

MODELLING MARKETS VERSUS MARKET ECONOMIES: SUCCESS AND FAILURE

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SUMMARY

Non-linear, stochastic, thermodynamic, agent based or network modelling are powerful tools brought from other fields into economics. Applied in almost every sub-field of economics, these tools had however substantial success only in the analysis of financial markets. We suggest that the reason for this is less the insufficiency of these technical tools but rather the incapacity of mainstream economic theory to adequately represent the functioning of modern market economies. We argue that the method of mainstream economics to understand market economies by the help of simultaneous price determination on all markets fails to provide a satisfactory representation of our economies. As a result, when modelling financial markets, the final goal - a satisfactory determination of prices - is achieved; but when modelling market economies, the final goal - a satisfactory representation of modern market economies - is not achieved even if all prices are satisfactorily determined.

KEY WORDS

economic relation, market concept, credit operation, monetary economy

CLASSIFICATION

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INTRODUCTION

Non-linear, stochastic, thermodynamic, agent based or network modelling are powerful tools brought from other fields into economics. [1 – 7] Applied in almost every sub-field of economics, these tools had however substantial success only in the analysis of financial markets. The following question raises:

When modelling partial markets why these tools provide promising results and why these same tools fail when all markets are brought together to form a complex market economy?

We suggest that the reason for this is less the insufficiency of these technical tools but rather the incapacity of mainstream economic theory to adequately represent the functioning of modern market economies. We argue that the method of mainstream economics to understand market economies by the help of simultaneous price determination on all markets fails to provide a satisfactory representation of our economies. As a result, when modelling financial markets, the final goal – a satisfactory determination of prices – is achieved; but when modelling market economies, the final goal – a satisfactory representation of modern market economies - is not achieved even if all prices are satisfactorily determined.

The argument is presented as follows: in a first section of the paper, we show that the major hypothesis of the ruling economic paradigm does not allow for an adequate representation of market economies, but permits adequate price determination on partial as well as on general (i.e. global) markets. This hypothesis is that all economic relations between agents can be conceived exclusively as exchange relations.

In a second section, we show that the adequate question for understanding the functioning of market economies is less the general price determination resulting from the exchange relation, but the modelling of credit-money systems resulting from the credit relation.

In a third section we show that credit-money systems cannot be represented in the terms of mainstream economics.

THE RULING PARADIGM: MAINSTREAM ECONOMICS

Following A. Smith [8], the father of economic sciences, economic science is *An Inquiry into the Nature and Causes of the Wealth of Nations*. That is to say, economic science is aiming at understanding what constitutes wealth and how individual and social wealth changes.

Mainstream economics, as all value theories, defines individual and social wealth as the sum total of commodities (i.e. useful things) [9, p.65]. In order to be able to sum up commodities to determine wealth, they must be expressed in a same unit. This is done by the help of prices, which are ratios of the given and obtained quantities. Whence the central question of analysing the exchange relation and markets (defined as the place of exchange) in this theory (the exchange operation consists in giving commodities for other commodities, because the utility that yields the former is less than the utility of the second).

However, mainstream economics does more than focusing on the exchange relation. It makes the assumption that exchange relation is the only relation between economic agents. In economics, the (pure) exchange relation is conceived as one which does not redistributes wealth. We will call this property of the exchange relation symmetry.

The exclusivity of exchange raises some problems. In fact, the system analysed in economics, called economy, is defined as all systems in any sciences, that is to say by its elements and by the relation between its elements. The elements of an economy are economic agents (being

capable of making decisions to get richer), the commodities, and the exclusive exchange relation (put aside the possessing). If we consider human beings as the economic agents of the economy, then there can be no difference between exchange economies unless the list of commodities is different. But should we consider different an economy when there is no nylon sock and a year after when it is invented? Certainly not. It follows that the mainstream economic paradigm does not allow for any fundamental difference between the functioning of a barter economy with no money and a monetary economy with money.

Empirical facts show that this conclusion of mainstream economic theory [10, 11] is completely mistaken, as admitted a decade ago by the president of the European Economic Association: “We do not, as yet, have a suitable theoretical framework for studying the functioning of a monetary system.” [12, p.215].

Hence, even if the tools brought from other fields allow for an adequate solution for the price determination problem, they does not form an adequate model for the understanding of monetary systems.

In what context these tools should be applied then? We examine this question in the following section.

SUGGESTION FOR AN OTHER CORE HYPOTHESIS TO REPRESENT MONEY ECONOMIES

Following the empirical evidence, if we want to allow for a possible difference between barter and money economies, we must have at least one different economic relation in the two economies.

We suggest, as Schumpeter and others [13 – 16], that the credit relation stemming from the credit operation cannot be reduced to an (intertemporal i.e. between periods) exchange.

To show this, let us consider the following example.

Agent A gives an apple today to agent B in exchange of a recognition of debt to be paid with two apples tomorrow. This operation is simply an (intertemporal) exchange, which is considered erroneously by mainstream economics as a credit operation.

The point of the credit operation is that agent A gives an apple today to agent B in exchange of a recognition of debt to be paid not with two apples tomorrow but with a claim of two apples tomorrow, a claim for example on an agent C.

The asymmetrical character of the credit relation is straightforward: the borrower (agent B) can honour her debt if and only if she can claim to apples tomorrow from agent C. And what if agent C is unwilling to recognise the debt of two apples tomorrow on herself (a claim on herself) unless she obtains in return three apples? And what if agent C is identical to agent A?

The relation stemming from the credit operation is thus an asymmetrical relationship distinguished from the exchange relation.

In modern bank-money economies the credit operation cannot be ignored, because money is created by credit operations, as illustrated in Table 1.

Table 1. Credit operations.

Bank		Non-bank agent	
Assets	liabilities	assets	liabilities
claim on non-bank agent	money	money	debt toward the bank

As a result, if we want to construct a model of a bank-money economy, the tools brought from other fields should be used in this framework. This framework is not intrinsically refractory to allow for some difference between monetary and barter economies.

However, this modification cannot be fitted in the habitual economic framework, as we show in the next section.

BASIC NOTIONS REVISITED

Mainstream economic analysis defines individual and social wealth as the sum total of all commodities. However, a formal analysis shows that money cannot be treated as a commodity. In fact, a commodity appears as a single number in the allocation of a single agent (an asset for an agent). But bank-money appears as a pair of numbers in the allocations of two agents (an asset for the non-bank agent and a liability for the bank). Whence, bank-money cannot be treated as a commodity. It follows that individual wealth does not consist exclusively of commodities. There are also financial assets and financial liabilities (a financial asset is an asset in the allocation of one agent and it is at the same time a liability in the allocation of another agent). As a consequence, the utility concept, which evaluates exclusively commodities, cannot be used any more for the individual evaluation of the individual wealth.

Table 2 summarises the differences of the two theoretical frameworks.

Table 2. Differences between the mainstream and non-mainstream economic approaches.

	Mainstream economics	Non-mainstream approach
main objective	price determination	credit-money representation
economic relation	exclusively exchange	also credit
individual wealth	commodities	also financial assets and liabilities
individual evaluation of wealth	utility	not utility

CONCLUSION

More and more natural scientists by formation publish in the field of economic sciences with more success in the analysis of financial markets and with less success in the analysis of the overall economy.

We suggested that this difference is not by chance. In fact, most of the works try to answer questions formulated by mainstream economists. As we have shown, the major question formulated by mainstream economic theory, which feeds other questions, is the determination of prices. On the level of microeconomics, this question is adequate. But on a macro level, even if these questions are correctly replied, the answers do not help to understand the functioning of our modern economies. Whence the lack of success on a macro level.

Some attempts, to model the overall economy allow for the abandon of the mainstream framework [17 – 19]. However, in a context, when non-mainstream economists are also ignored, it is not surprising that interdisciplinary approaches, which often have the additional burden of not using the “official economic language” are neglected.

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MODELIRANJE TRŽIŠTA U ODNOSU NA TRŽIŠNE EKONOMIJE: USPJEH I NEUSPJEH

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SAŽETAK

Nelinearno, stohastičko, ili termodinamičko modeliranje te modeliranje putem agenata ili mreža alati su koji se rabe u ekonomiji, a razvijeni u drugim područjima. Iako su primjenjeni u gotovo svakom dijelu ekonomije, ovi su alati pokazali znatni uspjeh samo u analizi financijskih tržišta. Kao razlog tomu predlažem prvenstveno nemogućnost vodeće ekonomske struje za prikladnim predstavljanjem funkcioniranja modernih tržišnih ekonomija, a tek u manjoj mjeri nedostatke tih alata. Obrazlažem da metoda vodeće ekonomske struje o razumijevanju tržišnih ekonomija pomoću istovremenog određivanja cijene u svim tržištima ne predstavlja na zadovoljavajući način naše ekonomije. Zbog toga, prilikom modeliranja financijskih tržišta, krajnji cilj – zadovoljavajuće određivanje cijena – jest postignut, ali prilikom modeliranja tržišnih ekonomija krajnji cilj – zadovoljavajuće predstavljanje modernih tržišnih ekonomija – nije postignut čak i ako su sve cijene zadovoljavajuće određene.

KLJUČNE RIJEČI

ekonomski odnosi, koncept tržišta, kreditne operacije, monetarna ekonomija