

THE \$8 TRILLION GAMBLE: CAN WE MAKE ECONOMIC POLICY FIT FOR PURPOSE?

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The \$8 trillion gamble - the central banks consider the risk.

INTRODUCTION

In response to the coronavirus pandemic in 2020, four of the world's central banks created \$8 trillion (USD) worth of new money to buy back their respective governments' debts from investors in the financial markets. To put \$8 trillion in context, it is roughly the same value of money as paying the median 'middle' salary to every working person in the USA, the Eurozone, Britain, and Japan for one year. So, the central banks of these economies have poured enough new money into their respective financial markets to furlough their entire workforces for a year. But there is a risk that this action will devalue people's actual wages by increasing the cost of living.

Given the magnitude of money involved, and the potential risk, it might be thought that the central banks have good justification for their actions, but this is not the case. The explanation that the Bank of England provides, to meet its legal obligation of Britain's freedom of information law, is that this action, known as quantitative easing, "makes [investors] likely to spend more, boosting economic activity". This nebulous statement is the extent of the Bank's justification. No further information is provided, such as how much spending would be involved, what will it be spent on and how does this address unemployment and homelessness caused by the pandemic?

As demonstrated by this extraordinary event, the theories used by policy-making economists are not fit for purpose. They make a pretence of 'following the science' but in truth align more closely to a

belief system than to scientific methodology. So, in this essay I present some examples of the problems with the current approach to economic theory and how these can be addressed.

THE FAILURE TO REPRESENT REALITY

We can begin by considering the concept known as *utility theory*. This theory states that the benefit gained by consuming a good determines its price. This is a process that cannot be observed, as not only is the price of a good said to be determined by the good's utility, but also the good's utility is said to be determined by its price. This reciprocal dependency between price and utility means that we cannot make predictions about the price of goods without knowing their utility, and we cannot predict the utility of goods without knowing their price.

This uninformative abstract logic leads some economists to interpret utility theory as the effect of consumer behaviour on the price of goods. Many attempt to demonstrate the validity of the theory by using statistical analysis to create mathematical functions to fit to real world data on consumer behaviour. These mathematical functions are called utility functions.

However, the problem remains. Since retailers set the price and not consumers, the effect of consumer behaviour on price cannot be directly observed. This is because the price of goods observably affects consumer behaviour and not the reverse as claimed by current utility theory, and this is demonstrated by discount sales. It is this observable process that prevents statics, or utility functions, from providing actual evidence for utility theory.

In the case of utility theory, the mathematical term to describe this is *spurious variable correlation*. Meaning, that as we cannot observe the effect of consumer behaviour on the price of goods, but we can observe the effect of the price of goods on consumer behaviour, then any correlation between real-world data and utility functions represents the observable process and not the unobservable one being claimed by utility theory. The logic of this argument is based on the scientific principle of Occam's razor, whereby an observable explanation takes precedent over an abstract argument.

Despite the problems with utility theory, some economists mistakenly claim that the theory is a scientific construct. This is not the case, because we cannot observe the process and the theory does not make testable predictions to explain the features or phenomenon of an economy. It cannot, say, provably help us understand why mass-produced goods tend to be manufactured in economies with a low cost of living, nor why poverty is higher in major cities than rural regions, nor the causes of inflation. So, utility theory does not provably explain any aspects of economy behaviour.

COMPETING INTERPRETATIONS OF CURRENT THEORIES

As current economic theories do not make testable predictions, economists themselves disagree about the interpretation of how various theories, such as utility theory, affect economy behaviour. The consequence is that economists form like-minded groups known as schools of thought, where the views of one group of economists are not consistent with those of other economists who belong to a different school. Crucially, as their current theories cannot be proven, their debate about economy behaviour is currently based on the premise that a theory must be disproven by the theory's

detractors, and not proven by the theory's supporters. So, the different schools are intellectual silos that will not consider any hypotheses that do not conform to their respective opinions.

In contrast to economics, science and applied science disciplines require proof of hypotheses. This means that scientists have a vastly different approach to the constitution of knowledge than that of economists. Indeed, the information that is accepted as fact by economists is deemed to be unverifiable proposition by scientists. To prove something is true takes one piece of independently verifiable evidence, and this is the approach of scientists. In contrast, and problematically for economists, to prove something is false – that is to prove a negative – takes a lifetime of investigation. So, what is the alternative to utility theory?

Let's start by considering that consumer behaviour could affect price. To accept this idea, consumer behaviour must be assessed through the market research of retailers. However, retailers are subject to business-to-business competition, financial pressures from the cost of input goods, staff wages, property rents, cost of borrowing, exchange rate fluctuations and the payment of duties and taxes. Also, as most businesses are micro and small enterprises where the owners are paid dividends in lieu of being paid wages, businesses must make sufficient profits for the owners of the business to live on. Furthermore, all goods and services can be purchased by businesses, who are therefore also consumers, albeit under a different set of tax rules.

There are many conflicting factors in the pricing of goods that economists must account for. Current economic theories do not consider this complexity. Yet, potentially antagonistic processes must be considered within any future economic theories. So, utility theory is not being replaced. It's being demoted from being declared as a paradigm that explains economy behaviour, to an applicable set of circumstances where consumer behaviour affects the price of goods. The mistake of the current approach to economics is to simply see theories as true or false, whereas under different circumstances different processes may become important, so the greyscale of reality needs to be considered.

PROBLEMS OF THE CURRENT HOLISTIC APPROACH

Current schools of thought in economics have opposing theories of economy behaviour. Each school adopts a series of complementary theories and attempts to interpret the effects of those theories on economy behaviour. This approach is undertaken in isolation of antagonistic theories, which produce a counter effect, so at best it can only be useful under a very specific set of conditions, which are unlikely ever to exist. This approach to developing theories is known as holistic. Despite the misleading name of this methodology, it cannot account for the effects of conflicting theories.

A consequence of a holistic approach is that economists attempt to understand economy behaviour by studying the growth of economic output. Here there is an unjustified acceptance that an economy must grow to be stable. This belief is flawed as studying the growth of an isolated output of a complex system cannot reveal the nature of the system. If we wish to understand employment opportunities and tax revenue, across different regions of an economy and between different economic sectors, then studying a single value of output or income for the whole economy, which does not distinguish between company profits and peoples' wages, cannot be insightful.

Of great concern is that the belief in continuous economic growth leads to the erroneous conclusion that being environmentally sustainable is disastrous for the economy. If we reduce, recycle, and reuse goods then the economy must contract. So, the current thinking of economists is fundamentally flawed at a time we urgently need to address climate change, rising pollution, and loss of biodiversity. To change this, we must move away from the misnamed *holistic* approach to studying economy behaviour.

The alternative to holism is reductionism, which is practiced by scientists and engineers. Scientists understand various natural systems by studying the constituent parts of the system and the processes acting on those parts. In meteorology, the constituent parts are bodies of air and the processes acting on the air include thermodynamics (temperature), fluid dynamics (pressure and speed) and the Earth's Coriolis effect (rotation). Similarly, with solar systems, astronomers study the celestial bodies (constituent parts) and the laws of motion and gravity that act on those bodies. The same approach is also used for studying ecosystems, where the constituent parts are organisms and the processes acting on them include any factors that affect individual reproductive success.

The current holistic approach of economics cannot represent apparently opposing theories that have different levels of influence depending on the conditions within the system, such as the effect of business competition and the cost price of production on the retail price of goods. Also, the holistic approach cannot represent the idea that consumer behaviour may affect price in some circumstances but not others. Whereas, by using the scientific approach of reductionism, and the mathematics of dynamic systems, we study the constituent parts of a system and the processes acting on those parts under all circumstances.

We can use reductionism to understand economy behaviour. The constituent parts, or entities, are people whose financial behaviour can be divided into that of households and that of businesses. The processes acting on these entities are any that affect their financial circumstances, such as the taxes they must pay, the cost of rent, the cost of supplies, the cost of borrowing and so on. Their financial circumstances will affect their financial behaviour, so we have a dynamic system due to the interdependencies between the expenditure of some entities (including businesses paying wages) and the income of other entities, and vice versa.

FOLLOWING SCIENTIFIC METHODOLOGY

The previous sections have explained that economic theories do not represent reality, that the inability to prove theories leads to separate schools of thought and promotes a holistic philosophy of knowledge, and that this philosophy cannot provide meaningful insights into economy behaviour. To change this economics must be studied following scientific methodology. This means that definitions of the structures and processes must be based on indisputable observation, all hypotheses must make useful and testable predictions that explain why the world is the way it is, and hypotheses only become theories when widely and independently proven.

Utility theory is an example of the failure to base the definition of a process on an indisputable observation. Economists argue that utility theory is an abstract concept, and they compare this with the abstract concepts of science. This argument misses the point that the observable parts and processes must be defined first to be able to prove the existence of the abstract parts (such as particles

in subatomic physics) and the abstract processes (such as gravity in astrophysics). So, in science, theories of abstract parts or processes make testable predictions about the effects of their presence on the observable processes and observable parts of the system. This is not the case for utility theory, which has an unbreakable circular dependency between price and utility. Moreover, currently economists neglect the concept of hypotheses and refer to postulated ideas that cannot be proven as theories.

So, the starting point of understanding economy behaviour must be to establish the structures and processes of an economy based on observations that are not subjective. Instead of utility theory as a process of setting the price of goods that cannot be observed, we must determine the process that can be observed. This is not difficult, as we know that retailers set the price, we find that all company annual accounts demonstrate that the retail price of goods is the cost price of production plus the company's profit margin.

This approach, based on observation of a process within the system, can produce informative, testable hypotheses that explain why the world is the way it is. One such hypothesis explains why the manufacturing of mass-produced goods will be in economies that have a low cost of living. The hypothesis is as follows:

If a company wishes to increase its profits, then it can either reduce the cost price of production or increase the retail price of the goods. If the business is in competition with other businesses on the price of goods, then it cannot increase the retail price and must seek to reduce the cost price of production. As wages tend to be the greatest input cost of a business, then the location of the production of goods becomes a major factor amongst businesses competing on price. So, there is a competitive advantage in the manufacturing mass-produced goods in economies that have a low cost of labour (although there must be consideration of other input costs, such as distribution and storage, and government tax incentive schemes and various other factors).

The idea that the retail price of goods is a function of the cost price of production and the business profit margin is not discarding utility theory, as there may be circumstances when a business is able to exploit some consumers' willingness to pay premium prices for exclusivity, such as the launch of a new model of mobile phone. So, the vast body of work on consumer behaviour remains relevant even though we reject the paradigm of utility theory.

By following reductionism and not holism, and by using the mathematics of dynamic systems, we can incorporate many different theories, of many aspects of household and business behaviour, and study how this varies under different financial circumstances, to make testable predictions of economy behaviour, such as the prevalence of poverty, consumer carbon footprint, and inflation.

THE \$8 TRILLION GAMBLE

The philosophical problems with economic theories have far reaching consequences as they are applied to economic policy. In 2020, four of the world's central banks creating new money worth \$8 trillion. This action is based on an economic policy termed "quantitative easing" whereby its intended objective is to alleviate perceived issues related to the quantity of money within an economy. This policy is underpinned by two unobservable, unprovable abstract concepts, with similar philosophical problems to utility theory, which are known as *quantity theory* and *market theory*. Furthermore, the

metric that drives this policy is fundamentally flawed due to the so-called holistic approach. So, the three unjustified assumptions of quantitative easing are as follows:

Firstly, quantity theory requires the acceptance without proof that increasing the money in circulation will stimulate the economy. This viewpoint is that the quantity of money in circulation – that is all the money available to be spent by all entities in the economy – affects the price of goods. The unprovable assumption being that the more money there is in circulation the higher the price of goods. This theory was proposed over 500 years ago and still cannot be proven. Yet, economists working for central banks assume that if economic output contracts then creating vast quantities of new money to buy back government bonds from investors will stimulate a growth of economic output.

Secondly, market theory requires the acceptance without proof that the self-interest of people trading through the financial markets has intangible benefits for the whole economy. This idea was originally proposed by the Scottish moral philosopher, Adam Smith, two hundred and fifty years ago. He was influenced by his belief that God intervenes in the behaviour of the markets. So, the effect of assuming that there is an inherent benefit to the economy of market behaviour – although no longer associated with the benevolence of a deity – is that the money created by the central banks is deposited with investors in the central markets, instead of, say, paying the essential living costs of people unable to work due to government-imposed restrictions on working patterns used to slow the spread of the coronavirus.

Thirdly, as discussed earlier, there is acceptance without validation that the economy must grow to be stable. The assertion that economy behaviour can be understood by studying the change in economic output is false. Economies must be broken down into constituent parts and processes by using the methodology of reductionism. To do this, science and engineering use a branch of mathematics known as the mathematics of dynamic systems. However, this branch of mathematics is not currently used to study large-scale economics. So, economists cannot currently understand the nature of economy behaviour.

As a result of these unjustified assumptions, the reasons for ‘printing’ money and the choice of where to spend it is currently a matter of gut-feeling – a gamble. The current beliefs of economists in the mainstream schools of thought have resulted in the central banks giving vast sums of money to wealthy asset owners in exchange for their investment in government debt. But what about the potential adverse effects of this action? How much of this money ends up being used to increase the size of investors’ property portfolio? By how much does this push up house prices and rent during the following years? By how much does this increase inflation? How does this affect the future cost of living and poverty levels within different regions of the economy?

The central banks do not know this information. They cannot even prove that there is any proportionate benefit to their actions, relative to the extraordinary sums of money involved, let alone understand the ‘likely’ detrimental consequences, such as a disproportionate rise in housing costs. Yet, there is an alternative approach.

BRINGING ECONOMICS INTO THE 21ST CENTURY

In contrast to current economic theory, I argue that the economy is driven by the need for most people to trade their time and skills for a wage, to meet their living costs. An economy is a natural system

that will form anywhere people need to trade regardless of the presence or absence of central governments, central banks, and central markets. To understand economy behaviour, theories must be based on people's need to trade to meet their living costs, and not, as it currently stands, based on the perspective of the organisations that happen to wield powerful economic tools that they do not provably understand.

Generally, from the economists I've corresponded with, those who follow the orthodox (mainstream) schools tend to believe that they are following a scientific approach, and those that align with the heterodox (counterview) schools dismiss a scientific approach as being impossible. Both groups believe in some form of utility theory and that the markets have some type of special characteristic, although they disagree about the effects on economy behaviour. Neither group has experience of scientific methodology, nor do they have experience of the mathematics of dynamic systems. Furthermore, they are constrained by a vocabulary tied to the current belief system of unnecessary abstract concepts.

So, I am writing a book to explain the scientific approach to studying economics to a general audience and writing technical papers for a new generation of economic analysts. I also plan to lead a team of software programmers, engineers, and economists, to create new economic forecasting software based on the mathematics of dynamic systems that will prove my theories of economics. If you would like to sponsor my work and receive pre-release copies of all my publications, please join my Patreon.com project [1]. Alternatively, you can follow my project on ResearchGate.net [2] or through my website [3]. So far, I have written a technical paper that outlines the new framework [4], I have also defined models of household behaviour [5], and the framework to interlink household and business income and expenditure [6].

Most importantly, my theories are provable as they follow scientific methodology, unlike the disproof required by current economic theories. Supporting my project will advance our understanding of economy behaviour and with sufficient funding can rapidly change the current acceptance of unprovable theories amongst economists. This will separate politics from economic analysis and will provide the information needed to address climate change and tackle rising child labour at its root; the economic policies currently based on theories that are not fit for purpose.

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