Financial Fragility, Dynamics of Capitalism, and Recessions

1. Financial Instability Hypothesis (Hyman Minsky Model)
2. Dynamics of Capitalistic Development
3. Balance Sheet of Firms and Financial Instability
4. Minsky Moment
Types of Business Cycles

Capitalistic system is characterized by different kinds of business cycles. The great economist Shumpeter distinguished among three types of business cycles: Kitchen, Juglar and Long Cycles.

1. Kitchen Cycles: Normal booms and recessions observed every 10-15 years mainly driven by inventory and investment cycles.

2. Juglar Cycles: Occur once every 30-40 years and monetary and financial markets play an important role. In these cycles, recessions are deep and prolonged.

3. Long Cycles (Kondratiev Cycles): Occur every 50-70 years and are mainly the result of the rise and then decline of the exploitation of major technological innovations.

The financial instability hypothesis is concerned with Juglar cycles.
Minsky and Keynes

1. Money and finance play fundamental role in determining investment, production and economic activities.

2. Business cycles and instability are endogenously generated by capitalism.

3. Macroeconomic policies (monetary, fiscal, labor markets policies and regulatory environment) affect the course of the development of an economy.
Financial Instability Hypothesis

“Success breeds excess breeds failure!”

The hypothesis has three parts:

1. A capitalist economy is characterized by different financing regimes (multiplicity of equilibria). Some regimes are stable (good) and some are unstable (bad).

2. The dynamics (or time path of economic activities) of capitalist system involves moving from one financial regime to other.

3. In particular, over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that make for an unstable system.
Basic Minsky Cycle

Focus is on the interaction among investment by firms, form of financing these investments (debt vrs. equity), their cash flow/profits and the interest rate.

**Phase I:** Hedge Financing (Financial Tranquility) ⇒

**Phase II:** Speculative Financing (Financial Fragility) ⇒

**Phase III:** Ponzi Financing (Financial Bust)

**Minsky moment** refers to the beginning of Phase III.
Basic Minsky Cycle

Phase I: Hedge Financing (Financial Tranquility): Hedge finance units are those which can fulfill all of their contractual payment obligations by their cash flows. Most financing of investment is done with equity.

Phase II: Speculative Financing (Financial Fragility): Speculative finance units are units that can meet their interest payment obligations through their cash-flow, but not the principle amount. Greater proportion of financing investment is done through debts and these debts need to be rolled over.

Phase III: Ponzi Financing (Financial Bust): Ponzi units are units that cannot meet even their interest payment obligations. Such units can sell assets or borrow.
Basic Minsky Cycle

Transition from one phase to another is driven by psychological changes in the behavior of borrowers, lenders and policy makers.

Both borrowers and lenders become more and more optimistic about future manifesting in ever increasing valuations of assets and revenue streams and increased appetite for taking on more risk (This time is different!).

Increased optimism also affects policy makers resulting in loosening of regulatory environment and oversight.
A Simple Minsky Model (Charles 2014)

Two types of agents: firms and capitalists (owners and bond-holders).

Total Profit of Firms = Retained Profits + Dividend Payment
Earnings of Capitalists = Interest Income + Dividends
Total Savings in Economy ($S$) = Savings by Firms (Retained Profits) + Savings by Capitalists in the economy
Investment of the firms ($I$) is financed by retained profits and borrowing from capitalists.
A Simple Minsky Model

Suppose that the Total Profit of Firms =
Return on Capital Investment ($rK$) - Repayment on Debt ($iD$)
where $r$, $K$, $i$, and $D$ are the rate of profit per-unit of capital, total capital stock, rate of interest on debt, and total debt of firms respectively.

Let $s_f$ and $s_c$ be the savings rate (or propensity to save) of firms and capitalists respectively. Then, savings per-unit of capital

$$S/K = s_f(r - id) + s_c[(1 - s_f)(r - id) + id] \quad (1)$$

where $d = D/K$. 

A Simple Minsky Model

In equilibrium,

\[ I = S. \]  \hspace{1cm} (2)

Let \( g = I/K \) (rate of capital accumulation). Then, combining (1) and (2) we have

\[ (r - id) = (g - s_c id)/S_F \]  \hspace{1cm} (3)

where \( 1 > s_F = s_f + s_c(1 - s_f) > s_f \).
Let the desired rate of capital accumulation, $g^d$, be the function of retained profits. Specifically,

$$g^d = \phi s_f (r - id) + \phi_0$$  \hspace{1cm} (4)

where $\phi_0 > 0$ is the autonomous rate of capital accumulation and $0 < \phi < 1$. The law of motion of $g$ is characterized by the following differential equation

$$\dot{g} = \delta (g^d - g)$$  \hspace{1cm} (5)

where $\delta > 0$ is the speed of adjustment and $\dot{g} \equiv dg/dt$. 
Behavior of Firms and Capitalists/Lenders

Suppose that capitalists can save in terms of a risk-less asset (e.g. govt. bond) or lend them to firms (risky). Then,

\[ i = i^* + \psi d \]  \hspace{1cm} (6)

where \( i^* \) is the risk-free rate of interest and \( \psi > 0 \). \( \psi d \) captures the risk-premium.

**Evolution of Debt**

\[ \dot{D} = l - s_f(rK - iD) \]  \hspace{1cm} (7)

where \( \dot{D} \equiv dD/dt \). In addition,

\[ \dot{d} = \dot{D}/K - dg. \]  \hspace{1cm} (8)

Then (3), (7) and (8) imply that

\[ \dot{d} = (1 - d')g - \frac{S_f}{S_F}(g - s_c id). \]  \hspace{1cm} (9)
Dynamics

(3), (4), (5), (7) and (9) imply that the dynamics of the economy is characterized by a system of two differential equations:

\[
\dot{g} = \delta \left[ \frac{\phi s_f - s_F}{s_F} g - \frac{\phi s_f s_c}{s_F} (i^* d + \psi d^2) + \phi_0 \right] \quad (10)
\]

\[
\dot{d} = \left[ \frac{s_c (1 - s_f) - s_F d}{s_F} \right] g + \frac{s_f s_c}{s_F} (i^* d + \psi d^2). \quad (11)
\]

Two equilibria: (i) Stable Equilibrium (high rate of capital accumulation, \(g\), and low level of debt, \(d\)) and (ii) Unstable Equilibrium (low rate of capital accumulation, \(g\), and high level of debt, \(d\)).
Dynamics

The economy moves between these two equilibria. Minsky emphasized changes in the behavior of firms and lenders in causing movement from stable to unstable equilibrium. Long period of prosperity and stability induce firms and lenders to become more and more optimistic about future manifesting in ever increasing valuations of assets and revenue streams and increased appetite for taking on more risk.

“Success breeds excess breeds failure!”
Policy Implications

- Keeping tight and effective regulatory framework.
- Fiscal and monetary interventions (e.g. QEs, fiscal stimulus) in the case of recession.