

# Is the Economy a Living Object?

**Martin Vlcek**

Department of macroeconomic forecasting  
 Ministry of Finance of Czechia  
 Prague, Letenska 15, 100 00  
 Czechia (Prague)

*martin.vlcek@mfcz.cz*

## General Terms

Economics

## Keywords

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## 1 ABSTRACT

I try to prove that the model used in this presentation opens up a new perspective on the economy. This perspective could indicate the economy as being an object with living properties.

The model uses two criteria for learning: tension and satisfaction. Tension is the inaccuracy of forecasting and this tension is minimized. Satisfaction is the mutual balance of coefficients used for this forecasting.

The model proceeds in an analogical way to living objects: it solves the tension moving according to the gradient of the satisfaction.

A living object, besides its movement as a whole on the gradient of satisfaction, is characterized by typical parts with a typical behavior. The activity of these parts obeys some rules of consequences, for example: there first occurs a tension which is followed by a reaction in the muscular system which will change its form etc. If we are successful in locating these consequences in the economy it will be another brick in the wall that solidifies its definition as a living object.

It seems that fixed capital formation corresponds to the muscular system and consumption of households is a candidate for the nervous system...

## 2 INTRODUCTION

I try to prove that the model used in this presentation opens up a new perspective on the economy. This perspective could indicate the economy as being an object with living properties.

## 3 MODEL

I constructed a non-econometric model for my predictive works at the Ministry of Finance of the Czech Republic. This model is distinguished by the following properties:

- Forecasts of any time series are made by the same technique and the same result – the structures of coefficients – see fig. 1,
- Model uses two criteria in the establishment of these structures: tension and satisfaction. Tension is the inaccuracy by which the model forecasts some value and in the process of learning, this tension attempts to be minimized. Satisfaction is the mutual balance of coefficients what are in the same distance from the forecasted value – see fig. 2.

Fig. 1: Evaluation of a Value of Time Series x at Time t – the Structure of Coefficients

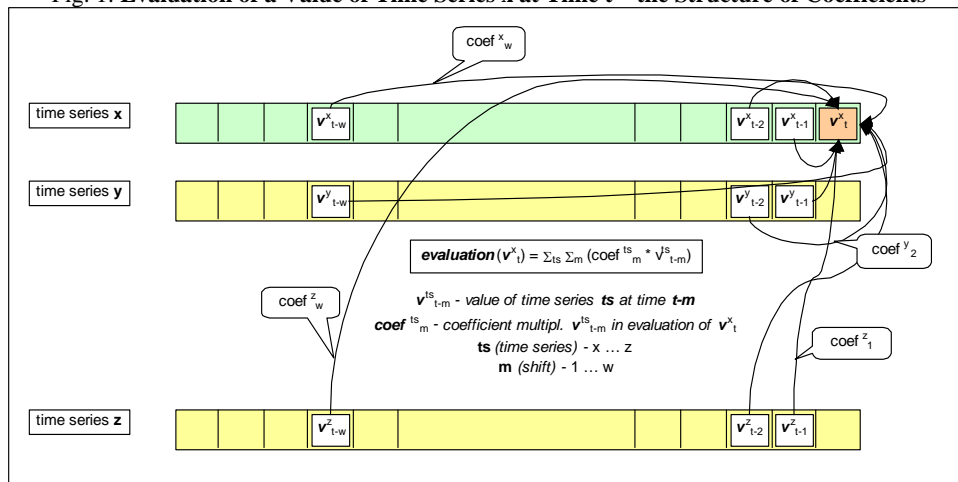


Fig. 2: Parameters in Distance of „2“ from Evaluated Value



Learning of the model is a successive augmentation of the number of time series in the structure of coefficients and follows the sequence below:

- At the beginning, the structure contains the forecasted time series (x) only,
- Another time series is temporarily put into this structure, the tension is minimized and satisfaction is calculated,
- All time series at its disposal are used in this manner,
- The time series causing the greatest satisfaction in preceding steps is added,
- All steps are repeated until the predefined number of time series in the structure is reached.

The word tension stems from the analogy with the biological situation: a desirable and real state, a desirable and real forecast. Generally speaking, the tension is a consequence of the non-inclusion of some important information regarding the time series into the structure of coefficients. From the point of view of the structure, the tension results from the occurrence of an external event – singularity, which influences the forecasted time series.

The word satisfaction stems from an analogical behavior of a living object: it chooses solutions which are less contradictory with interests of the environment taken into account. It results in a relatively balanced structure of environmental and internal interactions which influence the object. This is a state of a mutual utility and balance; every living object, I suppose, gravitates to this state and achieves it just by the orientation on the gradient of satisfaction. This is also a darwinistic principle: an object is as stable and as balanced as its interactions – an unbalanced dependence on a definite object is followed by higher vulnerability.

The model thus searches for structures of coefficients in an analogical way to living objects: it solves the tension with regards to the interests of the environment, it moves according to the gradient of the satisfaction.

Because the GDP describing the whole economy is one of the forecasted time series, and because the best solution of its structure of coefficients is reached in a way compatible with the vision of the life, the concept of the economy as a living object seems to be acceptable.

### 3.1 REFRACTION

The model is a refraction of reality and it's as correct as faithful is this refraction. When a property or a criterion is commonly and successfully used during the work of the model, this is probably a refraction of a real property or criterion.

Criteria of tension and satisfaction are successfully used in all forecasts - the tension is resolved with respect to the maximum level of satisfaction - that is why these criterion probably exist in reality. The economy thus seems to have biological strategies at the time of birth of new objects.

### 3.2 CHAINS OF CAUSES

The living object, besides its movement as a whole on the gradient of satisfaction, is characterized by typical parts with typical behavior. It must have a type of muscular system, because life is unimaginable without movement. It must have a nervous system which evaluates tensions, choosing strategies and calculating satisfaction. And it must have some preceptors which carry information about events to the nervous system.

The activity of these parts obeys some rules of consequences, for example: there first occurs a tension which is followed by a reaction in the muscular system which will change its form etc.

If we are successful in locating these consequences – chains of causes – in the economy it will be another brick in the wall that solidifies its definition as a living object.

### 3.3 ENTRIES AT OUR DISPOSAL

Every structure of coefficients for a time  $t$  extends, shifts to the past: see value  $w$  on the fig. 1.

Every shift in the structure is describable by values – see fig. 2: activity, form, tension and satisfaction.

**The activity** is the current value of the time series  $x$  at time  $t-s$ : a higher value represents higher activity and vice versa .

**The form** at time  $t-s$  is defined as an inversion of a mean of coefficients from the environment of the time series  $x$ . In this definition of the distance – form I takes as a presumption that a strong interaction means a small distance from the perspective of a living object, not of a physical one.

**The tension** at time  $t-s$  describes the accuracy by which the model succeeds to estimate the forecasted value, using coefficients from the time  $t-s$ .

**The satisfaction** corresponds to the balance of coefficients at time  $t-s$ .

### 3.4 TECHNIQUE OF VERIFICATION

A verification is more exactly a search for some flat, uncertain symptoms, of course.

First of all: I search for events - changes of state.

All events are searched for in the structure of coefficients in appropriate entries.

Let an event happen in the tension at time  $t-s$ . Let this event be followed by an event in the activity of a certain time series at the same time etc.

Numerically, it means to multiply the value of the event of the tension by the value of the event of the activity and so on.

For every time series, an appropriate value is found describing the extent to which the time series corresponds to the search for chain of causes. The negative value means that at the appropriate time, there is a lessening of the tension and in the description of the whole time series it means that in the majority of cases the chain is terminated with a lessening of satisfaction – that time series of course doesn't correspond to the sought after chain.

### 3.5 RESULTS OF VERIFICATION

Fixed capital formation – simply saying that the investment - corresponds to the muscular system – see fig. 3.

Consumption of households is a candidate for the nervous system – see fig. 4.

And a time series having characteristics of a preceptor seems to be the import of services – see fig. 5.

Fig. 3: Muscular System – Investment (Fixed Capital Formation)(TFKs)

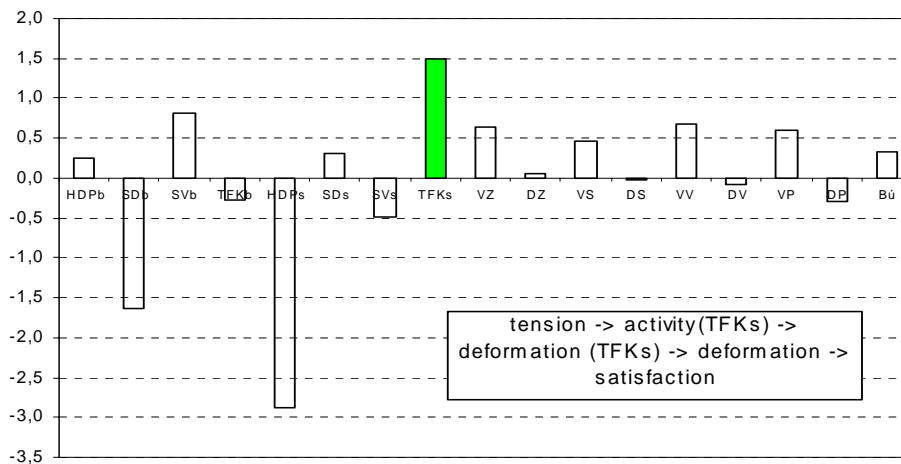


Fig. 4: Neural System – Consumption of Households (SDs)

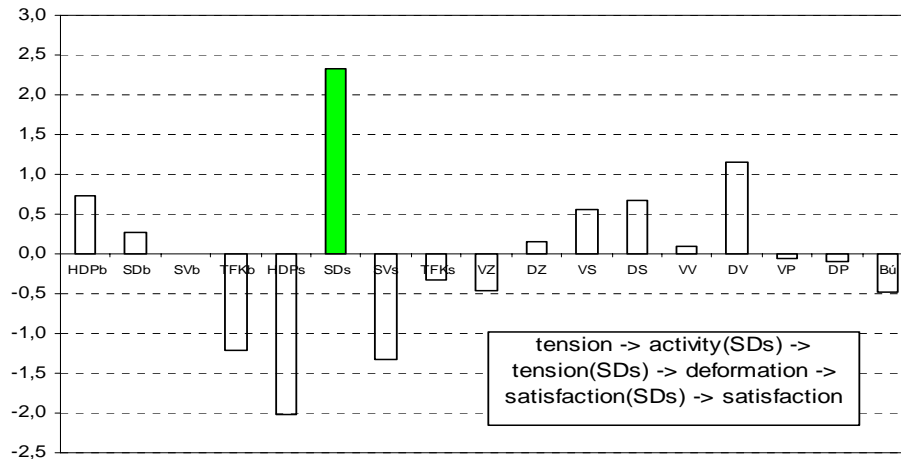
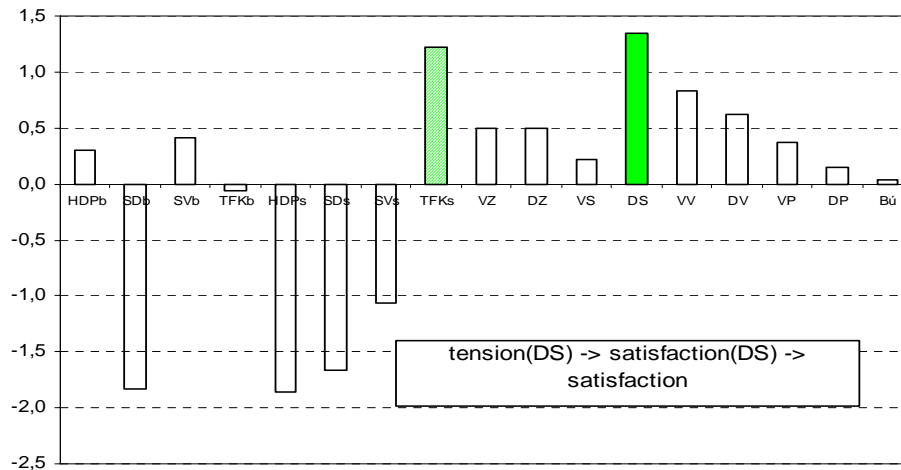


Fig. 5: Preceptor – Import of Services (DS)



Here it is interesting to mention that the activity of the import of services is similar enough to the muscular system – fixed capital formation – which could reflect the linkage of activities between preceptors and muscles.

The model works with quarterly data and best results in searching chains were achieved in the same time shift – quarter. Nevertheless, events related to neighboring shifts were also used for deeper verification – figures are an intersection of all these measurements. That is why the time of an economy as a living object seems to be measured in months not in quarters, but the problem is related to the availability of GDP.

#### 4 CONSEQUENCES

The proof of the life of the economy would surely have unforeseeable consequences: for example a quite different manner

of its control or influence. In other words, it could be possible to orient the effort in the search of a “common language” .

The impact on my small model workshop could also be important regarding the existence of another criterion: forecasted time series are ever more realistic as they reflect their own living function; for example as investments correspond to appropriate chains of causes.

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#### 6 REFERENCES

no references