I. Introduction

1. What is macroeconomics?

Macroeconomics is a set of theories and models on how economies operate[1]. Given the difficulty of the task, theories and models generally focus on aggregate indicators of economies: some measure of aggregate production, of price growth, of unemployment, of monetary aggregates, of transactions with other economies, of prices of currencies of different economies, of government debt, of the price of credit…

A less pretentious and less sugarcoated definition holds that macroeconomics is what macroeconomists do or what they say it is (with macroeconomists being those who do and define macroeconomics).

2. There are several macroeconomics

Macroeconomics is not a homogeneous discipline. There are several schools or traditions of macroeconomic analysis. The collection of all the theories and models of those schools contains mutually contradicting theories and models.

To the question of whether the Nobel Prize in Economic Sciences has been awarded to economists holding opposite views, Google answers the following:

> "Yes, Nobel Prizes in Economic Sciences (technically the *Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel*) have been awarded to economists with opposing, contradictory viewpoints, sometimes in the same year. Key examples include the 2013 prize (market efficiency vs. bubbles) and the 1974 prize (social planning vs. free markets).
>
> Here are specific instances of contrasting winners:
>
> - **2013 Efficient vs. Inefficient Markets.** Eugene Fama won for the Efficient Market Hypothesis, while Robert Shiller won for his work on market bubbles and investor behavior departing from rationality.
> - **1974 Socialist vs. Free Market Planning.** Gunnar Myrdal (a proponent of social engineering/social democracy) and Friedrich Hayek (a proponent of free-market liberalism) shared the prize, highlighting stark ideological differences.
> - **2002 Behavior vs. Theory.** Daniel Kahneman, who demonstrated how human behavior deviates from rational choice models, shared the prize with Vernon Smith, who demonstrated that market theory works, representing a clash between behavioral and traditional economics.

[1] In economics the most important concepts are never defined with precision: try to find a rigorous, clear and precise definition of 'market', 'money', 'capital', 'capitalism', 'wealth', 'development', 'good' … and 'economy'.

- **Other Contrasts.** The prize has often highlighted differing views on economic development and policy, with some critics suggesting the award can sometimes reflect opposing, and arguably, flawed perspectives on economic policy.

These instances are often cited to show that economic science is not a hard science like physics, but rather a 'broad church' covering diverse, and often contradictory, theories."

Simplifying a lot, these schools or traditions can be aggregated into two categories: orthodox (mainstream, dominant) macroeconomics and heterodox macroeconomics.

"US President Harry Truman is said to have sought a one-armed economist because he was so frustrated by his economic advisors always telling him, 'Well, on the one hand, we could do X, but on the other hand, we could instead do Y' – with 'Y' typically being the precise opposite policy to 'X' (…) We can think of the 'two hands' of economics as the orthodox, or neoclassical approach, of which a number of related strands have emerged, and the heterodox or Keynesian/Institutionalist/Marxist approach, which also is a 'broad church'."
Mitchell et al (2019)

"Let's therefore define 'mainstream economics' as theories shared by most academic economists at what they claim to be 'leading' universities, published in what they describe as the 'top' journals, as ranked by… well… by mainstream economists. This is a fairly well-defined community."
James K. Galbraith, https://www.postneoliberalism.org/articles/a-comment-on-dani-rodriks-new-paradigm-for-economic-policy/

3. Orthodox-heterodox divide I: public sector vs private sector

All macroeconomic views accept the distinction between the public sector and the private sector of an economy. Public sector economic activity corresponds to decisions made by public administrations, at all levels: national, regional, local. Private sector economic activity corresponds to what the rest of agents in the economy do.

The orthodox view is that, in 'normal' circumstances, public intervention in the economy should be reduced to what is considered essential (to keep circumstances 'normal'). Only in extraordinary circumstances (some kind of economic crisis or general economic malfunction) public intervention is justified, but just temporarily (until the intervention makes circumstances return to 'normal'). So orthodoxy claims that the private sector of the economy should be given as much freedom as possible and that the public sector plays a subordinate role (to help the private sector exercise its economic freedom).

Heterodoxy contends that the public sector is, from an economic point of view, at least as important as the private sector. The public sector is not subordinated to the private sector; rather both should collaborate. The perception in heterodoxy is that the private sector tends to generate economic instability (and other undesirable economic outcomes: unemployment, unfair distribution of

income and wealth, negative externalities such as pollution, resource exhaustion, global warming, biodiversity loss, ecosystem poisoning…). The economic role of the public sector, according to the orthodox position, is to correct the negative aggregate effects of private sector economic activity.

4. Orthodox-heterodox divide II: real sector vs financial sector

All macroeconomic views also accept the distinction between the real sector and the financial sector of an economy.

In a simple approach, an economy can be identified with two elements: the transactions that occur (what is bought and sold, who buys and who sells) and the outcomes of those transactions (the price at which sales and purchases take place, and the amount bought and sold). Since economies occur in time, outcomes may persist, so outcomes in the present will also include outcomes that remain from past transactions (accumulation of knowledge, non-depreciated means of production, outstanding debt, goods produced in the past…).

The distinction between private and public sectors focuses on who conducts the transactions (and owns or uses the outcomes): a public authority or the rest of economic agents. The distinction between real and financial sectors is based on the type of transactions.

There are two basic transactions: financial transactions and real transactions.

Financial transactions consist of the purchase and sale of financial assets. The financial sector of an economy includes all financial transactions and associated activities (like the creation and the liquididation of financial assets). Transactions and activities not exclusively involving financial assets (the real transactions) made up the real sector of the economy (essentially, the production, exchange and consumption of goods, bads and services).

The orthodox view underestimates the influence of the financial sector in the economy. In 'the long run' of an economy only the real sector matters: what happens in the financial sector has no long run impact on the real side (that is, production of goods and services, employment, standard of living, volume of international trade…). This implies that, eventually, the real sector is detached from the financial sector, so that both became mutually independent: what occurs in the financial sector remains in the financial sector. That explains why orthodox models characteriscally are formulated in terms of real variables, and hence have to struggle with the fact that all modern, advanced economies are monetary (that is, most variables are generated in non-real terms).

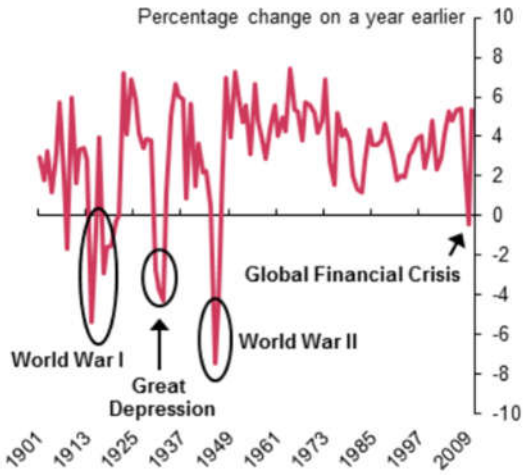
The heterodox view claims that the real and financial sectors are always interdependent. Most heterodox schools even conted that the financial sector is inherently unstable. As a result, financial troubles easily spread to the real sector and, in addition, troubles in the real sector are magnified by what takes place in the financial sector. This perception justifies the need of public intervention, to tame the financial sector and, when the taming is insufficient or ineffective, fix the damage that the financial sector causes on the real sector.

The global financial crisis started in 2008 was an episode rather consistent with the heterodox view.

"Assessments of the crisis's impact in the U.S. vary, but suggest that some 8.7 million jobs were lost, causing unemployment to rise from 5% in 2007 to a high of 10% in October 2009. The percentage of citizens living in poverty rose from 12.5% in 2007 to 15.1% in 2010. The Dow Jones Industrial Average fell by 53% between October 2007 and March 2009, and some estimates suggest that one in four households lost 75% or more of their net worth (…) It was among the five worst financial crises the world had experienced and led to a loss of more than $2 trillion from the global economy."
https://en.wikipedia.org/wiki/2008_financial_crisis

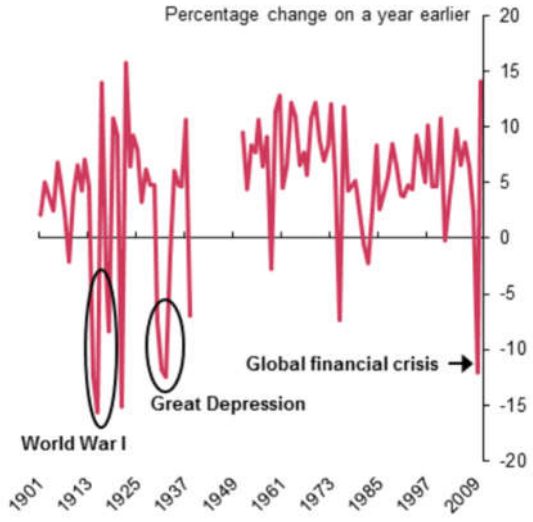
"The Global Financial Crisis (GFC) caused the worst peacetime contraction in world economic activity since the Great Depression (…) The Great Depression and both World Wars caused steeper falls in global GDP – but the GFC was by far the deepest global downturn that has occurred in the post-war period. Indeed, so far, 2009 has been the only year since World War II in which world activity contracted relative to the previous year. Of course, there have been other downturns – the most severe occurred in the mid-1970s, the early 1980s, and the early 1990s. But annual global growth never fell below 1% in any year of the post-war period – until the GFC."

Chart 1: World GDP



"A similar picture emerges when looking at other indicators of global activity, such as world trade (…) Again, though less severe than during World War I and the Great Depression (the data don't cover the World War II period), the fall in global trade volumes during the GFC was by far the deepest contraction that has occurred in the post-war period. Trade volumes fell by around 12% in 2009 – almost 5 percentage points more than during the next-worst contraction in 1975."
https://bankunderground.co.uk/2018/09/20/the-world-turned-upside-down-how-the-global-economy-was-hit-by-the-crisis/

Chart 2: Global trade volumes



5. Asymmetry between real and financial transactions

A financial asset is a monetary right of someone over someone else. A financial asset is a kind of I.O.U. ('I owe you'). An I.O.U. is a promissory note: the acknowledgement of a debt of money. A financial asset materializes a promise to pay money in the future. Loosely speaking, a financial asset

is a (direct or indirect) loan of money: the buyer of a financial asset extends credit (lends money) to the seller of the financial asset.

Any financial asset expresses a relationship between two parties: lender (creditor, saver) and borrower (debtor, investor/consumer). At the same time, a financial asset (which could also be called a 'financial liability') represents both an obligation (to the one who creates the asset in favor of the one who buys it) and a right (in favour of the one who buys the asset over the one who creates it).

Financial assets are instruments to channel money (to make and receive a loan of money) from those who wish to lend to those who wish to borrow. Those wishing to borrow have a deficit: their planned expenditure is larger than their current income, so they would like to use now future savings. For those wishing to lend, planned expenditure is smaller than current income: they have a surplus and would like to save it for future use.

• **Example 1 of financial asset.** A bank deposit is a financial asset: the customer has the right to use the deposit to make payments and the bank is obliged to attend the customer's request to use the deposit to make payments.

• **Example 2 of financial asset.** A Treasury bill (T-bill, for short) is a financial asset created by a government to finance an excess of expenditure over revenue. In Spain, a T-bill is a promise to pay €1000 in the future (in 3, 6, 12 or 18 months) to the owner of the bill.

• **Example 3 of financial asset.** A bank loan is a financial asset: the loan represents the borrower's obligation to fulfil a financial obligation and simultaneously represents a monetary right of the bank on the borrower. In everyday speech, 'loan' is used to designate both the credit that the bank provides to the borrower (the 'loan of money') and the borrower's obligation to repay the loan of money. In reality, the financial transaction when a bank grants a credit involves the exchange of two financial assets: the bank, as the lender, delivers a financial asset called 'deposit' to the borrower; and the borrower delivers to the bank a financial asset called 'loan'.

Orthodox analysis typically overlooks an asymmetry between real and financial transactions.

A real transaction (purchasing a commodity, hiring a worker) is, in essence, an outright transaction: it takes place at one point in time and does not require further action in the future.

Instead, a financial transaction is actually a two-fold transaction, which involves two points in time. In a financial transaction, the purchaser of the financial asset initially pays money to the issuer of the financial asset and, at some point in the future, the issuer must pay (more) money to the purchaser. This means that, initially, a financial transaction is an incomplete transaction, which is expected to be completed in the future.

And this also means that a financial transaction is a bet: the purchaser of a financial asset (the creditor) bets that the issuer (the debtor) will pay the debt.

Since nothing guarantees that the debtor's obligation will be met (even if the debtor is willing to comply, exogeneous events may prevent him or her from fulfilling the promise of payment),

financial transactions may be broken and generate unplanned and undesired consequences. For instance, if A is in debt with B, and with C, that C fails to cancel his or her debt may make B unable to cancel his or her debt; as a result, A may be prevented from conducting planned activity in the real sector.

The risk that financial transactions may not be completed (no one knows the future) gives support to the heterodox view that the financial sector is inherently unstable.

6. Orthodox-heterodox divide III: micro vs macro

How macroeconomic and microeconomic analysis are, or should be, linked? Microeconomic analysis is limited to parts of an economy, without taking into account how the whole and the parts are related. Macroeconomic analysis takes the bird's eye view: it is a totality (the whole economy) that is analyzed (actually, the totality usually considered is a national economy, rather than the world economy).

A basic tenet in orthodoxy is that microeconomic analysis is fundamental, and that macroeconomic analysis derives from microeconomic analysis. 'Good macroeconomics', in that view, means 'macroeconomics with microfoundations'. This means that macroeconomics is not an independent discipline: it is just microeconomics made bigger by increasing the scale of analysis. In consequence, macroeconomic models are really microeconomic ones. Perhaps it is no coincidence that microeconomics was mathematized first (the 19th century marginal revolution) and is essentially indistinguishable from pure mathematics (a mathematician, without any academic economic training, is more qualified to conduct microeconomic theoretical research than an average economist).

Heterodox economist have considered less relevant to built an alternative microeconomics, because dealing with, and understanding, macroeconomic troubles have been regarded as a more useful, and urgent, task. In this regard, orthodox economists have found in orthodox microeconomics a solid ground upon to which built a rigouristic approach to macroeconomics. In addition, all the models, techniques and excuses developed in microeconomics can be easily transferred to macroeconomics, for which reason orthodox macroeconomics research could grow at a very high rate. By contrast, heterodox macroeconomics needs to start almost from scratch, perhaps without an accompanying microeconomic support. Intellectually, that creates the impression of inferiority or at least incompleteness in any heterodox approach in comparison with the orthodox one.

The heterodox main response is the claim that requiring microeconomic foundations for macroeconomic analysis may be a massive error. Heterodox economists resort to the fallacy of composition to justify that the legitimacy of studying the macroeconomic reality autonomously, without having to subordinate macro to microenomic analysis (in any case, implications work both ways: macroeconomic reality influences also the microeconomic one, as not everything is a simple matter of aggregating microeconomic realities).

7. Fallacy of composition

The fallacy of composition means automatically assuming that what is true at a lower scale (what is true for individuals or parts of an economy) is true at a higher scale (true for groups of individuals or the entire economy).

- **Example 1.** (From Google) "An example of the fallacy of composition in economics is the paradox of thrift, which argues that while it's beneficial for an individual to save more, if everyone saves more simultaneously, it can lead to lower aggregate demand, reduced production, and a worsening economic recession for the entire economy. This occurs because one person's spending is another person's income, so a decrease in spending across the whole economy means a decrease in overall income and economic activity".

- **Example 2.** If only one driver leaves home early to avoid a traffic jam, he avoids it; if everyone leaves early, the traffic jam is not avoided but occurs earlier.

In the two examples above, a recommendation that could be successful at an individual scale need not be successful at a global scale. The fallacy relies on ignoring network effects, and network effects are first nature in an economy (it is not the same purchasing a phone when no one else has one than when most people have a phone). The fallacy of composition in financial regulations is presuming that if all the individual risks are kept under control, the entire financial system is safe. The fallacy ignores that even if all the banks are prudent, the system need not be safe.

- **Fallacy of division.** The division fallacy means automatically assuming that what is true at a higher or aggregate scale (a group, the economy) is true at a lower scale (individuals or parts of the economy). Examples: a cell is alive, but the molecules that compose it are not alive; brain activity generates consciousness, even though the neurons that make up the brain do not appear to be conscious.

- **Emergent property.** A property of a system is said to be emergent when none of the components of the system have it. The existence of emergent properties explains the fallacies of composition and division: when moving from one scale to another, the property appears or disappears and causes the fallacy of applying the same reasoning in two cases: one with the property present and the other with the property absent.

The expression 'too big too fail' testifies to the existence of an emergent property. Typically, an economy is unaffected by the bankruptcy of a firm. But, mainly in the financial sector, some banks or financial institutions have become so large and interconnected that bankruptcy of one such financial actor could be catastrophic for the whole economy (not just the financial sector). In this case, public intervention (to prevent bankruptcy) seems justified. Unfortunately, the emergent property of becoming a private systemic actor, carries with it a moral hazard problem: given that the private systemic actor is aware of this condition, and that the government is most likely to come to the rescue in case of trouble, the actor has an incentive to abuse its privileged position (if risky plans go wrong, losses will be assumed by the public sector; if the plans succeed, profits are privately appropriated). *Time*'s person of the year 2009, the Federal Reserve president Ben Bernanke,

declared: "'Too big to fail' is one of the biggest problems we face in this country" (see https://content.time.com/time/specials/packages/article/0,28804,1946375_1947251_1948043,00.html).

Changes of scale typically create new realities: if a company is losing money, the company has a problem; if all the companies in the economy are losing money, then the economy has a problem.

• **Simpson's paradox.** Simpson's paradox occurs when a characteristic true for several groups turns false for the union of the groups. As an illustration, the table below shows three groups, two periods, and the tax rate (the ratio of taxes to income) for each group. The tax rate for each group decreases from $t = 1$ to $t = 2$, but, for the aggregate group, the tax rate increases from $t = 1$ to $t = 2$.

	period $t = 1$			period $t = 2$		
	taxes	income	tax rate	taxes	income	tax rate
group 1	5	100	**5%**	2	50	4%
group 2	150	1000	**15%**	63	450	14%
group 3	40	200	**20%**	255	1500	17%
all groups	195	1300	15%	320	2000	**16%**

The example makes evident that a valid microeconomic claim (each group pays a lower proportion of income) need not be macroeconomically true (in the aggregate a lower proportion is paid as well).

In view of Simpson's paradox and related results, heterodox economists contend that it makes sense to conduct macroeconomic analysis directly at the aggregate level without necessarily have to ground that analysis microeconomically.