A Brief Summary

The gist of Keynes's economic theory, if spelled in plain English, is one that a layman could easily understand. He observed that population's income is divided into two part: the part spent for CONSUMPTION and the part that is SAVED, which is completely recirculated back into the economic system as new capital.

Hence SAVING = INVESTMENT.

 (Investment Multiplier) The first component of his theory is on the investment multiplier. He argued that, the ratio of consumption vs. saving depend mainly on the size of the total income. This is to say that let m = COMSUMPTION / SAVING, and T be the total income, then m = m(T). Because SAVING = INVESTMENT, we have

T = Consumption + Saving = (m(T) + 1) Saving = (m(T) + 1) Investment.

Hence, he claimed, that prosperity depends on the size of INVESTMENT. It grows and drops as INVESTMENT grows and drops. (He also argued that m(T) is a decreasing function of T. k(T) = 1 + m(T) is his investment multiplier.

(Inducement of Investments) The second component of his theory is on what induces investment. He reckoned that certain calculations are made by investors: they would estimate the rate of return they are likely to acquire in the future for their intended investment and compare it with the money-interest rate. He would invest only if he expects a return rate (which is called under the name ``the marginal efficiency of capital") that is higher than the money-interest rate.

According to this theory then, there are two ways one could address the issue of unemployment: to reduce the interest rate and to raise the marginal efficiency of capital. The interest rate can be manipulated by the monetary authority, though this is not without its limit, for the interest rate will have to stay positive. The marginal efficiency of capital, according to Keynes, is partly psychological therefore can hopefully be stimulated by deficit spending of the government. In particularly bad times, like that of the great depression, in which the marginal efficiency of capital was close to zero, one would need both to alleviate the evil of unemployment.

(Interest rate and Money) For the above to make sense it is critically important that the expected return rate of the entrepreneur and the money-interest rate are independent. This then led to the third component of this theory: the theory of interest rate and money. Money, according to Keynes, has three properties that make it unique.

(a) Money is not an ordinary commodity in the sense that it can not be produced by labor. It, on the other hand, can be extracted from and put back into circulation by the monetary authority at will with virtually no cost.

(b) Money has no carrying cost.

(c) Money can be used instantly to buy any of the other commodity. (Liquidity of money).

Keynes argued that item (c) is the objective value represented by the money interest rate, and by item (b) and (c) money-interest must be positive. Item (a) is tricky, it implies that interest rate can be manipulated by monetary authority. The monetary authority can adjust the total quantity of money in circulation to manipulate the interest rate: observe that if total quantity of money in circulation is reduced, then the objective value of (c) would increase and vice verse. This is his theory on interest rate and money.

Comments:

(1) These, in any rate, appear to be rather sound observations. Economics as an academic subject is quite different from the subject of physical sciences, where theories could be objectively tested by either empirical data repeatedly obtained in controlled environment. In economics, numerous observations, all appeared perfectly sound at times, had come with great promises then quickly passed into oblivion. As far as the entire economic system is concerned, controlled repeatable empirical experiments are out of question and one can easily argue things in opposite directions because the system is so complicated that, if one thinks hard enough, he could always throw a curve ball into a reasonably sound argument to completely swerve the directions of its conclusion. Sound economic observations are always debatable and, very quickly, debate would degenerate into endless mumble-jumbles of personal opinions.

Nonetheless, an established social and economic order is in the need of a theory to defend its fundamental organizational principles.

For the capitalist society, to formulate an acceptable theory had been hard. Our era is an era of science so our justification has to be built on earthly reasons and empirical data. But where there is a demand then there will be a meeting supply, and a theory indeed emerged from the endless mumble-jumbles, a theory that is referred to by Keynes as the classical theory in his book. The classical theory, essentially, treats every economic problem, large or small, as a mathematical problem of optimization, which can be solved in principle by calculus. A systematic way of analysis was further developed to treat economic problems as problems in which supply meets demand. Elegant solutions were offered to problem after problem, with similar conclusions that everything in the laissez faire is like a pendulum, swing forever back and forth around a stable equilibrium dictated by the principle of supply meets demand. The fundamental conclusion: we would have ups and downs but the system of laissez faire, left alone, in both small and large scale, is intrinsically self-adjusting therefore stable.

For instance, concerning the problem of employment, the answer offered by the classical theory is as follows: let the number of people employed as $N$, and the unit wage of labor as $W$. We regard $N$ as a function of $W$. For an employer, he would hire more people if the wage is lower, and this is to say that the demanding function, $N = D(W)$ is monotonically decreasing. For the laborer, on the other hand, more would be forthcoming if the wage is higher, and this is the supply function we denote as $N = S(W)$, an increasing function. These two functions would meet at a unique value of $N$, and this value is the equilibrium for employment.

The classical theory also offered an answer to the problem of interest rate. Here we have borrowers and lenders: Let $r$ be the interest rate and $M$ be the total money lent. For the borrowers, if $r$ is high then they would borrow less, so the demand schedule $M = D(r)$ is monotonically decreasing. For lenders it is the opposite. If $r$ is higher, then, more would be forthcoming to lend, so the supply function $M = S(r)$ is monotonically increasing. These two functions would again meet at a unique value of $r$, and this equilibrium value of interest is the effective interest rate of the system.

Classical theorists breaded in the official educational system, gradually infested and conquered all established economic institutions of practical influence. Against other competing theories, their victory was quiet, complete, and, if one reflects a little on it, stunning. The classical theory is for sure not without substantial intellectual merit, but their victory was clearly not built solely on intellectual merit. Nor did they actively seek to conquer the world, for these were mostly academic professionals. Though not without their own share of ego and arrogance, they would prefer far more in the delight of a witty chat with their colleagues than in facing the ugliness of the real world. Karl Marx called them the apologist of the system. Justly so. But the established social and economic order was in desperate need of an apologetic theory, not one that pronounced its death sentence. So, the apologists won. By the time of Keynes, their position and their theory had been well-entrenched.

Consequently, there was the trouble for Keynes: his theory is in confliction with the classical theory of employment and the classical theory of interest rate (as outlined in the above). For someone who believes that he has made fundamentally important discoveries, but his new findings are against the establishment of his time, to sell his theory to his contemporaries is virtually an impossibility. New ideas could never win over the ones whose prestige and self-interest have been deeply invested in the old. The only hope for him was in the future, when the power of the current authority wanes with the pass of the old generation and the new ideas are gradually accepted by the younger and less committed minds. It might take a long time for new ideas to win out. Unfortunately, ``in the long run we are all dead", and for an egoistic soul craving worldly influences, waiting was never an option. Hence Lord Keynes was set for the mission impossible, with the book ``The general theory of employment, interest and money".

The reasons why Keynes was ultimately successful in this impossible deed lied in two things. First, he was among the most prestige member of the classical establishment. He knew the classical theory inside out and his talent in academic theorization was far superior to his contemporaries. Second his time was the time of great depression, in which the prestige of the classical theory was mostly diminished by hard reality. The capitalist governments around the world was forced to practically abandon laissez faire one way or the other to prevent a complete melt-down of social and economic order. Some of their practices, particularly, the new deal, was in the need of a new economic theory and what Keynes presented was a perfect fit.

The way he presented his new theory was ingenious. He presented his theory as improvement and generalizations over the classical theory. In a world everyone was vested in peach, to argue apple is better therefore one should abolish all peach tree and plant apple tree would be an absolute no-go. Instead, he claimed that by doing something somewhat different from before, one could grow apple from the old peach tree.

As pointed out by Keynes himself in the preface of his book: ``The idea which are here expressed so laboriously are extremely simple and should be obvious. The difficulty lies, not in new ideas, but in escaping from the old ones, which ramify, for those brought up as most us have been, into every corner of our mind."

(2) Keynes's Investment Multiplier: The money an individual make, within a given period, is his/her INCOME, and all individual income added together is the National Income. Partly due to Keynes theory and partly due to the long-lasting influence of Paul Samuelson's undergraduate textbook "Economics", Income Analysis has become an important part of the modern economics theory.

To view Karl Marx's theory from the standpoint of income analysis, we see that he was very much focused on how the individual income are generated, and on income distribution as well. He basically argued that there are two (and only two) ways of making money in a capitalist society. The first is to sell your own labor, and the second is to own capital. The population are duly classified into Proletarians, whose income is exclusively from the sales of their labor, and Bourgeois, whose income is exclusively from capital ownership. He predicted that, as time goes, the population of the former would constantly grow but their share in national income would constantly shrink, while the population of the latter would constantly shrink but their share of national income would constantly grow. This theory has been proved wrong. As it turned out, majority of population in today's capitalist society is neither proletarian nor bourgeois. It is the middle class: a social class, though making their living primarily through the sales of their own labor, is also with capital ownership to certain degree (marginal capital ownership for each individual but substantial if added together), and with dominating political influence.

Keynes's income analysis, on the other hand, focused on the question of where the income goes. He divided the national income into two part: the part that is spent on consumption and the part that is saved. He then observed that, in a capitalist society, the saved part is not in the form of cash hoarded under the mattress for individuals. Savings are completely recirculated back into the economic system as new capital. The total of individual savings is the total of new investment of capital of the entire nation. Consequently, he wrote

T = C + I

where $T$ is the National Income, $C$ is the total spending in consumption and $I$ is the total saving, which equals the total new investment. Keynes then proceeded to write

T = (m+1) I

where $m = C/I$. He then claimed that $m=m(T)$ is a function of $T$, and as a function of $T$, $m(T)$ decreases as $T$ increases. This is to say that, as total national income increases, the saving outpaces consumption. At his time there is no empirical evidence to indicate if this claim is right or wrong, but it would not be fatal to his theory even if it is wrong.

He then started to make wild claims: (i) total income depend on total investment. To increase total income it is necessary to increase total investment. (ii) From $T=(m+1)I$ and $(m+1) > 1$, the impact of new investment would be amplified in total income, therefore total employment, by the Investment Multiplier $m+1$. Investment in any form, including the useless practice of digging holes on ground then fill it in would be beneficiary because of this multiplier. Keynes was not the original inventor of investment multiplier, but he was responsible largely for its popularity.

Mathematic formula, of course, cannot possibly be wrong, but their interpretation could easily go wrong. This bizarre investment multiplier is a perfect example of wrong interpretation of a straightforward equality. The mathematical error committed here by Keynes is that he switched the role of dependent and independent variable in a mathematical equality. In the way he derived

T=(m(T) +1)I,

he argued (correctly) regarding $T$ as the independent variable, but in his interpretation he regarded $T$ as the dependent variable.

Let us use the following example to illustrate to what degree one could be wrong in switching the role of dependent and independent variables. Let us say that there is a barometer that monitors the room temperature. One observes that when weather is warm, barometer goes up, and when weather is cold, the barometer goes down. Here obviously the number on the barometer is a dependent variable, but the weather is the independent variable. Now the people of the house, in a cold day, decided to switch the role of these two variables--this implies that they will try to get the number on the barometer higher (perhaps by burning a small fire under the barometer) to change the weather. As bad as it sounds, this is exactly the logic Keynes followed.

(3) On historic Background: Economics as an academic subject is essentially a subject of social science, the nature of which is entirely different from that of physical science and mathematics. If one finds a faulty argument as described in the above in a mathematical proof, the proof would immediately collapse. Likewise, a physics theory would be deemed as false if there exists a single repeatable phenomenon that is contradicting to its predictions. In social science, on the other hand, the correctness of a detailed argument employed to support a theory is usually of secondary importance. Incorrect technical argument undoubtedly would taint the prestige of a theory but would not invalidate the advocated proposition. Taking the issue on the existence of the GOD as an example. There had been many proofs offered, each committed logic mistakes of one kind or another. However, invalidating these proofs never settles the issue at hand, not at least to true believers. Social theories of great influence are never based on academically oriented arguments and cold mathematical logic. They are usually created by the inner drives of passionate souls in providing answers to burning questions of their times. To properly understand a social theory is not to dissect the technical analysis offered, but to understand why a theory, in occasions sounds ridiculous to a modern mind, could be regarded as part of eternal truth by a superb mind.

Keynes's theory emerged at a time that is particularly troubling to free capitalism both in practice and in theory. Established economic order based on the principle of free trade and private ownership had been severely damaged by a great depression. Instead of a recovery, anticipated by the prevailing economic theory of that time based on the law of supply and demand, economic condition continued to deteriorate. Long lasting high unemployment rate led to political and social turmoil. The communists and fascists blamed the fundamentals of the free market system. They claimed that the un-reigned short-sightedness of the free enterprise and the unbounded greediness of the capitalists had led to irresponsible economic decisions that had thrown the world into a terrible mess, and worse, there is actually no way out under the existing economic and political framework. The only way, they advocated, is to overthrow the fundamentals of the free capitalism to establish a new social and economic order. Unfortunately, the alternative new order they offered was nothing but trading your freedom for bread. Half empty stomach, however, needed bread more urgently than freedom. All around the world, democracy started to give way to dictatorship -- to Communism and Fascism, and the global free capitalist system appeared to be at the verge of collapsing.

Liberal souls, acutely aware of the potential evil of a dictatorship government, rejected the communist and fascist preach. They tried to find a way inside of the existing system to fix the mess. It was obvious that to avoid a total collapse of the existing social order, the evil of high unemployment must be dispelled. If private party is unwilling, then government must invest. Thus, there came the New Deal. People of action, however, needed a theory, which is then offered by Keynes, to back them up.

The gist of his "general theory" is rather straight forward. In order to restore employment to avoid a total collapse of the existing social and economic system, somebody must hire people to work. This is to say that somebody must invest. However, in a bad economical and unstable political environment, in which there appeared no incentives to invest, (marginal efficiency of capital is close to zero, in his word), private, free capital would shy away. In this case, the free market lost its capacity to self-adjust. Easy money policy of the monetary authority was destined to fail--seeing no incentives to invest, the unwilling private investors would rather buy government bonds. The latter, however, presented an opportunity for the government to raise the existing economic resources from private party and to use the money raised to hire people to work. In this sense, any job is better than no job, for anything, even digging useless holes in desert, helps to ease the social pressure of unemployment. With unemployment situation improved, and social order could be restored, and private investors would have more incentives to hire more people to create a true economic recovery.

Ironically, free capitalist system was saved neither by the New Deal nor by Keynesian theory. It was saved by the second world war: hence in a sense it was saved by the actions of its mortal enemy. Emergency war time power enabled the government to expand its authority into economic arena in an unparalleled way, and the evil of unemployment was cured almost overnight: though people were actually hired to do jobs that are much worse than digging useless holes on desert: they are now hired for the purpose of killing each other. In war time, the traditional influence of the private enterprise over the government, together with their short-sightedness and greediness, started to wane, make it possible for the government to introduce mild social and economic reforms in post war time, among which the most important were mild wealth re-distribution through labor law. Recovered from the death bed, the free capitalism not only survived, but also re-energized, entering an age of long prosperity and unprecedented growth. There had been only two major setbacks: the super-inflation of the 70th and the market crush of 2008, both are much less severe than the great depression.

(4) Keynes Theory--Academic Assessment: Keynes theory is essentially a nominal theory. It is rather shallow in the sense that his analysis does not touch the root of the problem that trouble the entire free capitalist system before and at that time. The basic characteristics of modern production system is that of a mass production of consumption goods. The free capitalist system focused on the issue of production but, to a degree, ignored the fact that mass production must go hand to hand with mass consumption. The problem was not on the production side but on the consumption side. This problem was indeed emphasized in Marxism economic analysis, but Karl Marx went further to claim that the fundamental principle of the free market system makes a fix of this problem impossible. The super structure of this system: democracy based on majority decision, fortunately, implied a possibility for a solution, as illustrated by the social and economic development after the second world war.

The essence of Keynesian theory, if academically pursued, is to use the nominal feature of the money to design schemes to stimulate production. This aspect in Keynes theory has been emphasized in modern times. Any such deceptive schemes, relying on the stickiness of price, wages, and other nominal quantities, would be far from adequate in solving the problems Keynes faced in great depression. However, in the time of mild recession, it might help as far as it is novel. To adopt such nominal schemes as a magic wand to stimulate economic growth would be foolish, for nominal stimulation would inevitably lead to inflation. But politicians are foolish in academic sense, and economists, guided by their longings of worldly influence, are willing to lend their theoretic authority to the needs of the short-sighted politicians. There then came the super inflation episode of the modern economic system of the 1970s. The blame, in this case, should not befallen on Keynes, but on both the politicians and on economists of that time.

Overall, the academic contents of Keynes theory have two legs: his theory of investment and his theory on money and interest. On investment his reasoning is as follows. The effect of nominal investment is amplified in terms of nominal income (by the investment multiplier). Increased nominal income would lead to two things. First is of course inflation. However, because the stickiness of price, increment in nominal income would also be interpreted by private enterprise as an indication of increased consumption demand, therefore lead to increment in production. Hence, we could hit two bird with one stone: Nominal increase of money would improve employment, and at the same time, increase production.

The proposition that nonmail increment of income has a positive impact on production is Keynes's unique contribution to economics theory, but this proposition does not automatically imply that nominal increment of income would have an overall positive effect on the economic system, which was assumed by Keynes. To have an overall positive impact, positives (increased production) must off set the negatives (inflation). What is the negatives of inflation? how large is the likely portion of the increased nominal income working for the positive and what is the likely portion works for the negatives? These questions were not even touched in Keynes theory.

We now move to his theory on money and interest. Here his reasoning is kind of backward in the sense that he adopted (somewhat unconsciously) the method of the already bankrupted classical theory of values. Money interest, he reasoned, is a subjective reflection of its objective value, that is, its complete liquidity and its zero carrying cost. The prevailing theory in Keynes time was that (1) Money is a commodity and interest is its price; and (2) like the price of every other commodity, it obeys the law of supply and demand, therefore can be analyzed using the equilibrium theory. Keynes (correctly perceived) that point (2) would have the same problem as its parallel in the prevailing employment theory. He decided to throw both (1) and (2) out of window to construct a theory of his own, basically retreated to the method of classical value theory. Such theory is not in any way enlightening, and it is of very little academic value. The program he endorsed, such as periodically stamp money to create an artificial carrying cost could only be regarded as fantastic. This is perhaps why no modern time Kenyesian has picked up this part of his theory.

The overall negative impact of Keynes theory is not his conclusion but its method. He focused on the finance aspect of the modern economic system without dig deeper into the fundamental dynamics of the free market system. His theory gave the impression that, by candid observation on the relations between certain macro-level quantities, many of which are nominal in nature, one could not only understand but also cure the sickness of the system. This tendency is made worse by the extensive use of statistical analysis in modern economics. Partly because of his influence, Macro-economic theory of modern time become a piecemeal subject, in which competing opinions can argue endlessly without an overall understanding on cause and consequences. Profound analysis, in the likes of the ones offered by Karl Marx and Joseph Schumpeter, disappeared altogether after Keynes.

(5) Macro Economics and Equilibrium Theory: One thing that is markable missing in Keynes analysis is the time. To ignore the time dependency in economic analysis is by large due to the classical equilibrium theory: that economic analysis is that of finding an equilibrium state, at which supply meets demands. The reality would oscillate around such equilibrium state. This principle of equilibrium had been very successful in micro economic analysis, particularly, when the issue is over a short period of time. There is, however, no base to assume there is an equilibrium state at macro level.

Let us take the classical theory of employment as an example. On the demand side, one assumes a function of total number of people the employer decided to hire as a function of unit wage, that is $D=D(w)$, and on the supply side we assume the number of labor who is forthcoming as $S=S(w)$. $D(w)$ is obviously a decreasing function of $w$ and $S(w)$ an increase function of $w$. The classical equilibrium is the point of intersection of the two curves: The stationary state where supply meet demands.

The entire point of this narrative is to claim that, like everything else in our economic system, employment do oscillate. Sometimes it goes up, sometimes it goes down, but overall it stays around an equilibrium state. The balance of supply and demand is the fundamental force that maintains the stability of everything in our economic system. However, is there a reason that $D(w)$ and $S(w)$ are independent of time? What if $D(w)$ moves constantly downward in bad times, like in a recession or in the great depression? If one allows both $D(w)$ and $S(w)$ move as times goes, then the analysis outlined in the last paragraph would mean nothing more than muddled mumble jumbles.

A fundamental fault of the theory of John Keynes was that, in his model of the economic system, the entrepreneurs of Joseph Schumpeter were absent. The focus of Keynes's entrepreneurs was not to acquire windfall pro t through innovation but to calculate carefully how many people they were going to hire to maximize their petty gain. If the world was like his economic system then Capitalism would be long dead. Keynes's macro-economic model was in essence an extension of the classical equilibrium models. The ultimate reason for the success of his equilibrium was not that it was more real than those of the classical theory, but that it confirmed in theory the proclivity of the man of political action of his time. The political influence it rendered to the official academic world of economics afterwards was also greatly appreciated by the world of economists.

Appendix:

Detailed Notes on Contents of ``The general theory of employment, interest and money".

Book I: This book has three chapters.

Chapter 1 is a short introduction.

Chapter 2 is a discussion on the classical theory on employment. He made the following points:

(i) A labor union can only negotiate money wage for the faction of labor it represents, therefore can only change the relative standing of different factions of labor. They can do nothing about the real buying power of the wage, by which the utility of labor is determined.

(ii) In reality, there is involuntary unemployment: labor is willing to accept (sometimes substantial) reduction in both money and real wage, but it is not possible to find a willing employer.

(iii) The methodology of the classical theory, that is, to make up a supply and demand schedule in terms of price, then assume the real world is a place where demand price meet supply price, is fundamentally flawed.

Item (i) sounds powerful but it does not necessarily collapse the classical theory. Not to distinguish real and nominal wage is certainly a mistake, but one could argue that to assume that the utility of labor is determined by the real buying power of their wage is equally bad. A man is usually unhappy not because he is poor. He is unhappy because his fellow is not as poor as he is. One then would need more than the distinction of real and nominal wage to defeat the apologist theory. Here we have a typical example of a curve ball in economic argument: assuming utility is determined by the real buying power of the wage sounds perfectly reasonable, but one could also argue that this assumption is not necessarily true. Therefore the debate would go on.

Item (ii) is devastating to the classical theory but this is based rather on empirical observation than on theoretic analysis.

Item (iii) is an attack aimed not at any particular conclusion, but at the general methodology of the classical economic theory. Here he had three options:

(a) Criticize the usage of the principle of supply meet demand;

(b) Criticize the general methodology of drawing a supply and a demand schedule to create economic equilibrium;

(c) Criticize the specific way of drawing a supply and a demand schedule using price as independent variable in the classic theory of employment.

Item (a) can be advanced based on empirical fact represented in item (ii). It would then be regarded as an attack on the most fundamental principle of all existing economics theory. Item (b) is a little narrower than (a) but it is still a no-go because no economist of his time (perhaps including himself) knows how to think without a supply and a demand schedule. Item (c) narrowed the scope of his criticism. It is the option he decided to take. Here he focused only on the classical theory of employment, and even in this case, he did not claim that the practice of using the price of labor as independent variable for supply and demand schedule as non-sense, but they are, he said, ``a special case" of his own theory for an ``ideal reality". As one would also see in the later chapters, he worked laboriously to maintain this claim, which is very clever salesmanship.

In Chapter 2(vi) he appeared to start with item (a) (quoting J.S. Mills), then shifted quickly to item (b) (quoting Marshall), then finally settled on item (c).

In chapter 3 he introduced his own theory in a very weird way. He endured considerable pain in trying to claim that his own theory follows basically the same methodology of defining a demand schedule and a supply schedule, which would eventually lead to an equilibrium. He defined his demanding schedule as ``the procced an entrepreneur expect to receive" and supply schedule ``the proceed an entrepreneur regard as worthy to acquire", without defining these two in more details. The purpose of this chapter is not to provide anything informative about his theory but to tell you that he is following the methodology of the classical theory.

At the end of Book I, a reader would probably be convinced that there were something fundamentally wrong in the classical theory of employment, and Keynes knew exactly what was wrong and he was going to offer a fix. It sounded like that his fix would follow the general methodology of the classical equilibrium theory. But Keynes was carefully not providing anything specific about his fix so you are without any solid ground to start to debate against his new proposal.

Book II: This book, according to Keynes, is a book of technical preparation. It comprises chapters 4-7. In order to present his theory with precision, we are told, that he is compelled to deal with some technical obstacles on his way. So the reader is dragged on to witness the thoroughness and the rigor of his thinking, mixed occasionally with his criticism of the messy state of the classical theory on some of these technical issues.

Chapter 4: He reasons as follows: All economic activities are nothing but activities of human labor. One should be able to reduce any quantity that is introduced to measures certain aspect of our economic system to eventually the amount of human labors involved. To compare quantitatively human labors of different kind one compares their respective money-wage. The fundamental units for all variables, at least for all he is going to use in his theory, is an ``abstract labor unit" and its money wage, which is the least common denominator of all kind of labors in terms of their money-wage.

This choice of unit is critically important for him, for it directly links income to employment. It follows that:

Income divided by money-wage for an abstract labor unit = employment.

(In this chapter he therefore introduced the tacit assumption that the output of the working labor is always propositional to the amount of labor employed. The difference of the task to dig holes then fill it and the task to build road is no longer reflected in this theory. Note that Keynes seemed to believe that by doing this he avoided the unnecessary difficulty of compare apple and orange concerning output. This appears a little strange, for the difficulty of comparing different output is no greater than that of comparing different kind of labors.)

Chapter 5: He talks about the expectations of industrial entrepreneurs. His discussion amounts to claim that expectations are critically important in entrepreneur’s decision, which determines the current employment. He classified expectation into short-term expectation and long-terms expectation (according to, I suppose, the production of output for current consumption, and the preparation for future production), and discussed their respective nature. His conclusion is that the short-term expectation for today (the size of output for current consumption) is based by large on yesterday's result, but long term expectation (investment) is more flexible, subjected to constant modifications by various factors.

Chapter 6: He defined four terms: Income, Consumption, Saving, and Investment and discussed there relations.

(Income) He started to define Income for a single entrepreneur: He receives money from the sale of his product, which is denoted as A; he pays the labor directly to produce, the amount of which is denoted as F, his factor cost; he also endure a cost for using the instruments he owns, which is called his user cost, denoted as U. Therefore his income is

Income = A - F - U.

To remove vagueness one needs to further define U in precision. Keynes defined U as

U = A\_1 + (G'-B') -G

where $A\_1$ is the cost of buying things from other entrepreneurs, $G$ is the value of his equipment at the end of this period and $G'$ is the would-be value of his equipment at the end of this period if he spends $B'$ to maintain it to the best possible shape. This definition is in perfect confirmation to accounting practice, except that, because there is no objective way of determining $G'-B'-G$, his definition is still something flies in the air. But never mind and let us move on.

Now we turn to Income of the entire community, which counts both the income of the entrepreneurs and that of the labor. Therefore

Total Income = Total A - Total U

because total $F$ is also part of the total income of the population.

(Investment) He defined current investment as ``the current addition to the value of the capital equipment which has resulted from the productive activity of the period", which is simply his

G - (G'-B')

(Consumption) The total sales of consumption goods to the population.

(Saving) Saving is defined as Income minus Consumption.

Let $A\_c$ be the total sale of the consumption goods to the population. We have

A = A\_c + A\_1

For the sales to other entrepreneurs are the same as bought from other entrepreneurs in aggregation. Therefore we have

Saving = A - U - A\_c = A\_1 - U = G - (G'-B') = Investment.

This is the conclusion of Chapter 6II.

Chapter 7: Keynes obviously thought very highly of his definition of User cost. He believed that through his definition, he clarified a substantial mess existed in classical theory. Appendix on User cost (as an appendix of chapter 6) and this entire chapter is to elucidate on the mess he is now cleaned up.

Book III: With $Income = Consumption + Investment$ we move on to Book III, which contains three more chapters: 8-10. Reaching to the end, the reader is still kept in mystery on the theory he promised to deliver in chapter 3, but he has delivered the first component of his theory: The theory of investment multiplier. It appeared that Keynes himself was carried away a little by the potential of this magic multiplier.

His theory goes as follows: First Saving and Investment, because they are the same, are interchangeable quantities. Second we have

Income = Consumption + Investment = (1 + Consumption/Saving) Investment = k times Investment.

Keynes's point is that $k$ is always larger than one, and the larger the ratio of consumption against saving, the larger is $k$. Treating now $k$ as a constant, we have

Change of Income \approx k \cdot Change of Investment.

because Change of Income is proportional to the change of employment, it then follows that THE EFFECT OF ANY INVESTMENT IS AUTOMATICALLY MULTIPLIED BY k, which make government stimulus a marvelously good deal!

Chapters 8 and 9 discusses propensity to consume. His conclusion is that, at a given income level, the propensity of consumption, that is to say, the percentage of income the entire population spend on consumption is a fairly stable thing. Further, the larger is the income, the smaller is this percentage. To reach this conclusion, he elucidated tedious and long on various factors other than the aggregate income that might change propensity to consume and argued that their impact appear to be secondary.

I was a little surprised by Chapter 8(iv), in which he appeared to blame the great depression on the size of sinking fund. His reasoning is as follows: As income gets larger, the multiplier gets smaller so the system is under greater pressure of needing investment of larger size. With a lot of money went to sinking fund, which was a hold-up on the investment, the investment was at a level much lower than where it should be, with a devastating effect on total income.

Chapter 10 is devoted to the multiplier. It is defined rigorously in 10(i). In 10(ii)-(iv) the magnitude of multiplier is discussed (appears following that of Mr. Kahn, who is the original inventor of this marvelous quantity): If the percentage of consumption is 90%, then the multiplier would be 10; but in reality it is much smaller because of various factors of reduction. The conclusion, the real multiplier is anywhere in the range of 2 to 5. 10(v) addresses a seemingly troublesome paradox following this theory: that the income in poor community would subject to violent swing because the multiplier could be real large. However, a more troublesome conclusion, that investment is always good regardless of its output, he decided to accept. Therefore digging holes on ground then fill it and building pyramids are good economic practices.

This theory of multipliers is fundamentally flawed: The first major flaw was committed in Chapter 4, in which he decided to disregard in his theory the differences in output of the same working labor. The second major flaw was his regarding of $G'-B'-G$ as investment, which is again rooted in the first flaw: the amount of labor invested in capital equipment, he assumes, equals to the resulted value of this investment. The third flaw, which runs throughout his theory, was his indifferences in distinguishing dependent and independent variables.

The world could become a really weird place if one messes cause and effect.

However, He has not yet told us in details the main body of his theory. So let us move on to the next book.

Book IV: This book is the main body of his theory. In contains eight chapters: chapter 11-18.

Chapter 11: Marginal efficiency of capital is carefully defined. The rest of this chapter argues that this variable is critically important in understanding the dynamics of the economic system, in particular because the future is now a critical part of the calculation. The purpose of chapter 5, which was a little confusing at the moment, was fully revealed.

Chapter 12: The content of this chapter is a little confusing. With what was laid out in the previous chapter, one would expect him to argue that the practice of investors in the real world is completely in line with his theory: they calculate the marginal efficiency of capital then compare it with the money-interest rate before investing. He did the opposite, however, complaining that the behavior of the Capital Market, which is a big part of the investment scheme of the real world, is irrational therefore so harmful that he actually would propose to close them and let the government do the job of investment. He gave an impression that he is upset with the reality because it does not fit his theory. The second component of this theory is now fully revealed.

Chapter 13-17 is where his theory of interest is presented.

Chapter 13: He argued that money-interest is not a reward to the action of saving, which was perceived as a reward to postpone the current pleasure of consumption to the future, but a reward for not to hold one's saving in the form of money. It is a reward of not-hoarding money.

He argued that there are various valid reasons (transaction motive, precautious motive and speculative motive) for people to hold their savings in money, which he called people's ``liquidation preference". He claimed that money interest rate is designed to offset liquidation preference.

Here he also argued, but leaving more details to chapter 15, the relation between liquidity preference and the quantity of money: ``As a rule, we can suppose that the schedule of liquidity preference relating the quantity of money to the rate of interest is given by a smooth curve which shows the rate of interest falling as the quantity of money is increased."

Chapter 14: He criticized the classical theory of treating money as a commodity and the interest rate as the price of this specific commodity, which is determined by supply and demand. This chapter also has a long Appendix.

There are two things one should be acutely aware: first why the classical theory of interest is in direct conflict with Keynes theory, and second what is the gist of his criticism to the classical theory. Note that he can not use the first as a reason to argue against the classical theory.

Why classical theory is in direct conflict to Keynes theory: (a) Classical theory assumes that, at a given level of income, SAVING is sensitively depending on the interest rate (This is the base for their supply schedule). One fundamental assumption of Keynes theory is that SAVING is by large determined by the level of income, and interest rate is among many of the factors, in determining the saving rate, the influence of which can only be secondary. (b) The independent variable in their demanding schedule IS essentially his marginal efficiency of capital. If interest rate and marginal efficiency of capital are not independent, Keynes theory would be reduced to nonsense.

His main argument against the classical theory: The demand and supply schedule are both dependent of total income. Without knowing the total level of income, classical theory can not determine the interest rate.

I have the impression that his criticism towards classical theory of interest rate is not nearly as strong as the one he advanced towards the classical theory of unemployment. It is much more debatable. (And remember such debate would then quickly degenerated to meaningless mumble-jumbles). It might be better for him to simply claim that his interest rate is by definition different from the interest rate defined in classical theory. This is in fact the case here. His definition of interest rate is entirely different from that of the classical theory. One then could further debate which definition is closer to reality, a debatable issue that could again be quickly reduced to mumble-jumbles, but such debate is now irrelevant for the integrity of Keynes own theory.

Chapter 15: In this chapter he tries to make a more detailed connection in between the interest rate and the total quantity of money in circulation. He divided total quantity of money into two part: the first part is due to the need of transaction motive and precautious motive, which is determined by large by the total income, and the second part is to satisfy the speculative motive, which is a direct function of interest rate. The second part, he indicated, is the part with which the monetary authority could play effectively to adjust the interest rate. But he also cautioned that, when the interest rate is already close to zero, it would be very hard to low it further by adjusting quantity of money. Therefore monetary policy might be ineffective, for speculative part could suck all money added so total investment would not go up.

Chapter 16: This is a chapter full of usual mumble-jumbles. I suppose the purpose of it is to enhance the strength of his theory but really it added (from my own point of view) nothing substantial to the theory.

In 16(i) he argued that the action of saving alone, that is, to hold the enjoyment of current consumption, does not imply automatically consumption in the future, therefore can have adversary impact on the economy as a whole. In 16(ii), he argued against the statement that ``capital has a positive yield". He pointed out that it is the scarcity of capital that induces a yield. He then moved to consider what happens if capital is not scarce in 16(iii) and (iv). He seem to indicate that laissez faire would break down in this case. He also indicated we might reach such point in one generation. Then, he proposed, would be the time we change laissez faire to a system of certain degree of central control.

(His intuition, that without technological and organizational advancement to improve the productively of the society, capitalist system would be in trouble, is valid. One must understand scarcity of capital (and richness of a society) is not an absolute but only a relative term. The only way to maintain the scarcity of capital is to create tremendous new demand for it through technological revolution and re-organization of the process of production.)

Chapter 17: This chapter is a rigorous presentation of his theory of interest. The third component of his theory is then fully revealed.

According to this theory, any durable goods bears an intrinsic interest rate because it bears some of the following properties. (a) its potential yield by the application of labor,

(b) it has a carrying cost, and (c) liquidity preference. For other goods, (a) is positive, (b) is negative and (c) is zero. But for money,

(a) and (b) are zero and (c) is the money interest-rate.

Chapter 18: This is a summary and a rigorous reformulation of his theory.

``We take as given the existing skill and quantity of available labor, the existing quality and quantity of available equipment, the existing technique, the degree of competition, the tastes and habits of the consumer, the disutility of different intensities of labor and of the activities of supervision and organization, as well as the social structure including the forces other than our variables set forth below, which determine the distribution of the national income."

His variables:

Independent variables: propensity to consume (k), the schedule of the marginal efficiency of capital (G), and the money interest rate (l).

Dependent variable: Volume of employment (N) and national income (T)

His Theory:

\Delta N = \Delta T \sim k (G-l).

(I thought he argued in chapters 8-9 that $k$ is determined by $T$. Now $T$ is a dependent of $k$. Which one is which?)

Book V: This book has three chapters. Chapter 19-21. It runs on one theme, that is, before full employment is reached, it is a good idea to increase the total quantity of money to improve employment. This is not part of the main body of his theory, but can be treated as an extension, which he derived by combining his theory and the method of elasticity analysis of the classical theory.

Chapter 19: He argues that, in terms of stimulating the economy, it is better to make the price level and money-wage both move upward

by increasing the total quantity of money than to let the price and money wage fall with a tight monetary policy. He argued that there is nothing you can achieve by the latter you could not achieve by the former, and the former is by far much cheaper and easier to implement.

Chapter 20: He argues that increased business proceed would be distributed in between increased price and increased employment. The argument he presented has very little to do with his own theory. It is an example of the classical elasticity analysis. The mathematics is elementary. The fundamental relationships on which one starts taking derivatives is

$$

D = \phi(N) = p \cdot O

$$

where $D$ is the business proceed, $N$ be the total unit employed, $p$ is general price level and $O$ is the total amount of output.

From this relation we can derive that

$$

\frac{1-e\_o}{e\_e} = - \frac{N \phi''(N)}{\phi'(N)}

$$

where $e\_e$ is the employment elasticity (on proceed D) and $e\_o$ is the output elasticity (on D). We also have

$$

e\_p + e\_o = 1

$$

Therefore increase in $D$ is shared by a rising in price and a rising in output. We have in addition

$$

e\_p = 1 - e\_0(1- e\_w)

$$

where $e\_w$ is wage elasticity.

(These are a little technical for a layman but a trained mathematician who understand the concept of elasticity should have no trouble to see through and properly interpret these formulas.

In order for the computation of this chapter to make sense, one must first define $p$ and $O$ (price level and total output). Here the trouble appears to be the one he tried to avoid by using exclusively labor and money as the basic unit (See Chapter 4). He worked details for specific industry, with everything carrying a subscript $r$. How to jump from individual industry to the entire economy, in which he must properly define $p$ and $O$, I failed to get out of my reading.)

Chapter 21: How to increase business proceeds? One way is to increase the quantity of money: By his theory, increment in quantity of money

implies declination of interest rate implies increased investment implies increased employment, which is the same as increased business proceed. He also derived a formula for price elasticity with respect to the total quantity of money:

$$

e = e\_d(1-e\_e \cdot e\_o + e\_e \cdot e\_o \cdot e\_w)

$$

where $e$ is the price elasticity (on quantity of money), $e\_d$ is elasticity of business proceeds (on quantity of money), $e\_o$ the elasticity of output (on business proceed D), $e\_e$ the elasticity of employment (on D), and $e\_w$ is the elasticity of wage (on D).

This formula is not hard to derive. The conclusion: increasing quantity of money would increase the price level but not entirely proportionally, for it would also improve employment (unless $e\_e = 0$, which means full employment), increase output and raise money-wage.

Book VI: This is another set of application of his theory, but without a unified theme.

Chapter 22: Use the fluctuation of marginal efficiency of capital to explain business cycles.

Chapter 23: Consider the merit of imposing a carrying cost on money (which would makes money-interest negative) to stimulate economy, etc.

Chapter 24: His vision of post-capitalist society: economically a system central-controlled at macro-level but not controlled in micro-level so that the evil of unemployment and great income disparity is removed but economic and political freedom are still preserved to a great degree. (A man certain could wish whatever he believes to be the best for the humanity. It is, however, incorrect to base a grand long-run projection to a theory that is constructed only for short terms.)