two steps. First, Financial Stability Plan has been constituted with the purpose “to protect taxpayers and ensure that every dollar is directed toward lending and economic revitalization, the Financial Stability Plan will institute a new era of accountability, transparency and conditions on the financial institutions receiving funds”

Second congress has passed Commission on Financial Crisis Accountability Act 2009. The purpose of which “To establish a commission on the tax and fiscal implications of the regulation of financial products and arrangements and to study the current financial crisis, its causes and impact on the Federal deficit and tax revenues.”

2.4: SECURITIZATION PRACTICES

Asset securitization or Securitization refers to the process that involves the pooling and repackaging of fixed income assets(loans) and the issuance of securities backed by these assets in the secondary market (Fabozzi and Modigliani, 2003). Mortgage securitization is a particular type of asset securitization, specialized to issue securities collateralized by mortgage loans (liu, 2007).

The Term "securitization" is derived from the fact that the form of financial instruments used to obtain funds from the investors is securities. In a simple lending scenario, a lender who decides to transfer mortgages loans into the secondary market through securitization will legally sell his loans to a company called Special Purpose Vehicle (SPV). "The investment banker hires "Econometricians" or financial economists to demonstrate that the risks of default on interest and principle of some class of the securities it proposes to issue are so small that these instruments deserve to have an investment rating that implies a low interest rate" (Minsky,1987).

According to (Kuttner, 2007) securitized loans played a major role in the 1920s speculation that helped to bring on the 1930s collapse. While securitization is usually presented as a technological innovation that came out of private sector initiative to spread risk, in reality -as (Minsky, 1987) argued-it was a response to policy initiated by Chairman Volcker in 1979 (Wray, 2007). Securitization allowed mortgage lenders to bypass traditional banks. Securitization pools mortgages or other debts and sells them to investors in the form of bonds rather than leaving loans of lender's balance sheets. (Getter, Jickling et al. 2007)

Securitization was seen as a solution to the problems with the S&L model, as it freed mortgage lenders from the liquidity constraint of their balance sheets.

Under the S&L system*, lenders could only make a limited number of loans based on the size of their balance sheet. The new system allowed lenders to sell off loans to a third-party, take it off their books, and use that money to make even more loans. The Government Sponsored Enterprises (GSEs), notably Fannie Mae and Freddie Mac, were created by the federal government in 1938 and 1970, respectively, to perform precisely this function: the GSE's bought mortgage loans that met certain conditions (called "conforming loans") from banks in order to facilitate mortgage lending and (theoretically) lower mortgage interest rates.

2.4. A: SECURITIZATION STRUCTURE

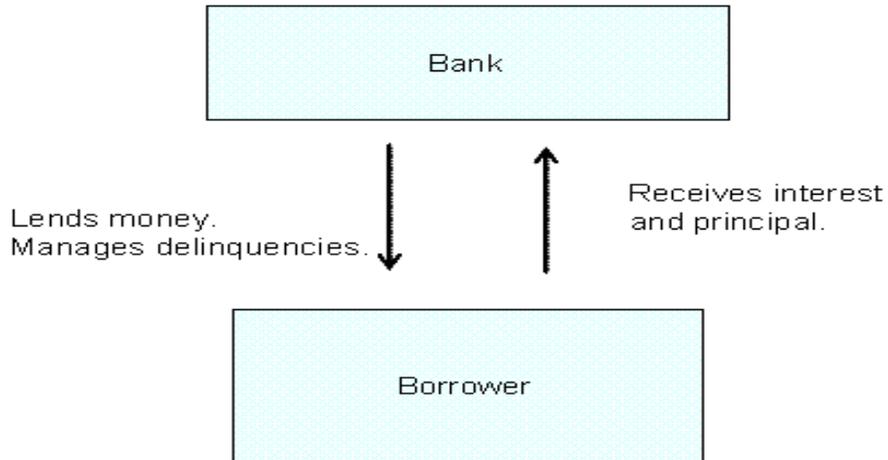
Prior to the widespread use of securitization, home finance typically involved a bank or savings institution granting a loan to a borrower. The lending institution would make the decision to grant credit, fund the loan, and collect payments. In the event of borrower default, the same institution could choose to restructure the loan or foreclose on the property.

The lender also might have an established relationship with the borrower, and, thus, be able to evaluate the relative long-term benefits of various alternatives. This relatively simple relationship between the borrower and lender illustrated in the diagram below has given way to a far more complicated securitization structure which includes multiple parties, each with unique and often divergent interests.

Figures 13 below shows the traditional Borrower/lender Relationship while Figure 14 below shows the borrowing under the securitization.

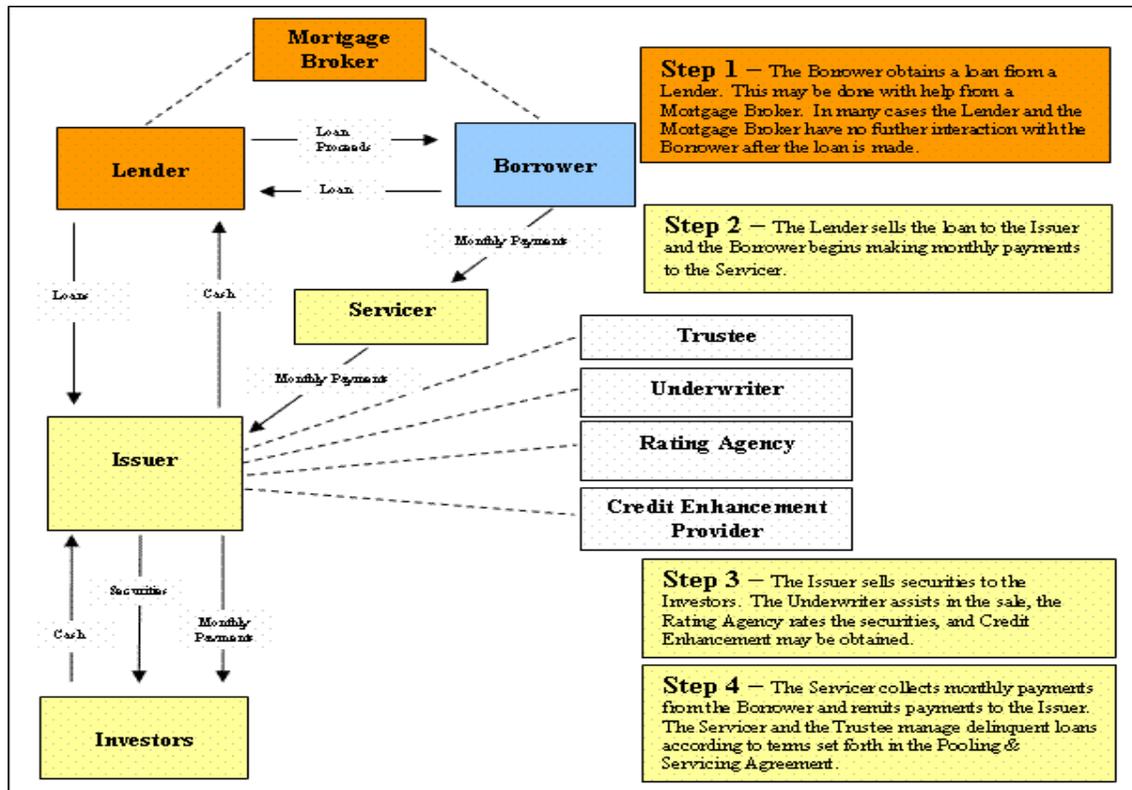
* (In this model, Mortgage loans were made by Savings & Loans institutions and the funds from them came from the savings deposits of retail customers. S&L themselves vetted the mortgages and took on the three risks involved: the risk of default, the risk of prepayment, and the risk of changes in interest rates. This system broke down in S&L crisis of the mid-1980 for complex reasons. One of them was payment of higher rates on their deposits without raising the rates on their stock of mortgages)

Figure-13: The Traditional Borrower/Lender Relationship



Self-made Figure

Figure 14: Borrowing Under a Securitization Structure



Source: Federal Deposit Insurance Company (FDIC) www.fdic.gov

The key elements to a typical securitization include the following:

Issuer - A bankruptcy-remote special purpose entity (SPE) formed to facilitate a securitization and to issue securities to investors.

Lender - An entity that underwrites and funds loans that are eventually sold to the SPE for inclusion in the securitization. Lenders are compensated by cash for the purchase of the loan and by fees. In some cases, the lender might contract with mortgage brokers. Lenders can be banks or non-banks.

Mortgage Broker - Acts as a facilitator between a borrower and the lender. The mortgage broker receives fee income upon the loan's closing.

Servicer - The entity responsible for collecting loan payments from borrowers and for remitting these payments to the issuer for distribution to the investors. The servicer is typically compensated with fees based on the volume of loans serviced.

Investors - The purchasers of the various securities issued by a securitization. Investors provide funding for the loans and assume varying degrees of credit risk, based on the terms of the securities they purchase.

Rating Agency - Assigns initial ratings to the various securities issued by the issuer and update these ratings based on subsequent performance and perceived risk. Rating agency criteria influence the initial structure of the securities.

Trustee - A third party appointed to represent the investors' interests in a securitization. The trustee ensures that the securitization operates as set forth in the securitization documents, which may include determinations about the servicer's compliance with established servicing criteria.

Securitization Documents - The documents create the securitization and specify how it operates. One of the securitization documents is the Pooling and Servicing Agreement (PSA), which is a contract that defines how loans will be combined in a securitization, the administration and servicing of the loans, representations and warranties.

Underwriter - Administers the issuance of the securities to investors.

Credit Enhancement Provider - Securitization transactions may include credit enhancement (designed to decrease the credit risk of the structure) provided by an independent third party in the form of letters of credit or guarantees.

According to a study by FDIC the volume of subprime loans included in private-label securitizations grew to at least \$672 billion by year-end 2006. Approximately 75 percent of the estimated \$600 billion of subprime mortgages originated in 2006 were funded by securitizations. Thus a substantial portion of subprime mortgages are ultimately funded by securitizations. Securitization accelerated in Mid-1990s. The total amount of mortgage-backed securities issued almost tripled between 1996 and 2007 to \$7.3 trillion. The securitized share of subprime mortgages increased from 54% in 2001 to 75% in 2006. The securitization market started to close down in the spring 2007 and nearly shut-down in the fall of 2008. More than a third of the private credit markets thus became unavailable as a source of funds (Dymyanyk & Otto, 2008)

The growing importance of securitization can be judged from this point that in conforming, prime jumbo and subprime securitization rates reached 81, 46 and 81 percent, respectively. Securitization was already well established among conforming loans, as the GSEs had been securitizing them for two decades; 72 percent of conforming loans were securitized in 2001. The real boom in securitization since 2001 came from subprime, as the share of these loans that were securitized had jumped 75 percent since 2001.

In light of the central role of the subprime mortgage market in the current crisis, critiques of the securitization process have gained increased prominence (Blinder & Stieglitz, 2007). Connection between securitization and subprime crisis relates to flaws on the part of underwriters, rate agencies and investors. There was inadequate disclosure and excessive reliance on untested models and ratings. While securitization was meant spread out risk away from the center of the financial system, exactly the opposite happened. When the credit crisis hit in August 2007, risk that was meant to be dispersed throughout the system was in fact heavily concentrated among

leveraged institutions at the heart of the financial system (Baily et al. 2007)

In the wake of the subprime mortgage crisis, a central question confronting market participants and policymakers is whether securitization had an adverse effect on the ex-ante screening efforts of loan originators and leads to Crisis. A study by (Keys, Mukherjee et al. 2008) shows that doubling of securitization volume is on average associated with about a 10-25% increase in defaults. However, delinquencies in the heavily securitized subprime housing market increased by 50% from 2005 to 2007, forcing many mortgage lenders out of business and setting off a wave of financial crises which spread worldwide. "Any effect on default behavior in one portfolio compared to another with virtually identical risk profiles, demographic characteristics, and loan terms suggests that the ease of securitization may have a direct impact on incentives elsewhere in the subprime housing market, as well as in other securitized markets" (Keys, Mukherjee et al. 2008).

Securitization of mortgage assets went beyond the point of value and created assets that were not transparent. We know from economic theory that markets with information asymmetries are trouble and the compounding layers of securitization seem to have been designed to exacerbate this problem (Baily, Litan et al. 2007).

2.5: COLLATERALIZED DEBT OBLIGATION (CDO)

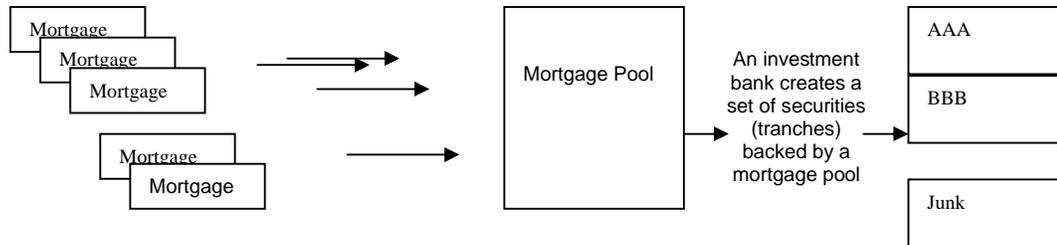
Collateralized Debt Obligations (CDOs)* were created in 1987 by Drexel Burnham Lambert Inc. Within 10 years, the CDOs had become a major force in the so-called Derivates Market. CDO is created when a financial institution, such as a bank, takes the debts owed by lots of borrowers, puts them together into a pool, divides that pool into different categories based on risk called “Tranches” and then sells off those tranches to investors such as hedge funds (Kenyon, 2009). By combining similar loans into pools, the lender was able to pass the mortgage payment through to the certificate holders or investors (Cameron, 2003)

According to (Wright, 2009) CDO is an asset-backed security which uses a portfolio of bonds or loans as collateral, or security. A sponsor uses the portfolio to set up a special purpose investment vehicle which issues securities or CDOs, sometimes with a higher credit rating than any of the individual underlying assets. There may be reduced transparency in assessing the underlying risks.

CDO structure is bit complicated. Let’s have an example of how CDO works. Mortgage brokers write loans to people with bad credit histories (or no credit histories or no verifiable income). Then the mortgage brokers sell these subprime mortgages to investment banks. The investment banks take thousands of subprime mortgages and repackage them into CDOs called mortgage backed securities (See Figure below)

* The first CDO was created in 1987 by the now-defunct Drexel Burnham Lambert, but this security structure was not widely used until the late 1990s when a banker at Canadian Imperial Bank of Commerce first developed a formula called a Gaussian Copula that theoretically could calculate the probability that a given set of loans could face correlated losses (Martin Baily, Robert Litan and Matthew Johnson, 2008)

Figure-15: How CDOs work



Self-made Figure

The investment banks sell these newly created securities to banks, pension funds, college saving funds, universities, cities, etc. As the mortgage holders (in most cases home owners) in this pool make their monthly payments, the AAA-security holders start receiving their payments. Once these AAA-security holders get their investment plus interest back, then the BBB-security holders start receiving payments. Assuming that the mortgage holders continue making payments, once the BBB-security holders get their promised payments, the junk bond holders start receiving payment.

In a CDO structure, there are different tranches from which debt obligations are issued to fund the purchase of the collateral assets such as MBS. Typically there are three different tranches (Josef, 2009). Understanding how those tranches work is crucial for grasping the whole concept of CDOs. The most senior tranche, often given AAA rating, is also the least risky one.

The senior tranche could be for example decomposed of the 20% best assets of the CDO, meaning that those investors buying the senior tranche will only have to bear losses if more than 80% of the whole assets in the CDO default. The middle tranche (Mezzanine) comprises e.g. the next 40% of the CDO, that is to say, money is lost in case more than 40% of the whole CDO default. The third tranche, the equity

tranche, has to bear any default that occurs within the CDO and is the riskiest tranche of the construction. Naturally, interest rates differ across the tranches and are highest in the equity tranche and lowest in the most senior tranche.

Each tranche except for the equity tranche carries a credit rating. For example, AAA or AA rating is typically sought for the senior tranches, whereas no less than B is for the mezzanine tranches. The equity tranches receive only the residual cash flow and hence have no credit rating assigned. Typically, each tranche includes both floating and fixed rates. Table-3 below shows the basic CDO security Structure.

Table-3 : Basic CDO Security Structure

TRANCHES		RATING
A-1 FLOATING RATE REVOLVING FACILITY	A-2 FIXED RATE TRANCHE	TRIPLE A OR DOUBLE A
B-1 FLOATING RATE	B-2 FIXED RATE	SINGLE A
C FIXED OR FLOATING RATE TRANCHE		TRIPLE B
D FIXED OR FLOATING RATE TRANCHE		DOUBLE B
EQUITY MOST SUB-ORDINATE TRANCHE		NOT RATED

Self-made Table

(Prince, 2005) described the relation between asset-backed securities (ABS), MBS and CDOs in which the latter two are part of the first one. He argues that CDOs constitutes approximately 14% of outstanding debt in the ABS market. However credit card receivables, auto and home equity loans make up about 60% of all ABS (Cameron, 2003).

The interlinking of subprime mortgages, the subprime RMBS and the CDOs is portrayed below. Some of the bonds issued in this subprime deal go into ABS CDOs. RMBS bonds rated AAA, AA, and A form part of a "High Grade" CDO portfolio, so called because the portfolio bonds have these ratings. The BBB bonds from the RMBS deal go into a "Mezzanine CDO," so named because its portfolio consists entirely, or almost entirely, of BBB rated ABS and RMBS tranches. If bonds issued by Mezzanine CDOs are put into another CDO portfolio, then the new CDO - now holding Mezzanine CDO tranches—is called a "CDO squared" or "CDO2."

There are two major types of CDOs - cash-flow CDOs and synthetic CDOs. In a cash-flow CDO, the issuer purchases a portfolio of underlying assets and finances its purchase by selling its own debt instruments. This legal transfer of ownership is accompanied by a transfer of the economic risks associated with the assets. Therefore, the CDO issuer creates direct exposure to the specific risks through owning the assets. In practice, cash-flow CDOs release a proportion of the regulatory capital held by financial institutions and remove illiquid bank loans from the balance sheet (Duffie and Garleanu, 2001).

While synthetic CDO is a collateralized debt obligation that is based on credit default swaps rather than physical debt securities (KOHLENER & ALAN, 2009). A CDS can be seen as an insurance policy which offers the buyer credit protection against default losses associated with the underlying assets. In exchange for the credit protection, the buyer in a credit default swap pays a regular premium to the seller.

Construction of CDOs is the result of a process of bargaining between the investment bank which puts them together, and the ratings agency which provides the ratings for the different tranches. The investment bank is interested in creating as large an AAA tranche as possible, while the ratings agency is concerned to ensure that certain standards are

maintained. However, the agencies are subject to a serious conflict of interest as the fees for rating CDOs are about twice as high as those for rating traditional corporate bonds, and in recent years this work has generated a substantial part of rating agencies’ income (Crouhy, Jarrow et al. 2009)

Annual CDO issuances went from nearly zero in 1995 to over \$500 billion in 2006. As CDO issuances grew, so did the share of them that was devoted to mortgages. (Mason and Rosner, 2007) tell us that 81 percent of the collateral of CDO’s issued in 2005 was made up of MBS, or about \$200 billion. Total issues increased from \$157 billion in 2004 to \$551 billion in 2006. Because CDOs appeared to offer higher rates of return than other assets with comparable ratings, they were quickly bought up by investors, including insurance companies, pension funds, banks and especially hedge funds.

Table-4: GLOBAL CDO MARKET

Years	Global CDO Market Total Issuance (\$Millions)
2004	157, 418.5
2005	271, 303.3
2006	551,700.6
2007	485,726.3
2008	61,097.5
2009	4,300.3
2010	8,000.1

Self made table (Data Source: sifma.org)

First break in investor’s confidence came in 2007 when a wave of mortgage defaults hit the CDOs tranches (Fisher, 2009). From the first Half of 2007 to the second half, CDO issuance dropped by 50%. CDOs

of subprime mortgages were at the heart of the current credit crisis, as a massive amount of senior tranches of these securitization products have been downgraded from AAA rating to non-investment grade. The reason for such an unprecedented drop in the rating of investment grade structured products was the significant increase in delinquency rates on subprime mortgages after mid-2005, especially on loans that were originated in 2005-06 (Crouhy, Jarrow et al. 2009).

Due to the downfall of housing market investors began to suspect the health of even highest tranches in some CDO instruments. Low confidence of the investors led to decrease in sales which ultimately made it difficult for banks and other institutions to perform "Mark to Market". These large write-offs in asset values by several major banks and investment institutions further make the situation more vulnerable. Rating Agencies played their role because it is very unlikely that the initial credit ratings on bonds were correct. If they had been rated correctly, there would have been downgrades, but not on such massive scale. Whatever the circumstances was the reality was that the sign of trouble was there in the CDO market.

Unsurprisingly, as CDOs began experiencing losses or potential losses, the lawsuits have followed. Bethel et al. (2008) documented the CDOs on the path to liquidation and examined 193 CDOs (issued as far back as 2002), which have experienced events of default, acceleration, and liquidation

A study by (Sabry, Sinha et al. 2009) found a tremendous increase in the losses of CDOs. They pointed out that signs of trouble means events of default (EOD), notices of acceleration, and liquidation. An event of default means the possibility of imperiled cash flows and losses to the note holders. A notice of acceleration is when the controlling note holders have voted to accelerate the maturity of the CDO notes outstanding. A notice of liquidation is when the controlling note holders have voted to terminate the CDO transaction and liquidate the portfolio

collateral. A liquidation event is when assets in the collateral pool are in the process of being sold or have been sold.

A study by (Sabry, Sinha et al. 2009) for example shows \$7.3 billion in aggregate CDO issuance experienced events of default in October 2007. Of these, \$3.5 billion have been liquidated, \$0.75 billion have issued notices of liquidation, and \$3 billion have issued notices of acceleration (as of 30 May 2008).

The 193 CDOs represent approximately \$215 billion in issuance. Of these, 20 CDOs (\$23 billion at issuance) have been liquidated, another 18 CDOs (\$15 billion at issuance) have given notices of liquidation, and 67 CDOs (representing \$77 billion at issuance) have provided notices of acceleration (through May 2008). As of May 2008, 87 CDOs had provided notices of events of default (representing \$98 billion at issuance) while one CDO had retracted the notice of default (approximately \$2 billion at issuance). The study shows the increase in the number of defaults in CDOs market and tremendous losses attached to these markets.

3

TECHNICAL CAUSES

As Financial Crisis of 2007-2009 is not the result of only one factor but the result of many combining factors the causes has been divided into Main Causes, Technical Causes and Innovative Causes. Main Causes has already been described in second chapter. In this chapter we would elaborate how Technical Causes has contributed towards compiling off the crisis and in the forth chapter we would discuss the Innovative causes in detail. These Technical Causes are as follows:

3.1: MARK TO MARKET

The market for mortgage-backed securities and related financial instruments has collapsed over the past year, leading to massive write-downs and the failure of several major investment banks and consumer lenders. Some blame fair value (Mark to Market) for unduly distorting the health of companies' balance sheets and contributing to a negatively reinforcing downward spiral, and they have called for the SEC to suspend fair value accounting.

(CPA Journal, Jan 2009).

"The current environment has made questions surrounding the determination of fair value particularly challenging for preparers, auditors, and users of financial information. The SEC's Office of the Chief Accountant and the staff of the FASB have been engaged in extensive consultations with participants in the capital markets, including investors, preparers, and auditors, on the application of fair value measurements (Mark to Market) in the current market environment"

(SEC press release 30th September 2008)

3.1. A: WHAT IS MARK TO MARKET?

Mark-to-market* or fair value accounting refers to the accounting standards of assigning a value to a position held in a financial instrument based on the current fair market price for the instrument or similar instruments. Fair value accounting has been a part of US Generally Accepted Accounting Principles (GAAP) since the early 1990s. The use of fair value measurements has increased steadily over the past decade, primarily in response to investor demand for relevant and timely financial statements that will aid in making better informed decisions. Mark to Market was introduced in 1993 after the S&L crisis, when then backward-looking GAAP accounting standards prolonged the crisis by allowing many thrifts to appear solvent on their books, even though their equity had effectively been wiped out.

An interesting early study on the relevance and implications from Mark to Market was performed by Bernard, Merton and Palepu (1995). For many years, Denmark's accounting standard-setting and banking regulatory authorities have relied on Mark to market valuation for the assets of their commercial banks (Bernard, Merton and Palepu (1995)). They find that Danish banks book values, which reflect mark to market valuations, seem to provide more reliable information to investors than historical cost-based figures then provided by U.S banks. They do not find evidence that Danish bank executives manipulate mark to market numbers to circumvent regulatory capital ratios. However they also

* For understanding consider that a futures trader, when taking a position, deposits money with the exchange, called a "margin". This is intended to protect the exchange against loss. At the end of every trading day, the contract is marked to its present market value. If the trader is on the winning side of a deal, his contract has increased in value that day, and the exchange pays this profit into his account. On the other hand, if the market price of his contract has declined, the exchange charges his account that holds the deposited margin. If the balance of this account falls below the deposit required to maintain the position, the trader must immediately pay additional margin into the account to maintain his position (a "margin call").

point out that Danish and US capital Markets are not quite similar and their findings may not completely hold in a U.S setting.

For almost two decades Mark to Market was the best system of providing investors with the reliable information. But as the crisis struck the financial system some economists lift finger towards this Mark to market system of accounting for deepening the turmoil in the financial markets. According to Peter Needleman (2008) "There is a powerful argument that this is a crisis which has been turned into a disaster by mark to market accounting rules".

Chief Economist Brian S. Wesbury and his colleague Bob Stein at First Trust Portfolios of Chicago estimate the impact of the "mark-to-market" accounting rule on the current crisis as follows: "It is true that the root of this crisis is bad mortgage loans, but probably 70% of the real crisis that we face today is caused by mark-to-market accounting in an illiquid market. What's most fascinating is that the Treasury is selling its plan as a way to put a bottom in mortgage pool prices, tipping its hat to the problem of mark-to-market accounting without acknowledging it. It is a real shame that there is so little discussion of this reality."

A study by Barth, Landsman and Whalen (1995) shows that fair Value based measures of net income are more volatile than historical cost based measures. According to Gingrich (2008) when a company in financial distress begins fire sales of its assets to raise capital to meet regulatory requirements, the market-bottom prices it sells out for become the new standard for the valuation of all similar securities held by other companies under mark-to-market. This has begun a downward death spiral for financial companies large and small.

During Financial Crisis, many of the Mortgage Backed Securities that were behind the financial crisis having no market and hence almost impossible to assign a fair value. Because of their perceived risk and

unknown exposure nobody wants them and in many cases if there is no demand they become worthless (\$0 value). This obviously was not true. Even if the value is 5 cents on the dollar, they still had a value. But the securities were so complex and the economic environment so uncertain, that nobody was willing to "stick their neck out" and try to pick the correct price.

Moreover foreclosures and home auctions continued to depress housing prices, further reducing the value of all mortgage-related securities. As capital values decline, firms scrambled to maintain the capital required by regulation. When they try to sell assets to raise that capital, the market values of those assets were driven down further. Under mark-to-market, the company had to mark down the value of all of its assets even more. The credit agencies saw declining capital margins, so they downgraded the company's credit ratings. That made borrowing to meet capital requirements more difficult. Declining capital and credit ratings caused the company's stock prices to decline further.

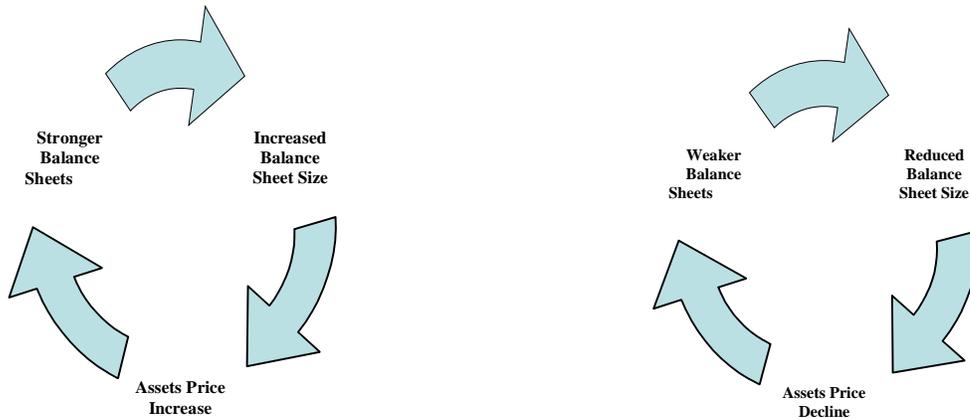
3.1. B: LEVERAGE ADJUSTMENTS AND MTO M

Panic prevailed, and no one wanted to buy mortgage-related securities, which derived their value under mark-to-market regulations down toward zero. Balance sheets under mark-to-market suddenly started to show insolvency. This downward spiral shuts down lending to these companies, so they lose all liquidity (cash on hand) needed to keep company operations going. Stockholders--realizing that they will be wiped out if the companies go into bankruptcy or get taken over by the government--start panic selling, even when they know the underlying business of the company is fine. This vicious circle transfers the panic into crisis and crisis into disaster. Figure-16 shows how the liquidity increased or decreases the size of Balance Sheet.

Figure-16: Leverage Adjustment in Upturn and Downturn

Leverage Adjustment in Upturn

Leverage Adjustment in Downturn



Self-made Figure

If financial markets are not perfectly liquid so that greater demand for the asset tends to put upward pressure on its price, then there is the potential for a feedback effect in which stronger balance sheets feed greater demand for the asset, which in turn raises the asset's price and lead to stronger balance sheets.

Figure above illustrates the feedback during a boom. The mechanism works exactly in reverse in downturns. In a financial system where balance sheets are continuously marked to market, asset price changes show up immediately as changes in net worth, and elicit responses from financial intermediaries who adjust the size of their balance sheets. On the asset side, traded assets are valued at market prices, or are short term collateralized loans for which the discrepancy between face value and market value are very small due to the very short term nature of the loans.

On the liabilities side, short positions are at market values. Long-term debt is typically a small fraction of the balance sheet for investment banks. For these reasons, investment banks provide a good approximation of the balance sheet that is continuously marked to

market, and hence provide insights into how leverage changes with balance sheet size.

To obtain total balance sheet size, we should multiply by hedge fund leverage. When expressed as a proportion of commercial banks' balance sheets, securities firms have been increasing their balance sheets at a very rapid rate. Note that when hedge funds' assets under management is converted to balance sheet size by multiplying by a conservative leverage factor of 2, the combined balance sheets of investment banks and hedge funds is over 50% of commercial banks balance sheets.

According to (Ryan 2008), during the Financial Crisis the markets for subprime become severely illiquid and disorder. This has led various parties to raise three main potential criticisms on fair value accounting. First, unrealized losses recognized under fair value accounting may reverse over time. Second, market illiquidity may render fair values difficult to measure and thus unreliable. Third, firms reporting unrealized losses under fair value accounting may yield adverse feedback effects that cause further deterioration of market prices and increase the overall risk of the financial system referred as “systemic risk”.

3.1. C: EFFECTS OF MARK TO MARKET

Due to Mark to market we have seen that during the crisis Bradford & Bingley's management announced to write-down of more than \$500 Million on a range of its SIVs, CDOs and hedging instruments on the views of its Auditors although the management says it did not agree with the auditors. AIG raised estimated losses on mortgage-related instruments from \$1 Billion to \$5 Billion. Their auditors claimed that there was material weakness in the way that the insurer valued its exposure which has been ratified now. But things clear that the auditors forced AIG to mark to market at valuation provided by a US investment bank. Credit suisse management reveals a \$1 Billion hit to

its first quarter profits, just a few days after telling investors at its full year 2007 results presentation that the bank survived the credit crunch. All these three incidents showed that the present crisis in financial markets is not just about credit losses. For many firms with exposure to the credit markets, mark to market is becoming almost as unpopular as sub-prime. Marking to market when no real market exists can seem nonsensical, especially when the asset is performing.

MBIA has posted mark to market losses of nearly \$ 3.5 Billion on CDS contracts.

AIG lost some \$15.1 Billion (More than 10 %) on its share price following the auditor's intervention. Bradford & Bingley's share price fell by more than 20% because of write-downs Euromoney (2008). Hence it can be put forward that Mark to market through its magnifying impact on earnings volatility, may have contributed to aggravate investors, regulators, and government's perceptions with respect to the severity of the crisis, itself characterized by record volatility in the prices of many securities and goods. (Michel Magnan, 2009)

3.1. D: HOW MARK TO MARKET CAUSED CRISIS

According to (Magnan, 2009) These cases raises the issue of FVA or Mark to market applicability as it is being extended from instruments traded in liquid and organized markets to credit type instruments that are often securitized and which are not quite transparent about their underlying assets. Key criticism against FVA is that its use in the current crisis has led to a reduction in the value of financial institutions assets, which translated into a severe shrinking of their capital ratios, forcing them to deleverage and sell further assets at distressed prices, thus feeding the downward spiral.

In words of (Gingrich, 2008) "So, mark-to-market accounting contributes both to credit bubbles, which no one on Wall Street ever

complains about because they are too busy raking in the cash, and credit busts, at which point, something must be done. If regulators on their own--or Congress, if regulators fail to use their discretion--can fix 70% of the financial crisis by changing the mark-to-market accounting rule, we should change the rule first before attempting to pass another reevaluated bailout package”

But the big question is to change Mark to market with whom? Although Mark to Market play its part in the Financial Crisis it seems impossible to eradicate this accounting system from the financial Institutions. As Andrew (Leonard, 2008) truly highlights the situation “There's just one big fat honking problem. If mark-to-market rules are suspended, what replaces them? Surely we don't trust the owners of these risky assets to decide for themselves what they're worth”

Many academics, argue that there is no alternative measurement or reporting model. For example (Barth, 2007) a member of International Accounting Standards Board, argues that “Although opponents of more comprehensive use of fair value have some legitimate concerns, standard setters are unaware of a plausible alternative”.

Michael (Magnan, 2009) sums up the whole debate in the following words” The debate goes further than accounting and financial reporting and deals with the essence of what accountants are expected to contribute to society and, implicitly, what competences and skills they must possess to deliver in that regard. One may surmise that current accounting standards, such as those relating to fair value, probably overstretch accountants' capabilities and prior learning and obscure other informational needs by investors and other interested stakeholders.”

3.2: GLOBAL IMBALANCES

Few among the public would be likely to pin the blame on “global imbalances”: the pattern of large, persistent current-account deficits in America and, to a lesser extent, Britain and some other rich economies, matched by surpluses in emerging markets, notably China. The damage done to the financial system by lax controls, rotten incentives and passive regulation is plain. Yet underlying the whole mess was the deeper problem of imbalances. A growing number of policymakers and academics believe that these lay at the root of the financial crisis. The deep causes of the financial crisis lie in global imbalances—mainly, America’s huge current-account deficit and China’s huge surplus

(ECONOMIST 22 JAN 2009)

3.2. A: WHAT IS GLOBAL IMBALANCES?

Global imbalances—meaning imbalances between savings and investment in the major world economies reflected in large and growing current account imbalances—did indeed play a major role in creating the current Financial Crisis (Dunaway, 2009). The financial sector debacle has its origins in the “global imbalance” — the phenomenon of large current account surpluses in China and a few other countries co-existing with large U.S. deficits (Krugman, 2009).

If capital inflows did not directly cause the crisis perhaps they did so indirectly by depressing real interest rates in the US and other industrial countries. Capital inflows to the US from emerging markets associated with managed exchange rates caused persistently low long-term real interest rates in both the US and generally throughout the industrial world (Dooley, Folkerts-Landau & Garber, 2009). Table 5 below shows the actual world saving and investment in United States and US investment abroad:

Table 5: Investment Flows in a Fully Globalized World

	2001	2002	2003	2004	2005	2006
	Trillions of Dollars					
Actual world Saving(Exc. USA)	5.02	5.23	6.21	7.44	8.27	9.16
Foreign Investment in USA	1.61	1.67	1.84	2.10	2.31	2.52
US Investment Abroad	1.13	1.01	1.02	1.11	1.16	1.32
Net inward Foreign Invest.	0.84	0.66	0.82	0.99	1.15	1.20

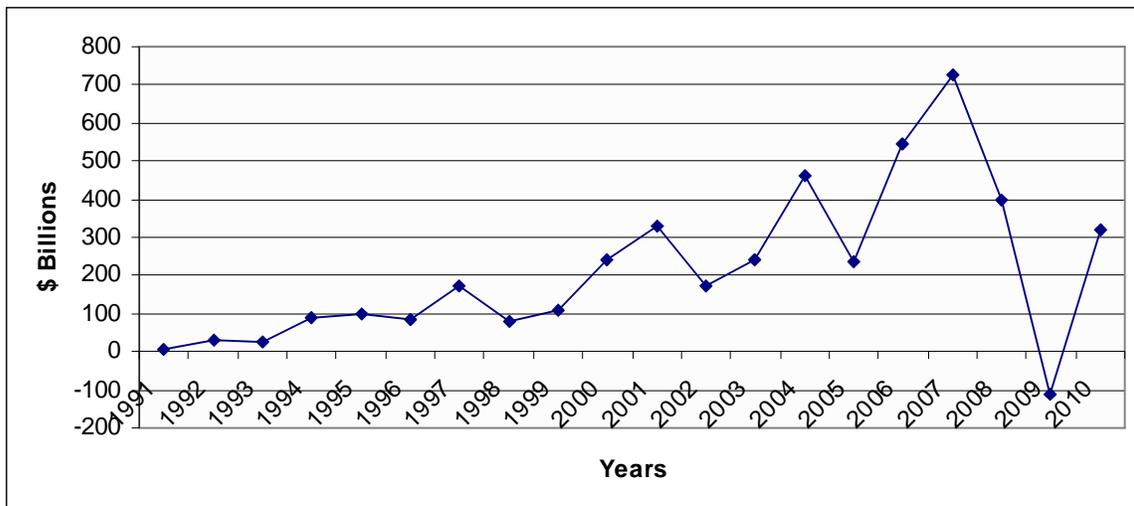
Self-made Table (Data Source: IMF)

According to (Mendoza, Quadrini & Jose Rull, 2008) at the end 2007 the United States reported the largest current account deficit and the lowest net foreign asset (NFA) position in its history. The NFA position reached -4.5 percent of the world’s output following a trend that started in the early 1980s. Throughout this period, the U.S. foreign asset portfolio also showed marked trends: net equity and FDI climbed to 1/10 of U.S. GDP while debt obligations increased to 1/3 of U.S. GDP.

3.2. B: CAPITAL INFLOW TO UNITED STATES

Over the last decade, the U.S. has experienced large and sustained capital inflows from foreigners seeking U.S. assets to store value (Caballero et al, 2008). This should not be surprising because a large amount of the capital flow into the U.S. has been from foreign central banks and governments who are not expert investors and are merely looking for a store of value (Krishnamurthy and Jorgenson, 2008). Figure-17 below shows the net capital inflow to the United States including the foreign official assets in United States and net capital inflow to the United States.

Figure-17: Net Capital Inflow to United States (\$ Billion)(1991 To 2010)



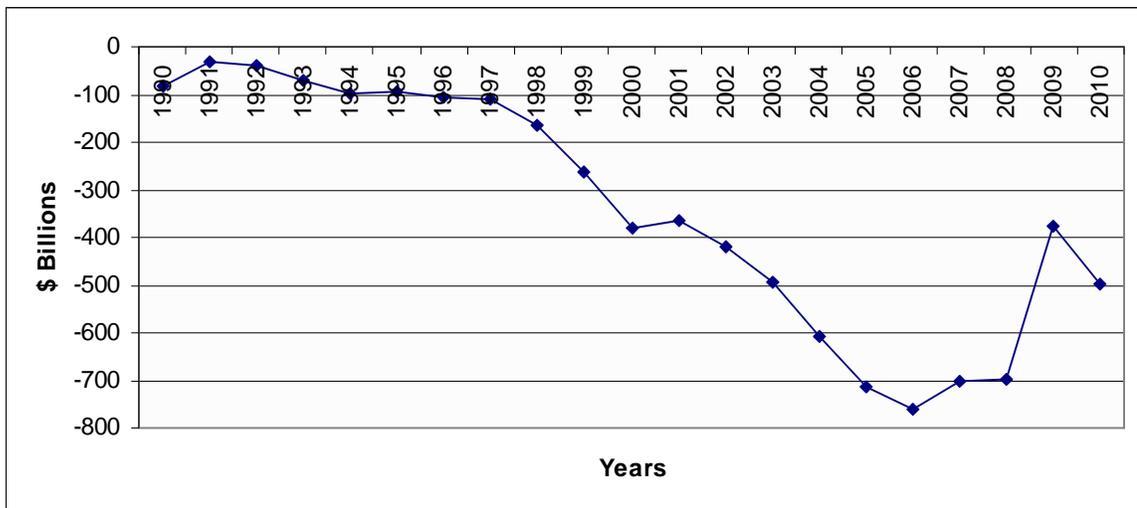
Self made figure (Data Source: Bureau of Economic Analysis 2008)

An important manifestation of the global imbalance has been the flood of money into the U.S. that kept interest rates low, inflated prices of real estate, shares and other assets. When the bubble burst the financial sector crisis surfaced. So an ‘orderly’ unwinding of imbalance alone helped mitigate the crisis. If this viewpoint is accepted, macro economic policies of countries need fine tuning.

3.2. C: US CURRENT ACCOUNT DEFICIT

The global imbalance is reflected in large mismatches in the current account positions of some countries and its mirror image in the form of domestic savings — investment mismatches. Understanding such imbalance is not that difficult even for lay people. The U.S has been running huge current account deficits. Figure-18 below shows the high US current Account Deficits since 1990 which reached on peak in 2006.

Figure-18:U.S Current Account Balance (1990 To 2010)



Self-made Figure (Data Source Bureau of Economic Analysis 2008)

In 2007 the U.S. balance of payments deficit amounted to 790 billion dollars, which makes the U.S. the world’s largest debtor state (Lim, 2008). Industrial production in the U.S. has decreased while there has been significant GDP growth the last eight years. The current

account deficit related to personal over-consumption in the U.S. can be traced back to the 1980s, with the birth of consumer credit through the easy access to credit cards.

The level of the U.S. trade deficit has varied through the years, but increased rapidly in the first part of this decade, hitting a record level in 2006 when it accounted for 6.2 percent of GDP in the U.S. (Bernanke, 2007). Today every country trading with the U.S. runs a current account surplus with the U.S. (Shirk, 2007)

Increase in the trade deficit started and rapidly changed the pattern of international trade balances in the world. In 2006, the aggregate current account surplus of emerging market countries rose to 643 billion U.S. dollars, to a large degree because of China's growth (Bernanke, 2007). But the decline in U.S. saving was not the cause of the deficit. The cause of the deficit was that the rise in consumption has not been matched by a rise in industrial production or exports (Bernanke, 2007).

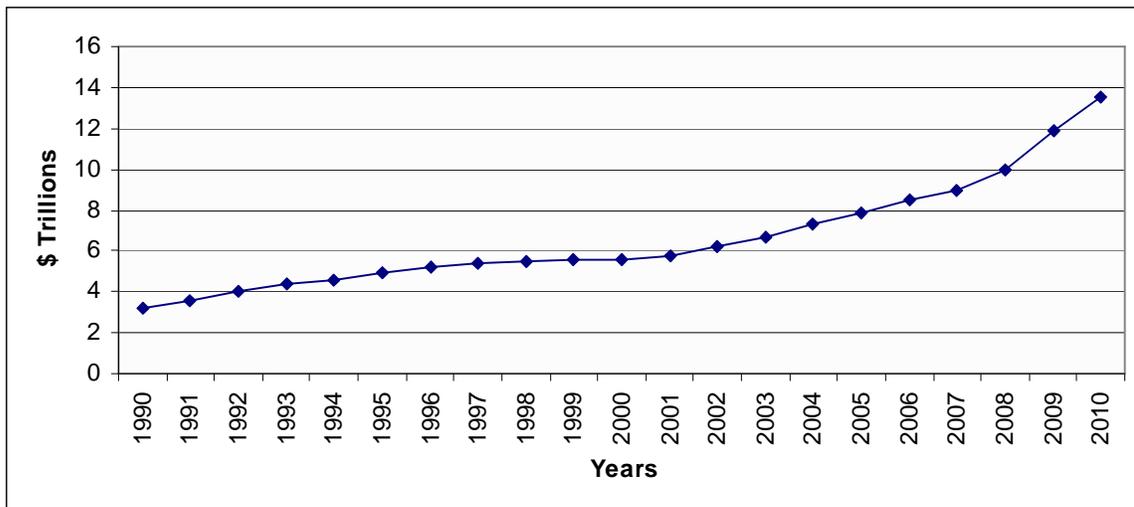
As economies of China, Emerging Asia and Middle East were generating large current account surplus, United States Economy was on the verge of large Current Account Deficit.

While comparing the current Accounts of the Developing Economies (Includes developing economies (Term used by IMF) such as Hong Kong, South Korea, Singapore and Taiwan by IMF) with the United States, we observe a tremendous Deficit in US current Accounts Balance and Surplus in Current Accounts Balance of Developing Countries.

According to (Pearlstein & Morgen, 2009) the financing of the U.S. national debt has been done primarily in Asia, and particularly in China, and has during the last five years included inflows of around two billion U.S. dollars every day (Trichet, 2005). The U.S. has in other words, been the recipient of the world's savings, while emerging

economies and developing countries have been the supplier. This has happened in combination with internationally low interest rates (Summers, 2006). The huge flow of capital to the US makes the United States the world's largest borrower country of the world. Figure-19 below shows a US Government Debt which has tremendously increased from 1990.

Figure-19: U.S Government Debt (1990 To 2010)



Self made figure (Data Source: Bureau of Economic Analysis 2008)

3.2. D: WHY CAPITAL INFLOW TO US?

But the big question is what why developing countries wants to export their capital to the rich world that might be better used at home? According to Economist (January 22, 2009) there were three factors: First the income of oil-exporting countries, for instance, has ballooned since 2004 because of higher prices for crude. It would have been neither feasible nor wise for oil-rich nations to spend this windfall at home; so much of it was saved and sent abroad.

Second in China's tightly controlled financial system, savers have little choice. And firms, not households, account for the recent rise in net national saving. Rising currency reserves of emerging markets is perhaps. Finally, this was largely a reaction to the painful memory of

the Asian crisis: Asian countries wanted to insure themselves against another sudden flight of capital. Reserves need to be large enough to draw upon if foreign-currency financing suddenly dries up, and to ensure that trade flows smoothly. But reserve holdings in some emerging markets have gone way beyond levels suggested by prudential rules of thumb—enough to pay for three months of imports, say, or to cover short-term foreign-currency debt.

According to (Gross, 2009) there is a close correlation between the US current account deficit and reserve accumulation, but it is not perfect since the US deficit had already been very large some time before the 'search for yield' started. But before 2003 reserve accumulation had been much lower than the US deficit (which had thus been financed largely by private capital transfers). By contrast, after this date reserve accumulation increased relative to the (increasing) US deficit until, by 2006, reserve accumulation actually surpassed by far the US deficit. There is thus certainly a link between the US current account deficit and the build up of the crisis, but this not as straightforward as sometimes believed

According to (Hunt, 2008) the global credit crisis that originated in the US sub-prime mortgage market can be understood as a consequence of the unsustainable nature of very large external imbalances that have evolved since the late 1990s

3.2. E: GLOBAL IMBALANCE CAUSE OF CRISIS?

US officials like Alan Greenspan and Ben Bernanke blame the immense pool of liquidity generated by high-savings countries in East Asia and the Middle East. All that liquidity, they argued, had to go somewhere. Its logical destination was the country with the deepest financial markets, the US, where it raised asset prices to unsustainable heights. The global savings imbalance – low savings in the US (Table-6) and high savings in China and other emerging markets – played a key role in the crisis by allowing Americans to live beyond their means. It encouraged

financiers desperate to earn a return on abundant funds to put them to more speculative use.

Table 6: Personal Savings as a Percentage of Disposable Income, USA (2000 To 2007)

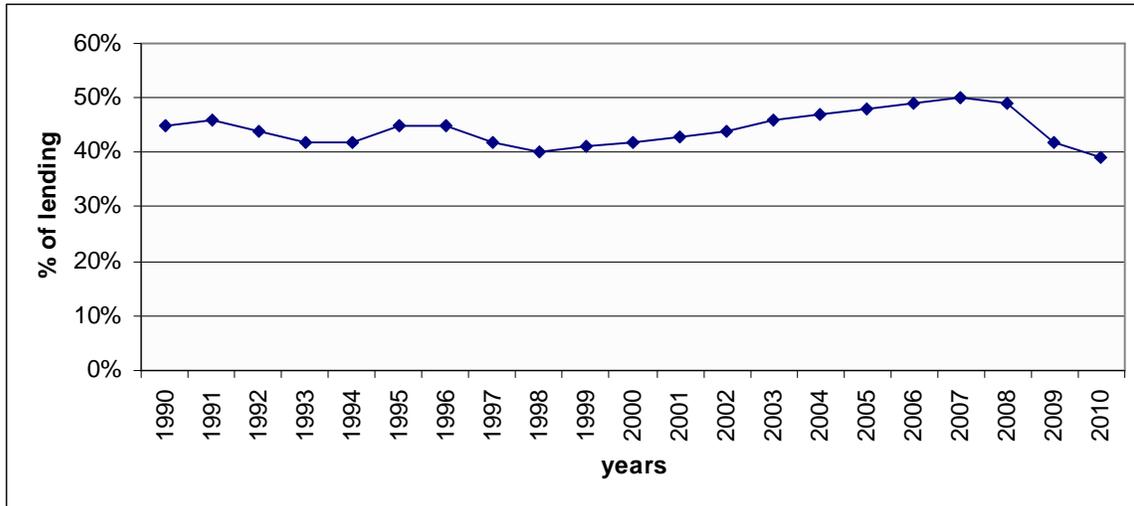
Years	2000	2001	2002	2003	2004	2005	2006	2007
% of Savings as compared to Disposable Income	2.3	1.8	2.4	2.1	2.1	0.5	0.4	0.4

Self-made Table (Data Source: Mortgage Bankers Association, March 24, 2008)

According to (Lapavitsas, 2009) while personal savings as a percentage of disposable income was 9-10% during the 1970s and 1980s, it fell to around 2% in the early 2000s. By 2006-7, personal savings had collapsed to 0.4%. In 2007, the difference between aggregate domestic savings and investment in the US approached 5% of GDP. This gap corresponded to a ballooning US trade deficit, which exceeded US\$ 700 billion during 2005-2007.

Large corporations have become less reliant on bank financing. They have financed their fixed investment either through retained earnings or direct borrowing in open markets. Hence, commercial banks have had to search for new profit-making opportunities. A decisive response was to turn to consumer and real-estate loans. In the US, the share of such loans in total bank lending rose from around 30% in the 1960s to almost 50% in the mid-2000s (see Figure 20). Lending to individuals can often be predatory, an aspect that took extreme forms in the course of the recent bubble.

Figure-20: Lending to Consumers and Real Estate as a Percentage of Total Bank Lending, USA (1990 To 2010)



Self made figure (Data Source: Federal Reserves)

According to (Dooley & Garber, 2009) low real interest rates in turn drove asset prices up, particularly for long-duration assets such as equity and real estate. At the same time, low real interest rates temporarily reduced credit risks and a stable economic environment generated a marked decline in volatility of asset prices.

Due to Global imbalance investment in United States directed towards most risky businesses. Consumer spending increased regardless of the fact that the savings were very low. These risky investments largely go to Housing Market and Mortgage Lending. More and more investment in housing market increased the prices of the houses to sky. This housing bubble then burst which caused the financial crisis. One “lesson” that seems to be emerging is that international capital flows associated with current account imbalances were a cause of the crisis and therefore must be eliminated or at least greatly reduced (Mann, 2009).

3.3: SHADOW BANKING SYSTEM

Financial Crisis 2007-2009 was a crisis of traditional banks and, more important, a crisis of the so-called shadow banking sector—that is, of those financial institutions that mostly looked like banks.

(Acharya, Philippon etc., 2008)

3.3. A: WHAT IS SHADOW BANKING SYSTEM?

The Shadow Banking System* or the shadow financial system consists of non-bank financial institutions that play an increasing critical role in lending business the money necessary to operate. These financial institutions are typically intermediaries between investors and borrowers. By definition shadow institutions don't accept deposits like depository bank and therefore are not subject to the same regulations. Examples include Bear Stearns and Lehman Brothers. Other complex legal entity comprising the system includes hedge funds, SIVs, Conduits, Money Funds, Monolines and Investment Banks.

Banks grant loans with the resources they receive from depositors and with their own capital. Above all, however, they create deposits – scriptural currency – by granting credit (Keynes, 1930). They also issue debts in order to raise resources and to grant new loans (Chick, 1986). According to (McCulley, 2007), executive director of the largest resource manager in the world, Pimco, the global shadow banking system includes all agents involved in leveraged loans which do not have (or did

* The term "shadow banking system" used first time by Paul Allen McCulley. He used this term in 2007 at Jackson Hole conference, where he defined it as "the whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures." He coined the term Minsky moment and Shadow banking system which became famous during the financial crisis of 2007-2009. Prior to joining PIMCO in 1999, he was chief economist for the Americas at UBS Warburg. During 1996-98, he was named to six seats on the Institutional Investor All-America fixed-income research team. He has 25 years of investment experience and holds an M.B.A. from Columbia Business School. He received his undergraduate degree from Grinnell College. McCulley adheres to Keynesian economics, and was particularly influenced by Hyman Minsky.

not have, according to the rule in force before the outburst of the crisis) access to deposit insurances and/or to rediscount operations of central banks. These agents are not subject to the prudential regulations of the Basel Agreements (Cintra & Prates, 2008) and (Freitas, 2008).

Table-7 below shows the impact of the crisis on the Banking Industry. Although the banking industry as a whole has seen a dramatic slowdown in terms of profitability and a rise in non-current assets and other real estate owned or “OREO” and the performance numbers for all banks are clearly deteriorating, but the industry is not yet near a crisis like the Shadow Banking Industry.

Table 7: U.S Banking Industry 2001 To 2007)

	2007	2006	2005	2004	2003	2002	2001
Return on Assets (%)	0.86	1.28	1.28	1.28	1.38	1.3	1.14
Return on Equity (%)	8.17	12.3	12.43	13.2	15.05	14.08	13.02
Core Capital Leverage Ratio (%)	7.98	8.22	8.25	8.11	7.88	7.86	7.79
Non-current Assets plus OREO(%)	0.94	0.54	0.5	0.53	0.75	0.9	0.87
Net Charge-offs to loans (%)	0.59	0.39	0.49	0.56	0.78	0.97	0.83
Net operating income growth(%)	-23.72	8.5	11.39	4.02	16.39	17.58	-0.48

Self-Made Table (Data Source: FDIC Quarterly Banking Profile)

Shadow institutions borrowed short-term in rollover debt markets, leveraged significantly, and lent and invested in longer-term and illiquid assets. However, unlike banks, they did not have access until 2008 to the safety nets—deposit insurance, as well as the lender of last resort (LOLR), the central bank—that have been designed to prevent runs on banks (Acharya, Philippon etc., 2008)

According to (Farhi, 2008) between June 2007 and November 2008, there were many especially dramatic events in the course of the crisis, with strong impacts on the global interbank markets. These moments

were mirrored in the behavior of the so-called TED spread – the difference between the rate of the three-month US Treasury papers (on the secondary market) and the Libor rate (London Interbank Offered Rate) for three-month deposits in Eurodollars – an international reference for interbank loans, estimated at US\$ 23.3 trillion in March 2008 by the Bank for international Settlements (BIS). In spite of the steep fall of the US basic interest rate and the combined reduction of the interest rates in the main developed economies in October and November 2008, the spread between the US Treasury Bills and the Libor rate remained at a high level.

3.3. B: SHADOW BANKING AND FINANCIAL CRISIS

According to (Roubini, 2008) a generalized run on these shadow banks started when the deleveraging after the asset bubble bust led to uncertainty about which institutions were solvent. (Roubini, 2008) described the meltdown of the Shadow Banking System in following stages:

The first stage was the collapse of the entire SIVs/conduits system once investors realized the toxicity of its investments and its very short-term funding seized up.

The next step was the run on the big US broker-dealers: first Bear Stearns lost its liquidity in days. The Federal Reserve then extended its lender-of-last-resort support to systemically important broker-dealers. But even this did not prevent a run on the other broker-dealers given concerns about solvency: it was the turn of Lehman Brothers to collapse. Merrill Lynch would have faced the same fate had it not been sold. The pressure moved to Morgan Stanley and Goldman Sachs: both would be well advised to merge – like Merrill – with a large bank that has a stable base of insured deposits.

The third stage was the collapse of other leveraged institutions that were both illiquid and most likely insolvent given their reckless lending: Fannie Mae and Freddie Mac, AIG and more than 300 mortgage lenders.

The fourth stage was panic in the money markets. Funds were competing aggressively for assets and, in order to provide higher returns to attract investors, some of them invested in illiquid instruments. Once these investments went bust, panic ensued among investors, leading to a massive run on such funds. This would have been disastrous; so, in another radical departure, the US extended deposit insurance to the funds.

3.4: RISK MANAGEMENT SYSTEM

Another significant factor contributing to the financial turmoil was risk-management weaknesses at large global financial institutions that created and held complex credit products.

Ben S Bernanke (Chairman Federal Reserves May 15 2008)

“At the root of it all, however, was—and still is—a deeply ingrained flaw in the decision making process. In contrast to the law, where two sides make an equal-and-opposite argument that is fairly judged, in banks there is always a bias towards one side of the argument. Then what it was proposing. The risk factors were a small part of the presentation and always “mitigated”. This made it hard to discourage transactions. If a risk manager said no, he was immediately on a collision course with the business line. The risk thinking therefore leaned towards giving the benefit of the doubt to the risk-takers.”

Confessions of a Risk Manager, The Economist, 07 August 2008

“Risk management* at large Western banks was deficient and "a major cause" of the current financial crisis; the shortcomings showed a lack of judgment and governance by the banks” International Monetary Fund (Reuters 10th April 2008).

* Risk Management System refers to a system of identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events

According to (Baily, Robert etc, 2008), due to low interest rates and competitive pressures to generate high returns for investors and high profits for shareholders, several of the financial institutions failed to apply the risk management practices that they already had in place.

But (Dowd, 2008) accused valuation models and the way they are used. “The models of Risk Management System valuation will often involve ‘marking-to model instead. Marking-to-model depends on assumptions, however, and these are open to question and possible abuse. Model-based valuations do not reflect true market prices and as we have seen again and again recently, a marked to model position can suddenly be revealed to have a market value that is only a fraction of its mode-based valuation”.

In fact, the very principle of applying statistical methods to risk management is problematic: sometimes good risk management makes use of rules of thumb that constitute bad statistics, and sometimes good statistics can lead to bad risk management. This is because statistical analysis fails to allow for risk managers’ need to err on the side of prudence. As one cynic recently wrote: “The statistician is trying to extract information from data, whereas the risk manager is trying to manage risks with limited information [and these are quite different tasks]. And limited information means that a good risk manager cannot afford to be anything other than prudent. Surely it is better to be careful a hundred times than to be killed just once?” (Dowd, 2007).

Although financial institutions had “Risk Management” departments but they failed to adequately judge or protect against certain risks during this Financial Crisis. This failure was magnified when institutions borrowed up to thirty-times their net worth. One system that many financial companies use for risk management is Value at

Risk (VaR)*. There are a few problems with the VAR system. Indeed, it is no exaggeration to say that VaR has been discredited for over a decade and its continued widespread use has long been indefensible (Artzner et al., 1997) and (Dowd, 2005).

(Olson, 2009) described three types of Value at Risk (VaR) Problems: First, humans are inherently good and bad at judging risks. But when it comes to finding the odds of extremely rare events (one in hundred), our natural abilities fail us. Sophisticated statistical models don't provide much relief either. Although we can't predict the frequency of rare events, VaR is built on this very ability.

The second: the end result of any model is dependent upon the original inputs. Garbage in, garbage out. Using historical data to calculate future returns and probabilities can be extremely dangerous. Finally, and most importantly, the final VaR figure ignores maximum size of losses. There may be only a 2% chance that the portfolio loses more than \$20 million in a one-month period. But that loss could be \$21 million, or it could be \$500 million. If the later wipes out the equity of the firm, then it's game over.

Banks and financial institutions weren't the only ones who bought into the VaR model. Regulators and rating agencies used the same analysis to ensure that the company had enough capital on hand or that it still deserved its triple-A rating. This type of backward-looking, false-precision risk analysis must be stopped to prevent future disasters.

* Basically, it's a complex form of scenario analysis that tries to give the firm a look at how much risk is being taken. A single scenario would be something like this: "How much our portfolio would be affected if the stock market went up 5%, interest rates declined ½%, and oil prices fell 3%?" The answer would be found by looking at historical data on performance and correlation. The end result of the VaR analysis gives you a dollar amount of loss for a certain percentile. It gets the final figure from combining all the different outcomes and probabilities of every scenario. The result looks like this: "The 98th percentile, one-month VAR is -\$20 million." (Meaning that 98% of the time, your holdings won't lose more than \$20 million in a one-month period.)

The current financial crisis makes abundantly clear the importance for independent risk management. This task poses demands at every level: individual companies, global groups, regulators, government, rating agencies & international institutions.

On March 6, 2008 the Senior Supervisors Group of the Financial Stability Forum issued a report "Observations on Risk Management Practices during the Recent Market Turbulence." The report shows risk management practices that helped some institutions to avoid the worst of the losses and the practices that led to failures. Report says "Our work has consequently proved useful in clarifying for principal supervisors the areas in need of improvement in the infrastructure, processes, and practices of some firms. As acknowledged throughout this report, a number of firms had already identified, or were beginning to identify, at least some of the deficiencies we cite in their own assessments, and many were already developing plans to address those weaknesses".

3.4. A: CFOs AND RISK MANAGEMENT SYSTEM

Improved risk management is the top priority of CFOs in reaction to the current financial crisis, ahead of short- and long-term access to capital, according to a Towers Perrin survey of finance executives at major U.S. corporations. Towers Perrin commissioned the survey by CFO Research Services, an affiliate of The Economist and CFO magazine, to gain insights on how companies view the seriousness of the financial crisis for their businesses. It also sought to learn about the likely impact on the way they conduct business.

The responses came from 125 top finance executives representing a solid cross section of American industry and were collected during the week of September 22, as Treasury Secretary Henry Paulson and Federal Reserve Chairman Ben Bernanke began making the rounds on

Capitol Hill to pitch the administration's \$700 billion rescue plan. (Towersperrin.com)

Top executives think that risk management practices in banks and other financial institutions contribute highest. About 62% is of the view that the present turmoil is the result of Risk management practices. Second biggest contribution to the crisis was the increased complexity of the financial instruments about 59%. While Financial Markets speculation is on third place with 57% executives think contributes to the crisis.

3.4. B: RMS AND FINANCIAL CRISIS

According to (Groome, 2008), the current economic crisis has brought home a number of lessons. One is that new products can hold unknown risks. Another is that risk management may not have been up to the task since many of the standard quantitative models and users of these models underestimated the systematic nature of risks. Risks were often under-estimated due in part to product complexity and over-reliance on quantitative analysis, including by rating agencies. Investors learned too late that many risk evaluations were wrong.

Investors had little ability to peer into the underlying pools. They bought on the basis of the AAA rating or monoline guarantee; assured by these ratings and the brokers' promises that such investments were without risk.

The incentives to sell these loans were huge. The upshot was that people without documented income were moving into homes with nothing down, and making no mortgage payments, in order to keep commissions flowing in. During 2005 and 2006, almost every mortgage application was accepted. The market funded Alt-A (alternate documentation) and subprime mortgages. No proof of income and nothing down? No problem; welcome to your new home. Even for consumers that

clearly could not afford the monthly payments, the banks and brokers structured (and advertised) mortgages at 1% interest for the first year, (during which the real interest accrues to increases of up to 15% more than the home's market value.) In effect, banks and brokers were lending against a greater estimated "future market value" that never materialized. For reasons unknown, the regulators sat back and allowed banks to treat these as conforming loans. As long as the properties' market values escalated, everyone seemed to win.

According to (Dowd, 2008) most important reasons for the failure of financial risk management are basic economic ones. Simply put, if the incentive to take risks is strong enough, then we should expect to see excessive risks being taken. Risk managers take their orders from the senior management who often pressure them to take short-cuts, turn the other eye to meet the required targets. Therefore the ultimate responsibility should be of the senior management.

Majority of the members in a survey made by AON agreed that Board of Directors, who should have overall responsibility for risk management, Senior Management and specific Risk Managers should share the responsibility of ERM and insurance. Aon's survey shows that, the current global trend is to establish Risk Management Committees. Chief Risk Officers (CRO) are required in certain industries where risk management is highly valued. One of the most important principles in corporate management is that the Board of Directors shall ultimately be held accountable for the corporation's interested parties. Although the specific responsibilities are allocated to various departments, the ultimate responsibility must be taken by the board. (Sharing Global Experience) Enterprise risk Management during the global financial crisis

(Dowd, 2008) says that until the senior management did not take the responsibility of the Risk management the whole building of the financial Risk Management would be on sand. (Dowd, 2008) severely

criticized senior management of taking highest possible remunerations and delivering nothing in the days of Financial Crisis.

According to (Dowd, 2008) problem lies in the nature of the joint stock company itself. One of the earliest and still one of the best critiques of the joint stock company is that given by Adam Smith in the Wealth of Nations: The directors of such companies ... being the managers of other people's money than their own, it cannot well be expected that they should watch over it with the same anxious vigilance ... Negligence and profusion must always prevail, more or less, in the management of such a company ... (Smith, 1976).

3.5: CREDIT RATING AGENCIES

The U.S. subprime residential mortgage debacle of 2007-2008, and the world financial crisis that has followed, will surely be seen as a defining event for the U.S. economy -- and for much of the world economy as well -- for many decades in the future. Among the central players in that debacle were the three large U.S.-based credit rating agencies: Moody's, Standard & Poor's (S&P), and Fitch.

Lawrence j. White (2009)

John Moody published the first publicly available bond ratings (mostly concerning railroad bonds) in 1909. Moody's firm was followed by Poor's Publishing Company in 1916, the Standard Statistics Company in 1922, and the Fitch Publishing Company in 1924. These firms' bond ratings were sold to bond investors, in thick rating manuals.

A central concern of any lender -- including investors in bonds -- is whether a potential or actual borrower is likely to repay the loan (including any specified interest). Lenders therefore usually spend considerable amounts of time and effort in gathering information about the creditworthiness of prospective borrowers and also in gathering information about the actions of borrowers after loans have been made. The credit rating agencies offer judgments -- they prefer the word "opinions" -- about the credit quality of bonds that are issued by corporations, governments (including U.S. state and local governments,

as well as "sovereign" issuers abroad), and (most recently) mortgage securitizes. These judgments come in the form of ratings, which are usually a letter grade.

3.5. A: RATING SCALES

The best known scale is that used by S&P and some other rating agencies: AAA, AA, A, BBB, BB, etc., with pluses and minuses as well (White, 2009).

Table 8: Rating Scales

S&P and Fitch use the same Scale	
Investment Grade	
AAA	The best Quality borrowers, Reliable and Stable
AA	Quality borrowers, a bit higher risk than AAA
A	Economic Situation can affect borrower's ability to pay
BBB	Medium class borrowers, satisfactory at the moment
Speculative Grades	
BB	Borrower's ability to pay is more prone to changes in the economy
B	Borrower's Financial Situation varies noticeably
CCC	Borrower is currently vulnerable and dependent on favourable economic conditions to meet its commitments
CC	Borrower is highly vulnerable
C	Borrower may be in bankruptcy but is still paying its obligations
D	Borrower has defaulted on obligations and CRA believes that it will generally default on most or all obligations
MOODY'S SCALE VARIES SLIGHTLY	
Investment Grade	From AAA to BAA3
Speculative Grade	From Ba1 to C, (C being in default)

Self-made Table

In fact, the rating business has not been profitable until mid-1990s when the financial institutions began to use credit derivatives such as credit default swap and collateralized debt obligation to free up balance-sheet capital requirements and transfer credit risk (Partnoy, 2006). This led the major credit rating agencies to increasingly expand their business to include the rating of complex debt instruments, particularly

collateralized debt obligation (CDO). This rating methodology along with a less regulated environment enabled three agencies to enjoy a multi-trillion dollar oligopoly market. However as credit rating agencies aggressively expand their rating methods issues arise around the trustworthiness of credit rating (Liu, 2007).

3.5. B: CONFLICT OF INTEREST

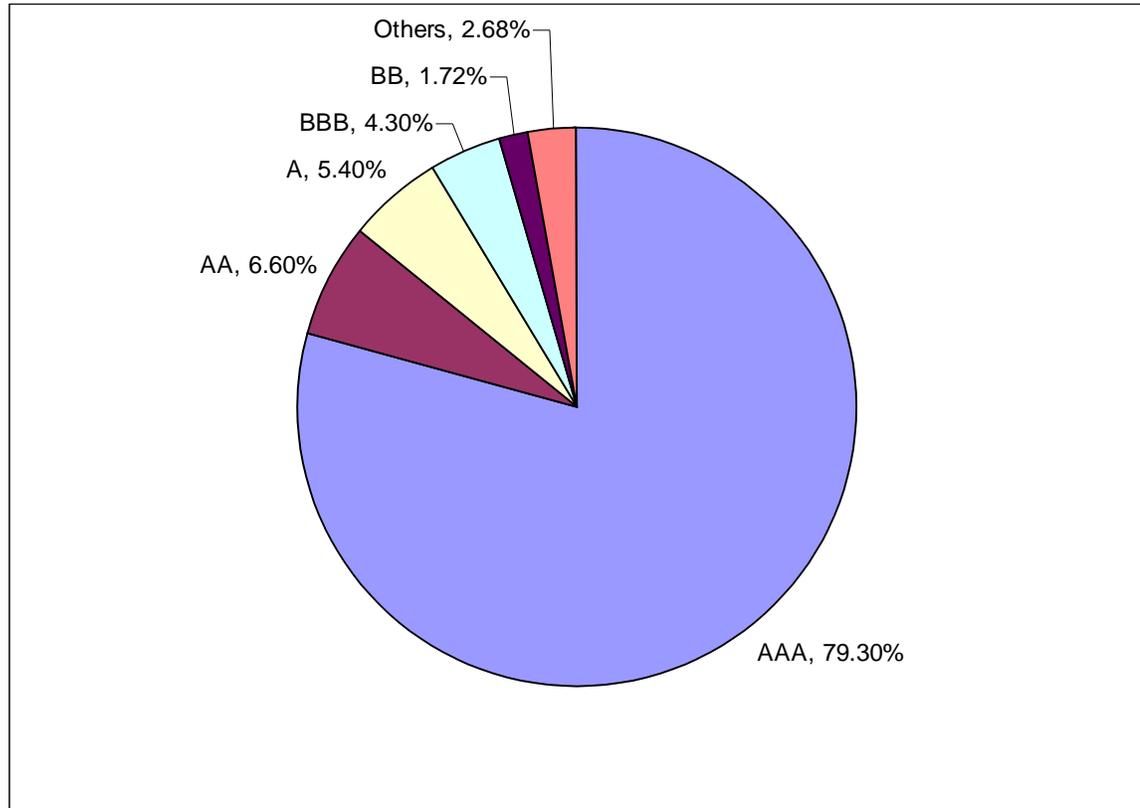
(Partnoy, 2006) points out that the credit rating industry presents strong conflicts of interests as result of the fact that as much as 90 percent of agencies' revenues are from the fees directly paid by the issuers they rate. He then goes on to argue that these agencies' complex and opaque methodologies for rating CDOs create arbitrage opportunities, motivating the rapid expansion of CDO market.

Since the agencies were receiving substantial payments for this service, it created a clear conflict of interest. If CDO issuers did not get the rating they wanted, they could try another agency, taking their fees with them – an act known as “ratings shopping.” (Baily, Litan etc., 2007).

According to the New York Times, Moody's profits tripled between 2002 and 2006 to \$750 million, mostly because of the fees from structured finance products. According to (Coval et al, 2008) fees from structured finance products made up 44 percent of Moody's revenue in 2006. Moody's net income rose from \$289Million in 2002 to \$754 Million 2006. (Economist, 06 sep. 2007)

In 2006, 79.3% of an average subprime MBS was rated AAA. CDOs were similar—often 95% of a CDO was rated investment grade as shown in below figure-36. In July 2008, the SEC concluded that the CRAs failed to manage conflicts of interest between MBS and CDO issuers and the CRAs. CRAs were supposed to serve investors, but conflicts of interest led some CRAs to cater to MBS and CDO issuers by inflating ratings (Amanda, 2009).

Figure-21: Average Subprime MBS Capital Structure



Self-made Figure (Data Source: Bears Stern)

Conflicts of interest were caused by:

1. Relationship conflicts: CRAs have had a close, ongoing working relationship with the largest MBS and CDO issuers;

2. Issuer-paid ratings: 98% of the ratings produced by the CRAs have been paid for by issuers, not investors. The pay incentive led some CRAs to try to inflate ratings of paying issuers in hopes of gaining repeat business from those issuers; and

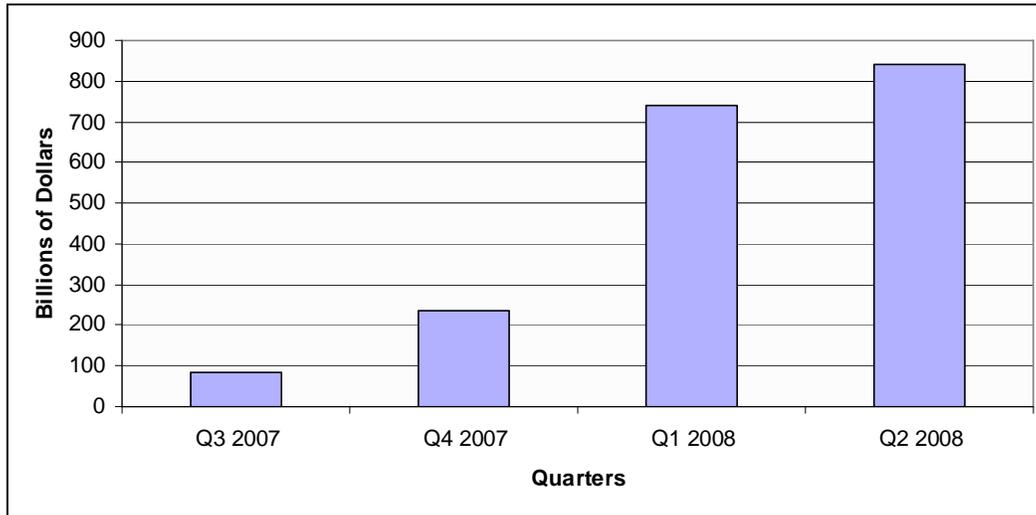
3. Advising-rating combination: CRAs advised issuers on how to structure MBSs and CDOs to get high ratings. Then CRAs “confirmed” that advice by issuing the “promised” ratings.

3.5. C: HOW CRA CREATES CRISIS?

From 2007 to 2008, rating agencies lowered the credit ratings on \$1.9 trillion in mortgage backed securities. Financial institutions felt they had to lower the value of their MBS and acquire additional capital so as

to maintain capital ratios. If this involved the sale of new shares of stock, the value of the existing shares was reduced. Thus ratings downgrades lowered the stock prices of many financial firms.

Figure-22: Mortgage-Backed Securities (MBS) Downgrades



Self-made Figure (Data Source: fortune magazine 08-04-2008)

Figure-22 above shows how Mortgage-Backed Securities has been downgraded from Q3 2007 to Q2 2008. In Q3 2007 less than \$100 Billions MBS has been downgraded while in Q2 2008 only after nine months almost \$850 Billion MBS downgraded. This figure shows the real work of Credit Rating Agencies. This situation creates panic in the market which ultimately led to crisis.

As CRAs downgraded their highest-rated instruments, investors wondered if any investments were safe. This uncertainty caused the credit markets to freeze. Suddenly, few wanted to invest in even the highest-rated instruments for fear they would be downgraded. Many wanted to rid themselves of their current investments. The ongoing crisis has shown that ratings can be inaccurate, untimely, and affected by CRA conflicts of interest. Many market participants no longer trust the ratings that CRAs produce (Amanda Bahena).

Critics allege that the rating agencies suffered from conflicts of interest, as they were paid by investment banks and other firms that organize and sell structured securities to investors. On 11 June 2008, the SEC proposed rules designed to mitigate perceived conflicts of interest between rating agencies and issuers of structured securities¹. Erik Sirri, Director of the SEC's Division of Trading and Markets, said, "The rules proposed today are designed to improve investor understanding of credit ratings through enhanced disclosure of NRSRO methods and performance data, and to promote investor confidence in credit ratings by minimizing conflicts of interest."

Although SEC takes steps to regain the investors trust but it seems that it's too late and damage has already been done. Wrong rating of Credit Rating Agencies has contributed much to this Financial Crisis.

-
- 1 Prohibit a credit rating agency from issuing a rating on a structured product unless information on assets underlying the product was available
 - 2 Prohibit credit rating agencies from structuring the same products that they rate.
 - 3 Require credit rating agencies to make all of their ratings and subsequent rating actions publicly available. This data would be required to be provided in a way that will facilitate comparisons of each credit rating agency's performance. Doing this would provide a powerful check against providing ratings that are persistently overly optimistic, and further strengthen competition in the ratings industry
 - 4 Attack the practice of buying favourable ratings by prohibiting anyone who participates in determining a credit rating from negotiating the fee that the issuer pays for it.
 - 5 Prohibit gifts from those who receive ratings to those who rate them, in any amount over \$25.
 - 6 Require the public disclosure of the information a credit rating agency uses to determine a rating on a structured product, including information on the underlying assets. That would permit broad market scrutiny, as well as competitive analysis by other rating agencies that are not paid by the issuer to rate the product
 - 7 Require credit rating agencies to publish performance statistics for 1, 3, and 10 years within each rating category, in a way that facilitates comparison with their competitors in the industry
 - 8 Require disclosure by the rating agencies of the way they rely on the due diligence of others to verify the assets underlying a structured product.
 - 9 Require disclosure of how frequently credit ratings are reviewed; whether different models are used for ratings surveillance than for initial ratings; and whether changes made to models are applied retroactively to existing ratings.
 - 10 Require credit rating agencies to make an annual report of the number of ratings actions they took in each ratings class, and require the maintenance of an XBRL database of all rating actions on the rating agency's Web site. That would permit easy analysis of both initial ratings and ratings change data
 - 11 Require documentation of the rationale for any significant out-of-model adjustments

4

INNOVATIVE CAUSES

Innovation is said to be the blessing for the mankind but sometimes this blessing converts into curse when there is a misuse of the innovation. Financial innovations played an important role in this crisis. Introduction of so much financial innovations without ample time to judge their reliability was one of the reasons of this crisis. Although innovations always appreciated round the corner but these innovations require lot of time to implement them so that complexity issues should be resolved. Well, in this chapter we would discuss how these financial innovations caused, deepened and prolonged this financial crisis and how this blessing becomes curse. These innovative causes are as follows:

4.1: OVER THE COUNTER (OTC) DERIVATIVES

"The current financial crisis has taught us that the derivatives trading activities of a single firm can threaten the entire financial system and that all such firms should be subject to robust federal regulation"

(Gary Gensler) Chairman Commodity Futures Trading Commission (CFTC)

"The severe financial crisis that has unfolded over the last two years has revealed serious weaknesses in the structure of U.S. financial regulation. One of these is the gap in regulation of OTC derivatives, which under current law are largely excluded or exempted from regulation. The SEC is committed to working closely with this Committee, the Congress, the Administration, and fellow regulatory agencies to close this gap and restore a sound structure for U.S. financial regulation"

Testimony Concerning Regulation of Over-The-Counter Derivatives by Chairman Mary L. Schapiro U.S. Securities and Exchange Commission before the Subcommittee on securities, Insurance, and Investment Committee on Banking, Housing and Urban Affairs United States Senate June 22, 2009

4.1. A: WHAT IS OTC?

Over The Counter derivatives* had been legally permitted in United States for the first time in 1993 after these were invented by JP Morgan in late 1990 (Jones & Bourse, 2009). This permission allowed the growth of a business that is now estimated at over a hundred trillion dollars annually in terms of the notional value of contracts worldwide. Growth of this market was the most significant development in financial markets of 1990s (Greenspan, 2009).

According to (Kregel, 1998) banks also offer derivative contracts to their clients in the "over-the-counter" market. These are not derivatives on organized markets, but rather individually tailored, often highly complex, combinations of standard financial instruments, packaged together with derivative contracts designed to meet particular needs of clients. They are often executed through special purpose vehicles. They generate substantial fee and commission income although bank committing none of its own capital but serving as an intermediary matching borrowers and lenders.

4.1. B: GLOBAL OTC MARKET

The global OTC Derivatives market* is very large, considerably larger than the listed equity market and the exchange-traded derivatives market. Information on OTC derivatives volume is generally traced from

* Derivatives are used to handle the loss risk arising from changes in the value of the underlying. This is known as hedging. Alternatively, derivatives can also be used by investors to take a risk and make a profit if the value of the underlying moves the way they expect. This activity is known as speculation. Broadly speaking we divide the derivative contracts into two types: Over the counter (OTC) and Exchange traded derivatives (ETD). OTC derivatives are contracts that are traded directly between two parties, without going through an exchange or other intermediary. It includes Swaps, Forward rate agreements, and exotic options. ETD derivatives are those derivatives that are traded via specialized derivatives exchanges or other exchanges.

* There are different instruments in this market. Mostly traded instruments are foreign exchange and interest rate derivatives. The instruments which were most implicated in the financial crisis were Collateralized Debt Obligations (CDOs) and structured products (SIVs). In addition much attention has been focused on Credit Default Swaps (CDS) which would seem to have been less heavily implicated. Of these, CDS are actually traded in considerably greater volume on the OTC derivatives market than CDOs.

the data collected by the Bank for International Settlements ("BIS"). Table below from BIS shows the derivatives position.

Table 9: Global OTC Derivatives Market Amount Outstanding (2007 To 2010)

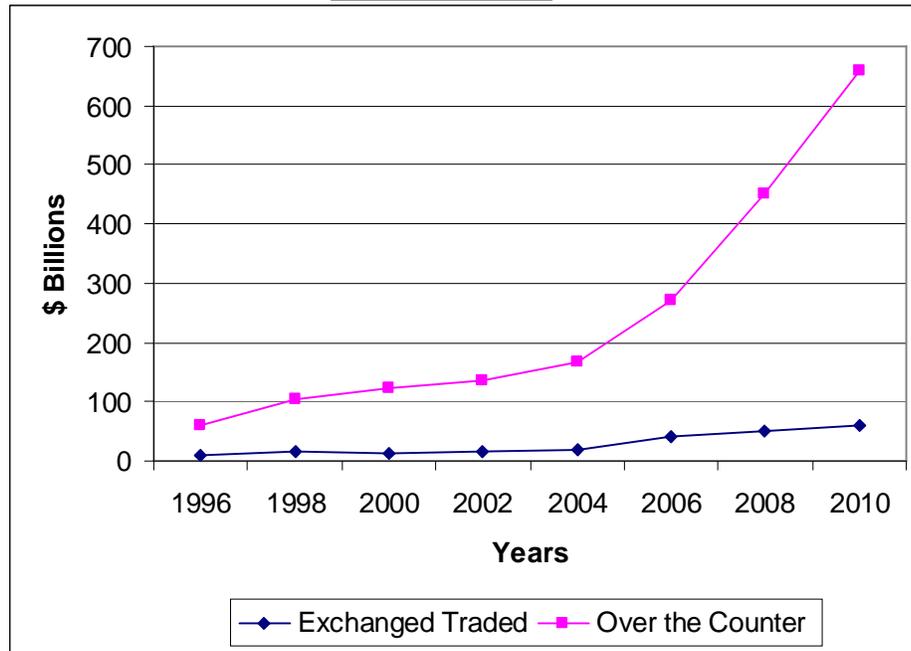
Years	National Amount outstanding (\$Billions)	Gross Market Value (\$Billions)
June 2007	516, 407	11, 140
December 2007	595, 341	15, 813
June 2008	683, 726	20, 353
December 2008	591, 963	33, 889
June 2009	594,553	25,298
December 2009	603,900	21,542
June 2010	582,655	24, 673
December 2010	601,048	21,148

Self-made Table (Data Source: Bank of International Settlements) www.bis.org

For all OTC derivatives in December 2008, BIS reported a notional amount outstanding of \$592 trillion and a gross market value outstanding of \$34 trillion. Interest rate contracts and foreign exchange contracts are the two largest sources of OTC derivatives volume. For those types of products that appear to be securities-related credit derivatives and equity derivatives in December 2008, BIS reported a notional amount outstanding of \$48.4 trillion and a gross market value outstanding of \$6.8 trillion.

A notional amount of \$70 trillion and a gross market value of \$5 trillion are "unallocated" for December 2008. Clearly, this volume of largely unregulated financial activity is enormous, even when just considering the relatively small volume component that is securities-related. Volume of OTC derivatives is far beyond the ETD. Figure-23 below:

**Figure-23: Derivative market Notional Amount Outstanding
(1996 To 2010)**



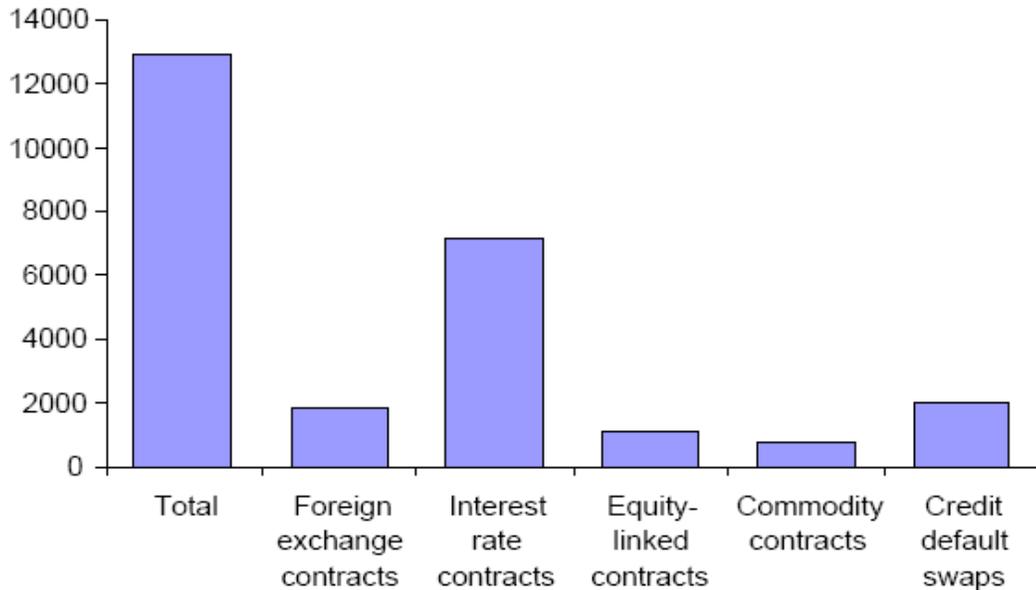
Self made figure (Data Source: Bank of International Settlements) www.bis.org

According to (Segoviano & Singh, 2008) the over-the-counter (OTC) derivatives market has grown sizably in the past years. Notional amounts of all categories of the OTC contracts increased rapidly. These include foreign exchange contracts, interest rate contracts, equity linked contracts, commodity contracts, and credit default swaps (CDS) contracts. Interest rate contracts continue to be the largest segment of this market comprising 66 percent of all OTC derivative market or about \$400 trillion. Growth in the credit derivatives segment has been the fastest and the volume has more than doubled in the last year to about \$60 trillion

The derivative markets have been accused for their alleged role in the financial crisis. The leveraged operations are said to have generate an “irrational appeal” for risk taking, and the lack of clearing obligations also appeared as very damaging for the balance of the market (Kelleher, 2008). The collapse of Bear Stearns, Sale of Merrill Lynch & Co and the

bankruptcy of AIG suggest a clear role of OTC derivatives in the crisis (Kevin & Christopher, 2009).

Figure-24: Global OTC Derivatives Market, Dec. 2007 (\$ Billions)



Self made figure (Data Source: Bank of International Settlements) www.bis.org

Credit Default Swaps (CDS) played an important role in the fall of these giants. "This is the derivative nightmare that everyone has been warning about. They booked all these derivatives assuming bad things would never happen. It was like writing fire insurance, assuming no one is ever going to have a fire, only now they're turning around and watching as the whole town burns down." (Peter Schiff, President of Euro Pacific Capital)

According to (Dodd, 2008) CDOs and Credit derivatives, unlike publicly traded securities and future contracts, are not traded on exchanges but on over-the-counter (OTC) markets. During the financial crisis markets for subprime mortgage-backed securities became illiquid, at that time highly leveraged investors such as hedge funds needed to adjust positions or trade out of losing positions. This left hedge funds locked

into damaging positions at the same time they faced margin calls for collateral from their prime brokers.

The fundamental derivative which was at the heart of this crisis was the CDO on asset backed securities. CDOs were the way in which banks securitized mortgages (Jones & Bourse, 2009). However, rather than being heavily traded on the OTC derivative market, many of the CDO instruments were sold to banks' off-balance sheet entities such as structured investment vehicles (SIVs), which many commentators have regarded as the beginning of the real crisis of confidence in the banks (Tett, 2009).

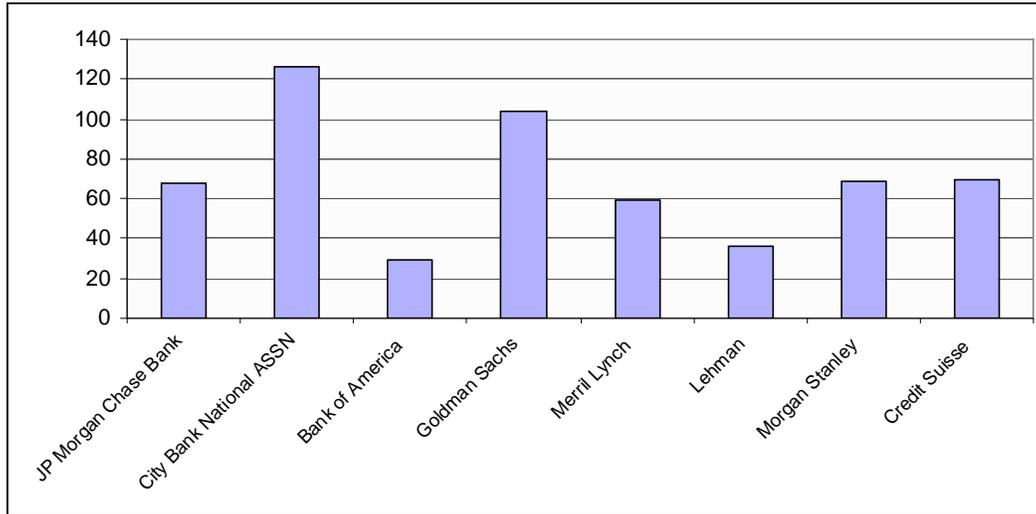
The situation becomes more exacerbated because, without trading, there were no market prices to serve as benchmarks and no way to determine the value of the various risk tranches (Dodd, 2008). Trading is between customers and dealers in OTC market, and prices and volumes of trades are not disclosed. The price discovery process is not transparent, and there is no surveillance of the market to identify where there are large or vulnerable positions.

Moreover, unlike exchanges, these OTC markets have no designated or otherwise institutionalized market makers or dealers to ensure liquidity (Dodd, 2008). Because OTC market was not transparent, investors became panic. This situation creates an environment of run on the shadow banking sector which make the situation more vulnerable

4.1. C: COUNTER PARTY LIABILITIES

OTC markets also suffered from a failure of liquidity. Instead of showing resilience in the face of greater price volatility, these markets ceased trading as counterparties became untrustworthy and buyers fled. Figure-25 below shows the counterparty liabilities on March 2008

**Figure-25: OTC Derivatives Counter party Liabilities March 2008
(\$ Billions)**



Self-Made Figure (Data Source FDIC)

AIG (notionally an insurance company) generated \$500 billion worth of exposure on paper rated AAA by the ratings agencies. Positions which, when written, were intended to make three or four basis points ended costing something like 800 basis points. The underlying portfolios of assets were sub-prime in many cases, and the ratings agencies accepted in their entirety mathematical models which calculated the chances of loss in these instruments as being extremely small.

4.1. D: OTC AND FINANCIAL CRISIS

Many investors were able to leverage positions in these tranches by obtaining funding in markets such as the Canadian 30 day CP market and when this and other markets failed they had to liquidate with catastrophic effects (Jones & Consult, 2009). To compound the problem, the banks exacerbated the rating abuse situation with insufficient controls to recognize that they were being deceived by their own marketing hype by optimistically valuing risk. The losses involved here are at the root of all bank revaluation of toxic asset issues.

In a study undertaken by JP Morgan Chase* reached the conclusion that in the top five recent bankruptcies, payments from sellers of CDS protection were considerably smaller than bondholder losses. In the case of Lehman for example, senior bondholder loss was \$101 billion, while payments from sellers of CDS protection only amounted to \$5 billion on a gross notional figure of \$72 billion.

In the case of AIG the figures were equally compelling. On AIG's corporate referenced CDS with a notional value of £180 billion (representing 48% of total notional value) the actual losses were barely £2 billion (representing only 6% of the total loss). This compared with their multi sector CDO on ABS with a notional value of \$196 billion (representing 52% of total notional value) resulting in actual losses of \$31 billion (representing 94% of the total loss). In other words while CDOs represented just half of the notional value they represented virtually all of the total loss. Having said this it is worth mentioning that one of the reasons the AIG losses on CDS were not that great was because AIG was effectively bailed out

According to (McKenzie, 2009) the financial crisis has illustrated that these risks are not theoretical but real. Bear Sterns, Lehman Brothers and AIG were important players in the OTC derivatives market, either as dealers or users of OTC derivatives, or both. The trouble they experienced originated outside the OTC derivatives markets, it entered the derivatives market via the CDS written by these three institutions and, because of these institutions' central role in all OTC derivatives markets and it spread beyond CDSs and affected the world economy.

The opaqueness of the market prevented, on the one hand, other market participants from knowing exactly what the exposures of their

*Study can be traced on JP Morgan Chase and Company's presentation to the investors on this website: <http://files.shareholder.com/downloads/ONE/692003482x0x275126/19682387-d023-4e95-bf23-287d789ff656/Derivatives-BillWinters.pdf>

counterparties were to these three entities, which resulted in mistrust and in the sudden drying up of liquidity.

The current financial crisis is requiring policy makers to rethink the existing approach to market regulation and oversight. Many observers have singled out over-the-counter (OTC) derivatives, including credit default swaps, as needing greater scrutiny and transparency (Lukken, 2008). If we are to avoid repeating the mistakes of the past, we must strive to increase the transparency of these transactions and find ways to mitigate the systemic risk created by firms that offer and hold these off-exchange instruments

While wholesale regulatory reform will require careful consideration, there is one immediate and proven solution at hand: centralized clearing. Clearinghouses have been around almost as long as trading itself as a means for mitigating the risks associated with exchange-traded financial products (Lukken, 2008).

Whether securities, options, or futures, centralized clearinghouses ensure that every buyer has a guaranteed seller and every seller has a guaranteed buyer, thus minimizing the risk that one counterparty's default will cause a systemic ripple through the markets. The clearinghouse is able to take on this role because it is backed by the collective funds of its clearing members.

4.2: STRUCTURAL INVESTMENT VEHICLES (SIV) AND OFF BALANCE SHEET ENTITIES

“When the credit crunch struck in the summer of 2007, however, the SIV industry was at the heart of the troubles because the sudden withdrawal of liquidity from all funding markets that could possibly be exposed to US subprime mortgages put huge pressure on the business model”.

Financial Times (October 1, 2008)

4.2. A: WHAT IS SIV?

Special purpose Vehicle (SPV)* also called Special Purpose Entity (SPE) is a legal entity (Usually a limited company or limited partnership) created to fulfill narrow, specific or temporary objectives. SPE are typically used by companies to isolate the firm from financial risk. A company will transfer assets to SPE for management or use the SPE to finance a large project thereby achieving a narrow set of goals without putting the entire firm at risk.

SPEs are mostly set up as “Orphan Companies” with their shares settled on charitable trust and with professional directors provided by an administration company to ensure that there is no connection with the sponsor.

According to (Bosworth & Flaaen, 2009) the rapid growth of these securities within off-balance sheet entities called Structured Investment Vehicles (SIVs) also led to large increases in the size of the issuing institutions without a matching increase in capital. The lower capital requirements associated with such SIVs allowed these financial institutions (often investment banking firms) to dramatically increase their effective leverage ratios.

* A structured investment vehicle (SIV) was invented by Citigroup in 1988. These SIVs were very popular until the market crash of 2008. The strategy of these funds was to borrow money by issuing short-term securities at low interest and then lend that money by buying long-term securities at higher interest, making a profit for investors from the difference. It also allowed the banks to keep billions in assets off balance sheet, and freed them from regulatory capital requirements on those assets.

4.2. B: SIV SIZE

(Fry, 2007) pointed that 36 SIVs worldwide deploy about \$400 billion in capital. These 36 SIVs have leveraged their capital to about \$2 trillion worth of actual exposure. SIVs could obtain cheaper funding than banks could, and thus increased the spread between their short-term liabilities and long-term assets — and for awhile they earned high profits. SIV assets reached \$400 billion in July 2007 but it could be more since they are off the books (Moody’s 2008). But according to CNN there were about 30 SIVs having estimated \$320 Billion in October 2007. Table-10 below shows the top five SIVs their managers, Assets held and Status

Table 10: Top Five SIVs on October 2007

Name	Manager	Assets(\$ Billions)	Status
Sigma Finance	Gordian Knot	\$57.6	In Operation
Beta Financ	Citigroup	\$19.3	In Operation
Five Finance	Citigroup	\$12.9	In Operation
Sedna Financ	Citigroup	\$13.2	In Operation
Axon Financial	Axon Financial Service	\$9.9	Unable to secure funding

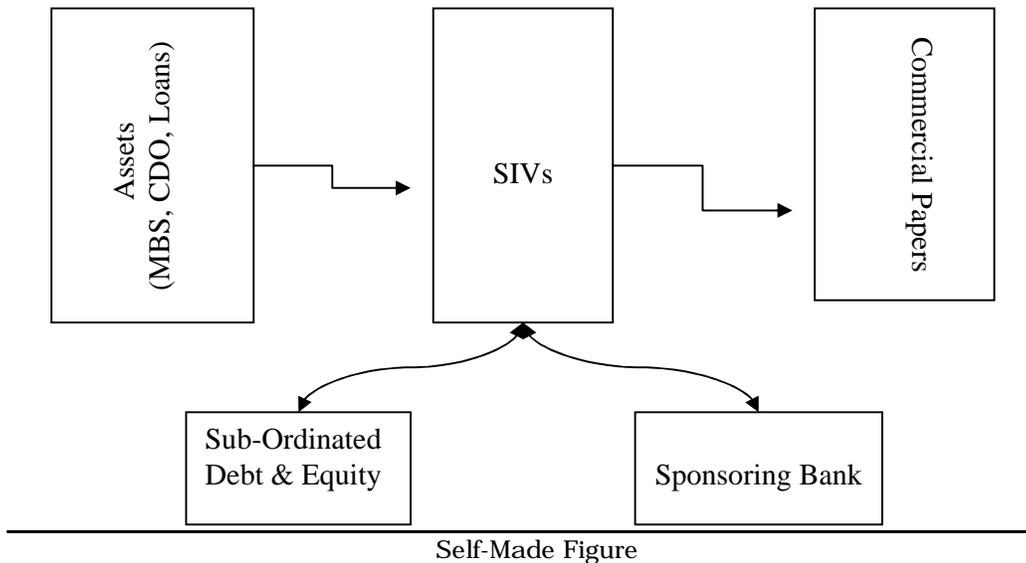
Self-Made Table (Data Source www.money.cnn.com)

4.2. C: SIV STRUCTURE

SIVs had an open-ended (or evergreen) structure; they planned to stay in business indefinitely by buying new assets as the old ones matured, with the SIV manager allowed to exchange investments without providing investors transparency or the ability to look through the structure.

Figure-26 below illustrates the basic cash flows. The SIV bought long-term debt assets, often mortgage-backed bonds, from which it received interest income. Purchase of these assets was financed by issuing short-term debt, usually commercial paper. The SIV’s net revenue was determined by the difference, or spread, between these two cash flows; the operation was profitable so long as the payouts from the assets exceeded interest payments to the commercial paper holders.

Figure-26: SIVs Cash Flow

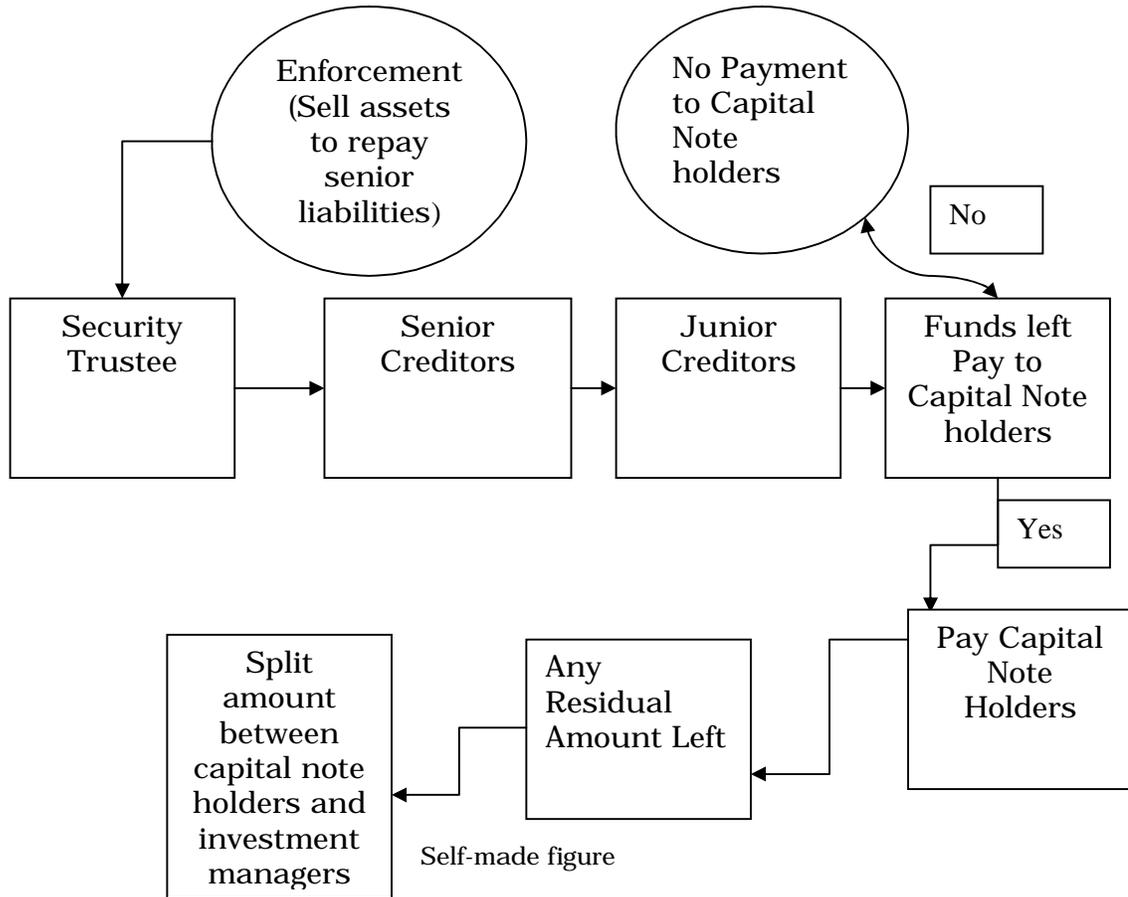


The SIV parent will issue subordinated debt to capital note investors. Both the SIV parent and its SIV subsidiary issue into the capital markets a mix of MTNs and CP rated 'AAA' and 'A-1+', respectively. The SIV parent uses the net proceeds of such issuance to purchase highly rated securities held for the benefit of the security trustee by the custodian. The SIV parent receives interest and principal from its assets and uses these proceeds to pay interest and principal on its liabilities.

The SIV parent enters into hedge agreements to manage interest rate and foreign exchange exposures arising from its mix of assets compared with liabilities. It also enters into liquidity agreements with highly rated banks to provide liquidity loans to assist it in repaying short-term liabilities as they fall due.

SIV has different participants*. Every participant plays its role in the SIV operations. Payment structure is defined. Figure-27 below shows the payment structure of the typical SIV.

Figure-27: SIVs Payment Waterfall



* The various participants in a SIV transaction are: The shareholders of the SIV. A charitable trust normally owns the SIV's shares; The senior and subordinated investors to whom the liabilities of both the SIV parent entity and the SIV subsidiary are owned under the CP programs, the MTN programs, and the capital note program; The investment manager/investment adviser responsible for acquiring eligible investments; managing market, credit, and liquidity risk associated with the portfolio The security trustee, who will in an enforcement event realize its charge over the collateral with the main objective of arranging for the timely payment in full of the SIV's obligations to the priority creditors; The issuing and paying agents who will issue the notes and make payments to the note holders under the CP, the MTN, and capital note program documents; The calculation agent, who calculates the interest rates applicable to any variable MTNs or capital notes issued; Dealers and placement agents, who will place the notes issued with investors on the SIV's behalf; The liquidity banks, who are required to make loans to the SIV under the liquidity agreements; The hedge counterparties with whom the SIV will enter into hedge agreements for the purpose of hedging any market risk related to the portfolio; and The external auditors, who will conduct a full audit on a regular basis, the results of which are also provided to Standard & Poor's.

First of all senior liabilities are being paid and then security trustee has been paid. After that senior creditor such as MTN, CP holders, hedge counterparties, liquidity banks are paid. Junior creditors such as paying agents, Custodians, dealers etc are being paid after the senior creditor have been paid. Capital note holders would not receive any amount if nothing left. If perhaps anything left Capital note holders would be rewarded. Anything left would be distributed among the capital note holders and investment managers.

SIV has different operation modes. In normal operations mode, the investment manager (or any person who is appointed by the investment manager to perform certain duties) provides the SIV with management services with respect to investment and funding. These services are consistent with the covenants given and the agreements entered into by the SIV and its various market participants

In defeasance mode the vehicle is, therefore, in wind-down. The primary difference between the defeasance and enforcement modes is that in defeasance the investment manager manages the wind-down and in enforcement the security trustee manages the process. Also, in defeasance, because the security trustee has not yet enforced its security, there is potential for the vehicle to return to limited or normal operations. Figure below shows the different modes within the SIV.

Once a SIV enters into enforcement mode, it has reached the point of no return. While in normal, limited, and, if appropriate, defensive modes the investment manager manages the SIV, in enforcement the portfolio is managed by or on behalf of the security trustee until it is fully wound down.

4.2. D: CITI'S SIV PROFILE

(Setser, 2007) by refereeing (Yves Smith) of naked Capitalism pointed out that the center of SIV is Citi Bank. But according to Wall Street Journal Citi – an American bank – was the centre of the SIV-world, even

if most of Citi's SIVs were managed out of London and registered in the Caymans. Citibank had over \$100 billion in SIVs, though that has dropped to \$80 billion in the past few months.

City group is said to have the biggest holder of SIVs in the world. SIV Asset mix includes CMBS, MBS, CBO, CLO and CDO, while average credit quality is AAA highest (54%), AA (43%) and A only (3%).

Commercial papers are used as a source of short-term borrowing by many SIVs. The maturity is generally between three months and one year. The profits were distributed in two ways: first as fees for services to the sponsoring institution, and second, as dividends or interest to holders of subordinated debt and equity, who were the nominal owners of the SIV.

Many of the assets held by SIVs were mortgage-related, but rarely were they actual loans. Rather, they were securities backed by pools of loans, in which the interest and principal payments of homeowners are passed through to the holders of the bonds. Financial engineers also bundled mortgage-backed bonds into pools of securities called collateralized debt obligations (CDOs), and sold claims against them.

CDOs were carved into various classes with different risk characteristics and yields. The portions of the pool that proved most difficult to sell might be pooled again, carved up, and resold — in a so-called CDO squared.

4.2. E: COMMERCIAL PAPERS AND SIVs

According to (Baily, Litan etc., 2008) SIVs needed to raise money of their own. They usually did this by issuing commercial paper i.e. promissory notes promising to pay back from two to 270 days. Every two to 270 days, therefore, SIVs needed to pay back their debt – and they did this simply by issuing more debt on the same basis. Until the credit crunch hit in August 2007, this business model worked smoothly: a SIV could

typically rollover its short term liabilities automatically. Liquidity risk was not perceived as a problem, as SIVs could consistently obtain cheap and reliable funding, even as they turned to shorter term borrowing.

(Mauldin, 2007) pointed out that due to the credit rating agencies SIVs sell commercial papers very easily over the Government bonds because they got easily the AAA rating. In fact, it was very easy to leverage SIV 10-15 times or more. Then that money was used to buy longer-term paper which pays higher rates. Difference between the cost of commercial papers and the interest received is called the spread.

Getting a spread of 4% and leverage it up 10-15 times was not bad thing, especially when the investment was in safe investment-grade paper. And in the beginning, the spreads were high so the banks decided to get in on the deal. Figure below shows the clear interest of the investors in the Asset-Backed Commercial Papers over Non-ABCP.

4.2. F: HOW SIVs CAUSED CRISIS?

Until late 2007, refinancing short-term loans had not been a problem for SIVs. However, in August 2007, due largely to the fear that SIVs may be holding large amounts of subprime mortgages, banks and the commercial paper market stopped lending to SIVs at favourable rates. Investors thought that the sub-prime-related assets like Asset Back Securities had no worth. Hence the investors were unwilling to buy the debt issued every two to 270 days (or so) by SIVs in order to fund themselves. And with no one willing to buy their debt, the SIVs ran into big trouble.

Since SIVs could not borrow new money, but had to pay old back loans that were now due, they were forced to sell some of their long-term investments to raise cash. Since this inability to raise money hit all SIVs at the same time, a large number of long-term investments became available for sale at the end of 2007. The large number of the types of

investments that SIVs held becoming available pushed their value down. This caused many SIVs to lose huge amounts of money as they sold assets at a loss in order to pay their debts

This problem with SIVs created a big headache for the banks which had set them up. Although many SIVs were off-balance sheet, it wouldn't have made the banks look good if they'd been willing to let the people who'd invested in SIVs lose all their money. As a result, some banks chose to bring SIVs back onto their balance sheets, incurring huge writedowns and losses in the process.

In 2007, for example, Citigroup brought SIVs worth \$49bn back onto its books. Its investors had been unaware of their existence only months before. Sub-prime writedowns and related losses pushed America's largest bank to post its biggest profit decline in three years and the stock is down more than 31 per cent since the beginning of the year (Kennedy, 2007). Citi own seven SIVs with \$80 Billion. Since July Citi sold more than \$ 20 Billion of SIV assets

In 2007 the \$6.6 billion Cheyne Finance Plc became the first SIV to default on its CP (Eric Fry, 2007). According to the Financial Times, "More than \$42 billion of assets in SIVs...are facing limits on their operations." But that still means about \$300 billion of SIV assets are struggling for survival. And they will likely continue to struggle, not merely because they cannot access funding, but also because their assets are deteriorating

The Asset Back Commercial Paper (ABCP) market nearly ceased functioning in 2007. In August 2007, ABCP outstanding totalled nearly \$1.2 trillion - representing about half of the entire Commercial Paper (CP) market. Since then, however, ABCP outstanding has tumbled by \$279 billion, while the other half of the CP market has remained exactly the same (Fry, 2007). In other words, traditional corporate borrowers like IBM may still tap the CP market, but not asset-backed entities.

On 07th July 2009 Telegraph reported that analysts at Fitch Ratings estimate that 95pc of assets held in SIVs since their peak in July 2007 have been disposed off as the vehicles have been wound down. Of the 29 SIVs, five have been restructured, 13 were consolidated on to the sponsoring bank's balance sheet and seven defaulted on payments on their senior notes. Fitch estimates that the remained four have been able to unwind themselves. If the SIVs were unable to consolidate or restructure the senior note, on average investors lost 50% of their investment, according to Fitch.

According to (Fry, 2007) the Federal Reserve appears to have absorbed about \$25 billion in MBS securities via "temporary" repurchase agreements.

According to Telegraph (7th July 2009) Many SIV investors have gone to court to demand a more equal share of the value left in SIVs. However, the newspaper said chances of receiving much money look slim as Ernst & Young, the receiver of Sigma Finance which went bust last October, only managed to raise \$306m for assets with a face value of \$2bn. Some investors are chasing hundreds of millions of pounds. Almost all of the \$400 Billion of assets held in structured investment vehicles (SIVs) has been disposed of in just two years

Calpers, the biggest U.S. public pension fund, has sued the three largest credit rating agencies for giving perfect grades to securities that later suffered huge subprime mortgage losses Reuters (15th July 2009). The California Public Employees' Retirement System said in a lawsuit filed in California superior Court in San Francisco that it might lose more than \$1 billion from Structured investment vehicles, or SIVs, that received top grades from Moody's Investors Service Inc, Standard & Poor's and Fitch Inc.

According to the fund by giving these securities their highest ratings, the agencies "made negligent misrepresentations" to the pension fund. Such ratings, which typically accompany investments with almost no risk of loss, proved to be wildly inaccurate and unreasonably high.

SIVs were in problem due to three factors. First, they involved the use of innovative securities, which were hard to value in the best of circumstances and which had little history to indicate how they might behave in a severe market downturn. Second, risks were underestimated: SIVs were a form of highly-leveraged speculation, which was dependent on the assumption that the markets would always supply liquidity. Finally, they were off balance sheet entities: few in the markets had an accurate idea of the scope or nature of their activities until the trouble came. The result of the interaction of these factors with a credit market downturn in the SIVs and elsewhere is the most sustained period of instability in U.S. financial markets in many years.

Citi, J.P. Morgan Chase & Co. and Bank of America Corp. announced a plan on 15th October, 2007 to establish a superfund, called "Master Liquidity Enhancement conduit" or super SIV to bolster the commercial paper market. The objective of the fund was to buy highly-rated assets from so called Structural Investment Vehicles (SIV) and to facilitate the refinancing of asset-backed commercial paper and complement other market-based solutions in supporting an orderly and efficient market environment (CNN 15th October 2007).

But some critics, including former Federal Reserve Chairman Alan Greenspan, worry that the fund could prevent the establishment of a true market price for the securities. At the same time, others are concerned that the fund won't get up and running quickly enough to calm the markets

4.3: CREDIT DEFAULT SWAPS (CDS)

4.3. A: WHAT IS CDS?

A credit default swap (CDS)* is a swap contract in which the buyer of the CDS makes a series of payments to the seller and, in exchange, receives a payoff if a credit instrument - typically a bond or loan - goes into default (fails to pay). Less commonly, the credit event that triggers the payoff can be a company undergoing restructuring, bankruptcy or even just having its credit rating downgraded.

Credit default swaps are a type of credit insurance contract in which one party pays another party to protect it from the risk of default on a particular debt instrument. If that debt instrument (a bond, a bank loan, a mortgage) defaults, the insurer compensates the insured for his loss (Lewit, 2008).

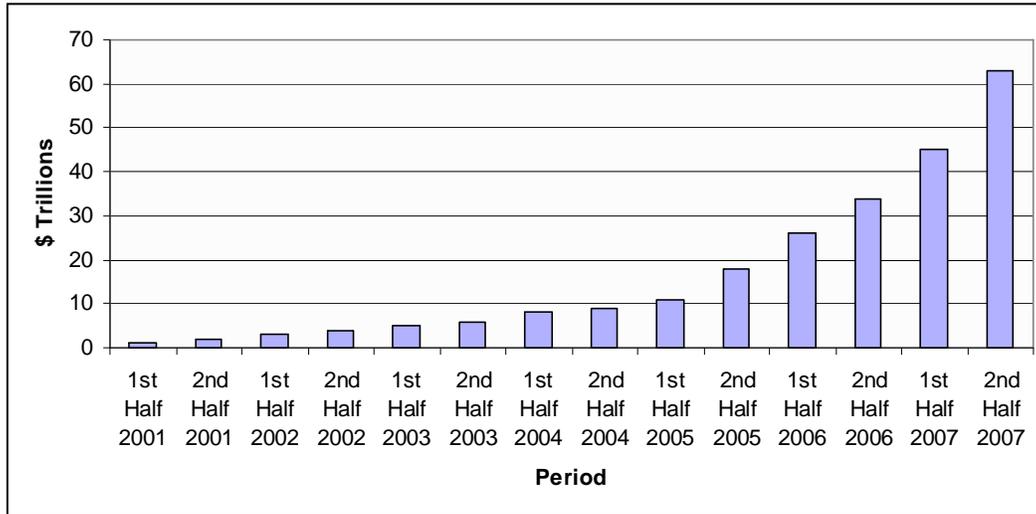
4.3. B: CDS MARKET

The market for the credit default swaps has been enormous. Since 2000, it has ballooned from \$900 billion to more than \$45.5 trillion — roughly twice the size of the entire United States stock market. The biggest player is J.P. Morgan Chase & Co., which has roughly \$16 trillion to \$18 trillion in CDSs while Bear Stearns Cos. has \$2.5 trillion CDSs (Soros, 2008). Figure below illustrates the exponential growth in the CDS market since 2000. The size of outstanding CDS reached a staggering \$60 trillion in 2007. As of September 2008, AIG, a financial

* A credit default swap (CDS) is a credit derivative contract between two counterparties. The buyer makes periodic payments to the seller, and in return receives a payoff if an underlying financial instrument defaults. As an example, imagine that an investor buys a CDS from AAA-Bank, where the reference entity is Risky Corp. The investor will make regular payments to this AAA-Bank, and if Risky Corp defaults on its debt (i.e., misses a coupon payment or does not repay it), the investor will receive a one-off payment from AAA-Bank and the CDS contract is terminated

guarantor, had itself sold nearly \$500 billion worth of CDS — most of it insuring ill-fated CDOs. This ever increasing trend reflects the interest of the investors in Credit Default Swap (CDS).

Figure-28: Value of CDS (2001 to 2007)



Self-Made Figure (Data Source International Securities and Derivative Association)

Commercial banks are among the most active in this market, with the top 25 banks holding more than \$13 trillion in credit default swaps — where they acted as either the insured or insurer — at the end of the third quarter of 2007, according to the Comptroller of the Currency, a federal banking regulator: JP Morgan Chase, Citibank, Bank of America and Wachovia were ranked among the top four most active members

Credit default swaps were seen as easy money for banks when they were first launched more than a decade ago because the economy was booming and corporate defaults were few back then, making the swaps a low-risk way to collect premiums and earn extra cash. The swaps focused primarily on municipal bonds and corporate debt in the 1990s, not on structured finance securities. Investors flocked to the swaps in the belief that big corporations would seldom go bust in such flourishing economic times (Morrissey 2008).

The amount at stake on the Credit Default Swap market is more than the World GDP (Varcharver, 2008). According to Varcharver (2008) because CDS are contracts rather than securities or insurance, they are easy to create: Often deals are done in a one-minute phone conversation or an instant message. Many technical aspects of CDS, such as the typical five-year term, have been standardized by the International Swaps and Derivatives Association (ISDA). That only accelerates the process. You strike your deal, fill out some forms, and you've got yourself a \$5 million - or a \$100 million - contract.

4.3. C: WHY CDS IS A BAD DRIVER?

"It's sort of like I think you're a bad driver and you're going to crash your car," says Greenberger, formerly of the CFTC. "So I go to an insurance company and get collision insurance on your car because I think it'll crash and I'll collect on it." That's precisely what the biggest winners in the subprime debacle did.

4.3. D: CDS IS BLESSING OR CURSE?

Due to the housing boom and Federal Reserve cut interest rates, Americans started buying homes in record numbers, mortgage-backed securities became the hot new investment. Mortgages were pooled together, and sliced and diced into bonds that were bought by just about every financial institution imaginable: investment banks, commercial banks, hedge funds, pension funds.

For many of those mortgage-backed securities, credit default swaps were taken out to protect against default. "These structures were such a great deal, everyone and their dog decided to jump in, which led to massive growth in the CDS market," says Rohan Douglas, who ran Salomon Brothers and Citigroup's global credit swaps research division through the 1990s (Philips, 2008).

According to (Gilani, 2008) Credit default swaps are not standardized instruments. In fact, they technically aren't true securities in the classic sense of the word in that they're not transparent, aren't traded on any exchange, aren't subject to present securities laws, and aren't regulated.

Then suddenly party becomes over when certain insurance companies such as American International Group (AIG), the world's largest insurer, MBIA and Ambac Financial Group Inc. faced rating downgrades because widespread mortgage defaults increased heir potential exposure to CDS losses. These firms had to obtain additional funds to offset this exposure. A rating downgrade of these companies was devastating for banks and others who bought insurance protection from them to cover their corporate bond exposure (Morrissey, 2008).

When investment bank Lehman Brothers went bankrupt in September 2008, there was much uncertainty as to which financial firms would be required to honor the CDS contracts on its \$600 billion of bonds outstanding. Merrill Lynch's large losses in 2008 were attributed in part to the drop in value of its un-hedged portfolio of collateralized debt obligations (CDOs) after AIG ceased offering CDS on Merrill's CDOs. The loss of confidence of trading partners in Merrill Lynch's solvency and its ability to refinance its short-term debt led to its acquisition by the Bank of America. This situation triggered panic between investors and the lead to the collapse of the shadow Banking System.

"It made it a lot easier for some people to get into trouble," says Darrell Duffie, an economist at Stanford. Although he believes credit default swaps have been "dramatically misused," Duffie says he still believes they're a very effective tool and shouldn't be done away with entirely. Besides, he says, "If you outlaw them, then the financial engineers will just come up with something else that gets around the regulation."

5

IS THIS A MINSKY MOMENT?

"Mr. Minsky long argued that Markets were crisis prone, His moment has arrived"

Justin Lahart
Wall Street Journal
18th August 2007

Final chapter in this total discussion is whether this is a Minsky Moment or not. On this issue I would include the point of view of some of the mainstream economists like (Whalen, 2007), (Kregel, 2008), (Davidson, 2008), (Wray, 2007) and (Fazzari, 2008). At the end I would discuss all the views and would come up with my own view on the Minsky Moment.

Hyman Minsky in 1986 while writing his book "Stabilizing the instable economy", says "The Economic instability so evident since the late 1960s is the result of the fragile financial system that emerged from cumulative changes in the financial relations and institutions over the years following World War II"(Minsky, 1986). While Taylor have view that economic busts specially this crisis of 2007-2009 is the outcome of various external shocks to the economy and regulatory Flaws on the part of Federal Reserve and Government actions (Taylor, 2009).

Taylor in his book "Getting off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the financial Crisis-An empirical Analysis of what went wrong" says that Financial Crisis is not the result of the failure of the Capitalism instead it's the Govt. actions which instead created, prolonged and deepened this crisis.

5.1: WHAT IS MINSKY MOMENT?

Hyman Philip Minsky (September 23, 1919 – October 24, 1996) was an American Economist and professor of Economics at Washington University. In 1941, Minsky received his B.S. in mathematics from the University of Chicago and then MPA. He did his PhD in Economics from Harvard University.

Minsky taught at Brown University from 1949 to 1958, and from 1957 to 1965 was an Associate Professor of Economics at the University of California, Berkeley. In 1965 he became Professor of Economics of Washington University in St Louis and retired from there in 1990. He was a Senior Scholar at the Levy Economics Institute of Bard College at the time of his death in 1996.

Laurence Meyer, who served on the faculty with Mr. Minsky at Washington University in St. Louis, was a Federal Reserve Governor during those turbulent times. Mr. Meyer says that when he was an academic, Mr. Minsky's work didn't interest him very much, but that changed when he went into the real world. He says he grew to appreciate it even more when he was at the Fed watching financial crises unfold (Lahart, 2007).

"Had Minsky been there, he probably would have been calling me and alerting me along the ride. And that would have been a good thing," Mr. Meyer says. "Every year that goes by, I appreciate him more. I hear myself sometimes and I think, oh my gosh, I sound like Minsky."

(Lahart, 2007) referred Steven Fazzari, an economics professor at Washington University, saying that Mr. Minsky would have supported the Federal Reserve's recent move to provide cash and cut the rate it charges banks on loans from its discount window to try to avert a financial crisis that could spill over to the economy. But he would probably be worried, too, that the moves might be bailing out investors who would all too soon be speculating again. Having seen recent

events unfold in the way his friend and former colleague predicted, Mr. Fazzari says, "I hope he's someplace saying, 'Aha, I told you so!'"

Being described as post keynesian economist Minsky supported Government intervention in financial markets and opposed some of the popular deregulation policies in the 1980s, and argued against the accumulation of debt. His work mainly focused on providing an explanation of the characteristics of financial crises.

Hyman P. Minsky has written more about the general topic of financial instability, and what he calls "Financial fragility" than any other modern author. He is clearly one of the leading theorists of financial crises today, and his views have influenced the thinking of many people. Minsky's research focused on the understanding and explanation of financial crisis. Minsky claimed that in prosperous times, when corporate cash flow rises beyond what is needed to pay off debt, a speculative euphoria develops, and soon thereafter debts exceed what borrowers can pay off from their incoming revenues, which in turn produces a financial crisis. As a result of such speculative borrowing bubbles, banks and lenders tighten credit availability, like right now, even to companies that can afford loans, and the economy subsequently contracts.

Minsky's core model is known as "Financial Instability Hypothesis" (FIH), which simply declares stability is inherently destabilizing. Minsky wrote in 1974, "That the financial system swings between robustness and fragility and these swings are an integral part of the process that generates business cycles."

Disagreeing with many mainstream economists, he argued that these swings, and the booms and busts that can accompany them, are inevitable in a free market economy, unless government steps in to control them, through regulation, central bank action and other tools.

He opposed the deregulation that characterized the long 18 years of Greenspan era. No wonder we are hearing a lot of talk about regulations recently.

Minsky broke down the process from stability to instability into three types of debt phases: hedge, speculative and Ponzi. The hedge phase describes that buyer's cash flows cover interest and principal payments for borrowers who obtain a debt to buy an asset. This way, the debt is self-liquidating, fully hedged, so it is a stabilizing factor in this economic phase.

The speculative phase is a step further on the risk side. In this phase, cash flows cover only interest payments, but not enough to amortize the principal. Obviously, this is less stabilizing since borrowers (or in this case on its way to be speculators) are betting on interest rates not going up and the value of the collateral not declining. The longer an economy is stable, the more incentive to speculate, and the more speculative borrowers become.

The Ponzi phase is the last phase toward the end of the bubble. In this phase, cash flows cover neither interest rate nor principal, and it all depends on rising asset prices to keep the borrowers afloat. In the mortgage market, it becomes option-ARM, a negative amortization loan, or subprime with no ability of paying back, and all the MBS. In other fixed income markets, it becomes CDO, SIV, and leveraged loans which private equity firms use for their leveraged buyouts, relying on their acquired business to maintain historical high revenue growth and profit margin.

Different than the speculative phase, this whole phase is hinged on the asset price (or the operating profit margin for private equity firms) to go up. They can't just stay flat or not decline, they have to go up, otherwise their investments will get wiped out. They are also betting that future

buyers will buy these overvalued assets from them, assuming more new buyers will buy the same assets at even higher price from future buyers. It is an escalation of buying high and selling even higher.

In this three step process, the tendency of markets becomes more risky as they become seemingly more stable. The longer the markets seem to be stable, or appear more secure the more risky and unstable they become. The false hope of security leads investors to extrapolate stability into the distant future.

In the Ponzi phase, the rising asset prices become a self-fulfilling prophecy. As more people enter the market and become speculators, they drive up the value of the collateral. In turn, they can borrow more to buy more assets to drive up the value further. Eventually, financial systems are inherently susceptible to destructive bouts of speculation. Once the asset prices decline, as presently in the housing market, suddenly everyone realizes that the emperor has no clothes.

Additionally, complex financial derivative products contribute and accelerate this destabilizing process. Minsky indicated that banking is a profit-seeking business, “Bankers are merchants of debt who strive to innovate in the assets they acquire and the liabilities they market”. Well said. Investment banking is basically to “innovatively” package and securitize assets acquired, and then to market and sell them to unsuspecting investors at profits.

Minsky Moment is a situation when a market fails or falls into crisis after an extended period of market speculation or unsustainable growth. A Minsky moment is based on the idea that periods of speculation, if they last long enough, will eventually lead to crises; It means the longer speculation leads to the worst crisis.

The phrase "Minsky moment" was introduced by Paul McCulley in 1998. He was referring to the Asian Debt Crisis of 1997, in which speculators put increasing pressure on dollar-pegged Asian currencies until they eventually collapsed. These types of crises occur because investors take on additional risk during prosperous times or bull markets. The longer a bull market lasts, the more risk is taken in the market. Eventually, so much risk is taken that instability ensues.

For example an investor might borrow funds to invest while the market is in an upswing. If the market drops slightly, leveraged assets might not cover the debts taken to acquire them. Soon after, lenders start calling in their loans. Speculative assets are hard to sell, so investors start selling less speculative ones to take care of the loans being called in. The sale of these investments causes an overall decline in the market. At this point, the market is in a Minsky moment. The demand for liquidity might even force the country's central bank to intervene.

Some economists called this financial crisis of 2007-2009 as "Minsky Moment" named after Hyman Minsky, an economist and professor famous for arguing the inherent instability of markets, especially bull markets, because of his exact predictions about the crisis. He felt that long bull markets only ended in large collapses. "He offered very good insights in the '60s and '70s when linkages between the financial markets and the economy were not as well understood as they are now," said Henry Kaufman, a Wall Street money manager and economist. "He showed us that financial markets could move frequently to excess. And he underscored the importance of the Federal Reserve as a lender of last resort.

Indeed, the Minsky moment has become a fashionable catch phrase on Wall Street. It refers to the time when over-indebted investors are forced to sell even their solid investments to make good on their loans, sparking sharp declines in financial markets and demand for cash that

can force central bankers to lend a hand (Lahart, 2007). "We are in the midst of a Minsky moment, bordering on a Minsky meltdown," (McCulley, 2007)

5.2: MINSKY MOMENT: WHAT MAIN ECONOMISTS SAYS?

5.2. A: WHALEN'S VIEW ON MINSKY MOMENT?

(Whalen, 2007) stressed on two aspects of FIH. First, the evolution of the economy from hedge to speculative and Ponzi finance. Second, the attention to lending as an innovative, profit driven business. He argues that both concepts can easily be connected to situation in the US mortgage market as the crisis reveals a rash of mortgage innovation and a thrust towards more fragile financing by households, lending institutions, and purchasers of mortgage-backed securities. To him, the key elements behind the credit crunch 2007 were the recent housing boom, "creative" lenders, "exotic" and subprime mortgages, unregulated mortgage brokers, the securitization of mortgages, and a conflict of interest among credit-rating agencies. (Whalen, 2007) concludes that "the US credit crunch of 2007 can aptly be described as a Minsky moment".

5.2. B: KREGEL'S VIEW ON MINSKY MOMENT?

(Kregel, 2008) highlights declining margins of safety in financial transactions and an increasing leverage ratio as expressions of Minsky's idea of endogenous instability. In contrast to (Davidson, 2008), (Kregel, 2008) identifies the idea of endogenous instability - "that stability in the economic system generates behaviors that produce fragility, and increasing fragility makes the system more prone to an unstable response to changes in financial or other conditions that are relevant to the return on investment projects" (Kregel, 2008) - as essential element of Minsky's theory.

Kregel's evaluation of Financial crisis depends on declining margin of safety due to endogenous factors. Kregel explains Minsky's theory of declining margins of safety and of the endogenous evolutionary process before comparing these concepts to the current crisis.

(Kregel, 2008) identifies declining margins of safety according to Minsky's approach in the current crisis, but argues that these were inbuilt in the subprime mortgage loans. In the case that the borrower had sufficient income to meet the payment commitments of a loan with an appropriate margin of safety in the first period, (Kregel, 2008) argues that sustaining this similar margin of safety would require one of these three possibilities: First, market mortgage interest rates would remain at the very low levels at which the mortgages were originally written or would even further decrease. Second, the borrower's income would rise in line with the rise of the payment commitment, which is due to increased interest rates. Third, the price of the property underlying the mortgage would remain stable or rise sufficiently to ensure that in the case of a possible default on the mortgage loan, the outstanding sum could be liquidated.

However, (Kregel, 2008) rules out all three possibilities as they were very unlikely: First, most originators assumed the Federal Reserve to return to higher interest rates again. Second, the average real income did not rise over the time of the last expansion. Third and finally, the distressed sale of properties was regarded problematical by experts as property values were assumed to have already entered a bubble.

Since all three possibilities of maintaining an appropriate margin of safety in subprime mortgages were very unlikely, Kregel argues that the subprime mortgage loans had inbuilt declining margins of safety. Thus, they appeared to be hedge finance at first, but eventually turned out to be speculative or Ponzi finance as borrowers could meet the

payment commitments only by further borrowing or other refinancing possibilities.

(Kregel, 2008) identifies both Ponzi finance and declining margins of safety in the current financial crisis. However, he points out that the declining margins of safety were not due to an endogenous evolutionary process over time of an economic expansion as described by Minsky. Thus, the global financial crisis 2008 cannot be called a Minsky moment. Kregel argues that the margins of safety have been insufficient from the beginning and that they are the result of the new method of having credit rating agencies evaluate credit risk in the originate-and-distribute model.

5.2. C: DAVIDSON'S VIEW ON MINSKY MOMENT?

(Davidson's, 2008) point of view of Minsky's FIH focuses on the borrowers' expectations of being unable to meet the cash-outflows at any specific date which results in liquidity problems and the resolution of a systematic liquidity problem by liquidity injections of the central bank. (Davidson, 2008) analysed whether the current financial distress caused by the subprime mortgage crisis followed this outlined path and thus constitutes a Minsky moment, or whether it has to be seen as the result of the attempt to securitize illiquid noncommercial mortgage loans.

In order to analyse this he referred (Wray, 1999) indicating that the Minsky analysis requires that "Over the course of any expansion, the economy moves from hedge to speculative to Ponzi finance. Minsky argued that this is a necessary precondition for an unstable financial system." He argued that if the necessary precondition - the movement from hedge to speculative and Ponzi finance - cannot be identified in the global financial crisis 2008, then it cannot be called a Minsky moment.

(Davidson, 2008) claims that the current subprime crisis does not meet the criteria of a Minsky moment as he cannot identify either speculative or Ponzi financing. (Davidson, 2008) concludes that neither speculative finance nor Ponzi finance can be identified in the current global financial crisis. Thus, no movement from hedge to speculative and Ponzi finance can be found, which includes that this crisis does not fulfill the necessary precondition of (Papadimitriou & Wray, 1999). So, this crisis cannot be called a Minsky moment. Instead.

He argued, that this financial crisis was set off by insolvency problems (and not liquidity problems) of large financial market underwriters, who tried through securitization to transform illiquid noncommercial mortgages into liquid assets. At the core of these insolvency problems, Davidson identifies the repeal of the Glass-Steagall Act in 1999, which enabled the passing of bank-originated mortgage loans to underwriters. With the ability to pass the loans, banks were much less concerned about the possibility of defaults.

5.2. D: WRAY'S VIEW ON MINSKY MOMENT?

(Wray, 2007) has written lot of papers on Minsky's FIH and used Minsky's framework in analyzing the current financial crisis. He argued that the current crisis only differs from the traditional financial instability hypothesis just because of the historical changes in the financial system. However, he point out that the replacement of the commitment model of banking under which Minsky conceived his theory with the new originate-and-distribute model would simply add some novelties to the dynamics of the margins of safety.

Moreover Minsky's theory can be extended by the financial fragility of the household sector without harming the consistency of his theory.

Bearing in mind these novelties and extensions, he argue that Minsky's theory can aptly be applied to the current crisis.

(Wray, 2008) point out that Minsky conceived his theory when banks followed a “commitment model”. However, this banking model was replaced by the new originate-and-distribute model, and so, they argue, the developments in the financial system in the 1980's and 1990's need to be taken into consideration and need to be incorporated into Minsky's theory.

(Wray, 2008) argue that in the new originate-and-distribute model, “a favorable trend for the prices of the assets underlying the Ponzi finance process” (instead of a sustained period of economic expansion) is thus sufficient to explain the dynamics of the margins of safety, of which the housing markets would provide a clear example.

(Wray, 2008) argue that the new originate-and-distribute model of banking adds two novelties to the dynamics of the margins of safety: First, the transformation of the economy from a stable to an unstable one proceeds at an accelerated pace. Due to incentive structures, banks and credit-rating agencies may overestimate the creditworthiness of borrowers in order to sell the structured financial products and to receive fee income, which leads to faster declining margins of safety. Second, a high portion of Ponzi finance may exist from the beginning of the economic expansion as credit-enhancement techniques enable structured financial products to receive the best credit ratings although being based on junk assets.

Finally, in reference to the role of the household sector in the global financial crisis 2008, (Wray, 2007) argues that although “Minsky never really addressed a situation such as the one we have experienced since 1996, in which households consistently spend more than their incomes, his work on financial instability can be extended to cover household

finance". This means, that Wray does not restrict Minsky's financial instability hypothesis to a financial theory of investment. His comment implies that Minsky's concept of financial fragility and the three types of finance – hedge, speculative, and Ponzi finance – can aptly be applied to the household sector.

5.2. E: FAZZARI'S VIEW ON MINSKY MOMENT?

(Fazzari, 2008) mainly concentrate on the consumption and debt of the US household sector over the period while analyzing this financial crisis. His argument is that the US may have exhausted an unprecedented consumption-driven boom and that this financial crisis deviates from the traditional financial instability hypothesis. However, he claim in the line of (Wray, 2008) that the specific form of any particular Minskyan cycle depends on the historical circumstances and that Minsky's theory can aptly be applied to the current crisis, when his financial instability hypothesis is extended by the financial fragility of the household sector.

(Fazzari, 2008) identify three patterns that allowed for an unprecedented consumption-driven boom of the US economy: First, increasing consumption norms and other social forces stimulated rising household spending. Second, financial innovations enabled this rising household spending. Third, favorable macroeconomic conditions, low energy costs, and large tax cuts allowed the consumption boom to continue for an unusually long time.

(Fazzari, 2008) argue that the reversal of these three patterns contributed to the severity of the current crisis and thus, completed a dramatic Minskyan cycle. In his analysis, he highlight the two-sided character of debt-financed spending as on the one side, strong consumption of the US household sector contributed to a strong economic growth and cushioned recessions, while on the other side, the

high leverage led to an increase in the financial fragility of the household sector. Given the rapidly rising home prices, (Fazzari, 2008) argue that that households had to take on "increasingly creative" mortgages, which included reduced debt service costs in the initial period that rose significantly in the successive periods, to afford new homes. They had to increase their leverage dramatically and had to face the problem of re-financing their mortgages. (Fazzari, 2008) claim that "these features of mortgage finance are the manifestation of Minsky's financial fragility at the beginning of the 21st century".

5.3: MY VIEW ON MINSKY MOMENT AFTER DISCUSSING ALL VIEWS:

In the above portion I have discussed in detail some analyses of the work of (Whalen, 2007), (Davidson, 2008), (Kregel, 2008), (Wray, 2007, 2008), and (Fazzari, 2008) on Minsky Moment. I think we should keep in mind three factors while evaluating Minsky's FIH in the light of the current financial crisis. First the identification of Ponzi finance, Secondly the endogenous movement from hedge to Ponzi finance and finally the extension of Minsky's theory by the financial fragility of the household sector. I think (Tymoigne, 2006) was right when he pointed out the centrality of the articulation of cash-flows in Minsky's theory. He identifies two essential dynamics in Minsky's analysis:

First the expectation side, which includes the changes in the acceptable and the desired financial leverages, and second the real or actual side, which includes what actually happens in the economy. Tymoigne claims that "In each side, it is the articulation between cash-flows (expected and actual) that leads the dynamics; therefore, it is the one that should be studied in detail" (Tymoigne, 2006). Moreover, although Minsky focused in his analyses on investment decisions by firms, I argue that his analysis can be extended to the household and

the government sector, i.e. to all kinds of economic activities that need external finance.

In his analysis, (Davidson, 2008) rejects the notions of speculative and Ponzi finance in the current financial crisis. In his explanation of these terms and later in his argumentation, he focuses on the borrower's motivation to engage in a certain type of financing and what he or she knows about refinancing possibilities, rather than on the articulation of cash-flows. He states that in speculative financing, “the debt-purchaser knows that at some date in the future, he or she will have to refinance the remaining contractual cash-outflows” (Davidson, 2008) and rejects speculative financing in the current crisis on the ground that “At the time of the signing of the initial subprime mortgage debt obligation, the borrower was led to believe that he or she was undertaking a hedge financing position” (Davidson, 2008).

Thus, (Davidson, 2008) seems to argue that as long as people believe to engage in hedge financing, it is hedge financing. Davidson follows the same line of thought when rejecting Ponzi finance in the current crisis. He first explains that “In a Ponzi financing scheme, the purchaser is aware that the expected future cash-inflows generated by the investment are not sufficient to meet the future contractual cash-outflows required to service the initial debt security obligation” (Davidson, 2008) and argues that subprime owners could have never planned to engage in Ponzi financing as this would include that they would have to obtain further mortgages. Thus, Davidson rejects the notion of Ponzi finance with the same argument as before, namely, the missing motivation of borrowers, in this case, to engage in Ponzi finance.

In contrast to his analysis, I argue that the definitions of hedge, speculative, and Ponzi finance are about the articulation of cash-flows, the anticipated quasi-rents compared to the payment commitments,

and not about the borrower’s motivation to engage in a certain type of financing or his or her knowledge of refinancing possibilities. This argument seems to be validated by the analyses of (Kregel, 2008), (Whalen, 2007), (Wray, 2007, 2008), and (Wray & Tymoigne, 2008) as they all identify Ponzi finance in the current financial crisis.

The second factor that needs to be addressed in this discussion is the endogenous movement from hedge to Ponzi finance. (Kregel’s, 2008) analysis concludes that, while the current subprime mortgage crisis involves both Ponzi financing and declining margins of safety, these conditions are not the result of endogenous processes. Rather, the crisis would be the result of insufficient margins of safety, which would be due to the new method of evaluating credit risk in the originate-and-distribute model. In contrast, I argue that the declining margins of safety, which Kregel assumes to be now inbuilt in the structured financial products, are still endogenous, even as the transmission mechanism, how it comes about declining margins of safety, has changed. The declining margins of safety may now be due to the complexity of the structured financial products and may present a novelty to Minsky’s theory.

I think that the transmission mechanism is not that important in Minsky’s analysis and that, in line with (Wray & Tymoigne, 2008), simply further novelties were added to the dynamics of the margins of safety: The development of financial fragility may proceed at an accelerated pace, because banks and credit-rating agencies have an incentive to overestimate creditworthiness, and a high proportion of Ponzi financing may exist from the very beginning of the economic expansion.

The final factor in this discussion is about the financial fragility of the household sector. In the current financial crisis, it became apparent that the household sector can not only contribute to, but even can

initiate a financial crisis. Thus, the question arises, if Minsky’s FIH is restricted to a financial theory of investment or, if it can be extended by the financial fragility of the household sector.

(Wray, 2007) and (Fazzari, 2008) argue that although Minsky’s writings focus on business finance and investment, his concept of financial fragility can also be applied to consumption and household debt. I agree with them and argue that his ignorance of household debt in his major works (John Maynard Keynes 1975, *Stabilizing an Unstable Economy* 1986) is due to the limited financing possibilities of the household sector in the time Minsky formulated the FIH and is not due to the impossibility of integrating the financial fragility of the household sector into the FIH.

In a paper of 1980, (Minsky, 1982) looked at the ability of businesses, households, and government to destabilize the economy and thus, addressed the potential of the household sector to cause a financial crisis. He argues that “consumption and housing debt of households are primarily hedge financing” (Minsky, 1982) and that thus, “the typical financing relation for consumer and housing debt can amplify but it cannot initiate a downturn in income and employment” (Minsky, 1982).

By that time Minsky did not see the potential of housing debt to engage in Ponzi finance. However, (Wray, 2008) highlight that Minsky predicted the explosion of home-mortgage securitization in a paper written in 1987 (Minsky, 2008), which has recently been published by the Levy Economics Institute. In this paper, Minsky underscores the necessity to understand securitization in order for central bank interventions and government interventions to successfully guide ongoing institutional developments. He argues that securitization results from three developments: First, securitization would lead to the creation of financial products that are eminently suitable for a global financial

structure. He even calls the relation between the globalization of the world's financial structure and the process of securitization "symbiotic" as the process of securitization makes it possible to turn every asset world-wide into a tradable financial product. Second, securitization would reflect a change in the weight of market and bank funding capabilities. Minsky argues that market funding capabilities increased, whereas the funding capabilities of banks and depository financial intermediaries decreased. He claims that this was a lagged response to monetarism, which enabled new opportunities for nonbanking financial techniques.

Thirdly, securitization would also be a response to the cost structure of banks. Minsky argues that banks seem to need a 450-basis point spread to generate profits of fund income. However, the process of securitization enables banks to supplement fund income with fee income and thus, to stay competitive with nonbanking financial intermediaries, which operate on much lower costs. Overall, (Minsky, 2008) concludes that these developments and the process of securitization significantly increase the fragility of the financial system.

Finally, after having discussed the identification of Ponzi finance, having provided some novelties of the declining margins of safety in this crisis, and having argued for the extension of Minsky's FIH by the financial fragility of the household sector, the analysis of (Fernandez et al., 2008) needs to be addressed. They analyze the current crisis using Minsky's framework and argue that "the subprime crisis is yet another classic Hyman Minsky episode of financial instability" (Fernandez et al., 2008).

However, they focus in their analysis on the failure of the US government policy the "democratization of homeownership", which, I argue, is closer to the mainstream economics' analysis of government failure than to Minsky's FIH. Furthermore, they claim that destabilizing

effects of inequality led to financial innovation, predatory lending, and financial turmoil. Starting from “stability breeds instability”, they want to push Minsky’s argument a bit further and argue that “inequality breeds instability” as well. However, in my opinion they thus push Minsky over the edge as a theory about inequality is non-existent in Minsky’s FIH .

The changes in the articulation of cash-flows over time represented by the three types of finance – hedge, speculative, and Ponzi finance – constitute the essential element of Minsky’s financial instability hypothesis. The analyses of (Davidson, 2008) and (Kregel, 2008) seem to be misleading in their evaluations. (Davidson, 2008) rejects speculative and Ponzi finance on the ground of the missing motivation of borrowers to engage in speculative or Ponzi financing. (Kregel, 2008) focuses too much on the transmission mechanism that leads to declining margins of safety.

(Kregel, 2008) is right that the transmission mechanism has changed, but he is not right in rejecting Minsky’s FIH on this ground. Moreover, in reference to the novelties of this financial crisis, it is important to see that Minsky, throughout working on his financial instability hypothesis from the 1960’s until his death in 1996, was well aware of ongoing institutional changes and tried to integrate them into his theory. His major writings, John Maynard Keynes (1975/1976) and *Stabilizing an Unstable Economy* (1986/2008) focus on business and investment decisions and resemble institutional changes of that time.

The lack of household debt in these writings is, as I have argued, only due to the lack of possibilities of the household sector to engage in debt financing at that time. Thus, in my opinion, the current global financial crisis can aptly be described as a Minsky moment, even as the household sector led to the destabilization of the economy. This Minskyan crisis, however, presents some novelties: A high portion of

Ponzi financing may exist from the very beginning of the economic expansion, the declining margins of safety may be inbuilt into complex structured financial products, and the development of financial fragility may proceed at an accelerated pace, because banks and credit-rating agencies have incentives to overestimate creditworthiness.

CONCLUSIONS:

The financial crisis of 2007-2009 was not a single event/crisis but was a combination of different events/crises which combined and led to a very complicated Crisis. It was actually a series of multiple crises that rippled through the U.S financial system and, ultimately, the world economy. Distress in one area of the financial markets led to failures in other areas by way of interconnections and vulnerabilities that bankers, government officials, and others had missed or dismissed. Almost all the factors which I have mentioned in this thesis contributed to this crisis to some extent.

In my opinion, the current global financial crisis can aptly be described as a Minsky moment. This crisis, however, presents some novelties: A high portion of Ponzi financing may exist from the very beginning of the economic expansion, the declining margins of safety may be inbuilt into complex structured financial products, and the development of financial fragility may proceed at an accelerated pace, because banks and credit-rating agencies have incentives to overestimate creditworthiness

Minsky's Financial Instability Hypothesis (FIH) correctly covers the crisis. Although FIH was presented three decades ago and I agree with Wray (2007) that a slight modernization of FIH would clearly led to truly depicts of the event of current financial crisis. Especially FIH's components like: Displacement, Boom, Euphoria, Profit taking and Panic, this is what happened in this financial crisis.

Global imbalances, such as large trade deficits and budget deficits indicative of over-consumption, were sustainable. Private debt relative to GDP tripled over 30 years. Trade deficits increased the flow of capital into the U.S. and put downward pressure on interest rates, making the housing bubble worse.

Low interest rates, widely available capital, and international investors seeking to put their money in real estate assets in the United States were prerequisites for the creation of a credit bubble. Those conditions created increased risks, which should have been recognized by market participants, policy makers, and regulators

Mortgage lending standards were collapsed almost. Limited documentation cases increased tremendously. Desire to increase the lending overcome the lending standards. When housing prices fell and mortgages defaulted, the lights began to dim on the Wall Street.

The percentage of borrowers who defaulted on their mortgages within just a matter of months after taking a loan nearly doubled from the summer of 2006 to late 2007. This data indicates they likely took out mortgages that they never had the capacity or intention to pay.

Government housing policies failed. Aggressive homeownership goals with the desire to extend credit to families which were previously denied create mess in the market. Fed made serious mistakes to understand the market situation. Mortgages were granted to the families which were even not able to pay in future. Homeownership peaked in the spring of 2004 and then began to decline. From that point on, the talk of opportunity was tragically at odds with the reality of a financial disaster in the making.

A survey held by (Case and Shiller, 2003) report that the overwhelming majority of persons surveyed in 2003 agreed with or strongly agreed with the statement that real estate is the best investment for long-term holders. The decline in mortgage interest rates was a key factor in triggering the run up of housing prices. Many borrowers might have been motivated by the prospect for short-term financial gains and investors turned to riskier types of MBS and these investments create a

housing bubble which ultimately becomes the main reason of Subprime Default

During rise of the overall home mortgage market, subprime lending sector in particular have grown tremendously. According to Kregel, in 1999 congress approved the Gramm-Leach-Bliley Bank Reform Act according to which “Banks of all sizes gained the ability to engage in a much wider range of financial activities and to provide a full range of products and services without regulatory restraint”. Due to this banks have excess liquidity ratios. This over-leverage compelled banks to search extra sources of investment. For this purpose sub-prime mortgages were given edge because of easy conditions and higher interest returns. First, excess liquidity resulted in asset bubbles, particularly in housing and mortgage-based securities. These asset bubbles encouraged speculators to borrow, while the (rising) asset value of collateral comforted the lenders. Second, there were clear gaps in regulatory and accounting standards regarding the treatment of “off-balance sheet” financial vehicles and lending practices.

Federal Reserve’s pivotal failure to stem the flow of toxic mortgages, which it could have done by setting prudent mortgage-lending standards also contributed towards this crisis. The Federal Reserve was the one entity empowered to do so and it did not.

Government’s inconsistent handling of major financial institutions during the crisis—the decision to rescue Bear Stearns and then to place Fannie Mae and Freddie Mac into conservatorship, followed by its decision not to save Lehman Brothers and then to save AIG—increased uncertainty and panic in the market

By the end of 2007, Fannie’s and Freddie’s combined leverage ratio, including loans they owned and guaranteed, stood at 75 to 1.

Financial institutions issued, bought and sold bad mortgages securities. Some of the securities they never examined and even sometimes knowingly that these securities are defective. firms depended on tens of billions of dollars of borrowing that had to be renewed each and every night, secured by subprime mortgage securities; and major firms and investors blindly relied on credit rating agencies as their arbiters of risk

From 1999 to 2008, the financial sector expended \$2.7 billion in reported federal lobbying expenses; individuals and political action committees in the sector made more than \$1 billion in campaign contributions. What troubled was the extent to which the US was deprived of the necessary strength and independence of the oversight necessary to safeguard financial stability

From 1978 to 2007, the amount of debt held by the financial sector soared from \$3 trillion to \$36 trillion, more than doubling as a share of gross domestic product. The very nature of many Wall Street firms changed—from relatively staid private partnerships to publicly traded corporations taking greater and more diverse kinds of risks. By 2005, the 10 largest U.S. commercial banks held 55% of the industry’s assets, more than double the level held in 1990. On the eve of the crisis in 2006, financial sector profits constituted 27% of all corporate profits in the United States, up from 15% in 1980.

Failure of Corporate governance and risk management systems in important financial institutions were key cause of the crisis. These institutions acted irresponsibly, take too many risks with too little capital and depend on short term funding. Especially large investment banks and holding companies focused on risky trading activities with hefty profits.

Some large investment banks, bank holding companies, and insurance companies, including Merrill Lynch, Citigroup, and AIG, experienced

massive losses related to the subprime mortgage market because of significant failures of corporate governance, including risk management. Executive and employee compensation systems at these institutions disproportionately rewarded short-term risk taking. The regulators—the Securities and Exchange Commission for the large investment banks and the banking supervisors for the bank holding companies and AIG—failed to adequately supervise their safety and soundness, allowing them to take inordinate risk in activities such as nonprime mortgage securitization and over-the-counter (OTC) derivatives dealing and to hold inadequate capital and liquidity.

By the end of 2007, Lehman had amassed \$111 billion in commercial and residential real estate holdings and securities, which was almost twice what it held just two years before, and more than four times its total equity. And again, the risk wasn't being taken on just by the big financial firms, but by families, too. Nearly 1 in 10 mortgage borrowers in 2005 and 2006 took out “option ARM” loans, which meant they could choose to make payments so low that their mortgage balances rose every month.

In 20th century, there were so many protections like Federal Reserve as a lender of last resort and FDIC which were responsible for regulation to provide the protection against the panics. But over thirty years plus permission to growth of Shadow Banking system has narrowed the size of commercial Banks. Shadow banking system was permitted to grow to rival the commercial banking system with inadequate supervision and regulation. That system was very fragile due to high leverage, short-term funding, risky assets, inadequate liquidity, and the lack of a federal backstop. When the mortgage market collapsed and financial firms began to abandon the commercial paper and repo lending markets, some institutions depending on them for funding their operations failed or, later in the crisis, had to be rescued. These markets and other interconnections created contagion, as the crisis

spread even to markets and firms that had little or no direct exposure to the mortgage market. In addition, regulation and supervision of traditional banking had been weakened significantly, allowing commercial banks and thrifts to operate with fewer constraints and to engage in a wider range of financial activities, including activities in the shadow banking system

In 2007, the five major investment banks—Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch, and Morgan Stanley—were operating with extraordinarily thin capital. By one measure, their leverage ratios were as high as 40 to 1, meaning for every \$40 in assets, there was only \$1 in capital to cover losses. Less than a 3% drop in asset values could wipe out a firm. To make matters worse, much of their borrowing was short-term, in the overnight market—meaning the borrowing had to be renewed each and every day. For example, at the end of 2007, Bear Stearns had \$11.8 billion in equity and \$383.6 billion in liabilities and was borrowing as much as \$70 billion in the overnight market. It was the equivalent of a small business with \$50,000 in equity borrowing \$1.6 million, with \$296,750 of that due each and every day.

Risk management may not have been up to the task since many of the standard quantitative models and users of these models underestimated the systematic nature of risks. Risks were often under-estimated due in part to product complexity and over-reliance on quantitative analysis, including by rating agencies. Investors learned too late that many risk evaluations were wrong. The incentives to sell these loans were huge. The upshot was that people without documented income were moving into homes with nothing down, and making no mortgage payments, in order to keep commissions flowing in. During 2005 and 2006, almost every mortgage application was accepted. The market funded Alt-A (alternate documentation) and subprime mortgages. No proof of income and nothing down? No problem; welcome to your new home. Even for consumers that clearly could not afford the monthly payments, the

banks and brokers structured (and advertised) mortgages at 1% interest for the first year, (during which the real interest accrues to increases of up to 15% more than the home's market value.) In effect, banks and brokers were lending against a greater estimated "future market value" that never materialized

Financial institutions and credit rating agencies embraced mathematical models as reliable predictors of risks, replacing judgment in too many instances. Too often, risk management became risk justification.

Credit Rating Agencies also contributed toward financial crisis. All the three Credit Rating Agencies contributed. Especially Moody which alone has 45000 mortgage-related securities rated as AAA. In 2006 alone, Moody's put its triple-A stamp of approval on 30 mortgage-related securities every working day. The results were disastrous: 83% of the mortgage securities rated triple-A that year ultimately were downgraded. Forces at work behind the breakdowns at Moody's, including the flawed computer models, the pressure from financial firms that paid for the ratings, the relentless drive for market share, the lack of resources to do the job despite record profits, and the absence of meaningful public oversight. And you will see that without the active participation of the rating agencies, the market for mortgage-related securities could not have been what it became.

The number of suspicious activity reports—reports of possible financial crimes filed by depository banks and their affiliates—related to mortgage fraud grew 20-fold between 1996 and 2005 and then more than doubled again between 2005 and 2009. One study places the losses resulting from fraud on mortgage loans made between 2005 and 2007 at \$112 billion

Lack of transparency and accountability in financial institutions motivated borrowers to borrow more and more even if they are not eligible. Former Fed Chairman Paul Volcker has observed that problems of financial crisis began with a lack of accountability in mortgage lending and the trading of mortgage-backed securities. Financial executives spawned a proliferation of mortgage backed securities without integrity and traded them in non-transparent markets. Apart from the low standard of credit and minimum documentation there have been cases of massive frauds in mortgage loans. According to Financial Times 18th January 2008, the five largest investment banks – Merrill, Goldman Sach, Morgan Stanley, Lehman Brothers and Bear Stearns paid out about \$66 billion in compensation in 2007, including an estimated \$40 billion in bonuses. Despite the decline in profit the bonus figure was higher than the \$36 billion last year.

Mark-to-market accounting contributes both to credit bubbles, which no one on Wall Street ever complains about because they are too busy raking in the cash and credit busts. Key criticism against Mark to Market or FVA is that its use in the current crisis has led to a reduction in the value of financial institutions assets, which translated into a severe shrinking of their capital ratios, forcing them to deleverage and sell further assets at distressed prices, thus feeding the downward spiral

Financial Innovations also become curse instead of blessings. These new innovations like SIVs also played a role in the financial crisis. Until late 2007, refinancing short-term loans had not been a problem for SIVs. However, in August 2007, due largely to the fear that SIVs may be holding large amounts of subprime mortgages, banks and the commercial paper market stopped lending to SIVs at favourable rates. Investors thought that the sub-prime-related assets like Asset Back Securities had no worth. Hence the investors were unwilling to buy the debt issued every two to 270 days (or so) by SIVs in order to fund themselves. And with no one willing to buy their debt, the SIVs ran into

big trouble. Since SIVs could not borrow new money, but had to pay old back loans that were now due, they were forced to sell some of their long-term investments to raise cash. Since this inability to raise money hit all SIVs at the same time, a large number of long-term investments became available for sale at the end of 2007. The large number of the types of investments that SIVs held becoming available pushed their value down. This caused many SIVs to lose huge amounts of money as they sold assets at a loss in order to pay their debts

According to a study by FDIC the volume of subprime loans included in private-label securitizations grew to at least \$672 billion by year-end 2006. Approximately 75 percent of the estimated \$600 billion of subprime mortgages originated in 2006 were funded by securitizations. Thus a substantial portion of subprime mortgages are ultimately funded by securitizations. A study by (Keys, Mukherjee et al. 2008) shows that doubling of securitization volume is on average associated with about a 10-25% increase in defaults delinquencies in the heavily securitized subprime housing market increased by 50% from 2005 to 2007, forcing many mortgage lenders out of business and setting off a wave of financial crises which spread worldwide. Securitization of mortgage assets went beyond the point of value and created assets that were not transparent.

Tremendous increase in CDO was possible due to the Expansion of Global Savings. First break in investor's confidence came in 2007 when a wave of mortgage defaults hit the CDOs tranches. From the first Half of 2007 to the second half, CDO issuance dropped by 50%. Significant increase in delinquency rates on subprime mortgages after mid-2005, especially on loans that were originated in 2005-06. CDOs of subprime mortgages were at the heart of the current credit crisis, as a massive amount of senior tranches of these securitization products have been downgraded from AAA rating to non-investment grade. The reason was

significant increase in delinquency rates on subprime mortgages after mid-2005.

Over-the-counter derivatives contributed significantly to this crisis. The enactment of legislation in 2000 to ban the regulation by both the federal and state governments of over-the-counter (OTC) derivatives was a key turning point in the march toward the financial crisis. OTC derivatives contributed to the crisis in three significant ways. First, one type of derivative—credit default swaps (CDS)—fueled the mortgage securitization pipeline. CDS were sold to investors to protect against the default or decline in value of mortgage-related securities backed by risky loans. Companies sold protection—to the tune of \$79 billion, in AIG’s case—to investors in these newfangled mortgage securities, helping to launch and expand the market and, in turn, to further fuel the housing bubble. Second, CDS were essential to the creation of synthetic CDOs. These synthetic CDOs were merely bets on the performance of real mortgage-related securities. They amplified the losses from the collapse of the housing bubble by allowing multiple bets on the same securities and helped spread them throughout the financial system. Goldman Sachs alone packaged and sold \$73 billion in synthetic CDOs from July 1, 2004, to May 31, 2007. Synthetic CDOs created by Goldman referenced more than 3,400 mortgage securities, and 610 of them were referenced at least twice. This is apart from how many times these securities may have been referenced in synthetic CDOs created by other firms. Finally, when the housing bubble popped and crisis followed, derivatives were in the centre of the storm. AIG, which had not been required to put aside capital reserves as a cushion for the protection it was selling, was bailed out when it could not meet its obligations. The government ultimately committed more than \$180 billion because of concerns that AIG’s collapse would trigger cascading losses throughout the global financial system.

REFERENCES

- Acemoglu, Daron (1998), "Changes in unemployment and Wage Inequality: An Alternative Theory and Some Evidence", National Bureau of Economic Research, working paper, no. 6658, Cambridge, Cambridge Press, pp. 1-12
- Acemoglu, Daron (2001) "Directed Technical Change", National Bureau of Economic Research, working paper, no. 8287, Cambridge, Cambridge Press, pp 10-50
- Acemoglu, Daron (2001) "Good Jobs versus Bad Jobs", Journal of Labor Economics, vol. 19, no. 1, Chicago Press, pp. 12-21
- Acemoglu, Daron (2002) "Technical Change, Inequality, and the Labor Market", Journal of Economic Literature, vol. 40, no. 1, Pittsburgh, American Economic Association Publications, pp. 10-34.
- Adam S. Posen and Marc Hinterschweiger (2009) "How useful were recent financial innovations? There is reason to be skeptical" Economist 15th May 2009
- A.G. Dymski (1997): Deciphering Minsky's Wall Street Paradigm. Journal of economic issues. Vol. 31 No. 2 pp. 103-122
- Artzner, P., F. Delbaen, J.M. Eber and D. Heath (1999) "Coherent measures of risk." Mathematical Finance 9 (3): pp. 203-228.
- Andrew Leonard: (2008) "Should Mark-to-Market Asset Valuation be suspended?" The Economist 25th October 2008
- Baily Martin Neil, Robert E. Litan, and Matthew S. Johnson (2007) "The Origins of the Financial Crisis" Brookings Institution working paper no 1519
- Barry Bosworth and Aaron Flaaen (April 2009) "America's Financial Crisis: the End of An Era" The Brookings Institution working paper no 1552
- Barth, Mary E, Landsman, Wayne R, Whalen, James (1995) "Fair Value accounting: Effects on banks earnings volatility, regulatory capital and value of contractual cash flows"
- Bernanke, B. (2007): "Global Imbalances: Recent Developments and Prospects." Financial Times 11th May 2007
- Berman, Eli; John Bound y Stephen Machin, 1997, "Implication of Skill-Biased Technological Change: International Evidence", National Bureau of Economic Research, working paper, núm. 6166, Cambridge, Mass., Cambridge Press, pp. 1-40.
- Blinder, Alan (2007): "Six Fingers of Blame in the Mortgage Mess," New York Times, Sep. 30, 2007.
- Bowles, Samuel; Herbert Gintis & Melissa Osborne (2001), "The Determinants of Earnings: A Behavioral Approach", Journal of Economics Literature, Pittsburgh, American Economic Association Publications vol. 39, no. 4, Pp. 1137-1176.
- Brad, Setser (2007) "SIV-City" Financial Times 28th October 2007
- Caballero, Farhi, and Gourinchas, (2008) "An Equilibrium Model of Global Imbalances and Low Interest Rates," American Economic Review, March 2008
- Capell, Kerry (2007) "Britain's Coming Credit Crisis." Guardian 20th March 007
- Case, Karl and Shiller (2003) "Is There A Bubble in the Housing Market?" Brookings Papers on Economic Activity 2:2003: pp 299-342.
- Chang and Velasco (2000) "Financial fragility and the exchange rate regime". Journal of Economic Theory 92, pp. 1-34.
- Chris Hunt (2008) "Financial Turmoil and global imbalances: the end of Bretton Woods II". Financial Times 20th April 2008
- Costas Lapavistas (2008) "The roots of the Global Financial Crisis" New York Times 29th June 2008
- Courchane, Surette, Zorn, (2004) "Subprime Borrowers: Mortgage Transitions and Outcomes" Journal of Real Estate Finance and Economics, 29 (4), pp 365-392.
- Coval, Joshua, Jakub and Stafford (2008) "The Economics of Structured Finance". Harvard Business School Working Paper; Cambridge, MA.
- CPA Journal "The Role of Mark-to-Market Accounting in the Financial Crisis"
- Crotty James (2008) "structural causes of the global financial crisis" New York Times 15th May 2008
- Davidson (2008): "Is the current Financial Distress caused by the Subprime Mortgage Crisis a Minsky Moment? Or is it the Result of Attempting to securitize illiquid noncommercial Mortgage Loans?" Journal of Post Keynesian Economics. Vol. 30 No. 4, pp 669-676
- Davies Paul, Anousha Sakoui and Gillian Tett (2008) "Sigma collapse ends shadow bank project" Financial Times 02 January 2008
- Delargy and Goodhart (1999). "Financial Crises: Plus ca Change, plus c'est la meme chose". LSE Financial Market Group Special Paper No.108.
- Dooley, Michael, David Folkerts-Landau and Peter Garber (2009) "Bretton Woods II Still Defines the International Monetary System," NBER Working Paper 14731 (February).

- Dowd, (2005) “Measuring Market Risk.” Economist 11th February 2005
- Dymski, (1997): “Deciphering Minsky’s Wall Street Paradigm” Journal of economic issues Vol. 31 No. 2
- Dymski, Pollin(1992): “Hyman Minsky as Hedgehog: The Power of the Wall Street Paradigm” <http://www.econ.uoa.gr/UA/files/1013800711..pdf> Economist 17th March 2007
- Eichengreen, Barry (2009) “Will global imbalances return” Brookings institute working paper
- Eichengreen, Rose and Wyplosz (1995), “Exchange rate mayhem: the antecedents and aftermath of speculative attacks” New York times 5th October 1995
- Fabozzi & Frank (2007). *Bond Markets, Analysis, and Strategies*. 6th Edition, NJ: Pearson Prentice Hall
- Farzad, Roben, Goldstein, Henry, and Palmeri (2007) “Not So Smart.” Financial times 25th December 2007
- Fazzari & Cynamon (2008) “Household Debt in the Consumer Age: Source of Growth – Risk of Collapse” http://www.boeckler.de/pdf/v_2008_10_31_fazzari.pdf
- Ferguson, Niall (2008) *The ascent of money, a Financial history of the world*. New York. Penguin Press Publication
- Firla-Cuchra and Jenkinson (2006) “Why are Securitization Issues Tranched? [Online]. Available from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=676730
- Fisher David, (2009) “Collateralized Debt Obligations (CDOs) - A Complicated Way to Spread Risk crisis”. New York Times 12th March 2009
- Gary Gorton (2008) “The Subprime Panic” Financial times 12th January 2008
- Geithner, Timothy (2007) “Credit Markets Innovations and their Implications” Brooking institute working paper March 2007
- Green, Richard and Susan Wachter (2007) “The Housing Finance Revolution.” Paper presented at the Federal Reserve Bank of Kansas City Symposium
- James Crotty and Gerald Epstein (2008) “Proposals for Effectively Regulating the U.S. Financial System to Avoid Yet another Meltdown” Economist 15th January 2008
- Katz, Lawrence & Kevin Murphy (1991), “Change in Relative Wages, 1963-1987: supply and Demand Factors”, National Bureau of Economic Research, working paper, no. 3927, Cambridge, Mass. Cambridge Press, pp. 1-38.
- Kevin, Phillips (2009) *Bad Money, Reckless Finance, Failed Politics, and global crisis of American Capitalism*. New York. Penguin Group publication
- Kolenikov, Stalishnav & Anthony Shorrocks, (2005) “A Decomposition Analysis of Regional Poverty in Russia”, Review of Development Economics, vol. 9, no. 1, New Jersey, Blackwell Publishing, pp. 25-46.
- Kregel Jan (2007) “Using Minsky’s cushions of Safety to Analyze the Crisis in the U.S Subprime Mortgage Market” The Jerome Levy Economics Institute. Working Paper. No. 275
- Kregel, J. (2008): Minsky’s Cushions of Safety. Systemic Risk and the Crisis in the U.S. Subprime Mortgage Market. The Levy Economics Institute of Bard College. Public Policy Brief. No. 93 http://www.levy.org/pubs/ppb_93.pdf
- Krishnamurthy and Vissing-Jorgensen (2008) “The Aggregate Demand for Treasury Debt,” working paper, North-western University, 2008
- Krugman, Paul (1979) “A Model of Balance of Payments Crises,” Journal of Money Credit and Banking, 11: pp 311-325.
- Kunt Dermirguc and Detragiache (1997), “The determinants of banking crises in developing and developed countries”, IMF Working Paper 106
- Kuttner, Robert (2007) “The Alarming Parallels between 1929 and 2007,” The American Prospect. October 2. Testimony of Robert Kuttner Before the Committee on Financial Services, Rep. Barney Frank, Chairman, U.S. House of Representatives, Washington http://www.truthout.org/docs_2006/100307H.shtml. (<http://www.sec.gov/news/press/2008/2008-110.htm>)
- Laderman, Elizabeth (2001) “Subprime Mortgage Lending and the Capital Markets” [Online]. San Francisco: FRBSF. Available from: <http://www.frbsf.org/publications/economics/letter/2001/el2001-38.pdf> [Accessed 23 July 2007]
- Lahart, Justin (2007) “Mr. Minsky long argued that Markets were crisis prone, His moment has arrived” Wall Street Journal 18th August 2007
- Lawrence White (2008) “The Credit Rating Agencies: Understanding their central role, the subprime debacle of 2007-08” Financial Times 30th June 2008
- Lynton Jones, Bourse Consult (2009) “Current Issues Affecting the OTC Derivatives Market and its Importance to London” Telegraph 23th August 2009
- Mark Jickling (2008) “CRS Report for congress-Averting financial crisis” Financial times 15th August 2008

- Mary Schapiro (2009) “Chairman U.S Securities and Exchange Commission’s Testimony Concerning Regulation of Over-The-Counter Derivatives” New York Times 23rd May 2009
- Mathew Philips, (2008) “How 'credit default swaps'—an insurance against bad loans—turned from a smart bet into a killer” News Week September 27, 2008
- Max Olson (2009) “Real Causes of Crisis” www.futureblind.com
- Michael Lewitt, (2008) a Florida money manager, in a New York Times 16th September, 2008
- Miguel A. Segoviano and Manmohan Singh (2008) “Counterparty Risk in the Over-The-Counter Derivatives Market” The Jerome Levy Economics Institute. Working Paper. No. 271
- Minsky, H. P. (1992): The Financial Instability Hypothesis. The Levy Economics Institute of Working Paper. No. 74
- Minsky, H. P. (2008): *Stabilizing an Unstable Economy* New York: Mc Graw Hill
- Moody’s Investor Services (2008), “Moody’s Update on Structured Investment Vehicles.” International Structured Finance Special Report.
- Morduch, Jonathan & Terry Sicular, (2002) “Rethinking Inequality Decomposition, with Evidence from Rural China”, Economic Journal, vol. 112, no. 476, Princeton, John Wiley-Royal Economic Society, pp. 93-106.
- Newt Gingrich (2008) “Suspend Mark-To-Market Now!” Forbes.com
- Nicholas Varcharver, (2008) “The \$55 Trillion Question” Fortune 30th September 2008
- Nouriel Roubini, (2008) “The Shadow Banking System is Unravelling” The Jerome Levy Economics Institute. Working Paper. No. 270
- Partnoy and Skeel (2006) “The Promise and Perils of Credit Derivatives”[Online]. Available from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=92974
- Randall Dodd (2008) “Subprime: Tentacles of a Crisis” New York Times 30th January 2008
- Reuters (July 15, 2009) “Calpers sues Moody's, S&P, Fitch over SIV ratings”
- Sabry Faten, Anmol Sinha, and Sungi Lee (2009) “An update on the credit crisis litigation: A turn towards structured products and asset management Firms” New York Times 26th February 2009
- Securities industry and Financial Markets Association (sifma.org)
- Shah Gilani (2008) “The Real Reason of financial Crisis-The real story no one talk about”
- Shorrocks, Anthony, (1982) “Inequality Decomposition by Factor Components”, *Econometrica*, vol. 50, no. 1, Chicago, mit-Press, pp. 193-211
- Silber, Jaques, (1989) “Factor Components, Population Subgroups and the Computation of the Gini Index of Inequality”, *The Review of Economics and Statistics*, 71, Chicago, mit-Press, pp. 107-115.
- Smith, A. (1976) *The Wealth of Nations*. Oxford: Oxford University Press
- Standard and Poor’s “Structural Investment Vehicles (SIV)” http://www2.standardandpoors.com/portal/site/sp/en/us/page.article_print/2,1,1,0,103134246664_2.html
- Summers, L. H. (2006) “Reflections on Global Account Imbalances and Emerging Markets Reserve Accumulation.” Telegraph 08th July 2006
- Taylor, John (2009) *Getting Off Track: How Govt. Actions and interventions caused, prolonged and worsen the financial crisis*. Hoover Institution Press publication series no. 570
- Telegraph (July 07, 2009) telegraph.co.uk
- Volcker, Paul (2009) “Some musings on Financial Innovation” Financial times 11th March 2009
- Walter Lukken (2008) “How to solve the derivative problem” Wall Street Journal 20th February 2008
- Wan, Guanghua; M. Lu & Z. Chen, (2007) “Globalization and Regional Income Inequality: Empirical Evidence from within China”, *Review of Income and Wealth*, series 53, no. 1, New Jersey, John Wiley, pp. 35-59.
- Whalen, C. (2008): “A Minsky Moment: Reflections on Hyman P. Minsky (1919-1996)”. *Journal of Economic Issues*. Vol. 42 No. 1
- Wray, R. L. (2008): “Financial Markets Meltdown. What can we learn from Minsky?” The Levy Economics of Bard College. Public Policy Brief. No. 94
- Wray, R. L., Papadimitriou, B. D.(1999): “Minsky’s Analysis of Financial Capitalism”. The Jerome Levy Economics Institute. Working Paper. No. 275