

# ABSTRACT TIME = MONEY

## PART 1 TIME TO VALUE

Since the existence of Labour Value Theory (LVT), developed by the classical economists Adam Smith, Karl Marx and David Ricardo over two centuries ago, it has been argued that labour (useful human time) is the only source of value. At the time economists could not use modern financial accounting, corporate finance and asset pricing techniques to build a mathematical framework on this premise. Today we can, which is exactly what we do in part 1 of this book. Based on the premise of LVT we derive a conceptual view on macroeconomics that is both simpler and more congruent with other parts of economics than the neoclassical school which has been dominating the economical debate since decades.

Neoclassical macroeconomics is based on the premise that there are several production factors, which always include labour and capital. The fact that “capital” as a production factor refers to “capital goods” is often disregarded; we need the capital goods for production, capital itself is just a legal claim on profits. In line with LVT we argue that labour is the only factor of production because the costs of creating capital goods is exclusively determined by labour. The natural resources they were made off (if any) were already freely available for humanity at the time of production. Throughout the value chain there was no effort (“costs”) involved in creating the capital goods other than human time and humans never “paid” nature for anything. The same holds for consumption goods and (obviously) services. The value of natural resources then is the value they carry in a final useful state (either a consumption good or a capital good) minus the investment of human time that is required to get there.

Consumption of value occurs in two ways. Firstly, people consume goods (consumption of labour from the past) and services (instant consumption of labour). Secondly, people consume the opportunity costs of labour whenever they are not working (leisure time). Expressing both the costs and value of aggregated production and consumption in a closed economy in terms of human time instead of a monetary value forms the basis we use to derive a conceptual macroeconomic framework. In analogy with “the time value of money” in corporate finance we introduce the “time value of time” that states that present time is more valuable to humans than future time, which we use to discount future human time. Furthermore, we use the net present value method and the law of diminishing marginal returns to denote the value of a closed economy in terms of human time. This enables macroeconomic analysis of the real economy without considering the complex dynamics of our financial system and shows two important things:

1. There is an optimal ratio between (1) labour that is invested in creation and maintenance of capital goods at the one hand and (2) production of consumption goods and providing services at the other hand, that maximises the aggregated value of a closed economy like our globe.
2. What we consider to be the risk-free rate in asset pricing in fact reflects the depreciation rates of the remaining expected lifetimes of individuals and organisations in the real economy (interpretable as the annual chance to respectively die or default) who are considering buying assets. This “time value of time” is personal and hence differs for anyone that is valuing an asset. This individuality of the risk-free rate is currently not included in asset pricing theories.

Finally, we use financial accounting to develop the aggregated time statements (financial statements denoted in units useful human time at a reference year) of a closed economy. Time accounting and valuation show that in a closed economy wherein the people invest in increasing future labour productivity there is an aggregated free time flow at the disposal of the people in this economy which they can use to improve their “quality of life” by either (1) reinvesting in further increasing future consumption and/or (2) consuming more future leisure time (“time dividends”).

## PART 2 MONEY TO SHARE

First, we relate valuation and asset pricing to the natural dynamics of value in the real economy as developed in part 1 of this book (Time to value). This shows that we can relatively easily include the individuality of the risk-free rate (time value of time) into our current models of corporate finance and asset pricing. The well-known net present value formula ("Value equals free cash flow divided by the cost of capital minus expected annual growth") remains unchanged, but the cost of capital now consists of (1) a premium for the inability of the investor to predict future growth (which reflects his individual exposure to uncertainty of expected future cash flows) and (2) a premium to account for the investors' time value of time (which reflects the risk aversion of the investor).

Secondly, we relate economics and financial accounting to time accounting. It reveals that free cash flows (dividends) in the financial system generally flow to different people (investors) than free time flows (dismissals and labour reduction) do in the real economy (employees). Therefore, the people that receive more free time often do not have the income required to spend their additional free time as leisure. This leaves them no choice but to find new jobs and keep working equal hours. Consequently, (nearly) all productivity increases have always been reinvested in consumption growth instead of leisure time.

Thirdly, we develop the consolidated financial statements (P&L, balance sheet and cashflow statement) of a fictive merger of all companies and financial institutions (referred to as the "private sector") of a closed economy with a certain Gross Domestic Product ( $GDP=C+G+I$ ), wherein all companies and financial institutions are privately owned and the government does not employ people but sources all its services from the private sector (referred to as a "truly capitalistic closed economy"). By consolidating the private sector we eliminate all business-to-business transactions, which leaves us with all business-to-consumer transactions (commonly referred to as "C") and all business-to-government transactions (commonly referred to as "G"). This way, we denote the consolidated financial statements of the private sector of a truly capitalistic closed economy in terms of the various components (C, G and I) of GDP.

From these consolidated financial statements we derive among other things the "net public budget constraint". This is a numerical equation that expresses the development of the consolidated debt position of the public sector (all loans provided by the private sector to all governments and all households) in terms of the net interest rate ( $r$ ), nominal growth rate ( $g$ ) and fractions of the various components of GDP. The net interest rate is the weighted average interest rate paid on public debt minus the fraction that is regained by the public sector by (1) imposing taxes on the financial sector and (2) by labour costs and dividend payments of the financial sector. We then solve the continuous-time equivalent of this numerical equation assuming a steady state. This shows that our current financial system is unstable if the net interest rate is higher than the nominal growth rate of the economy, which is probably not the case in real-life. However, by decomposing the public budget constraint it appears that our current system of money creation (fractional reserve banking) inevitably results in both financial instability and an ever-increasing inequality between households. A policy of inflation, which most central banks have, accelerates these dynamics.

Finally, we give some guidance on how we could adjust our monetary control and inheritance taxing policies to develop a sustainable financial system that is both stable over long periods of time and reduces inequality between households. Part 2 of this book comes with a spreadsheet model that supports the content of the book and can be used to see the long-term impact of tax regimes, nominal growth rates, interest rates and fractional reserve banking on financial stability.