



INNOVATION

Understanding Financial
Innovation: An
Evolutionary/Post-
Keynesian Approach

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What is Financial Innovation?

- No generally agreed definition
- Broadly speaking, any significant changes regarding to developing new financial products, services or markets can be considered financial innovations
- Process innovation versus product innovation
- Product innovation: derivative contracts, new corporate securities, or new forms of pooled investment products
- Process innovation: new means of distributing securities, processing transactions, or pricing transactions
- According to different purposes, different taxonomies can be developed.-types, motives and functions

Motivation

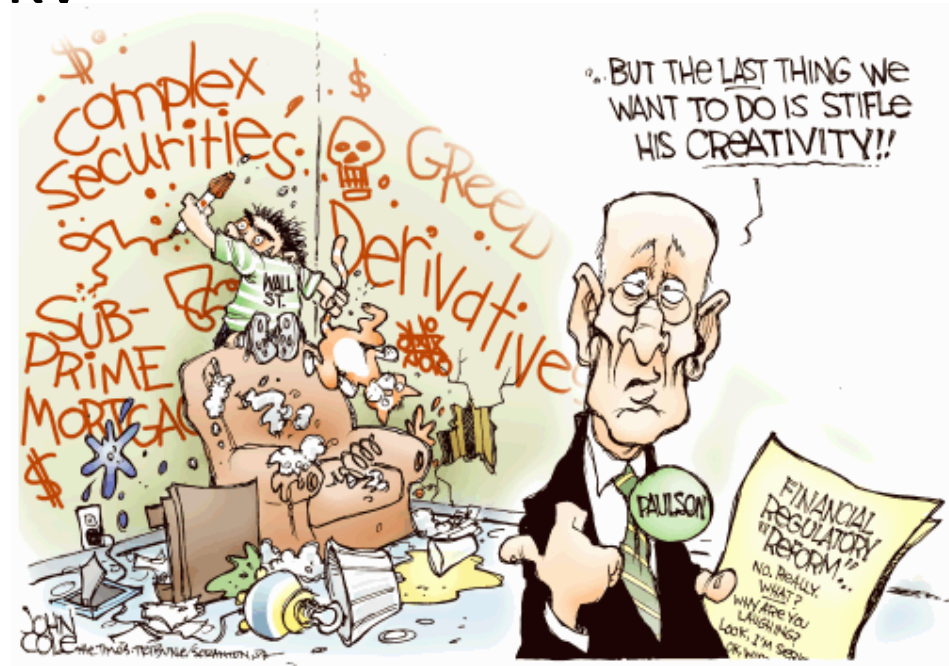
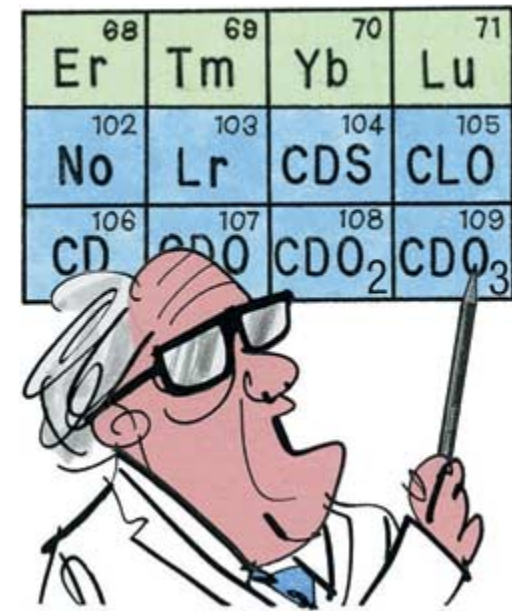
- Recent developments increased the attention to the concept of financial innovation
- Many have focused on the role of the financial innovations in the recent crisis.
- Lack of satisfactory theory for financial innovation
- the theory of innovation in the real sector has been well developed

Motivation

- This paper: An attempt to contribute to the theory of innovation from a Schumpeterian/Evolutionary and Post-Keynesian framework.-work in progress
- Because:
- Schumpeterian innovation theory is very relevant to the theory of financial innovation.
- Evolutionary approach can capture the dynamic process of financial innovation better.
- Minskian theory is relevant: implications.
- Similar attempts: Carter (1992), Niggle (1986) Raines and Leathers (1992), Leathers and Raines (2004)
- The closest study: Burlamaquie 2000.

Outline

- Existing literature
- The Relevance of Schumpeter and Evolutionary Approach
- The Relevance of Minsky
- Conclusion



Existing explanations for financial innovation

- Financial innovation exists because they complete markets (Grinblatt and Longstaff 2000 and Duffie and Rahi 1995)
- Agency and information problems (Lerner and Tufano 1993 and Ross 1989).
- Transaction costs (McConnell and Schwartz 1992).
- A response to regulations and taxes (Silber 1983 and Miller 1986).
- Increase in the volatility of macroeconomic variables (Frankel and Mann 1986; Smith, Smithson, and Wilford 1990).
- Existing framework is not enough to capture the true nature of financial innovation. We need to conceptualize financial innovations in a different way;

The Theory of Innovation

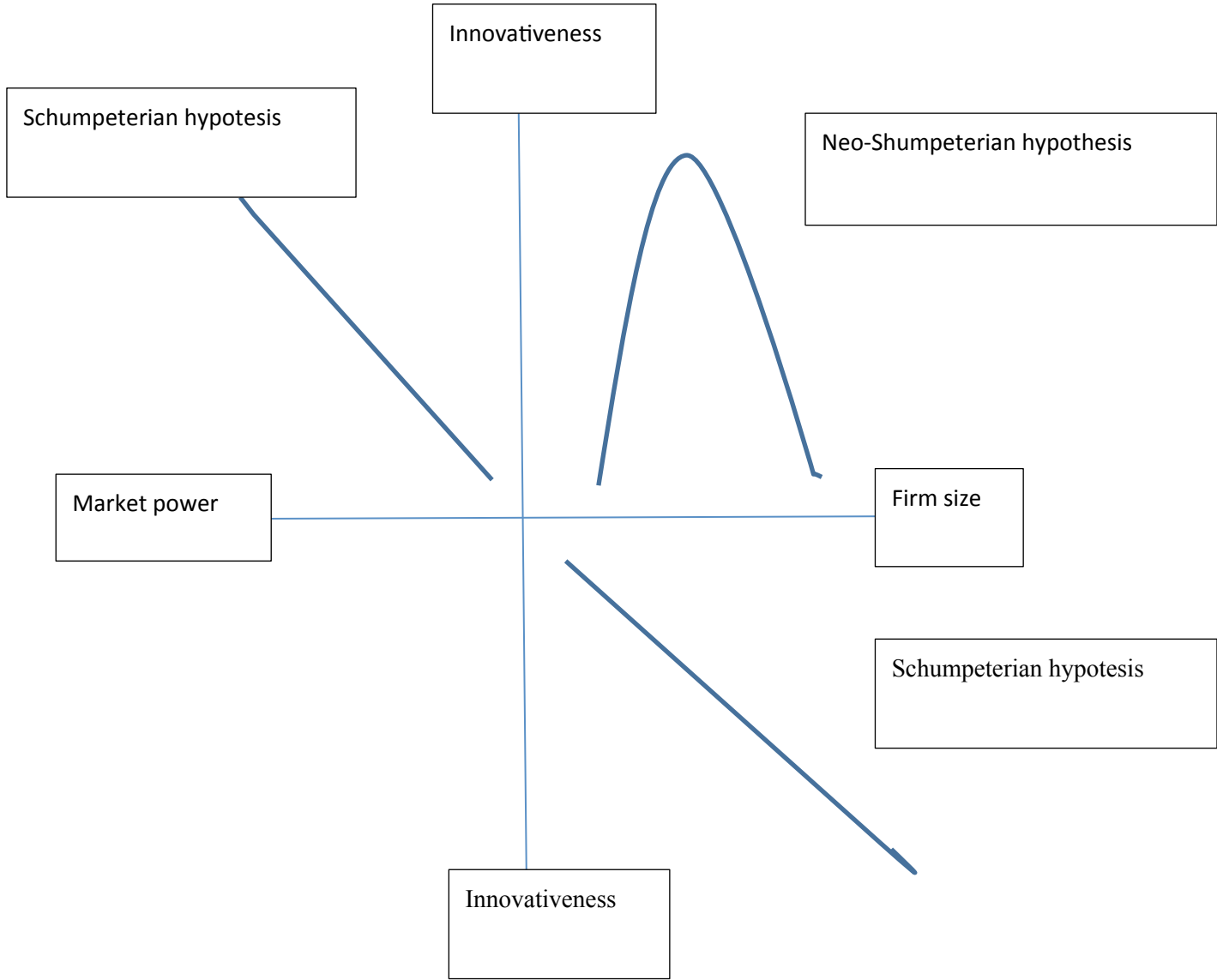
- On the other hand, there is a vast empirical and theoretical literature on innovation in the real sector.
- Joseph Schumpeter (1934, 1942) and his followers
- Banks and finance were always at the center stage in his picture,
- However, 'Schumpeter never really took time to discuss *financial innovation* or gave it a similar status in his theoretical framework.' (Burlamaquie 2000:3)

The Relevance of Schumpeter

- Schumpeter: innovation is a dynamic processes stemmed from profit motives a long with competitive pressure eroding extra profits.
- Early writings of Schumpeter: entrepreneurs as the driving force of innovation in industrial sector-captains of industry (*The Theory of Economic Development*)
- In his later writings, Schumpeter highlights the role of big firms and R&D departments as the source of innovation (*Capitalism Socialism and Democracy*)

Schumpeterian Hypotheses (-)

- i) A positive relationship between the size of firm and innovativeness
- ii) An inverse U shape relationship between innovativeness and the size of firm (Neo-Schumpeterian)
- iii) The market power of firms are positively related to innovativeness
- iv) Persistency in innovational activities (there is a positive relationship between past innovativeness of a firm and its current innovativeness)
- v) Innovators increase their profit by either increasing their market share or enjoy higher prices.



The Relevance of the Evolutionary Approach

- Financial innovation is an evolutionary process.
- Financial innovation takes place in a special socio-economic structure.
- The *speed and characteristics* of financial innovation may change under different historical and institutional circumstances
- The incentive structure of the innovators matters!

Following Schumpeterian/Evolutionary tradition in light of the empirical literature

- Financial firms have always tendency toward innovating for increasing their profits especially by increasing the *volume of transactions and* to manage their risks.
- In general, big firms, institutionalized R&D departments are the engines of financial innovations.
- Overwhelmingly supports the role of big banks and persistency in financial innovations; Pennings and Harianto (1992), Karen et al (2002) , Napoli (2008) and Arnaboldi and Rossignoli (2009)

Following Schumpeterian/Evolutionary Tradition in light of the empirical literature

- **Characteristics of Financial Innovations:**
- Financial innovations take place in a special socio-economic structure.
- This structure is shaped by interrelated factors such as existing regulatory framework, taxes, available technologies, and volatility in macroeconomic variables.
- Any changes in these conditions may significantly alter the characteristics of new financial innovations.
- For example, in the US case, in volatile and high interest rate periods, financial innovations were more in the form of indexation, maturity shortening and products with floating rates.

Following Schumpeterian/Evolutionary Tradition in light of the empirical literature

- In a period of low interest rates, low inflation and low volatility with a relatively loose regulatory framework, financial innovations: higher turn over and higher leverage.
- After the 1980s industrialized countries experienced a period in which the volatility of many macroeconomic variables decreased and financial markets were deregulated significantly.
- In this period, different securitization practices and importance of money market instruments, which aimed at increasing the turnover and higher leverage, increased.

Following Schumpeterian/Evolutionary Tradition in light of the empirical literature

- **Speed of Innovation:** can change throughout time and be considered as a function of
 - Deregulated markets
 - existing competition framework,
 - incentive structure within financial firms
 - the speed of technological developments

Deregulated markets

- The Fed did not even use its existing power to oversight new financial products (Comert 2013)

Competition and Centralization

- Increasing competition has gone hand in hand with rising centralization since the 1980s
- On the one hand, due to the decreasing legal barriers between different segments of financial markets and pressure from international financial markets competition increased in the financial markets
- On the other hand, “the ongoing consolidation of financial institutions is one of the most notable contemporary features of the financial landscape both within and across many industrial countries (Group Ten 2001)

Percentage Share of Top Banks in Derivative Markets in the US

Year	%	number of top banks
1991	86	top nine banks
1992-1993	91	top nine banks
1994	92	top nine banks
1995	94	top nine banks
1996	94	top eight banks
1997	95	top eight banks
1998	94	top seven banks
1999	95	top seven banks
2000-2003	96	top seven banks
2004	96	top five banks
2005	96	top five banks
2006-2007	97	top five banks
2008	96	top five banks
2009	97	top five banks

Relatively Intense Oligopolistic Competition

- Since the 1980s: Intense oligopolistic competition in many segments of financial markets contributed to increasing rate of innovation.
- In a relatively oligopolistic structure, at the top layer of financial firms, big firms change their strategies in response to what other top firm are doing and actively try to distinguish their products from those of others (product differentiation).
- Given easy imitation, oligopolistic competition put pressure on firms for incessant innovation
- For example, one motive behind JP Morgan's decision to embark on credit derivative deals with mortgage loans was the fact that the team of JP Morgan financiers heard that some other competitors were making similar deals (Tett 2009)

Skewed Incentive Structure

- Changes in incentive structure within financial system have significantly altered the motivation of employees of financial firms
- Early writings of Schumpeter focus on entrepreneurs as the driving force of innovation in industrial sector.
- Today, big financial firms have special departments focusing on developing different financial products and practices
- Financial firms try to hire the brightest brains from top schools to develop new financial products and practices to gain advantage against their competitors and increase their profit margin (called rocket syntists at the Wall Street)
- the incentive structure for these departments may be crucial to understand the process of innovations


Skewed Incentive Structure

- The existing incentive structure has encouraged more financial innovations.
- top ranking officers and financial engineers earn enormous amount of bonuses

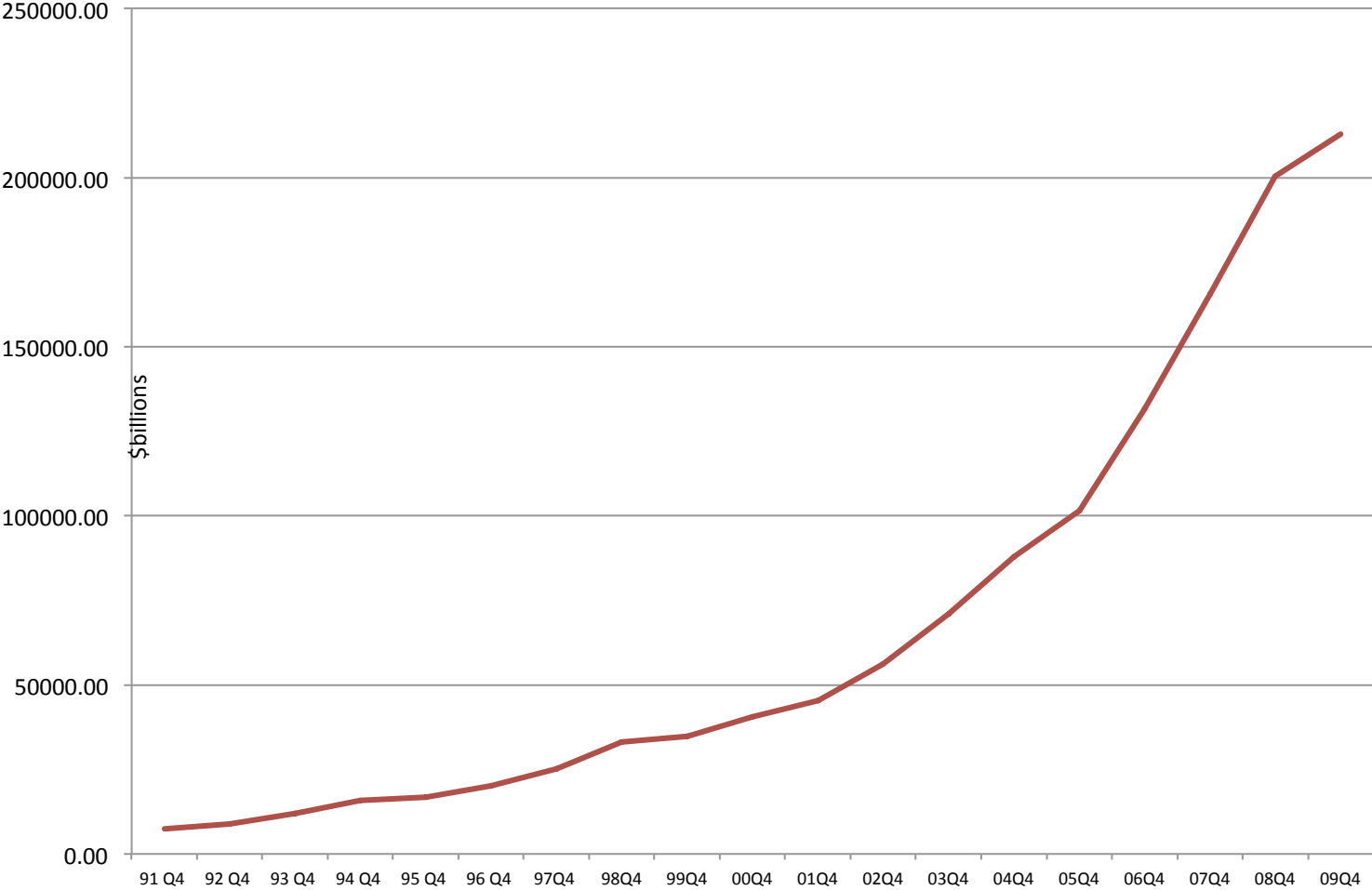
Technological Advances

- Rapid technological developments: especially computer technology, pricing models etc
- Increased the set of available financial innovations

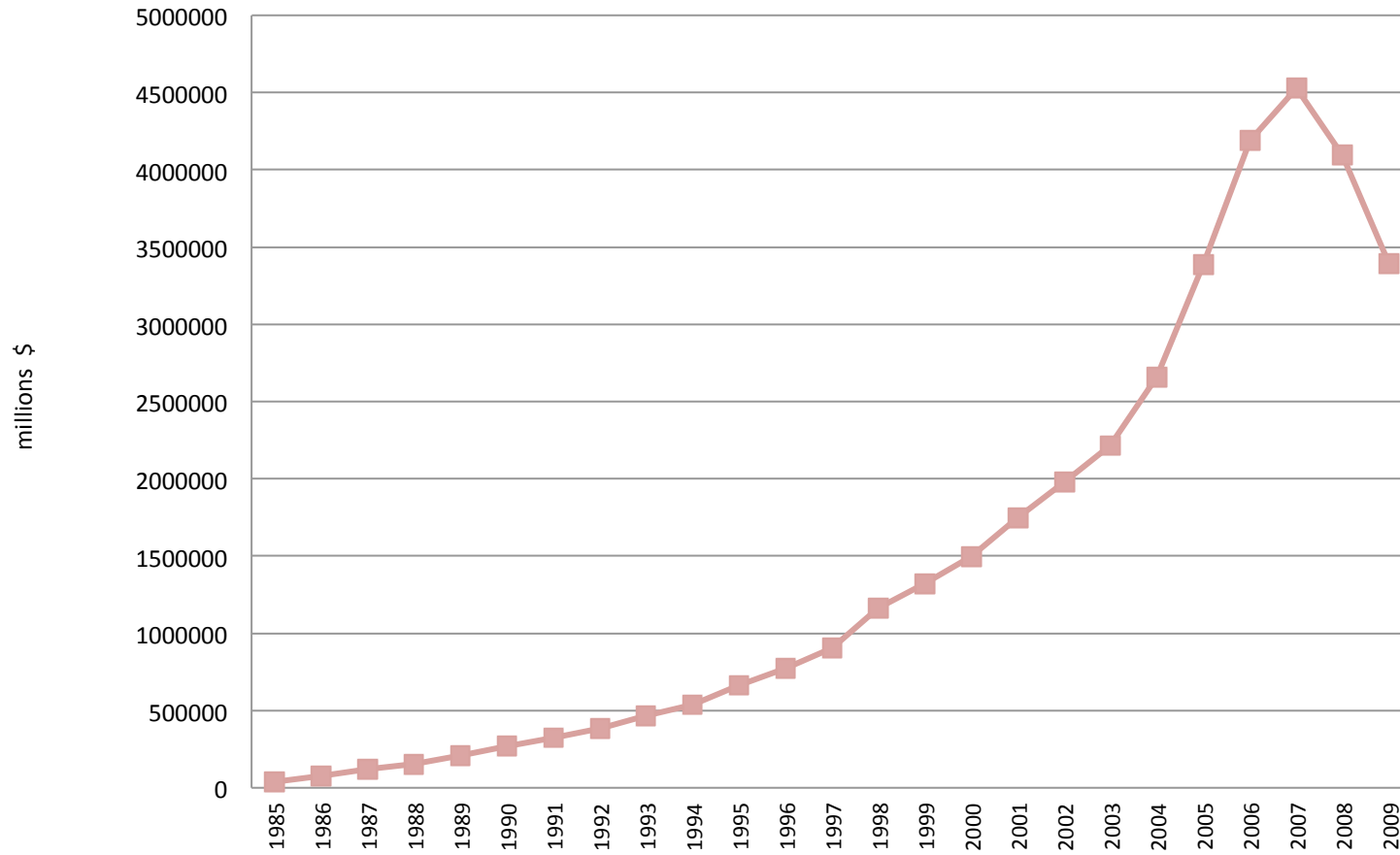
As a result

- In short: Increasing oligopolistic competition, skewed incentive structure and rapid technological advances
 - the rate of innovation since the 1980s.
- 

Derivatives



Securitization



The Relevance of Minskian and Post-Keynesian Approach

- What are the outcomes of the rapid financial innovation ?
- Some: the process of financial innovation contributed to emergence of New Economy (Greenspan 1997, 1998, 1999, 2000)
- Decreased volatility Dyan et al. (2006)
- After the financial crisis the stance has significantly changed Gennaioli, Shleifer and Vishny (2012), Henderson and Pearson (2011) , Fostel and John Geanakoplos 2011

The Relevance of Minskian and Post-Keynesian Approach

- Post-Keynesian -Minskian analysis has highlighted the relationship between financial fragility and financial innovations for a long time.

The Relevance of Minskian and Post-Keynesian Approach

- Hyman Minsky: financial innovations in his financial fragility hypothesis.
- "the introduction of additional layering in finance together with the invention of new instruments designed to make credit available by tapping pools of liquidity is evidence, beyond that revealed by the financial data itself, of the increased fragility of the system.(1986)
- However, although he makes use of the concept of financial innovation very often, he does not develop a coherent theory of financial innovation.
PLUS!!!

The Relevance of Minskian and Post-Keynesian Approach

- The Minskian 'Financial fragility hypothesis' does not need the explanation of financial innovation
- According to Minskian analysis, financial fragility can endogenously emerge as a result of positive expectations about the future of the economy without much emphasis on financial innovation
- So, what would be the role of financial innovation in the Minskian analysis!!

Financial Fragility under Two Regimes

- Financial Fragility (in a financial system where there is a relatively mild growth of financial innovation)
- Financial Fragility (in a financial system where there is a relatively fast growth of financial innovation)

Introduction the growth of financial innovation into the Minskian Framework

- In the periods where the growth of financial innovation is not very fast
- The instability can be relatively contained by central bank and government policies «big government»
- Especially financial firms balance sheets would not be overstretched too much.
- In this case, the pressure would be more real sector oriented
- However, when the growth of financial innovation is fast
- the instability can be exacerbated due to financial innovations which can increase the vulnerability of balance sheets of financial sectors.
- increasing the speed of financial innovation goes hand in hand with increasing financial fragility.
- The crisis of 1929 and 2008 were exacerbated by high growth of financial innovations

Conclusion

- Combining the Schumpeterian/Evolutionary Approach with the Minskian Approach can improve our understanding about financial innovation and its implications
- Financial firms have always tendency toward innovating for increasing their profits especially by increasing the volume of transactions and to manage their risks.
- In general, big firms, instiutionalized R&D departments are the engines of financial innovations.
- Any changes in the institutional structure may significantly alter the characteristics of new financial innovations.

Conclusion

- **Speed of Innovation:** can change throughout time and be considered as a function
 - Deregulated markets
 - existing competition framework,
 - incentive structure within financial firms,
 - the speed of technological developments

Conclusion

- In the period when the speed of financial innovation increases, the size of fragility increases and **may not be contained by government policies**.
- The current and the crisis of 1929 can exemplify this.