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FINANCE TEACHING IN GLOBAL RECESSIONARY CONDITIONS

Mathematics

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ABSTRACT

Present study aims at identifying the contradictions found in financial theory during global economic downturn and new concepts emerged as a substitute of traditional financial aspects. Study reveals that various financial models could not predict such down turn and various new financial concepts emerged to replace theses traditional aspects like behavioral finance, multi-factor and agent based modeling and non-trival probability etc. 3P's of finance mix were also redefined, adapting the recent changes occurred during global financial crisis (G10, G11, G12,G13,G14,G15,G17 & G18)

KEYWORDS

CAPM, Stocks, Risk Analysis, Investment Decisions, Bayes Theorem

INTRODUCTION

Traditional financial theories have again been questioned during the period of global recession which needs to be incorporated the behavioral finance with the integration of various disciplines. A wide gap has been witnessed between theory and practice. So these traditional finance theories, taught at especially at MBA programme, cannot be useful and effective to finance academics. Now question arises what kind of change is required in finance mix/ theory to make it compatible with global economic slowdown. Need to answer this question initiated the researcher to make the study on this topic. The global financial crisis of 2008 has pushed to financial professionals and economists to rethink about financial theories to make their disciplines compatible with present scenario. No one can deny that there is a gap between theory and practice or there is a fundamental problem in finance theory itself. Even if the problems are only with the practice and not with the theory, finance academics must revisit how finance is taught so that these problems do not reoccur. If there are problems in finance theory itself, then finance academics must reflect on the directions that finance research should take to redress these problems.

This paper focuses on two issues; first how finance ought to be taught and second how finance theory needs to change to cope with global economic meltdown. The paper first discusses what the crisis taught us about the 3P's of finance – individual's preferences, their assessment of probabilities and the behavior of market prices. This is followed by an analysis of data collected through a snap survey to know the investor's perceptions/behavior under situation of economic slowdown that leads to make changes in modern financial theories with the integration of insights from other source disciplines as well.

OBJECTIVES OF THE STUDY

Following are the objectives of the present study:

- To explain the concepts i.e. 3 P's of financial theory.
- To know the practical implications of financial mix/ theory during the period of global recession.
- To suggest the substitutes of certain financial aspects not being applicable to global crisis.

RESEARCH METHODOLOGY

It consists of following procedures:

- **Research Design**: Being study descriptive in nature, it went through theoretical description of financial mix and its implications during global recession.
- **Data Collection**: Mainly study is based on secondary data but 50 interviews have also been taken from financial experts to draw some concrete outcome about the practical implications of financial theories during global recession.

GLOBAL RECESSION IN INDIA & UK

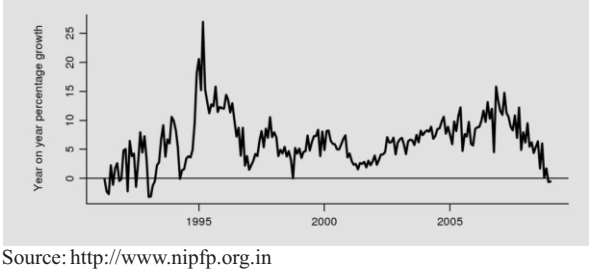
A recession is a contraction phase of the business cycle. National Bureau of Economic Research (NBER) is the official Agency in charge of declaring that economy is in a state of recession. Recession can be defined as significant decline in economic activity lasting more than a few months, which is normally visible in real GDP, real income, employment, industrial production and wholesale – retail sales. For this season the official designation of recession may not come until after we are in a recession for six months or longer. A global recession is a period of global economic slowdown. The International Monetary Fund (IMF) takes many factors into account when defining a global recession, but it states that global economic growth of 3 percent or less is "equivalent to a global recession". By this measure, three periods since 1985 qualify: 1990-1993, 1998 and 2001-2002.

JEL CLASSIFICATION CODES

G10: General Financial Markets: General (includes Measurement and Data)
G11: Portfolio Choice and Investment Decisions
G12 Asset Pricing; Trading volume and Bond Interest Rates
G13 Contingent Pricing and Futures Pricing
G14 Information and Market Efficiency and Event Studies
G15 International Financial Markets
G17 Financial Forecasting and Simulation
G18 Government Policy and Regulation

Global economic meltdown has affected almost all countries. Strongest of American, European and Japanese companies are facing severe crisis of liquidity and credit. India is not insulated, either. However, India's cautious approach towards reforms has saved it from possibly disastrous implications. The truth is, Indian economy is also facing a kind of slowdown (shown in Figure 1). The prime reason being, world trade does not functions in isolation. All the economies are interlinked to each other and any major fluctuation in trade balance and economic conditions causes numerous problems for all other economies.

Figure 1: Economic downturn of Indian Economy



Source: http://www.nipfp.org.in

Despite slowing from highs of 8% to 9% growth, India's economy will grow close to 6% in 2009. Amid domestic and global liquidity crunch, large domestic savings and corporate retained earnings are financing investment. Sluggish labor market and wealth effects have hit urban consumption. But low export dependence, a large consumption base

and the high share of employment (two-thirds) and income (one-half) coming from rural areas has helped sustain consumption. According to Governor of RBI, as India's growth is mainly driven by domestic demand and consumption, the country would be less affected by the global financial turmoil, but it would not go completely unscathed.

Table 1: Volatility of UK Macro Economics Variables during the Great Moderation Compared with 150-years Average

Variable	Volatility (1998-2008)	Volatility (1857-2007)
GDP growth (%)	0.6	2.7
Earnings growth (%)	0.5	6.4
Inflation (%)	0.9	5.9
Unemployment (%)	0.6	3.4

Source: Haldane (2009)

HOW THE CRISIS CHANGED THE FINANCE MIX i.e. 3Ps

The global recession have made the impact on 3P's and has given us sufficient reason to rethink many of our ideas about each of these three:
1) Preferences (P_1): It denotes the risk preferences. Generally risk aversion is found in investors. Two investors who agree on the probability distributions of returns from two assets might still make different. If we consider preferences, it is necessary to reconsider whether risk aversion is stable (time invariant) or whether it changes during the course of a crisis.

2) Probabilities (P_2): It indicates the uncertainty in cash flow on various investments. Turning to the probabilities, we need to ask whether investors have sufficient relevant data to estimate statistical parameters with reasonable accuracy. Can investors be assumed to have homogenous expectations or is the data so sparse that probabilities are inherently subjective and heterogeneous?

3) Prices (P_3): It represents investment opportunities available to each investor. When it comes to prices, the process of price formation needs to be re-examined. In particular, we need to pay attention to market microstructure theories in which trade prices are the outcome of a complex interaction of quotes and orders, and do not necessarily represent equilibrium prices at every instant of time.

FINANCE TEACHING IN GLOBAL RECESSIONARY CONDITIONS

Incorporating 3P's of finance mix into finance teaching will make it more effective and consequently it will lead to richer and more nuanced understanding of the subject.

1) Preference (P_1): If the degree of risk aversion is a strategic choice – the choice of a strategy for solving recurrent adaptive problems – the drastic shifts in the environment – the distribution of such adaptive problems – could conceivably cause change in these strategies. Booms and busts could then lead to (evolutionarily) rational changes in aggregate risk aversion. To push the analogy with Heilbronner et al (2008) to the level of caricature, one may suspect that human investors may (quite rationally!) behave like chimpanzees in booms and like bonobos during market crashes.

In particular, exceptionally loose monetary policy during a boom could change aggregate risk aversion as a (evolutionarily) rational response to altered expectations of future rates of return. The empirically observed yield-seeking behavior (shifting to higher risk assets to maintain portfolio yield levels) far from being irrational may in fact be ecologically rational when viewed as an environment contingent shift in life history strategies. Central banks may need to take this into account.

2) Probabilities (P_2): Finance courses necessarily build on what has been covered in the statistics courses keeping in view the following points:

2.1 Probabilities are always subjective: Unless finance professors are willing to spend time in classroom discussing subjective probabilities, they must put pressure on the statistics professors to discuss probability from subjective, Bayesian point of view. Finance students need to be confronted with probabilities that have no frequents interpretation at all.

2.2 Expectations are heterogeneous: Heterogeneous expectations arise naturally when there is inadequate data to estimate the requite parameters with huge accuracy. Even if long time series is available and the apparent sample size is very large, parameter estimates would be very impressive if there are frequent regime changes. The global financial crisis has highlighted the importance of regime changes, and therefore forced us to recognize the imprecision in statistical parameter estimates. Parameter estimates must therefore be subjective, and expectations will be heterogeneous.

2.3 Estimation must always be Bayesian: The importance of Bayesian estimation of parameters can be illustrated nicely in terms of the CAPM beta. Bayes theorem is an omnivore that can digest any piece of information whatever its source and put it to use to revise the prior probabilities. The advantage of shifting to Bayesian statistics and subjective probabilities is primarily conceptual and theoretical. It would eliminate confusion in the minds of students on the ontological status of the fundamental constructs of finance theory.

3) Prices (P3): At the microstructure level, there is no such thing as "the price". There is a bid price, an ask price, a mid price, a last traded price, and then, there is a volume weighted average price, but there is no such thing as "the price".

During the global financial crisis, this phenomenon was witnessed on an even larger scale with entire markets freezing for extended periods of time. From the microstructure perspective, what is new is not the phenomenon itself, but its scale, scope and duration. At any time, all finance researchers must not only learn microstructure theories, but also take them seriously as potential explanations for even macro scale phenomenon.

RESULTS & DISCUSSIONS

Information were gathered in theoretical manner through personal interviews and discussions with finance analysts as their views have been presented in following table:

Table 2: Move of Financial theory during Global Recession

	Aspects of Finance Theory	Move during Global Recession	Substitution in Global Recession
1	Efficient Market Hypothesis	Irrational investment decisions	Behavioral Finance
2	Factor Models	Inadequacy of CAPM	Multi-Factor Model
3	Liquidity	Micro has become macro!	Systemic Risk- non diversifiable risk
4	Risk Free Rate	Mere a useful approximation	Overnight Index Swap
5	Microstructure theories	Heterogeneous Players	Agent–based Modeling
6	Tail Risk – Real Risk	Non-linear dependence	Quantitative models based on non-Gaussian fat-tailed distributions
7	Econometrics	Several possible regimes	Non-trivial Probability

1. GR has opposed the two aspects of Efficient Market Hypothesis (EMH). First aspect is that there is no free lunch means it is not possible to beat the market in risk adjusted terms. During recession low-risk, high return investments turned out to be high-risk that failed the EMH. Second aspect is that prices are "right" in the sense that they reflect fundamentals. The economic slowdown has also denied this claim. Many prices were clearly not right.
2. Global Recession has proved that CAPM should be substituted by Fama-French three-factor model and it should be taught as core model in elective courses in MBA Program. Further finance researcher should go beyond even to consider liquidity as an explicit risk factor.
3. During Global Recession, it became clear that liquidity was a systematic risk and not a diversifiable risk. The second key advance was the theoretical linkage that was established between market liquidity and funding liquidity. Market liquidity which is all about market microstructure is intimately related to funding liquidity which is all about macroeconomics – suddenly, micro has become macro!

4. Post crisis OIS (Overnight Index Swap) is regarded as the closest thing to a risk free rate under the assumption that the probability of default of a highly creditworthy entity over a one-day horizon is negligible. This leads to the well known two-curve discounting model. So risk free rate should be regarded as nothing more than a useful approximation.
5. Agent based models allow arbitrary number of heterogeneous players with different information sets, trading strategies, and objectives. If it is true that microstructure theories are relevant for understanding phenomena at macro time scales, then it is necessary to embrace agent-based models in finance theory.
6. Much of the tail risk of diversified portfolios comes not from the tail risks of the individual assets but from common jumps or other forms of non-linear dependence. Quantitative models based on non-Gaussian fat-tailed distributions with non-linear dependence structures (copulas) are hard from the point of view of teaching in the MBA program, but we must not shirk hard mathematics.

Risk modeling using value at Risk with Gaussian distributions and linear correlations is no longer defensible after all that we have seen during global financial crisis.

7. A key mistake prior to the crisis was the assumption that the Great Moderation was permanent structural change in the world economy that implied a permanently reduced volatility. The crisis has taught us that the statistical processes that we observe during any particular period should be viewed as just one of the several possible regimes. There is always a non-trivial probability of shifting to a different regime.

CONCLUSION

The global economic slowdown has caused the serious problems with the finance which is taught in a typical MBA Programme. It seems that finance courses have not coped with the developments in finance theories in the last decade or more. Since late 1990s, finance theory had shifted to new multifactor Network models that are used in modern finance. In other words, change in finance teaching is required, a lot in comparison to change in finance theory itself. Study also reveals that there are certain subfields in finance which need to be better assimilated into mainstream models. However, finance theory itself is upgrading with the incorporation behavioral finance which integrates the new ideas and insights from several other disciplines and models, but the global recession has demonstrated that many phenomena have their roots in sociological factors. To achieve the optimized point of finance theory, not only sociology but finance professionals must learn from evolutionary biology, neurosciences, financial history, and the multidisciplinary fields of network theory. At the end, it can be said that in globalization and increasing complex world, finance theory must be converged with sophisticated mathematical models and statistical tools.

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