Wealth of Capitalist Nations: chrematistics *versus* oikonomics

Zsolt Gilányi

2022

I Chapter: Foundations of the science of social wealth accumulation

Many economists agree that Adam Smith's [1776] *Inquiry into the Nature and Causes of the Wealth of Nations* made the study of the accumulation process of social wealth a separate science, and accordingly Adam Smith is considered the father of **economic science**. The emergence of economic science is the result of a long process. Smith was originally a moral philosopher. He lived during the Industrial Revolution, when many intellectuals, philosophers, and writers were obsessed with the causes and fairness of the still-existing gap between rich and poor, despite the abolition of aristocratic privilege. Before Smith, thinkers were more interested in answering the question of how to increase the wealth of the ruler, often identified with gold; a question prompted by the concern of how to make a nation strong. Thus, the inquiry into the wealth of nations is a study of the patterns of wealth accumulation (economic growth) and the patterns of wealth distribution among the members of the society.

The distribution of wealth inherently raises the question of social justice, a question that has stimulated the development of economic science through proposals aimed at improving the socio-economic system. Therefore, all economic theories can be degraded to serve ideologies, even if they were not originally intended to do so.

The ideological status of the science of social wealth accumulation

An **ideology** is an explanation to justify the fairness and efficiency of a socio-economic system by the winners of the system. In recent times, Europe has been dominated by three major socio-economic systems: feudalISM, capitalISM and socialISM. In feudalism, God - the perfect good - ensured the functioning of the socio-economic system with clockwork precision. Therefore, no additional explanation was needed to justify the efficiency and fairness of the feudal system. The need for scientific self-justification of the prevailing socio-economic system disguised as economic science arose in parallel with the exile of God, because the Leibnizian type argument could no longer hold: "The universe that God chose to exist is the best of all possible worlds, otherwise it would have been unreasonable for God to create it." [Leibniz, 1710]. The ideology of capitalism is liberalism; the ideology of socialism is Marxism.

The approach of both liberal and Marxist ideologies is strikingly similar. Both ideologies deny the existence of God (or at least God's involvement in social life) and claim that human actions alone govern society, which are not governed by God.[1] Therefore, human action can also reform society. The social reform proposal of the liberalists is to abolish the nobility in order to solve the problem of feudalism's unfair redistribution of income from the peasantry to the nobility.[2] The Marxist proposal for social reform is to abolish the capitalists in order to solve the problem of capitalism's unfair redistribution of income from workers to capitalists. The

[1] Note that the existence or non-existence of God is an irrelevant question. A non-existent God can, by faith, govern human actions just as much as the liberal or Marxist ideology that is supposed to replace God.

abolition of the nobility and the capitalists should mean the appropriation of the means of production from the nobility (land) and from the capitalists (including land). The systemic transition period is an unfortunate "side effect" for the exterminated millions: the number of aristocrats beheaded by the invention of the ill-minded Professor Guillotine is not enough for a rounding error in the estimated 100 million victims of communism (Courtois, 1997), although in percentage terms the two million victims of the French Revolution in relation to the 20million inhabitants of France at the time is not a rounding error. These socio-economic reforms would supposedly end the inequitable redistribution of income and create the uniform people called citizens by liberalists and proletarians by Marxists. Of course, the clockwork precision of the God-orchestrated socio-economic system is not undermined. God is simply replaced respectively by the invisible hand and the central planning office. Of course, no more basic social reforms are needed, because the “universe that [the liberalists and the Marxists] chose to exist is the best of all possible worlds”. The metaphysical invisible hand that has replaced God and governs market economies is simply a term to hide the power that governs people in our free world to ensure the functioning of society: money.[3]

To sum up, “The ruling ideas [ideology] of each age have ever been the ideas of its ruling class.” (Marx-Engels, 1848:25). Both liberalism and Marxism identify ex ante the main injustice in society and its cure in order to mobilize people for social reform. Therefore, the prevailing, i.e., the mainstream economic theory in the service of capitalism (called orthodox theory) and the mainstream economic theory in the service of socialism (Marxism) necessarily provide only ex post justification; of course, both "theories" claim "scientific status for [their] tenets". (Soros 1997:5)

The scientific status of the science of social wealth accumulation

Empirical science is the logically coherent and testable explications of phenomena. A **phenomenon** is the perceived reality by our senses (even indirectly by the help of instruments). An explication (with other words **theory** and the concrete specification of a theory is called **model**) is the formulation of propositions (called theoretical proposition) deduced from hypotheses. **Logical coherence** means that a statement and its negation cannot be true at the same time in the theory. **Test** means the comparison of the theoretical propositions (reformulated in a testable form) with the empirical propositions in empirical way. As long as logical coherence is met and the test falsifies the theory, the hypotheses of the theory are not acceptable, they must be modified.

Often the will to understand phenomena leads some to consider erroneously hypotheses contrary to empirical observations that do not fit to their understanding. A good example for that mistake is the interpretation of Milton Friedman’s (1953, p.21.) well know example with the billiard player: „Consider the problem of predicting the shots made by an expert billiard player.

---

[2] As for this redistribution of income, originally the nobles provided military service and the peasants paid for this service through taxes and servitude; military service disappeared, taxes and servitude remained.

[3] Production requires labor, and in market economies products are sold for money (barter is insignificant). Therefore, in the end, those who have money can command other free individuals in society what to do (work).

It seems not at all unreasonable that excellent predictions would be yielded by the hypothesis that the billiard player made his shots **as if** he knew the complicated mathematical formulas that would give the optimum directions of travel … Our confidence in this hypothesis is not based on the belief that billiard players even expert ones, can or do go through the process described; it derives rather from the belief that, unless in some way or other they were capable of reaching essentially the same result; they would not in fact be expert billiard players.” From this example many economists erroneously conclude that model results rather than model assumptions are to be tested. Are then physicians who test hypotheses, dull? Not at all. Economists do not realise that Friedman’s example says nothing about tests: what one can really observe (empirically) are the billiard player’s shots. One can make hypotheses on what is on the mind of the billiard player when making these shots, but none of these speculations are tests. For example, one can formulate the behavioural hypothesis on shots using empathy: the model maker projects what he would do if he were the billiard player. Clearly, the empathy is a thought experiment, not a test. Also, it is possible to listen to the own narrative of the billiard player, but this is again not a test: there were no need for video recording to amend sportsmen’ technique if they did what they think they do.

In brief, Friedman’s misinterpreted example demonstrates that the model maker economists often expect model agents to behave according to the understanding of the model makers; that is, economists often want hypotheses to be **reasonable**. Reasonable is not a prerequisite for scientific procedure. Have you ever heard refuting the theory of kinetic motion of gases in physics with the argument that if I were a molecule, I would not follow the Brownian motion?

Thus, economists’ understanding does not mean reasonable. Economists’ understanding means that economists are aiming at giving logically coherent explications with economic notions. This understanding makes the difference between economic models and models used in the field of economic science. For example, statistical models – if correctly formulated - are logically consistent, but not necessarily in their economic content. Stating something in the language of mathematics (statistics) neither makes that statement truer nor necessarily more accurate or more scientific.

Logically coherent explications require clear, unequivocal definitions. A **definition** is the explication of a notion so that everybody means the same under the notion. The most appropriate way to think of a definition is a checklist, which helps classification.[4]

Trivially, the words (terms) used in the explication should also be explained so that everybody means the same on the words (terms) used in the definition and so on. In order to avoid infinite explication, we suppose that at some stage everybody understands words (terms) in the same way. In short, everyone has the same syntax that relates words to reality. In empirical sciences, this reality is generally defined by **measurement**, which simply means comparison with an etalon (standard). For example, the notion of length is defined by the

[4] As an example, if someone fulfills the following criteria, his name is **Brian Smith**:

- ✓ male,
- ✓ brown hair
- ✓ brown eyes
- ✓ height 140cm
- ✓ attends the Elementary School Széchenyi István at Budapest, Hungary

following measurement: take a stick from the ground and put it in straight line next to the object to be measured as many times as you can. The property of the object measured that way is called length (which is a common property of the different objects in that case), the stick is the etalon. This property i.e., the length of the etalon is also baptised, say meter. This same stick can also be used to measure other properties. For example, the weight can be measured by the equilibrium of a two-armed balance, and the name of the etalon this time is gram. The measurement of length or weight is so obvious in everyday life that we all know that the measurement method may require additional precision because, for example, the variation of the temperature may change the length of the etalon. Naturally, a definition gains its precise and full meaning in the context of the framework of a theory. The two generally committed definitional errors are the followings: (1) definition is a list of non-exhaustive examples; (2) definition is tautology (circular argument), as for example economist is the individual who deals with economics; and economics is what economists do.

It is important to emphasize that the theory is not the reality; notions used in a theory and the same notions used in everyday life are not identical. As we are intending to describe the reality, we are aiming at establishing a strong connection between theory and reality. Therefore, in empirical sciences we make hypotheses according to empirical observations of the reality, called **postulates**. These empirical observations as well as the way the theory is constructed reflect the *a priori* beliefs of the model maker. ***A priori*** means before proceeding to the scientific procedure. That is, the model maker limited by his beliefs and knowledge i.e. in a subjective way contemplates the phenomena to be explained. It is possible that she does not recognize important facts or attributes importance to some insignificant facts; or she interpret observations erroneously. There is no problem with the model maker's subjectivity. It cannot be otherwise. The problem arises if the model maker does not respect the rules of the scientific procedure. That is, he keeps a theory that either contains logical inconsistency or contradicts empirical evidence. At that moment, the theory thought to be scientific becomes a dogma, and its supporters who call themselves scientists, simple henchmen of ideologies – always beneficial for social well-positioning: Hiv: vegyél x embert bármilyen hülyeséget nyomhatsz egyetem Taleb

Mathematical representation of social wealth accumulation

The science of social wealth accumulation presupposes that the variation of wealth can be studied and measured. In any mathematically formulated model, there are two ways to represent variation: either we argue in continuous time models or in discrete time models.

In continuous time models, time is conceived as in reality from centisecond to centisecond. Mathematically speaking, in continuous time models, variations in infinitesimally small time intervals have meaning (derivation).

A stock variable S is a variable that refers to a point in time. Formally, a stock variable is a function of time, $S(t)$, denoted in economics as a variable indexed with the point t, S_t. The difference quotient of this variable S is:

$$\frac{\Delta S_t}{\Delta t} \stackrel{def}{=} \frac{S_t - S_{t-\Delta t}}{\Delta t} (1)$$

In economics, this difference quotient is called the flow F of the stock S during the time interval from t-Δt to t. This difference quotient is a function of the point t and the time elapsed up to point t, Δt. Formally,

$$F_t(\Delta t) = \frac{\Delta S_t}{\Delta t} (2)$$

Equation (2) is equivalent to:

$$F_t(\Delta t)\Delta t = \Delta S_t = S_t - S_{t-\Delta t} (2')$$

and

$$S_t = S_{t-\Delta t} + F_t(\Delta t)\Delta t (2\backslash$$

In discrete time models the continuous time is divided into arbitrarily chosen identical and non-infinitely short, closed intervals. These closed intervals are called **periods**. The length of each period is one unit, $\Delta t=1$. This is not a dimensionless scalar, but it refers to any real-world time length: be it year, week, or day. By convention, the time interval [t-1, t] between moments t-1 and t is called period t.

It is obvious that the end of period t, i.e. the moment t, is the beginning of period t+1. This means that if you have 3 apples at the end of period t, then you have the same apples at the beginning of period t+1. However, this does not mean that the valuation of these apples is the same! The valuation of period t reflects the decisions and expectations made in period t, while the valuation of period t+1 reflects those made in period t+1. The two are not necessarily the same. For example, apples can be revalued. There is no mechanical link between the periods. Cartelier [2018: 117] refers to the balance sheets that are valued in this way as the **backward-looking balance sheet** and the **forward-looking balance sheet**, respectively.

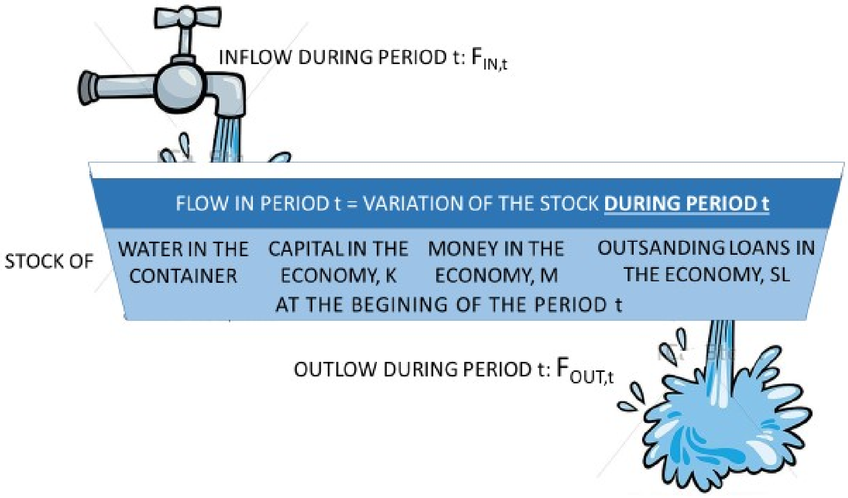
By convention in economics, the unit period $\Delta t=1$ is omitted in the above equations, even though it is not a dimensionless scalar. For example, instead of equation (2):

$$S_t = S_{t-1} + F_t(1) \cdot 1$$

we write:

$$S_t = S_{t-1} + F_t$$

The concept of stocks and flows can be illustrated as follows:



For example, there is water in the container at a moment in time measured in gallons versus water flowing into the container over a period of time measured in gallons per minute. There are outstanding loans in the economy at a point in time measured in \$ versus loans taken out during a period measured, for example, in \$ per year. In mathematical terms with the notations used in economics:

$$S_t = S_{t-1} + F_{IN,t} - F_{OUT,t}.$$

That is, the stock at the end of period t is equal to the stock at the beginning of period t plus inflows minus outflows during period t. Or rearranged:

$$S_t - S_{t-1} = F_{IN,t} - F_{OUT,t}.$$

That is, the change in stocks between the moments t-1 and t (i.e., during period t) is equal to the difference between the inflows and outflows during this period t.

The term "in period t" means any moment in period t; we simply do not know. There is no time within the period, i.e. no sequence of actions. In other words, periods cannot be subdivided: all we know is the end and beginning of the period stocks and the total inflows and outflows during the periods.

Finally, since the purpose of using discrete time models is precisely to get rid of the obligation to represent a multitude of actions, the length of the period is never chosen "too" short. This means that the length of the period is chosen to be long enough for the economic actions that the modeler wants to represent to take place. In theoretical models, this length does not matter in terms of real time. This is why we say that in economic models we have **logical time**. Economic models are almost exclusively discrete-time models. The advantage of discrete time models is that we can get rid of the representation of each economic action. The disadvantage of this simplification is the loss of information. (Annex 1)

A series of variations in wealth and production from period to period is called an **accumulation path** and a **growth path**, respectively. The most popular growth path in economics is proportional steady state growth because of its simplicity. Namely, in proportional steady state, all stocks and flows grow at the same rate; hence, the proportions between any two stocks and/or flows are constant. A **steady state** is a hypothetical state that can be maintained ad infimum. The zero-growth steady state is also implied in this definition. Obviously, in the zero-growth proportional steady state it is sufficient to consider a single period, because in this case each state is the same regardless of time. Obviously, in a zero growth (non-proportional) steady state path, wealth accumulation can be strictly positive.

However, economic data show that real economic processes tend to follow paths with fluctuations that regularly end in crises. A **crisis** is a situation in which there is necessarily at least one economic agent who is unable to carry out his plan. Rosier (1991:181) calls the opposite situation **normal functioning** of the economy. Note that the normal functioning of the economy does not exclude the existence of economic agents who cannot realize their plans. An **economic agent** is an agent who can make economic decisions. An **economic decision** is a decision for the purpose of increasing individual wealth. An **economy** is the concrete realization of a socio-economic system. **Socio-economic system** is a social system determined by the relations influencing individual and social wealth. **System** is defined by its elements and the relationship between its elements. **Society** (i.e. social system) is a system composed of people i.e. society is the organized ensemble of people.

Instead of concrete evolutionary paths, Cartelier (2018) suggests describing only **viable states** of the economy, i.e. states where fluctuations remain within a range that does not corrupt the whole system. Viable state and crisis are not mutually exclusive concepts, i.e. viable state does not per se exclude crisis.

1 Postulates on social wealth accumulation

The first step in theory building is to translate reality into theory. This means that we make a necessarily subjective and non-exhaustive list of the properties of the complex reality and select those that seem relevant to us. This reduction is inevitable because reality has too many properties. These selected properties serve as the definition - the checklist - of the phenomenon to be explained in the theory. In other words, these are our initial postulates that we accept as true and relevant. The scientific procedure gives us the receipt to decide whether we were right: if the theory is free of logical inconsistencies, then the test of the theory will decide its acceptability. If the test falsifies the model, then an inappropriate property has necessarily been postulated, or an important property has been omitted. Conversely, we may believe that our model describes reality until we encounter empirical evidence to the contrary.

Although we postulate on the basis of empirical observations, logic also helps us to select the relevant properties of reality. In our case, if we distinguish basic socio-economic systems such as feudalism, capitalism, and socialism, then we implicitly assume that there are differences among these systems. That is, each system has some characteristics that distinguish it from the other systems. The distinguishing characteristics are distinctive precisely because they are exclusive to the given socio-economic system; the other systems necessarily do not have the same characteristics.

The characteristics of socio-economic systems can be those that are independent of human decisions, called **natural laws**, and those that depend on human will. In fact, the natural laws are the same in all socio-economic systems. Therefore, the differences in socio-economic systems are due to the characteristics that can be changed by human beings. Characteristics that depend on the collective decision of people are called **social rules** or **institutions**. The reason these characteristics are called rules rather than laws is that rules allow for exceptions, while laws do not. [Mérő 2008:15-19] Therefore, in economics we can only establish rules or tendencies, not laws; this is why John Stuart Mill uses the term tendency-law for economic rules. [Gilpin, 2001:54]

The collective nature of a rule or a decision is not to be taken literally. It does not necessarily mean that the rule is generally accepted. It just means that the violation of the rule will result in a social sanction. For example, the social rule of private property was successfully changed in Russia by a handful of well-organized people, led by Vladimir Ilyich Ulyanov (alias Lenin), calling themselves Bolsheviks (i.e., the majority), and allegedly financed by the Kuhn-Loeb Co. led by Jacob Schiff[5], and in Hungary, after the ephemeral attempt led by Béla Kohn (alias Kun), Matyás Rosenfeld (alias Rákosi) implanted the socialist dictatorship in 1947. As for the pseudonyms of these dictators, I cannot help but think of the excellent comedy entitled *Les*

[5] Jacob Schiff married a Warburg. The Warburgs (alias Levy) have been an influential banking family since the rise of the Fuggers, the Schiffs were the former neighbours of the Rotschilds. All of these families later co-founded the Federal Reserve of the US in 1913.

Visiteurs (1993, 57. min. 28 sec.), directed by Jean-Marie Poiré: “Shameless liar!, if you are so proud of your family, why have you changed your name? What is the heinous secret you hide?”.

Conversely, the fact that a rule is accepted by all agents - referred to by the term "general" - does not necessarily mean that the rule is a social rule. The terms general and social are not synonymous. For example, the rule that young people must give way to older people on the bus is a general rule, but the few who break it are not punished by law or by the disapproval of others.

One set of social rules defines capitalism; another non-identical set of social rules defines socialism, and so on. Different social rules define different socio-economic systems, which frame and constrain individual actions, not the other way around. If individual actions change the social rules, then the socio-economic system changes, and we find ourselves in a different economy. In other words, social rules are not part of the individual's choice set. For example, in market economies, all individuals are constrained by the social rule of private property. I cannot make the decision to change this, but the parliament or a dictator (ex. Lenin) representing society can and in that case, we find ourselves in a different economic system than a market economy. Thus, the concrete behavior of any individual in a given socio-economic system is completely irrelevant to the systemic properties of a given socio-economic system (i.e., which option the individual chooses from her choice set). Accordingly, explanations of social (systemic) phenomena based on the meticulous study of individual behavior miss the point entirely. In other words, methodological individualism (individual decision making and ergo individual action and rationality) is completely irrelevant in determining the systemic properties of a given socio-economic system.

Having said that, the basic postulates of any theory aiming to describe the accumulation process of social wealth are as follows:

1. postulate on individual and social wealth, which can be identical or different in nature;
2. postulate on the modalities of the accumulation of individual and social wealth, which can be oikonomia and chrematistics.

1.1 Individual and social wealth: different (versus identical) in nature

There are two basic ways of translating wealth as an empirical concept into a theoretical concept.

Real analysis or value theories: commodities

The departure point of value theories is the empirical observation that someone is said to be wealthy if he owns valuable things.

Valuable things can be exchanged**. Exchange** is giving something in order to get something else. Something is exchangeable if it is desired and cannot be obtained otherwise than by giving other individuals something that they desire. (Léon Walras 1900) This second characteristic is said not to be freely available or, in the words of Walras, to be limited in quantity.[6] Note that this limitation on quantity is related to private property: you need more of something you have, and the only way to get it is from others. Walras (1900) establishes a direct link between desired things and **useful** things, i.e. things that can satisfy human needs. The two qualities useful and not accessible for free together are called **scarce**. With these terms, value is proportional to the extent of those unsatisfied human needs that can be satisfied by giving to other individuals that which is itself capable of satisfying human needs, i.e. by giving **commodities**. Instead of saying that commodities valued at some prices define individual and social wealth, the shortcut to say that both *individual and social wealth have the same nature*. Schumpeter calls this postulate real analysis: "Real analysis proceeds from the principle that all the essential phenomena of economic life are capable of being described in terms of goods and services." (Schumpeter 1954, p.277.)

Accordingly, all of its concepts are determined in terms of commodities: **consumption** is the satisfaction of needs by commodities; **capital** is produced commodities that can be used several times in production (also called **means of production**); **investment** is the purchase of capital; **depreciation** is the attrition of capital; **production** is the transformation of commodities into other commodities of an agent for the purpose of increasing his wealth when the total quantity of commodities change. **Cost** is the value of the commodities used during the production. Economic agents are also defined according to their distinctive actions with commodities: the distinctive activity of **consumers** is consumption, the distinctive activity of **firms** is production.

It is worth noting that the definition of a commodity as anything that is useful and eventually limited in quantity, is the most commonly used definition of a commodity. I say most commonly, because at present most textbooks simply do not define the basic terms - such as the otherwise excellent introductory textbook to microeconomics called Intermediate Microeconomics, written by Varian. Gérard Debreu, the Nobel Prize-winning mathematician in economics, does not neglect definitions. For him, a commodity (good) is a variable in the choice set of an economic agent that has a price of any sign. [Debreu 1959:36]. Although a negative price, and thus a negative utility, makes sense to a mathematician, this logically puts usefulness ad acta: if the property of usefulness can be ascribed to anything, then this property is not distinctive, so it makes no sense to include it in the definition of a commodity. So, everything is a commodity for Debreu. The lack of definitions and clear terms is quite annoying because, as my father used to say, the clarity of a science's terms determines the quality of that science. At present, the term commodity can refer to a hammer, to the use of a hammer for an hour, and also to money. It is important to underline that Walras's definition of commodity is free from the confusion of stocks and flows. **Walras** (1900), in his *Éléments d'Économie Politique Pure*, distinguishes between stocks and the service of stocks, i.e. flows. He calls all kinds of services **commodities** and stocks **capital**. That is, for Walras, a hammer is capital, the use of the hammer for one hour is a commodity. Accordingly, Walras wording when he defines **wealth** as the sum of commodities; is in fact, to be understood as the sum of capitals valued by the services

[6] Léon Walras (1900) argues that only **useful** things are desired, i.e. things that can satisfy human needs. The two qualities useful and not accessible for free together are called **scarce**.

(commodities) of capitals. The modern use of the term commodity does not make the difference between the hammer and the use of hammer for an hour: both are commodities.

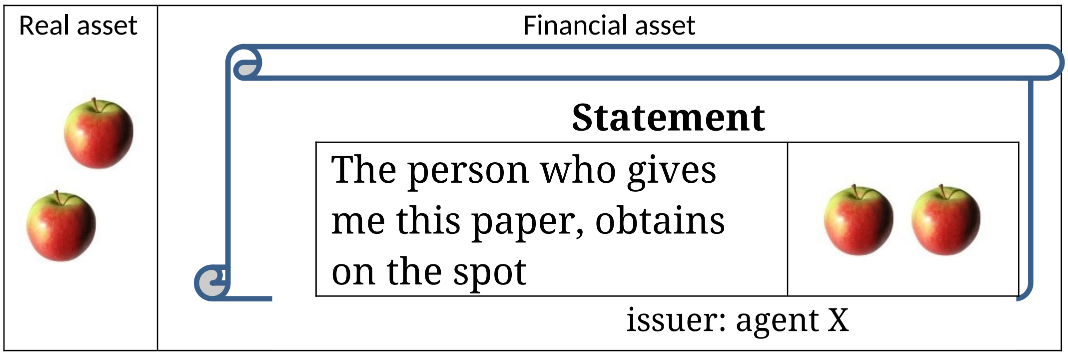
In summary, **value theories** or **real analysis** postulate that *both individual and social wealth are embodied in commodities owned by the individual and society* respectively.

Monetary analysis or accounting approaches: financial assets versus real assets

The departure point of the monetary analysis is the empirical observation that the amount of individual wealth in everyday life is determined in the following way: we make an inventory of all the possessions of the individual at a given date, including claims; we evaluate all of them in monetary terms, and finally we subtract debts from the sum of claims and other possessions. The valuation is done with the help of monetary prices.

This measurement means that wealth is a quantifiable stock variable. In turn, price is the ratio of two flow variables. For this reason, unless money is the only item in the above inventory, wealth cannot be unambiguously determined, just as the speed and location of an object cannot be determined with absolute precision at the same time. The valuation is therefore necessarily arbitrary.[7]

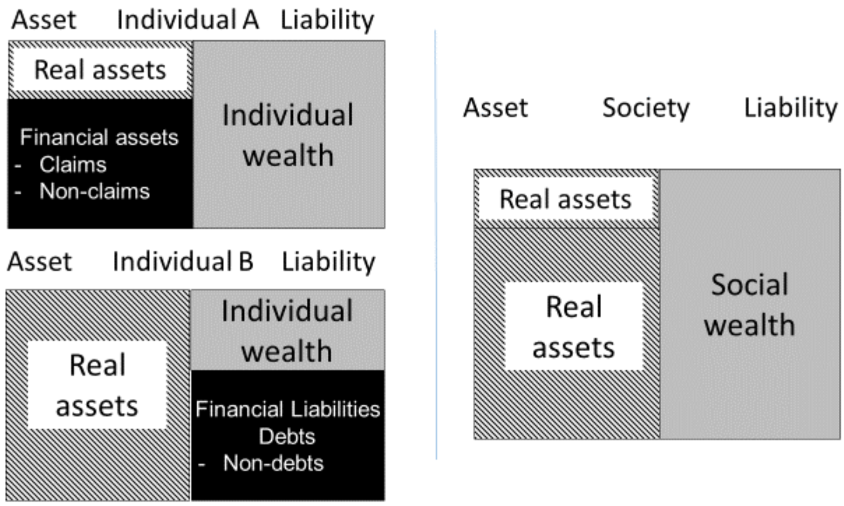
The result of this measurement can be summarized in our modern economies as follows: the **wealth of an individual** *at time t-1 is the maximum amount of money that this individual can expect to spend in period t, ceteris paribus, after fulfilling all his contractual obligations and without engaging in any activity that affects his wealth (i.e. this capacity to spend money)*. Contractual obligations and rights arise from contractual relationships. A **contractual relationship** is a relationship between two individuals in which one makes a binding statement to the other in relation to wealth. We call the same binding statement in relation to wealth a **financial asset** for the holder of the statement and a **financial liability** for the issuer. All other possessions of an individual that are not financial assets (i.e. do not arise from a contractual relationship) are called **real assets**.



This binding statement may be explicit as in the example above, or implicit as we will see in the next chapter for example in the case of high powered money.

[7] In accounting, the main rule for valuing wealth is at past prices, called **book value**. In finance, the main rule for valuing wealth is the amount of money that the individual expects to be able to spend in the future (valuation at market prices i.e. at expected prices).

Financial assets and financial liabilities are classified into two categories based on whether or not they are enforceable in terms of something other than themselves. Those financial assets and financial liabilities that are enforceable in terms of something other than themselves are called **claims** and **debts**, respectively. (Keynes, 1930:6) In one word: **IOUs** (I owe you-s). The amount specified in the acknowledgment (to be delivered or not) is called the **face value** of the financial asset. This amount can be a physical measure of some useful stock (two apples) or flow (one hour massage) or any quantity of financial asset. Most importantly, it can be expressed in terms of a unit of account. A **unit of account** is a unit in which the items in the accounts - and therefore prices and debts - are expressed. [Keynes, 1930:3]). An **account** is a two-column register, expressed in a common unit, which records either the assets and liabilities of an individual at a given date - called the **balance sheet** - or the increase and decrease in the individual's wealth during a period. By convention, liabilities are placed in the right-hand column of the balance sheet and assets in the left-hand column. The difference between the two columns of an account is called the **balance**. The balance of assets and financial liabilities is individual wealth. **Social wealth** is defined as the sum of individual wealth:



As it is already clear, the term **assets** stands for private property, which corresponds to a certain capacity to spend money. [8] The term **liabilities** comes from the French lier, which means to bind; i.e. thing for which one is bound by law (liable).[9]

Formally, a real asset is an asset that is not simultaneously a liability to another individual. (Rosier (1991) or Wray (2015:10))[10] and a financial asset is an asset that also appears as a liability for another individual and conversely, a financial liability is a liability that also appears as an asset for another individual. Obviously, financial assets and financial liabilities cancel each other out in social aggregation, and social wealth is contained exclusively in real assets while individual wealth can also be contained in financial assets. In a broader perspective, the very essence of the existence of financial assets and liabilities, as opposed to real assets, is that

[8] "any property that theoretically can be converted to ready money" (https://www.etymonline.com/search?q=asset)
[9] https://www.etymonline.com/word/liable
[10] Also referred to sometimes as tangible capital (ex.: Godley-Lavoie, 2007). This is an erroneous name, because capital is liability (wealth) used with chrematistic aim, not asset.

they translate the existence of an economic relationship at a point in time between economic agents.[11] Although, as we will see later, the monopoly on the issuance of financial assets is also important (e.g., only I can issue a claim on myself), it is by no means specific to financial assets (e.g., only the BMW factory has the right to put the BMW emblem on a car).

Real assets should not be confused with commodities. A real asset is any valuable stock that can be owned, excluding financial assets. For example, useful things (an apple) or useful knowledge (chess game, manufacturing instructions, or information on where to buy apples cheaply). Useful things derive their utility from their physical properties which is not true of useful knowledge. By contrast, the term commodity can now refer to a hammer, to the use of a hammer for an hour, and also to money. Regardless of which definition of commodity one accepts, this understanding of the term commodity raises two basic problems. First, the hammer is a useful and valuable stock, and therefore a real asset. The use of the hammer during one hour is a service and a flow. It is rather annoying that the term commodity can refer to a stock and a flow at the same time. (See Annex) As an aside, it is worth mentioning that Walras's commodity is free from the confusion of stocks and flows. Second, it is rather problematic that the term commodity can refer to both real and financial assets at the same time because real assets, unlike financial assets, do not disappear during social aggregation. Namely, if individual and social wealth are contained in commodities, - the starting postulate of the value theories - then social aggregation does not eliminate financial assets. This has the annoying consequence that, ceteris paribus, the emission of financial assets increases social wealth. Especially, printing money increases social wealth. A clear distinction between real and financial assets allows us to avoid this paradox. If social wealth is contained exclusively in real assets, while individual wealth is contained in both real and financial assets, then social aggregation cancels out financial assets. Thus, we do not violate the **postulate of the invariance of social wealth with respect to financial assets**: any issue of financial assets (shares, bonds, money, etc.), ceteris paribus, leaves social wealth unchanged.[12] (See Annex) In short, value theories contradict the postulate of the invariance of social wealth with respect to financial assets.

1.2 Basic behaviors of wealth accumulation: oikonomia *versus* khrematistiké

Aristotle [Politics, B.C. 4. c, 1 book, point 8. and 9.] identifies two basic behaviors that drive individual decisions about wealth and thus govern wealth accumulation: the satisfaction of human needs and the accumulation of wealth itself in monetary terms. Accordingly, we distinguish two basic behaviors that drive the decisions about individual wealth.

Oikonomia

Oikonomia (oikonomic behavior) is the decision about wealth for the purpose of satisfying human needs. As anything that can satisfy human needs is called a commodity or good, the

[11] In mainstream economics without financial assets and liabilities, there is never an economic relationship between any two agents in the states represented (beginning and end of periods). This is a very special case.
[12] It is worth remembering that corporate accounting also violates the postulate of social wealth invariance because shares appear in individual wealth (own capital).

essence of oikonomia (oikonomic behavior) boils down to the transformation of commodities into other commodities in order to satisfy human needs. With the Aristotelian-Marxian scheme: **C–(M)–C’**, commodity-(money)-other commodity, the essence is always: **C-C’**[13] i.e., commodity transformation process, where direct exchange is the pure form[14].

The role of money in oikonomia is to enhance the commodity transformation process in order to satisfy human needs. As such, money is no different from a production technology, namely money is also a commodity transformation process. In other words, money is inessential[15] - which is why we put money in parentheses in the Aristotelian-Marxian scheme C-(M)-C'. In short, we have prices - i.e. the ratio of the quantity given to the quantity received - as C/C’. This means that in oikonomia prices can be expressed in any commodity, which we call **relative prices**. The commodity in which all relative prices are expressed is called the **numéraire**.

Chrematistics

However, Aristotle identifies another behavior that drives individual decisions about wealth and, accordingly, the accumulation of wealth: the use of monetary wealth for the purpose of accumulating more monetary wealth; spending money for the purpose of realizing excess income in money. It is important to understand that spending money for the purpose of realizing excess income in money means that the excess money earned is also spent with a chrematistic purpose. Accumulating (part of) the excess money earned is equivalent to not using that money; this behavior is called **hoarding**. It should be noted that the use of the excess money for oikonomic purposes degenerates the whole action to oikonomia. To fully grasp the difference between oikonomia and chrematistics, note that oikonomia means buying bread to eat; chrematistics means buying the same piece of bread to resell at a profit again and again. If all the profit is spent on satisfying human needs (which is equivalent to profits being distributed integrally to consumers[16] who make (intertemporal) consumption choices), then the whole activity amounts to oikonomia. Chrematistic behavior includes chrematistic production, chrematistic trade, and chrematistic loan. With the Aristotelian-Marxian scheme respectively: **M-(C-C’)-M’**, **M-(C)-M’** and **M-M’**. In short, in chrematistic logic, all economic phenomena end up being the same: a process of money proliferation, with credit being the pure form.

The role of money here is to satisfy the chrematistic goal. As such, money is no longer a means, but the proliferation of money is the end in itself. For chrematistic agents, commodities are inessential and money is essential: „*In fact, the summum bonum of this ethic, the earning of more and more money, ... is thought of so purely as an end in itself, that from the point of view of the happiness of, or utility to, the single individual, it appears entirely transcendental and absolutely irrational. Man is dominated by the making of money, by acquisition as the ultimate purpose of his life. Economic acquisition is no more subordinated to man as the means to satisfaction of his material needs. This reversal of what we should call the natural relationship...*” (Max Weber 1930:18) (3) Accordingly, prices appear as M/C, i.e., the price is

[13] Prime ' simply refers to different, without any Marxian connotation of different value.
[14] **Direct (oikonomic) exchange** means giving commodities of which one individual has less need to another individual in order to obtain other commodities of which the first individual has more need, and vice versa.
[15] Term used by F. Hahn (1982?).
[16] In standard economics, the consumer is an economic agent with the purpose of consumption.

not determined by the ratio between the quantity of commodities demanded and the quantity of commodities supplied, but by the ratio between the money spent on the market and the quantity of commodities supplied (price determination known as Cantillon’s rule or Shapley-Shubik’s rule cf. Cartelier (2018, p.99). This means that the unit in which prices are expressed is not arbitrary, we have **absolute prices**, prices expressed in monetary terms.

1.3 The primary classification of theories on social wealth accumulation

As we have seen in the two previous points, the aim of studying the wealth of nations logically implies that the minimum postulates of any economic theory are about the nature (definition of wealth) and causes (behaviors that drive decisions about wealth) of the wealth, which gives the following four basic theoretical frameworks:

<table>
<tr><td colspan="2" rowspan="2">PRIMARY CLASSIFICATION OF ECONOMIC THEORIES
AS IMPLIED BY ADAM SMITH’S DEFINITION OF ECONOMICS</td><td colspan="2">BEHAVIORS THAT DRIVE INDIVIDUAL DECISIONS ABOUT WEALTH</td><td rowspan="2"></td></tr>
<tr><td>oikonomia</td><td>khrematistiké</td></tr>
<tr><td rowspan="2">NATURE OF INDIVIDUAL AND SOCIAL WEALTH</td><td>identical</td><td>Orthodoxy</td><td>Marxian heterodoxy</td><td>real analysis</td></tr>
<tr><td>different</td><td>Keynesian heterodoxy</td><td>Full heterodoxy</td><td>accounting approach</td></tr>
</table>

Orthodox economics postulates oikonomia and the identical nature of individual and social wealth. **Heterodox economics** is defined as the negation of orthodox economics. Accordingly, there are two main lines of heterodox theories. **Keynesian heterodoxy** rejects the postulate of the identity of individual and social wealth in nature (Keynes 1930); i.e., it rejects real analysis. **Marxian economics** rejects the orthodox postulate that oikonomia is the rule for the creation of social wealth. *We call these two main branches of heterodoxy Keynesian and Marxian heterodoxy, respectively, regardless of whether a particular theory has anything to do with the Keynesian or Marxian project.* Full heterodoxy rejects both orthodox postulates.

Mainstream is a synonym for dominant, which is a loose, non-scientific term, with or without ideological connotations. Orthodox theory so defined has been the mainstream in the West for centuries, while Marxism has been the mainstream theory in socialist countries.

The oikonomia postulate of individual behavior to describe the variation of individual and social wealth became so exclusive after Adam Smith that the science of studying the variation of wealth is baptized *economics*. The existence of both oikonomic and chrematistic behaviors as decisive behaviors in the creation of social wealth in different socio-economic systems suggests that the term economics to designate the scientific study of the nature and causes of the wealth of nations is misleading. Oikonomics is just a part of that science, probably the less relevant one in our modern market economies. A new term should be given to this science. If this term is to be derived from ancient Greek as the term economics, then **plutology** seems a better choice, composed of ploutos=wealth and logia=science, i.e., the science of wealth.

Perhaps it is worth mentioning at the outset some of the deeper problems associated with these frameworks.

To understand the basic choice of orthodox theory, it is worth looking at the genesis of economic theory. Economics was forged in parallel with the advent of the new free world order when aristocratic privileges were abolished. The obvious problem for intellectuals was to understand these changes and their consequences for the functioning of the new socio-economic system. Intellectuals believed that we could understand the transformation of societies from one to another if we understood the birth of societies. Therefore, they imagined a pre-societal situation that Thomas Hobbes (1651) called the **state of nature**. In this state, when there is no social rule (i.e. institutional relationship or law) among humans, each human is in constant struggle with others (homo homini lupus). Society emerges from the state of nature through the social contract, when people voluntarily give up some of their rights to avoid the constant struggle and transfer these rights to the state. Orthodox theories simply adopted this logic to construct their representation of the real socio-economic system.

Accordingly, in a first step, orthodox theories also imagine men in the state of nature before the birth of societies, when they have not experienced what cooperation and social life is. These men are able to live and survive alone in the state of nature; therefore their behavior that drives their decisions about wealth cannot be other than oikonomia. Accordingly, the attribute of man in orthodox economic theory is oeconomicus. The economy that consists of a single individual is called the **Robinson Crusoe economy**, and these individuals are called homo oeconomicus. **Homo oeconomicus** is an economic agent who - in order of importance - (1) pursues an oikonomic goal, (2) is free from any social determination (Watson 2011), and (3) makes decisions by weighing the expected advantages and disadvantages of the decisions. The behavior of weighing advantages and disadvantages is called **rational behavior**. Behavioral economics is providing us with empirical examples to show that people are not necessarily rational. In doing so, these psychologists and economists do not touch the essence of the concept of the economic model man inspired by Thomas Hobbes: the model agent remains an agent guided exclusively by an oikonomic goal.

In a second step to build the representation of our reality, orthodox economists imagine the spontaneous emergence of economic life from the state of nature through mutually advantageous free contracts (exchange[17]), just as Hobbes foresees the emergence of society through the social contract. As a result, orthodox economists treat social rules and individual decisions as if they were on equal footing.[18] Obviously, this is a pathological distortion of

[17] Exchange is giving something to another person to get something else.

[18] In a given socio-economic system, individuals, by definition, cannot make decisions about the social rules that define the given socio-economic system. I do not have the choice today to nationalize all private property, but

methodological individualism: “methodological individualism strictly interpreted [...] would rule out all macroeconomic propositions that cannot be reduced to microeconomic ones [...] this amounts to saying goodbye to almost the whole of received macroeconomics. There must be something wrong with a methodological principle that has such devastating implications" (Blaug 1992, p. 45-46).

This Hobbesian logic underlying the birth of orthodox economics means that if Adam Smith is the father of orthodox economics, then Thomas Hobbes is its grandfather. Orthodox economists - including Adam Smith - have not modified the very general framework that Thomas Hobbes provided for them.

The postulate that individual and social wealth are identical in nature, excludes the integration of financial assets into any real analysis. Attempts to integrate money, defined as a special commodity, into the real analysis have all failed, too. (for a detailed analysis see Cartelier 2018) Real analysis and the explicit representation of money (defined either as a financial asset or as a commodity) are therefore mutually exclusive. The prerequisite of chrematistics is the existence of money. In economies where chrematistics is the rule for the creation of social wealth, money is of primary importance and should be explicitly represented. Therefore, chrematistics and real analysis are mutually exclusive. In short, orthodoxy is fundamentally inadequate to describe any economy in which money matters (especially chrematistic economies), i.e. where money changes the systemic properties of the economy.

Despite Keynesian heterodoxy’s rejection of the identity of individual and social wealth in nature, Keynes is treated by orthodoxy as an addition to, or extension of, orthodox economics. This means that the coherent integration of money into post-Keynesian models, as opposed to the incoherent integration of money into orthodox equilibrium models, is not in itself sufficient for a real departure from orthodoxy.

In his remarkable book, Cartelier (2018) argues that Keynes's involuntary unemployment equilibrium in perfect competition with flexible prices is the real departure from orthodoxy. This is because involuntary unemployment is incompatible with Walras's law, the latter being at the heart of the orthodoxy. He argues that most post-Keynesian models - including stock-flow consistent models - fuel the orthodox reduction of Keynes's contribution because in these models, involuntary unemployment is absent in favor of an underemployment equilibrium, the latter being fully compatible with Walras's law and having nothing to do with Keynes. At the same time, Cartelier (2018 pp.177-180) reproduces Keynes's involuntary unemployment equilibrium within the framework of the orthodox real analysis. He warns that the problem is not to reproduce Keynes's involuntary unemployment; this can easily be done by imposing asymmetric budget constraints to break the Walras's law. The problem is to impose these asymmetric budget constraints in a coherent way; in the orthodox theory, this can only be done in an ad hoc way.[19] Obviously, if the incoherent integration of money is not a problem for the

the parliament or a dictator representing society does.

[19] In this perspective, we understand why Clower’s (1967) otherwise absurd cash-in-advance constraint is a remarkable effort in the good direction according to Cartelier (2018, p.177): cash-in-advance constraints break Walras’s law. These constraints are absurd because they do more: they also exclude direct exchanges (barter), whereas these operations are not prohibited in a monetary economy. This inadequacy of the cash-in-advance constraints is because these constraints are constraints on the exchange of goods, whereas exchange is between

orthodoxy that dominates economic thought, then the incoherent integration of asymmetric budget constraints will not be a problem either. This means that criticisms of stock-flow consistent models for their perceived or real distance from Keynes[20] are completely irrelevant to the positioning of Keynes relative to orthodox economics. It follows from these observations that as long as Keynesian results can be reproduced, coherently or not, within the orthodox framework, orthodoxy can treat Keynes as a branch of orthodoxy. In this perspective, the term "Keynesian heterodoxy" is merely a tribute to Keynes that recognizes his substantial contribution to orthodox theory; but this heterodoxy is by no means to be taken seriously in the sense of being totally incompatible with the very heart of orthodoxy. Keynes (1936) seems to share this assessment, as the title of The General Theory suggests: his theory is the general case, the mainstream is only a special case. This line of reasoning leads to the conclusion that the basic structure of a model (real analysis versus monetary analysis), although a valid and fundamental opposition, is not the most important criterion for classifying economies. The first criterion is the behavior that drives decisions about wealth.

Marxian heterodoxy is fundamentally incoherent because of the incompatibility of its postulate of chrematistics with its postulate of real analysis. This does not mean, however, that Marxian economics hasn't produced valuable and relevant results about the functioning of market economies. These results cannot be reconciled with the orthodox results. That is why Marxian economics could never be treated by orthodoxy as an addition or extension of mainstream economics.

In short, Keynesian heterodoxy is coherent but does not really challenge orthodoxy, while Marxian heterodoxy is incoherent but produces results that cannot be reproduced (even incoherently) within the orthodox framework. That orthodox theory is also incoherent as a representation of both a monetary economy (Cartelier 2018) and a decentralized economy (Fisher 1983) seems to bother only the minority of economists even though "*reasoning with the help of a consistent … framework … is the less a theoretician is expected to do*." (Cartelier 2018, p.160) Double standards are extremely damaging to the credibility of science. Despite its inconsistencies, Marxist economics was the mainstream scientific theory in socialist countries, just as (liberal) orthodox economics, despite its inconsistencies, is the mainstream theory in market economies. Socialism has collapsed and Marxism has been put ad acta. Market economies are still functioning, and the "*supposedly scientific theory*", i.e., the incoherent orthodox theory, is still in full force: "*The resemblance to Marxism, which also claimed scientific status for its tenets, is too close for comfort.*" (Soros, 1997, p.4-5) In short, orthodoxy deserves to be qualified as an ideology.

agents. Technically, these constraints are transaction technology (Hahn 1971), not exchange rules (Ostroy and Starr 1974). For example, no one prohibits the direct exchange of an hour's lecture in economics for an hour's masonry, or for a kilo of apples, if the economics professor finds the appropriate exchange partner. Clower's constraint forbids all such exchanges.

[20] The purpose here is not to discuss Cartelier's problem of interpreting Keynes.

2 Money

The empirical definition of wealth as the maximum capacity to spend money makes it necessary to define the concept of money.

Accounting approaches are in line with this empirical observation, while the concept of wealth in value theories is not fully in line. Chrematistics as a motive for decisions about wealth (the proliferation of money) also requires a definition of money, whereas oikonomia (the satisfaction of human needs) does not. This means that there is only one constellation of postulates in which logic does not imply the need for money: orthodox theory.

But if orthodox theory is to be a theory of our reality with money, then it cannot dispense with a definition of money either.

2.1 Money: payment system (*versus* commodity)

Although Schumpeter (hiv) has already explained for a while in *Das Wesen des Geldes* the essence of money, there is still much confusion about this concept. In nature, simple forms are followed by more complex forms. With regard to money the opposite is true. Therefore, to understand the essence of money one should start with the analysis of modern money. , o see clearly, The confusion is largely fed by precious metal moneys, which is a hybrid form where real assets move together with financial asset. reason why the concept of money these confusions roots.

Value theories: money is a special commodity

Since value theories postulate that individual wealth is contained exclusively in commodities, money cannot be anything other than a commodity with special characteristics.

It is not hard to see that the concept that money is no more than a special commodity is logical nonsense. For economic systems differ in their social rules. The addition or subtraction of a commodity in an economy does not change the social rules; ergo, a monetary and a non-monetary economy do not differ because of the addition of a commodity called money. In other words, if you believe that it makes sense to distinguish between monetary and non-monetary economies, then you cannot adopt the concept that money is no more than a special commodity.

There are also problems in finding the distinguishing characteristic of money relative to other commodities.

Obviously, the distinguishing feature of commodity money relative to other commodities cannot be that it is the most liquid commodity[21], because in every economy there is one or more most liquid commodities. Consequently, every economy would be a monetary economy, so there would be no point in distinguishing between monetary and non-monetary economies. In

[21] Liquidity means the ease of exchangeability. (Menger 1891?)

other words, if we eliminate the most liquid commodities from an economy one by one, then all commodities can be money.

According to standard monetary theory, the special feature of commodity money compared to other commodities is that it is a general means of exchange, i.e., each agent accepts the means of exchange only to exchange it later.[22] The peculiarity of money as a general means of exchange raises the problem that not all transactions between individuals are exchanges. Exchange, by definition, is supposed to be a voluntary action on the part of the participants. Tax payment is not a voluntary action; therefore, it is not an exchange. In addition, the means of exchange function and discrete time models most commonly used in economics are mutually exclusive, because actions within the periods cannot be represented. This is the reason why the variable intended to be money in standard monetary theory is only a **reserve of value** (accepted for exchange between periods) and never a **means of exchange** (accepted for exchange later within a period), which contradicts the standard definition of money being the general means of exchange and leads to standard monetary theory's failure to integrate money into the general equilibrium theory. Game theory approaches try to solve this problem by showing that a "**fiat commodity**", i.e. a (non-producible) commodity with no direct use and no storage costs, can be the general means of exchange, i.e. fiat money. If we see in the general acceptance of money only the coincidence of individual interests, then money is not a social rule, despite its general acceptance. Again, we run into the problem that in a given socio-economic system, individuals do not choose the social rules: just as it is not an option for me to drive to work on the left side of the road, it is not an option for me not to use money in our monetary economies. Game theorists suggest that not using money is also an option, albeit a more expensive one; they do not realize that people who refuse using money are simply not part of our economic system. Therefore, the emergence of money is necessarily the result of a social act. This social act (force of "charta") is known as **chartalism** (Knapp, 1905).

In other words, the distinctive characteristic of the special commodity called money relative to other commodities for value theory is money's role in enhancing the commodity transformation process aimed at satisfying human needs by solving the difficulties of realizing exchange without changing the social rules. However, if the special role of money is merely to facilitate the realization of exchanges (transaction technology) without changing the social rules, then the difference between a monetary and a non-monetary economy is merely a difference in the degree of ***transaction costs*** *(i.e., costs associated with the realization of exchanges other than the price to be paid); the economic logic is identical in a monetary and a non-monetary economy. This is equivalent to saying that the essence of how monetary economies work can be understood without the explicit representation of money.*

Thus, the assertion that money is used as a general means of payment is only a partial truth; it is used as a general means of payment by the force of social rule. In other words, *money is necessarily a general means of payment, but a general means of payment is not necessarily*

[22] Handook of Monetary Economics; The criterion „general" is missing in the Handbook, which is obviously an error: if I accept a hammer in order to exchange it later for a knife, the hammer is a means of exchange; if I make this exchange between two periods, it is also a reserve of value. Since prices in the real analysis can be expressed in terms of any commodity, any commodity can be a unit of account. Therefore, according to the definition of the Handbook, the hammer is also money.

money. That is, even if one accepts the narrative of the problem of the realization of exchange as the origin of money (spontaneous evolution by individual choice), unless this general means of payment was made a social rule by social action, it was not money. The market genesis of money narrative is consistent with the legacy of the private control of the monetary system, while the narrative that social action creates money corrupts the legitimacy of private control of the monetary system.

In support of their position, adepts of the market genesis of money often cite the ineffectiveness of legal tender laws in driving money. This fact should be interpreted to mean that it is impossible to make money generally accepted if it does not coincide with individual interest. Therefore, individual interest, i.e. market genesis, comes first. As to the market genesis of money, Cartelier (2018, hiv) simply notices that it is a logical nonsense.

From the perspective of modern monetary theory, the ineffectiveness of legal tender laws can be interpreted quite differently. The motivation for the social action that created money was not to solve the problem of the realization of transactions, but to raise revenue for the state. This is the reason why legal tender laws are ineffective to drive money as opposed to tax laws or any other solution where "*An authority that monopolizes a needed resource (land, energy) … dictate what must be delivered to obtain it.*" (Wray, 2015, p.51.) For example, until recently, the U.S. has managed to maintain dollar-based international petrol markets to ensure demand for the dollar beyond its borders, where U.S. laws cannot reach. From this point of view, money is as much a means of securing income for the state as it is a means of solving the problem of the realization of transactions.

The fact is that real assets have never been money in recent history; money has always been a financial asset. That is, gold (real asset) is not money; coins (financial asset) minted from gold are money. The confusion comes from the fact that the financial asset gold coin necessarily circulates together with the real asset gold contained in the coin. Some, instead of accepting this empirically verifiable fact, proceed the other way round. They define money as anything (let's limit this anything to real or financial assets) that is a general means of payment and they cite ancient archaeological findings that cannot speak, such as mother-of-pearl or cowry shells, to support that real assets were also once money as well, and thus that their definition of money corresponds to reality. The problem with such empirical "evidence" is that we simply do not know the exact use of these shells; moreover, we do not know whether these shells should be interpreted as real assets in these societies at all.

To avoid the pointless debate that you can define a real asset as money - yes, you can - but this money will have nothing in common with the money of the monetary systems of the last few thousand years with written archaeological evidence (e.g. Greece, Rome), in which money was never a real asset and never a synonym for general means of payment, we will limit our analysis to the monetary systems of the last few millennia. We also refrain from discussing the origin of money, as it is irrelevant to understanding the functioning of our monetary systems. For a meticulous critique of all concrete attempts to represent money merely as a commodity (real asset) in a coherent way, see, for example, Cartelier (2018).

Accounting approaches: money is a financial asset of a payment system

As argued in the previous point, money cannot be conceived of merely as a special commodity unless we believe that there is no difference between a monetary and a non-monetary economy apart from the ease of realizing exchanges. Therefore, money should be seen as a social rule. Is this logical conclusion in line with the empirical facts?

When you hear the word money, you think of cash or money in your bank account. In a museum, you can also identify money minted from gold, silver, or copper. What are the basic characteristics of all money that distinguish it from non-money? As we can see, (1) the physical substance of money is not important: it can be printed on paper, minted from gold and copper, or it can have no substance at all (money of account); (2) money has a unit that is not necessarily linked to any real physical units. Finally, what we know from everyday life about modern money is that it is used for payments.

The first characteristic shows us the nature of money. Money is not a thing; its usefulness does not derive from physical properties. The role that money plays in the economy can only be understood in the context of a set of rules, just as the role that the rook plays in chess can only be understood in the context of chess rules. The set of rules in which money acquires meaning is called the payment system. The **payment system** is a set of social rules that determine the modalities of honoring the contractual obligations related to wealth. In other words, the payment system is the social rules of payment; **payment** means to settle claims or debts (depending on what definition you accept). The assets (financial or real) with which one can pay are called **means of payment**. The **monetary system** is a special payment system that includes one or more financial assets expressed in a common unit, with which one can pay any of its debts. This financial asset is called **money**.

To fully understand the importance of the two different definitions of payment, consider the following example. In the initial state, Agent (B) owes to Agent (A) and Agent (C) owes to Agent (B). Let us denote these IOUs BOA and COB, respectively. Then, Agent (A) accepts a claim on Agent (C) from Agent (B) in settlement of Agent (B)'s debt, i.e., Agent (A) accepts the COB in settlement of the BOA:

	Agent A		Agent B		Agent C	
initial state	BOA		COB	BOA		COB
final state	COB					COB

If we accept Rosier’s (1991) definition of payment as the settlement of a claim, then in the above example Agent (B) has settled her debt to Agent (A) without paying Agent (A) because agent (A) still has a claim, but this time not against Agent (B), but against Agent (C). In other words, you cannot pay with a debt (claim). Money is not a debt: “*When, however, what was merely a debt has become money-proper, it has changed its character and should no longer be reckoned as a debt, since it is of the essence of a debt to be enforceable in terms of something other than itself*”. (Keynes, 1930:6).

If we accept to define payment as the settlement of a debt, then in the above example Agent (B) not only settles his debt to Agent (A), but also pays her, because Agent (B)'s debt disappears. In that case, we depart from Keynes' definition quoted above[23] because money can also be a debt. The money(-proper) that is not a debt (i.e., not enforceable in terms of something other than itself) in this notional grid is called **high-powered money** - a financial asset expressed in a common unit with which any economic agent can pay any of its debts.[24] Note that the definition of payment as the settlement of a debt leads to confusion between money-proper and debt: it leads to an arbitrary distinction between money and other privately issued financial assets known in the monetary statistics as the aggregates of M1, M2, M3 and M4.

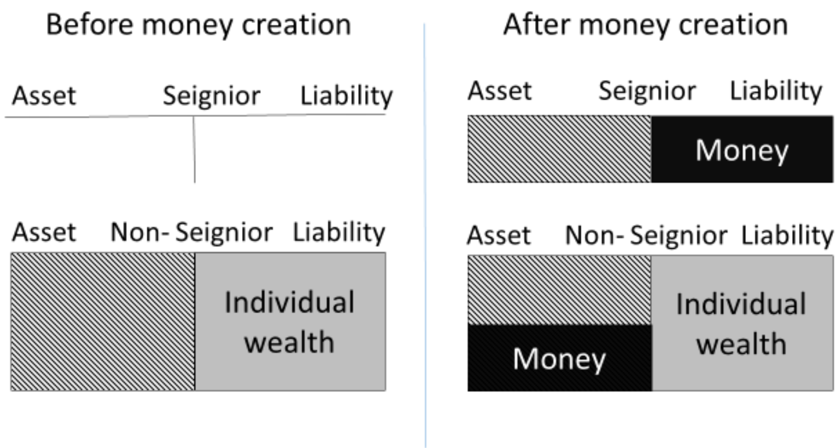
The second characteristics shows that money has a unit, that has nothing to do with any physical measure, although it has been linked to physical quantities (e.g., a given amount of gold) in different periods of history. The general narrative of the reason for linking the monetary unit to physical quantities is to anchor intrinsic value to money; and consequently, to create trust among people to accept something without direct utility only to exchange it in the future. Regardless of the veracity of this assertion, the fact is that money does not need to have intrinsic value to exist. In any case, when money is tied to physical quantities to ensure intrinsic value, the maximum amount of money that can be created is limited by physical quantities. Therefore, the anchoring of money to physical quantities is tantamount to a self-imposed constraint on the monetary sovereignty of the issuer.

The concept of the intrinsic value of money illustrates the roots of many confusions about money, which go back to the concept of commodity money as money born of a commodity with intrinsic value. Money without intrinsic value is called **fiat money**.

As a financial asset, money is not produced like real assets but created. Money can be created in two ways: either by purchase or by financial lending.

The **purchase** or **buying** is an operation between two agents which consists in the giving of money for something; the **selling** is the receiving of money for something and the order of the fulfillment of the transaction by the participants does not count. Money creation *via* purchase (**purchase created money**) goes as follows: the issuer of money (say seignior) purchases for example real assets and in exchange creates (pays with) money from thin air:

[23] As for example R. Wray (2012), one of the emblematic figures of post-Keynesian economics.
[24] Note the difference: any agent pays any of its debts (high-powered money) versus an agent pays any of its debts (money).



1. table: Money creation via purchase

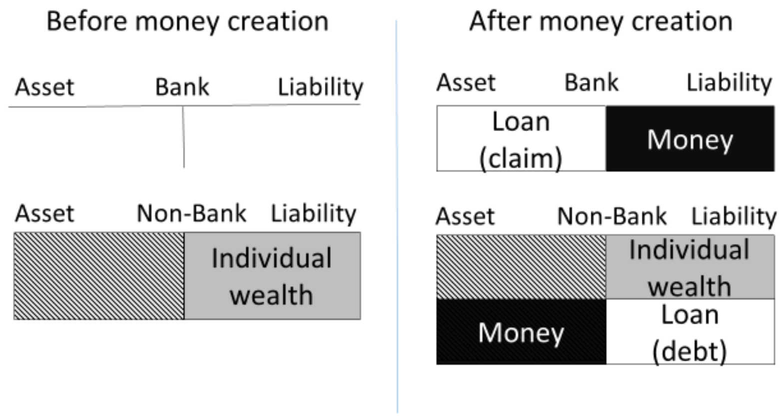
Lending is a transaction between two agents when an IOU (claim/debt) is created, and the issuer of the IOU is not interchangeable, or expressed differently, the order of the fulfillment of the transaction by the participants counts. We call this latter property **asymmetric** transaction or (economic) **relationship** between the participants. The one who has the claim is said to **lend**, and the one who has the debt is said to **borrow**. We can divide IOUs into two categories: those that must be paid in financial assets and those that do not. Accordingly, we speak of **financial loans** and **non-financial loans**. For example, it is possible that I buy a phone over the Internet and pay before the phone is delivered or after the phone is delivered. In both cases, the fulfillment of the two parties is separated in time, so an IOU is created, and also the order of fulfillment is arbitrary, so this transaction is not a lending but a(n intertemporal) purchase.

Standard economics conceives of all transactions between economic agents as exchange and argues that exchange retains the property of being a transaction or relationship of equivalence. A **transaction of equivalence** is a transaction when equal values are exchanged.[25] According to these economists, the link between freedom and equivalence is obvious: since nobody forces you to make a deal with the bank to get a mortgage loan, and since you are rational, you will not accept a deal that is not worth it. Since both parts are in the same situation, free transactions necessarily have the property of equivalence.

The question arises as to whether an asymmetric transaction is, at the same time, really a transaction of equivalence. Financial loans are certainly not. As an example, let us consider the case when agent (A) gives an apple to agent (B) in the current period and in return agent (B) agrees to give an acknowledgement of giving two apples (financial asset) to agent (A) in the next period. Obviously, agent (B) cannot pay with apples but only with the acknowledgement as agreed. Therefore, it does not seem wise to conclude this transaction if the issuer of the financial asset with which agent (B) can pay is agent (A), because agent (A) decides whether to issue these financial assets at all! Is the status of agent (B) fundamentally different if the issuer is agent (C)? This means that a financial loan can never be thought of as a relationship of equivalence, even if equivalence holds in certain such transactions.

[25] This is what Marx expressed as the question of what is equal in 1kg of bread = 2 liters of milk.

Money creation through financial lending - also called **credit money** – goes as follows: the non-bank agent signs the loan contract (i.e. he acknowledges his debt to the bank and the bank will have a claim on the non-bank agent) and, in return, the bank credits the agent's bank account, thus the non-bank agent will have money as a financial asset and the bank will have money as a financial liability:



2. table: Money creation via financial loan operation

The **bank** is an economic agent capable of creating money through financial loan operations. Note that banks are able to create money out of thin air (ex nihilo) in the sense that they do not credit existing money. I emphasize that the role attributed to banks as intermediaries between creditors and debtors is completely irrelevant. Not only banks can play the intermediary role between creditors and debtors, therefore the intermediary role is not a distinctive feature of banks.

When money flows back to its creator, the financial asset and financial liability cancel each other out, so money ceases to exist: returning to the creator is death. In a pure credit money system, the backflow of money to the bank at a predetermined date in the future is encoded into the system, because loans are to be paid with money. Therefore, the perpetual existence of money requires the perpetual renewal of loans: if there are no new loans, there is no money and no monetary economy. In a system of money created by purchase, the backflow of money to its creator is ensured by taxes to be paid in money. The existence of money simply requires greater cumulative purchases than cumulative tax payments in money up to each moment.

The proper quantity of money in the economy has been a constant concern in economic theory. This proper amount would be an amount of money that is always backed by a proper amount of social wealth to ensure a constant value of money. In other words, the **value of money** is said to be constant if the amount of social wealth that money can buy is constant.

Every time additional (i.e. newly created) money is spent in the economy, new purchasing power is created, i.e. new money flows into the markets. This newly created money (less the cost of creating it) can be spent at will in any market, which is called seigniorage. In short,

seigniorage is the amount of freely spendable money (i.e., without giving anything in return) from money creation.

The term comes from the purchase created metal money systems, when only the seignior had the right to coin money from precious metal. Minting coins required the purchase of metal; the seignior's earnings from money creation (i.e., newly created, freely spendable money) was the difference between the face value of the coins and the price of the precious metal contained in the coins. The seignior realized this profit once at the moment of money creation (i.e. at the moment of spending money into circulation).

The logic of money creation in the purchase created paper money system, where money is not tied to any quantity of precious metal, is the same: the value of the paper content of money is neglected, the seigniorage is the new (additional) money spent into circulation once at the moment of this fiat money creation. Since the face value of paper money is not anchored to any real asset, the price of fiat money in terms of any real asset can fall to zero (i.e., the quantity of any real asset that one is willing to give for a piece of paper money is zero). In other words, fiat money can become worthless and thus cease to be money. For this reason, in a pure purchase created fiat money system taxes to be paid in money play a central role in maintaining the value of money: this tax ensures the demand for, and thus the positive value of, fiat money. Thus, in a purchase created fiat money system, the role of taxes is not to finance government expenditure, but to ensure the value of money. In other words, government expenditure is not constrained by tax revenues. The one-sentence argument of modern money theory to support this claim is that it is impossible to collect taxes in money unless this money is first spent into the economy.[26] In light of what has been said above - the value of fiat money is maintained by the force of law and not by market action - it is not surprising that standard monetary theory is unable to introduce fiat money into the model economy (apart from the fact that money is not a real asset). The failure of standard monetary theory to introduce fiat money into the model economy should be interpreted as evidence against the market genesis of money, the primary concern of standard monetary theory.

In a credit money system, the repayment of loans with interest destroys more money than is created. Therefore, a constant total money supply presupposes that newly created additional money is perpetually spent into circulation in an amount equal to the effectively realized interest income. Hence, banks realize an ever-increasing accumulated seigniorage.

2.2 Money power

To fully grasp the central role that the monetary system plays in the economy, we need to rethink the notion of wealth on the one hand and the logical structure for describing economies on the other.

[26] Modern money theory goes further: it claims that in a closed economy this statement also applies to our private credit money system. In order to be consistent with the usual way of interpreting taxes as revenues (i.e., taxes finance government expenditures), it is sufficient to divide the state into two agents: the treasury (government) and the central bank. In this case, the tax payment does not destroy money, because it goes to the treasury, and therefore there is no problem in considering it as a revenue for the government.

The fact that the level of wealth is linked in one way or another to private property is not an issue: it is the value of private property, free from binding contractual obligations, valued at relative or absolute prices. The term private property includes the word *deprive*: individuals who have private property, deprive others of the use of that property. This deprivation of others may be interpreted from an individual and a *collective perspective*. From individual perspective, it can be interpreted as the sum of Walrasian commodities, i.e. as a scalar quantity of the mass of human needs that can be satisfied by the commodities.

But there is a vexing problem in a multi-period setting. If we measure wealth in terms of any commodity that has a price, even the sign of the variation in wealth that translates the same variation in commodities may be different. This is because the value of the numéraire can change, which is like changing the length of the yardstick in a measurement of length. To avoid this problem, the classical economists looked for a reference whose scarcity could be considered fixed, independent of time and space. For them, such a reference is labor, in accordance with the liberal ideology that substituted God for man, the collective for the individual, accepting Protagoras' statement that "man is the measure". The quantity of commodities does not increase by itself, for that happen, one has to act. We call **labor** the effort made by an individual in accordance with social rules for the purpose of increasing individual wealth.[27] Since human beings do not satisfy their needs directly with useful things provided by nature, as animals do, social wealth is always ultimately created through labor. The role of being both the measure and the source of social wealth assigns a central role to labor.

In this reading, Thomas Hobbes's [1588-1679] famous assertion also quoted by Adam Smith [1776:23] that wealth is power takes on the following meaning: wealth is the power to command the valuable things (exchange value stemming from scarcity); and since valuable things are created by labor, **wealth** is ultimately *the power, originating in private property, to command other individuals what to do* (labor). A fixed vector of commodities can represent a fixed amount of services (the service of a hammer for one hour, the service (e.g. nutritional value) of a slice of bread) or a fixed amount of labor that can produce this vector of commodities, but certainly not a fixed amount of exchange value, i.e. certainly not a fixed amount of commanded labor.

In this Hobbesian understanding of wealth, the essence of wealth and the essence of money are similar: a social rule for coordinating society, i.e. a **coordinating mechanism** that determines the actions of individuals that other individuals want them to take.[28] The breaking off coordination mechanisms in society other than wealth and money – especially compassion[29] – revalues the existing ones, especially the coordination via wealth and money. Instead of the force of custom - disguised as God - in sacral social systems, money - disguised as the "invisible hand" - became the main organizing force of the free market economy, i.e. the way of

[27] If we do not include „in accordance with social rules" in the definition, then theft should also be considered as labor. Note also that the term "own" (own individual wealth) is not included in the definition to allow the activity of the slaves to be called labor.

[28] For example, the action of individual A carrying a basket of wheat from one town to another can be induced by individual B amongst others (1) by law (the king orders his subject to do it), (2) by wealth (offering money) or (3) by compassion (the father asks the son).

[29] liberal ideology: consumer society / individualism / patchwork family / no nation

commanding people. Of course, this does not mean that every free person in society can be commanded by money; only those free people who feel their needs are unsatisfied.

With these considerations in mind, we can understand the famous maxim attributed to Mayer Amschel Rothschild: "*Give me control of a nation's money, and I care not who makes its laws*". Namely, the systemic characteristics of any socio-economic system is determined by social rules. The set of social rules that determine contributions to and appropriation of social wealth is of primary importance to the process of wealth accumulation. Such rules necessarily exist because in a society, tautologically, there is some degree of cooperation between the members of the society; therefore, social wealth is necessarily created collectively by the members of the society[30] - i.e. **production** is collective. Specifically, the collective social organization of production implies the existence of contractual relationships between the members of society relating to wealth; the payment system is the set of social rules that regulate the untying of these relationships, and therefore the payment system plays a central role in the process of wealth accumulation. In monetary economies, i.e., economies with money, this set of social rules is the monetary system. Thus, the control of the monetary system implies the control of the contractual relationships between the members of society relating to wealth which implies the control of the process of social wealth accumulation. Wealth is the power to command free people in society what to do, including statesmen.[31] Thus, the control of the monetary system is tantamount to the power to command society, or in other words, to run society. That is to say, the legislative, executive and judicial powers of the state, whether separated or not, are all subordinate to the power to control the monetary system.

Obviously, private control of the monetary system, and therefore private people in command of society, corrupts society as society becomes a private enterprise. In more sophisticated terms, private control of the monetary system necessarily corrupts society because those in control run society in such a way that the costs of their actions become social costs, while the social benefits are privatized. The difference between **public** and private **control** is that in the former, those in control are the representatives of society and are therefore accountable for their actions (even if this accountability is formal in the case of dictators or absolute rulers), while this is not the case in the latter. Therefore, private control of the monetary system and democracy in its utopian sense are mutually exclusive; private control of the monetary system is plutocracy: "*In a capitalist democracy, … , never have so many been manipulated so much by so few.*" (Huxley 1958 Brave New World Revisited). This point of view casts a different light on the great socio-political changes of the Enlightenment, when a series of revolutions created parliamentary democracies, the first step toward the complete private control of the socio-economic system. The mainstream narrative, of course, invites us to

[30] This means that even those members who do not produce for example valuable stocks (priest, prime minister, soldier) contribute to the formation of social wealth, because without society, individuals who actually produce valuable stocks (peasant, worker) would not be able to do so. In this collective perspective, it is far from obvious that an individual's contributions to and appropriation of social wealth are equal.
[31] Those statesmen who cannot be commanded by money may follow J. F. Kennedy's faith – naturally by accident.

believe that this superpower simply fell into the hands of private oligarchies through a series of happy accidents. Any suggestion that doubts that such a superpower is simply "given" is labeled a conspiracy theory without any real discussion.

The theoretical justification of private control[32] of the monetary system is based on the narrative of the market genesis of money as primarily a means of facilitating the realization of exchange, and on the recognition of only three powers of the state, legislative, executive, and judicial, without even mentioning the money power as a possible candidate. The **money power** is the sovereignty of the state to issue money at will. (Andrew Jackson president; Zarlenga HIV)

2.3 Monetary systems: evolution from publicly issued money to privately issued money

The monetary system has evolved from publicly issued money created by purchase to our modern credit money system of privately issued money. We outline here the major logical stages of this transition.

Publicly issued money created by purchase

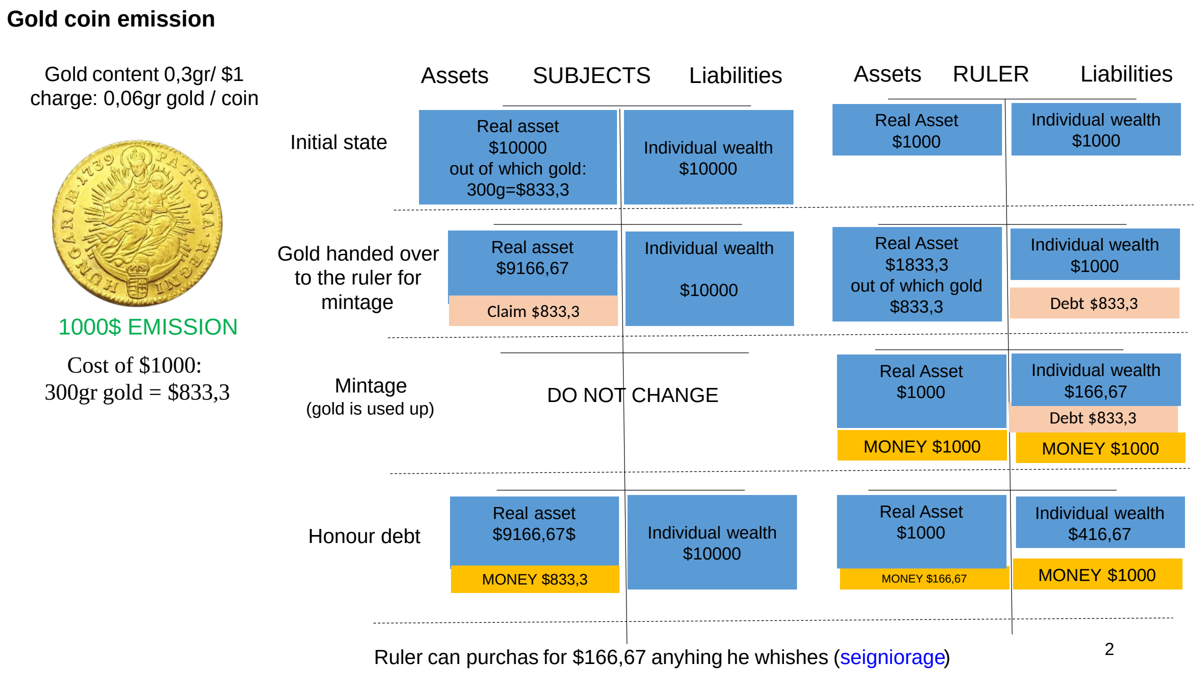
The basic logic of money creation is the same in any publicly issued, purchase-created monetary system, regardless of the technological advances - gold coins, paper money, or digital currency. These technological advances are simply reflected in the cost of money creation. The essential difference, which may be obscured by technological advances, is the eventual limited access to the base of money creation (e.g. limited quantity of gold in the gold money system). This is because a limited access to the base of money creation leads to a limited sovereignty of the money power and thus to an eventual need for the state to borrow from private agents.

It is also worth clarifying that the technical inventions of paper money or virtual money issued by the state in place of gold coins are conceptually different whether these monies are tied to gold or not. If they are tied to gold, they are government debt (enforceable in terms of something other than itself, i.e., in terms of gold). If they are not, these monies cease to be government debt and become high-powered money.

Money creation works as follows in a gold money system where gold coin dollars can only be issued by the sovereign. Suppose the gold content of a dollar is 0.3 grams of gold, and the sovereign charges 0.2 dollars (or 0.2*0.3 grams=0.06 grams of gold) to mint a dollar. This fee is the benefit (seigniorage) to the sovereign from minting $1. The price of gold in terms of gold coins is 1/0.36=2.78$/gr of gold. That is, the subject receives $2.78 from the sovereign for 1gr of gold. Suppose the sovereign issues $1000. To do so, he must buy 300gr of gold for $833.3 and he is free to buy any other real asset in the value of 1000-833.3=$166.67 (equivalent to the

[32] **Control** means that an agent or group of cooperating agents can determine the outcome. Consequently, such a thing as decentralized control is an oxymoron.

value of 6gr of gold).[33]. His individual wealth varies accordingly: 1000-833.3 (gold used for coinage)=$166.67.[34]



The destruction of money (financial asset) is special inasmuch as the melting down of coins gives birth to the real asset gold, just as the mintage of coins made disappear gold. However, the 300 grams of gold had a value of $833.3 when coins were bought for minting, but the same 300 grams of gold has a value of $1000 when coins are melted down, otherwise coins are not melted down. That is, in the gold money system, gold has two prices in trade between the subjects and the sovereign. When a subject sells gold to the sovereign, as we have seen, the price of gold is $2.78. When a subject buys gold from the sovereign (i.e. melts down coins), the price of gold is $3.33.[35] As a consequence, in the gold-money system, the price of gold in trade between subjects must vary between these limits (quantity restrictions are omitted), otherwise the subjects necessarily "trade" with the seigneur: at a market price lower than the lower limit, subjects sell gold to the seigneur; at a market price higher than the upper limit, a subject is willing to buy gold not from other subjects but from the seigneur (coin melting).

In the precious metal monetary system, the fixed gold content of the coins is a self-imposed constraint on the monetary sovereignty of the state: for lack of gold, the ruler is unable to issue

---

[33] The technological advance of paper money has just shifted the freely spendable part of money creation: the money creator is not any more obliged to spend 83,33$ out of 100$ for gold, but this 83,33$ can also be spent to any other real assets if the paper money creation cost is omitted. The privately issued decentralized crypto currencies are clearly a step backward from commercial banks' virtual moneys (demand deposits) from the point of view of social wastage.

[34] At first glance it may be confusing that gold coins on the liability side of the balance sheet decrease wealth. However, there is nothing special in it: we get individual wealth as a balance. Individual wealth means the extent to which the individual has contributed to social wealth. In the case of paper money this wealth decrease is not confusing: in exchange for nothing (intrinsically worthless sheet of paper) we can consume real assets from social wealth, thus our net contribution to social wealth is negative (we just take out from it).

[35] 0,3gr=1$, i.e.: 1$/0,3gr.

high-powered money. Therefore, when the ruler is short of money, he is forced to borrow from private chrematistic lenders who have gold. This self-imposed constraint favored the takeover of monetary control by private agents through financial loans, the primary means of concentrating high-powered money in the hands of lenders.

Private debt becoming money: leverage in lending

The pure form of chrematistic activity is the chrematistic loan (M-M'). The chrematistic loan is necessarily in terms of money, therefore it is also a financial loan. In the case of one-period loans, the difference between the amount of money to be repaid in the next period and the amount of money lent in the current period is called **interest**, and the ratio of this excess money to be repaid to the money lent between these two periods is the **(nominal) interest rate**. Obviously, after a successful chrematistic loan operation, ceteris paribus, the creditor ends up with an increased stock of money, the debtor with a decreased stock of money. An oikonomic lender sooner or later spends all his excess income from lending for oikonomic purposes. Accordingly, oikonomic lending - the only existing lending operation in mainstream economics - amounts to intertemporal exchange and is of no interest to us. On the contrary, if the lender is a chrematistic agent and his only chrematistic activity is lending, then in addition to the original amount of lending, he spends his excess income from lending again on lending. For example, a private chrematistic lender who owns $10 in gold coins and lends that money at 4% interest rate will have $10.4 in a year to lend it again.

Soon and unnoticed, the purchase created gold money system knew substantial transformations. Chrematistic lenders invented **banknotes** - financial assets enforceable in terms of (i.e., promises to pay) high-powered money (gold coins) on demand - and obtained the name bank. These banknotes allowed them to expand their activity. In fact, chrematistic lenders could issue more banknotes than their collateral in gold coins in their possession, because banknotes were accepted as a means of payment among non-bank agents, and consequently in normal times only few individuals redeemed the coins themselves. This leverage allowed them to substantially increase their profits from lending.

As an example, suppose that 10% of banknotes are backed by coins, 20% of the total amount of coins in the economy always ends up in the bank's vault, and $10 of the total $1000 in the economy is owned by the chrematistic lender in the initial state. After lending her $10, the lender has no more coins to lend. However, the deposit of $200 in coins in exchange for notes allows the bank to own $200 in gold coins and thus lend out an additional $180 in coins while maintaining a $20 reserve. With this operation, the bank manages to realize (10+180)*0.04=7.6 interest income. Even though the bank charges only 4% interest on loans, this is a 7.6/10=76% return on his original $10! This process can be repeated over and over again, which is called the **multiplier effect**. That is, another $180 of coins are deposited in the bank according to the hypothesis that 20% of the coins always ends up in the bank's vault, allowing the bank to lend again 0.9*180=162, and so on. In this way, the bank is able to issue $2000 worth of banknotes (200+200*0.9+…=200/(1-0.9)), lend $1810 (10+200*0,9+200*0,9*0,9+…=10+180/(1-0,9)), and realize a return of $72,4, which is 724% over the bank's initial wealth. Thus, the moderate 4% interest rate on loans can easily reach 100% return through the leverage provided by privately issued promises to pay high-powered money (banknotes). We all know from the anecdote about the invention of chess that Sissa's modest demand to receive as a reward the grains of wheat placed on the chess board - one grain on the first square, two on the second, four on the third, and so on, always the double of the grains on each subsequent square - is impossible to fulfill; only the last square is worth 2^{63}= 9.223.372.036.854.775.808 =$9{,}2*10^{18}$ as opposed to the 4% interest rate, which is $1{,}04^{63}$=11,83. The expansion of successful lending required for this exorbitant return runs up against obvious constraints.

In simple terms, the essence of the multiplier effect is that banks use other people's high-powered money to increase their own returns. This multiplier effect follows the "**deposits make loans**" logic. However, as soon as banknotes are also accepted as a means of payment, the whole story turns upside down: the bank can issue banknotes as the counterpart of loans *before* non-bank agents make bank deposits in coins. The logic of the process is no longer "deposits make loans", but the other way around: "**loans make deposits**". This means that chrematistic lenders can create their own liabilities from which they can realize socially recognized profit, i.e. profit in high-powered money.

In our example, this means when $200 is deposited according to our hypothesis that 20% of the coins always end up in the bank's vault, the bank can directly issue $2000 in banknotes with the 10% reserve ratio.

PROPOSITION

If the state is constantly in debt to private chrematistic lenders, the banknotes (promises to pay high-powered money on demand) issued by these private agents necessarily become money. The state *de facto* loses its money power.

This is because these banknotes will also make it possible for the state to pay its debts to these private chrematistic lenders. Therefore, the indebted state - in the absence of sufficient high-powered money caused by the self-imposed constraint on its own monetary sovereignty - will also accept these banknotes as a means of paying taxes. The state writes (legislative power) and enforces (executive and judicial power) social rules. The state's acceptance of private debt as money is thus equivalent to the social acceptance of private debt as money. Instead of creating money for itself for free, the state pays interest to private agents to do the same for the state. This is an indirect way for chrematistic lenders to tax individuals through the state. Instead of openly levying tax on subjects as the nobles did, chrematistic lenders do this sneakily: the state collects this tax for them. Welcome to the Brave New World of Animal Farm!

In short, the monetary system evolved in such a way that private chrematistic lenders issued promises to pay high-powered money, and these promises themselves began to circulate as (perfect) substitutes for high-powered money.

In feudalism, only the nobility and the ruler were suitable for large-scale lending. Lending to rulers is expedient not only because it is lucrative, but also to get private debts (banknotes) accepted as money. But at the same time, it's very risky when the ruler claims that *L'Etat, c'est* *moi!*[36]. A series of fortunate coincidences - or orchestrated actions of chrematistic lender oligarchies (Drábik HIV) - led to a series of revolutions to create parliamentary democracies first in England and then throughout Europe in the XVIII and XIX centuries to separate the state and the ruler. This separation has resulted, on the one hand, in the minimization of the risk of lending to the State: commitments signed by absolute rulers are commitments of the rulers themselves, while commitments signed by parliamentary representatives are commitments of the subjects (nation). Subjects (nation) are constant, rulers change. This separation has resulted, on the other hand, in transferring the exclusive right of the ruling dynasties to mint coins to the parliamentary representatives, which was a precondition for the chrematistic lending oligarchies to acquire from the ruling dynasties the right to issue high-powered money. These chrematistic lenders were given the name bankers. In normal times, private banknotes and high-powered money are considered as (perfect) substitutes, because banks can fulfill all the requested conversions. However, if the amount in banknotes converted into high-powered money increases substantially, the macro-agent commercial bank is necessarily unable to keep its promise. Low leverage - along with lower profits - certainly mitigates the conversion problem, but it does not eliminate it. To mitigate this systemic problem of periodic private bank crashes, private chrematistic lending oligarchies created the bank of banks disguised as a national bank (1694-: Bank of England; 1791-1811: First Bank of the United States; 1816-1836: Second Bank of the United States; 1913-: Federal Reserve System) with the prerogative to issue banknotes and lend to the government. These banks of banks have evolved into our central banks.

Modern private credit money system: two tier banking

The monetary system in which private commercial banks and the central bank create money together through lending is called the **two-tier banking system**.

History shows that the uncontrolled or poorly controlled private credit money system prior to the two-tier banking system was quite unstable. The fact that most central banks are publicly owned does not change the fact that the very mission of central banks is to maintain the financial stability of the private credit money system. This financial stability is definitely in the interest of the chrematistic lender oligarchies, because the state can also operate with other types of monetary systems where money is created debt-free without paying interest to private agents. In short, the debate over private or public control of the central bank - while an interesting one - is a distraction from the real issue: central banks use the sovereignty of the state to pursue a private interest.

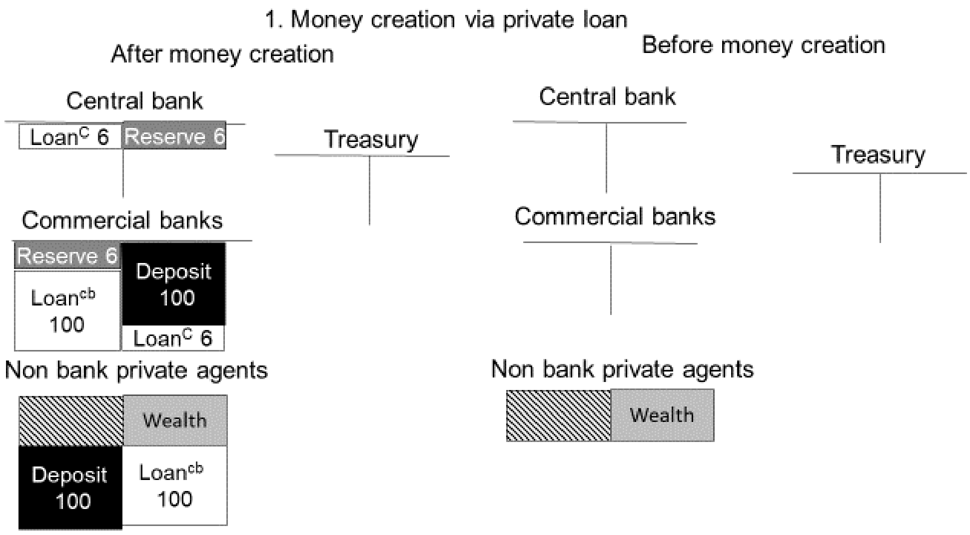
This private bank-based monetary system is also called **fractional reserve banking**, since only a fraction of the banks' promises can ever be converted into high-powered money. Whenever there is a danger of systemic failure caused by defaults in payments of high-powered money, the central bank provides additional high-powered money to private banks through various channels. High-powered money in this monetary system is money created by the central bank (called **reserve** if it is on account and **cash** if it is paper money).

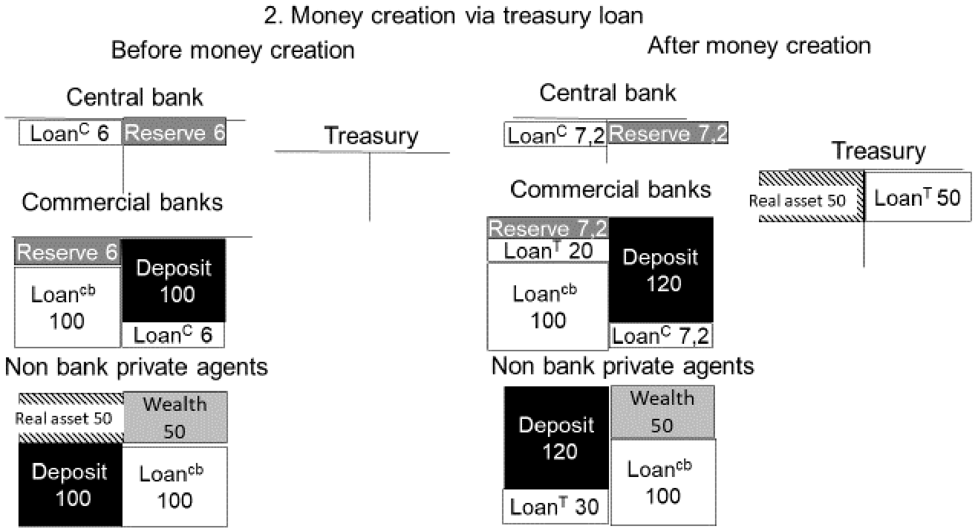
[36] I myself am the State! (Louis XIV)

As a general rule, only commercial banks and the treasury are the clients of the central bank. Accordingly, all payments among these agents are made in the form of high-powered mone and – if cash is omitted – this high-powered money never enters into circulation among non-bank private agents. Therefore, in this monetary system, the treasury is disconnected from private non-bank agents; or in other words, without private banks, only an extremely limited volume of payments can take place in cash. High-powered money is not "deposited" in private banks, private banks create demand deposits.

As a general rule, the treasury is not allowed to borrow directly from the central bank. Accordingly, high-powered money is created in the relationship between the central bank and the commercial banks. There are two possibilities of this high-powered money creation: either commercial banks borrow from the central bank, or they sell financial assets in their possession to the central bank. As a general rule, these financial assets are financial assets issued by the Treasury, since the Bank of Banks does not generally interfere with the clientele of commercial banks. These financial assets issued by the Treasury are loans, i.e. government bonds. This means that high-powered money held by private banks is not in itself a constraint for private banks to expand their activity; this constraint is the sum of high-powered money (reserves) and treasury bonds together. Put another way, the central bank cannot prevent private banks from expanding by simply refusing to lend to them. The central bank should also refuse to buy government bonds.

Accordingly, money is created in the following way. Either (1) private agents borrow (say, \$100) from commercial banks, and then commercial banks borrow from the central bank to ensure the target reserve ratio; or (2) the Treasury borrows (say, \$50) from the private sector (say, 40% directly from commercial banks) and spends it; the central bank ensures the temporary need for extra reserves for commercial banks (i.e., commercial banks borrow \$50 from the central bank, and when the Treasury spends these \$50 reserves in the economy, commercial banks repay these loans within the limits of their free reserves). Assume that commercial banks, in the normal course of business (i.e., normal functioning), maintain a reserve-to-deposit ratio of 6 percent (**reserve ratio**), and for the sake of simplicity, let us leave cash out of the story.





In the first example, commercial banks are unable to create private money without the consent of the central bank if they wish to function normally. In the second case, commercial banks are unable to create private money if the central bank refuses to provide the temporary excess $50 reserves needed to carry out the operation. It may seem that the central bank has full control over private money creation: without reserves, commercial banks cannot create private money. Reserves create deposits.[37] However, it is not difficult to construct a counterexample to this proposition: if private non-bank agents borrow and make payments exclusively by bank transfers among themselves, so that at the end of the day there is no need for interbank payments (claims and debts among commercial banks cancel each other out), then all payments can be made without high-powered money. Thus, private money creation does not require the prior existence of high-powered money. This suggests that the logic of money creation is the other way around: deposits make reserves.[38] In short, without jeopardizing the normal functioning of the entire monetary system, the central bank is not in a position to substantially and abruptly reduce the reserves available to commercial banks.[39] Accordingly, the central bank now provides loans at the request of commercial banks at a predetermined interest rate, called the **prime rate**.

Adepts of the Modern Money Theory (MMT) claim that even in our two-tier private banking system money creation by the state in a closed economy is purchase created money, which boils down to two operations. First, the central bank lends high-powered money to the treasury, and second, the treasury buys from non-state agents.

The amount of government bonds on central bank balance sheets is small relative to government debt. To make the MMT explanation consistent with this fact, the money creation process as seen by MMT cannot stop here. Central banks necessarily sell government bonds to private banks. In doing so, the state withdraws high-powered money from the economy in the current period to reinject an increased amount of high-powered money in the next period

[37] Mainstream position
[38] Post-Keynesian position
[39] If the central bank wants to, it can provoke a financial crisis by doing so voluntarily. Many believe this was the case with the Wall Street Crash of 1929.

(matured government debt repaid). Since the share of high-powered money in the total money supply is negligible, the goal of this operation cannot be to maintain the value of money; taxes serve this purpose in a purchase-created money system. MMT says that the state chooses this costly operation to maintain the interest rate, knowing that in the next period the same operation will have to be repeated on a larger scale. Be it! I wonder though why the low interest rate is the problem for the state and not for the private bankers.

In most countries, the treasury is prohibited from borrowing directly from the central bank, which seems to undermine the MMT interpretation of the modern money creation process. MMT sees this as a self-imposed constraint that makes the above logic less transparent; but by no means does it consider the debt relationship between the state and the private sector to be a real one, since the state pays with money that it has created out of thin air. Consequently, MMT pays no attention to the ownership of the central bank either.

In any case, the fact is that the state is indebted to the private sector because of the monetary system. Accordingly, the state pays interest to the private sector instead of buying products or services with this high-powered money. Even if the state pays for it with money that it has created out of thin air – in exactly the same way as private banks acquire the right to interest from the state –, this interest payment cannot be neglected because the amount of money that can be injected into the economy is not unlimited. Therefore, MMT's magic of establishing equivalence between private and public money creation to hide the importance of the private sector's grip on the money power is untenable.