Time Value of Money – What is it Really?

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Abstract

The 20^{th} C and 21^{st} C have witnessed the use of age old golden business mantra 'use money always quickly and as much as possible to make money'. Thus financial management has assumed even greater role and importance than the very output of the forms. Very many firms have gone to the oblivion even with good useful products and services due to inefficient or faulty financial management, Lehman Brothers case being the latest one. The first and foremost tool of financial management seems to be the fundamental concept of 'time value of money,' critical for financial and investment decisions. This paper attempts to revisit this basic concept and finds interesting conclusions.

1 Introduction

The objectives of a firm are listed in the literature as many and are disputed even today by the scholars. The number of objectives firms follow is also not without dispute. Some say that the firms follow a single objective whereas some other say that the firms follow multiple objectives like Behavioural Theory of the firm. Whether the firms follow a single objective or multiples, they all surely seems to use the age old golden business mantra 'use money always quickly and as much as possible to make money'. The 20^{th} C and 21^{st} C have witnessed financial management assuming even greater role and importance than the very output of the forms. Very many firms have gone to the oblivion even with good useful products and services due to inefficient or faulty financial management, Lehman Brothers case being the latest one. The first and foremost tool of financial management seems to be the fundamental concept of 'time value of money,' critical for financial and investment decisions. This paper attempts to revisit this basic concept and finds interesting conclusions.

2 Time value of Money

The time value of money is the value of money figuring in a given amount of interest earned over a given amount of time. For example, 100 dollars of today's money invested for one year and earning 5 percent interest will be worth 105 dollars after one year. Therefore, 100 dollars paid now or 105 dollars paid exactly one year from now both have the same value to the recipient who assumes 5 percent interest; using time value of money terminology, 100 dollars invested for one year at 5 percent interest has a future value of 105 dollars. [1] This notion dates at least to Martin de Azilcueta (1491-1586) of the School of Salamanca.[1] The concept of time value of money has become critical in financial and investment decisions. Khan and Jain (2010) have presented the definition of the concept of time value of money and the rationale behind it as below:

"Time Value of money means that the value of a unit of money is different in different time periods. The value of a sum of money received today is more than its value received after some time. Conversely, the sum of money received in future is less valuable than it is today. In other words, the present worth of a rupee received after some time will be less than a rupee received today. Since a rupee received today has more value, rational investors would prefer current receipt to future receipts. The time value of money can also be referred to as time preference for money. The main reason for the time preference for money is to be found in the reinvestment opportunities for funds which are received early. The funds so invested will earn a return; this would not be possible if the funds are received at a later time. The time preference for money, is, therefore, expressed generally in terms of a rate of return or more popularly as a discount rate."[2]

The concept of time value of money is extensively used in all financial planning and investment decisions. The major methods are the methods of compounding and discounting. The compounding methods calculate the future value of a sum whereas the methods of discounting calculate the present value of a future sum or a series of it. These two methods are widely used for a variety of cash flow patterns.

3 Value of money – Causes

Time value of money refers to the value of money from the time dimension that the value of a unit of money is different in different time periods. A quick review of the theories of value of money presented in the text books will help in analyzing the concept of time value of money. The value of money is determined by these factors as identified by the scholars: David Hume: money supply (inversely) through it positive impact on price; JS Mill: money supply (inversely); Fisher: exogenous money supply (inversely), volume of transactions (positively), supply of bank credit (inversely); Alfred Marshal: national income (positively), money supply (inversely), and the capital coefficient (positively); AC Pigou: money supply (inversely), relative income (positively), the fraction of national output for which cash is held (positively), consumption (positively), rate of savings (inversely); DH Robertson: money supply (inversely), output (positively), and the fraction of output held as cash (positively); JM Keynes: money supply (inversely), a fraction of consumer goods held as cash (positively), a fraction of consumer goods held as bank deposits (positively), rate of interest (positively), demand for money (positively), velocity of money (positively), and output (inversely); Tooke: national income (inversely), and the output of the consumer good (positively); A Aftalian: production (inversely) and national income (positively); K Wicksell: productivity (positively), aggregate demand (positively) which in turn is influenced by investment which in turn is determined by market rate of interest (inversely) and natural rate of interest (inversely); Radcliff-Sayers: price (inversely) that in turn is influenced by expectations (positively) and this is determined by the general liquidity level (positively); Gurley-Shaw: money supply (inversely), supply of M1 money (inversely), supply of M2 money (inversely); Don Patinkin: money supply (inversely). Thus according to these scholars these causes influence the value of time. However none of them have identified 'time' as a cause of the value of money. Of course, time is one of the causes for all effects. For, according to the Causal Law 'for every effect there are minimum two causes, namely causal-time (let us call this as secondary cause) and another cause (let us call it as primary cause; primary because only after this cause is invoked the operation of causal-time starts), where mere causal-time alone will not yield the effect.'[3] Hence 'time' alone as a cause cannot cause the value of money.

4 What is value?

'The basic question is "what is value?" The concepts of value, use value, utility, exchange value and price have a very long history in economic and philosophical thought, from Aristotle to Adam Smith, and their meanings evolved. Value theory encompasses a range of approaches to understanding how, why, and to what degree humans should value things, whether the thing is a person, idea, object, or anything else. This investigation began in ancient philosophy, where it is called axiology or ethics. Today much of value theory is scientifically empirical, recording what people do value and attempting to understand why they value it in the context of psychology, sociology, and economics.'[4] Economic analysis emphasizes goods sought in a market and tends to use the consumer's choices as evidence (revealed preference) that various products are of value.'[5]

Various scholars see the value of a product differently. Some look at the value as the labour needed to produce, i.e. labour content of the product (labour theory of value). The labor theories of value (LTV) are economic theories of value according to which the values of commodities are related to the labor needed to produce them.[6]

Some others look at value as 'usefulness or utility' or value 'in use'. 'Value "in use" is the usefulness of this commodity, its utility. There is a classical paradox which is often expressed when considering this type of value. Here, once again in the words of Adam Smith: "The word VALUE, it is to be observed, has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys. The one may be called 'value in use;' the other, 'value in exchange.' The things which have the greatest value in use have frequently little or no value in exchange; and on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water: but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it. (*Wealth of Nations* Book 1, chapter IV)."[7]

To some others 'value 'in exchange' is the relative proportion with which this commodity exchanges for another commodity (in other words, the price in the case of money). It is relative to labour as explained b Adam Smith. "Value "in exchange" is the relative proportion with which this commodity exchanges for another commodity (in other words, its price in the case of money). It is relative to labor as explained by Adam Smith: The value of any commodity, ... *to the person who possesses it, and who means not to use or consume it himself, but to exchange it for other commodities*, is equal to the quantity of labour which it enables him to purchase or command. Labour, therefore, is the real measure of the *exchangeable value* of all commodities (*Wealth of Nations* Book 1, chapter V; emphasis added)."[8]

Some others see the value as the cost-of-production. "In economics, the cost-of-production theory of value is the theory that the price of an object or condition is determined by the sum of the cost of the resources that went into making it. The cost can compose any of the factors of production (including labour, capital, or land) and taxation."[9] The process of production of money is known as minting rather than manufacturing! Many countries import raw materials to produce money!

5 Multiple Role of Money

Though money is 'assumed' to play multiple roles such as a generally accepted medium of exchange, a store of value (!!!!), and a measure of value (!!!!), it is also a commodity if viewed scientifically in the sense money, be it a coin or currency note or plastic money or electronic money, is a product of the factors of production (see Chendroyaperumal, 2004, for a discussion on the factors of production). Therefore the value of money has to be treated as the value of a commodity only. Money viewed as a commodity, as is a fact, the time value of money has to be taken as time value of commodity! This view is also consistent with the treatment of the value of money with the demand for and supply of money and other causes just like for commodities!

Also money is only an instrument (negotiable instrument) and a documentary evidence of some one's (monetary authority of a country) promise to pay sum of monetary units or its worth in gold. And a promise is not a store of value. Similarly money, being documentary evidence, is and cannot be a store of value.

Time preference of money implies preference for earning revenue using the money during the period instead of not-earning money during the period. Therefore time value of money refers, in reality, to the revenue that could be earned by using the money. The price paid or asked for 'using' money, a commodity, for a definite period is popularly known as 'interest' as is wages for 'using' labour for a period. Thus time value of money literally or actually refers to 'use-value' of money. Simply keeping money unused for any length of period does not generate any revenue and hence it does not generate value. Therefore the time preference of money implies the preference for the opportunity-to-earn-revenue by using money. Hence time value of money should rather be understood as 'opportunity cost', i.e. the money that could have been earned through use-value-of-money. Thus time value of money in finance is another name for economists' opportunity-cost!

6 Concluding remarks

It can even be said that the concept of 'time of value of money' is the fourth fundamental concept next only to revenue, cost, and profit. It has assumed even greater and important role in financial management. It has become the first and foremost tool in financial planning and investment decisions. This paper finds money does not have 'time-value', since time alone as a cause does not cause any value, and that the concept 'time-value' in finance only refers to the 'use-value' of economics! Thus the concept of 'time value of money' in finance is only another name for economists' opportunity cost!

Notes

[1] http://en.wikipedia.org/wiki/Time_value_of_money

[2] Khan and Jain, p-2.2.

[3] Chendroyaperumal, 2009.

[4] http://en.wikipedia.org/wiki/Value_theory

[5] http://en.wikipedia.org/wiki/Labor_theory_of_value

[6] http://en.wikipedia.org/wiki/Labor_theory_of_value

[7] http://en.wikipedia.org/wiki/Use_value

[8] http://en.wikipedia.org/wiki/Exchange_value

[9] http://en.wikipedia.org/wiki/Cost-of-production_theory_of_value

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3 Khan, M. Y., and Jain, P. K., Financial Management – Text, Problems and Cases, Tata McGraw Hill Education P Ltd, New Delhi, 2010.