

MODELLING OF EXPECTATIONS OF ECONOMIC AGENTS AND THEIR INFLUENCE ON DYNAMICS OF INDUSTRIAL GROWTH

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Abstract. The article exhibits a well ordered evaluation calculation for the desires of financial specialists in a concentrated frame that is an outflow of business movement deciding the flow of social and monetary development. We advocated that the way toward distinguishing the desires ought to be founded on a far reaching evaluation of components portrayed by the propelled progression in respect to general monetary patterns and speaking to a declaration of institutional and artful changes. Depending on this approach, we made an endeavor in this work to build up a well ordered demonstrating calculation for the desires of monetary operators, the recommendation of which was reflected in their quantitative appraisal, connected to the Russian economy for the time of 1996-2015. The usage of this phase of the investigation made it conceivable to survey, utilizing the financial and numerical examination techniques, the level of impact of the business action record on the modern advancement parameters of the Russian monetary framework. This, thusly, decided the strategy for creating situations for the advancement of the mechanical segment of the national economy for the medium term (until 2020), considering the programming of basic segments deciding the desires of monetary operators.

It is built up that high rates of mechanical improvement adding to defeating the auxiliary issues in the economy can be shaped for the most part on account of execution of the institutional changes framing a steady reason for the age of positive, stable assumptions in regards to the change of the present request framing the systems of macroeconomic movements.

Keywords: expectations of economic agents; business activity; industrial development; scenario modeling; forecasting.

1. INTRODUCTION

The assortment of elements framing the "focuses and nature of development" of financial frameworks significantly confound the target displaying forms, which predetermines the need to enhance the methodological ways to deal with the examination and recognizable proof of the macroeconomic age systems. Today, a dependence, which prevalently happens in neoclassical and neo-Keynesian ideas, on monoand smaller scale parametric (counting an extremely constrained arrangement of exogenous parameters) models of monetary development, implies a diminishing in the objectivity of the evaluations acquired and their decisions (Abalkinn, Kondratev, Yakovets and Makasheva, 2002) (Hicks, 1988) (Perez, 1983) (Keynes, 2002)

It is trusted that the change forms occurring in the Russian Alliance, including the procedures of stage moves in financial cycles, are intrinsically auxiliary in their inclination. Maybe there is no financial examination, where there has been no endeavor to clarify the economy state by the basic changes occurring in it.

Obviously, the financial improvement parameters are firmly connected with the bearings and rationale of the rebuilding of monetary and political procedures in various times of monetary advancement, basically caused by the arrangement of developing desires of monetary specialists about future changes in the arrangement of institutional and crafty components. In such manner, there are various issues, the arrangement of which would empower us to illuminate and formalize the totality of ideas, strategies and instruments of information of such a vital segment of monetary hypothesis as displaying and estimating of the social and financial improvement.

It is difficult to profoundly comprehend the embodiment of the present moves in the economy without characterizing their inside inconsistencies and the rationale of their advancement in particular recorded conditions and not considering the elements and the degree in which these progressions are instigated by such factors. The investigation of the financial advancement forms, producing their institutional and conjunctural factors, is vital for the divulgence of improvement highlights and examples of the monetary frameworks at both national and territorial levels. It is critical to comprehend what main impetuses and variables decide the age of monetary development forms in certain market frameworks with various

sorts of financial disequilibrium and what irregularities they create.

An expectation of macroeconomic ages on the premise of nature and rationale information setting off their systems is of extraordinary enthusiasm, inside the structure of concentrate the hypothesis of monetary development. In the meantime, the mind greater part of works are centered around the way that the character and elements of financial advancement in the past will decide the nature and elements of monetary improvement later on. In any case, as we would see it, this approach causes a considerable measure of dialog issues.

2. METHODS

Considering that the monetary frameworks, for an assortment of reasons, adjust distinctively and respond to any progressions (of institutional, financial, social and other request) happening, including inside the national or worldwide financial condition, the nature and directions of their improvement will have customized highlights, including patterned vacillations of these frameworks (Hicks, 1988). Subsequently, the top to bottom investigation of financial advancement requires a crucial examination of an extensive variety of variables that decide their affectability to them.

In the meantime, the utilization of more factors and logical factors in the model for deciding and recognizing the financial improvement may prompt various known issues that decrease the nature of factual evaluations (Fischer, 1977) (Laydler, 1975) (Friedman, 1957). In this way, there emerges the need to choose an exceptionally constrained arrangement of such exogenous elements that would totally compare to the arrangement of the issue postured. As we would see it, the ideal answer for the issue postured is to utilize a vital pointer in the model, which is a statement of the entire arrangement of parameters in a concentrated shape that describe the components of macroeconomic, social, institutional and different sorts of ages. A quantitative evaluation of the desires of monetary operators - the principle drivers of macroeconomic age may go about all things considered incorporated pointer. For this situation, the desires of monetary specialists should be demonstrated as an indispensable capacity of weighted segments portrayed by cutting edge flow with respect to the patterns in financial progression and communicating the

institutional and conjunctural parameters of the financial condition. Above all else, this is because of the way that the hypothesis of judicious desires lies at the premise of the orderly approach being produced. In such manner, it is fitting to build up a model that would mirror the present desires of financial specialists, which, thus, would mirror the most likely parameters of the framework working later on.

Cross-relationship investigation fills in as a powerful factor sifting device by the standard of their propelled advancement (Mkhitaryan, Arkhipova and 2008). To do this, it ought to be demonstrated the cross-connection elements of the powerful factor (reference arrangement), contingent upon the predefined factors (driving monetary parts).

Because of various cycles and actualized measures of quantitative examination, handling of open insights, we decided an arrangement of institutional and pioneering factors that fulfilled the key foundation for their determination, and in addition the slack estimations of these elements. By gathering them as indicated by the homogeneity paradigm (Table 1), we acquired an arrangement of sub-records framing the reason for displaying the business movement file of the monetary framework, computed as the aggregate of normal weighted sub-file esteems portraying its institutional and market potential (I1, ..., I6).

Table 1: System of grouped factors satisfying the condition of their advanced nature with respect to general economic dynamics

Factor name	Lag value
Urban development change index (I1)	
Number of rural population	1, 2, 3, 4
Human capital index (I2)	
Number of graduates from secondary schools	3
Number of graduates from higher educational institutions	2
Production index (I3)	
Commodity stocks	1
Freight turnover of motor transport	1
Mining process index	1
Freights transported by rail	1
Social well-being index (I4)	
Number of theatres	2
Number of clubs	3
Economic activity index (I5)	
Consumer price index	2
Monetary incomes	2
Research capacity index (I6)	
Scientists	1
Research institutes	2
Internal costs for the R&D	3

Having recognized the underlying database of elements used to decide the fundamental estimations of the business action list, surveying the desires of financial specialists in a concentrated frame, we executed a grouping of activities went for evaluating the sub-list esteems (I1, ..., I6). The count calculation comprises in computing the weighted estimations of the standardized (institutionalized) factors used to evaluate the comparing sub-file. A more itemized depiction of this calculation, including the way toward deciding the weight proportions, is indicated in the before works of the creators (Safiullin, Elshin, and Prygunova, 2015) (Safiullin, Elshin, and Shakirova, 2012). Thus, we acquired the information exhibited in Table 2.

Table 2: Sub-index integral values of the business activity index

	I1	I2	I3	I4	I5	I6
1996	2.090	-1.300	-0.880	0.421	0.782	-0.259
1997	1.173	-0.566	-0.851	-0.486	-0.337	-0.453
1998	0.406	-0.712	-0.169	0.606	-0.147	-1.036
1999	-0.017	0.566	-0.552	0.470	-0.040	0.160
2000	-0.150	1.130	0.828	0.476	-0.381	0.626
2001	-0.038	0.610	0.730	0.308	-0.375	-0.402
2002	-0.134	1.005	0.529	-0.014	-0.257	0.662
2003	-0.364	0.751	0.539	0.464	0.332	0.701
2004	-0.443	1.362	0.837	0.979	0.169	0.781
2005	-0.798	1.584	0.734	-0.399	0.289	0.353
2006	-0.243	0.731	0.563	0.360	-0.169	0.241
2007	0.084	0.260	0.442	0.173	-0.060	-0.705
2008	-0.074	0.118	0.636	-0.732	0.052	-0.034
2009	0.078	-0.390	-0.208	-0.925	0.052	0.135
2010	-0.475	0.647	-0.770	-0.275	-0.252	0.361
2011	-0.442	-0.212	1.115	0.168	0.166	-0.105
2012	-0.190	-0.582	0.668	-0.417	-0.221	0.632
2013	-0.188	-1.085	0.598	0.277	-0.507	-0.252
2014	-0.197	-1.141	0.185	0.210	-0.150	-0.093
2015	-0.078	-1.064	0.141	-0.133	-0.040	0.464

3. RESULTS AND DISCUSSION

The usage of methods went for recognizing the sub-record necessary esteems empowers us to continue to the last phase of demonstrating the business action list, in light of the already

expressed calculation. Formally, the way toward evaluating the estimations of business movement list is displayed in Condition 1

$$I_i = W_1 I_{1i} + W_2 I_{2i} + W_3 I_{3i} + W_4 I_{4i} + W_5 I_{5i} + W_6 I_{6i}, \quad (1)$$

where I_i - the BAI value; i – value of a period (of the month in our case);

I_{1i} – urban development index in the i -th year;
 I_{2i} – human capital index in the i -th year;

I_{3i} – production and resource development index in the i -th year;

I_{4i} – institutional and cultural development index in the i -th year;

I_{5i} – index of economic activity development in the i -th year;

I_{6i} – research capacity index in the i -th year;

$W_1, W_2, W_3, W_4, W_5, W_6$ – weight ratios of the corresponding indices.

In light of information for the period from 1996 to 2015, the computed flow of the business action record in the Russian League, in view of the desires of financial operators about the progressions in institutional and conjuncture factors, is appeared in Figure 1.

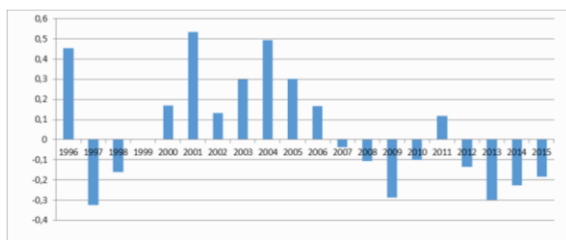


Figure 1. The business activity index assessing the expectations of economic agents in a concentrated form

The aftereffects of business movement appraisal, got amid the recommendation of exhibited methodological methodologies, which depend on the change of debt, as well as institutional parameters of the social and monetary condition, empower us to go to the improvement of prognostic models. At that, it is essential that these models will have a huge

potential as far as their anticipating the illustrative factors because of their high "affectability" to changing multilevel parameters that describe the desires of monetary operators.

As per the actualized financial and scientific investigation of the BAI impact on the IPI progression with the utilization of probit - , logit - models and various decision models (Bonabeau, 2002) (Diaz, 2010), the Condition 2 was acquired:

$$IPI = 0,053 I + 2,462 f_1 + 1,62 f_2 \quad (2)$$

where

IPI - industrial production

index; I – business activity

index; f_1, f_2 – fictitious

variables.

The dynamics of calculated and observed IPI values is shown in Figure 2.

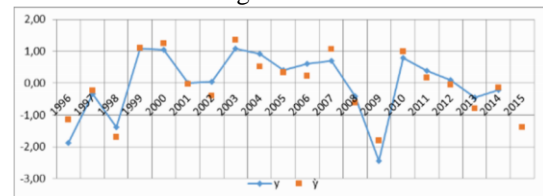


Figure 2. Ratio results predicted by the model of normalized IPI values and their actual level

Along these lines, we obtained the model that affirms the joining of two dynamic organized game plan, which engages us to relate the veritable IPI movement to the components of the figured composite rundown going about as a business development assessment contraction conveying the wants of financial administrators in a concentrated edge with an abnormal state of steady quality.

The delayed consequences of econometric exhibiting made it possible to get really obvious results inside the arrangement of the above speculations and assumptions. If the impelled headway record increases by one point, the institutionalized estimation of the cutting edge creation list augments by 2.462 units. Thusly, this confirms the strange condition of adaptability between two markers considered. That is, minor changes in the wants of money related experts

outline a discernible reaction in the time of financial systems, conveyed in the looking at capriciousness of mechanical creation.

4. CONCLUSIONS

The executed approach shapes a basic potential for the use of activities went for working up the circumstance prognostic change models of the money related systems. Support of the above estimations is shown as made circumstance models for the Russian economy headway for the period up to 2020. At that, we chose three possible circumstances for the medium-term headway:

- The negative headway circumstance (the circumstance of hard resource prerequisites) is based mainly on beating the most extraordinary times of monetary and social change.
- The fundamental change circumstance (the circumstance of direct resource prerequisites) relies upon the way that the key measures went for strengthening the new sorts of organizing the macroeconomic techniques will be realized;
- The cheerful headway circumstance (the circumstance of sensitive resource objectives). This circumstance depicts the most outrageous possible rates of money related progression in light of finishing high forcefulness and ensuring amazing social and fiscal improvement.

The refinement in circumstances rises up out of the possible difference in factors drew in with the BAI show. The circumstance parameters for the factor change are presented in Table 3.

In perspective of the delayed consequences of backslide demonstrate preliminary arrangement illuminating the stream of advance in the standardized IPI regards depending upon the business development record (IDA) change, we finished the foreseen evaluations of the IPI change by 2020 due to change of the course of action of institutional and conjuncture factors.

Table 3: Scenario parameters of key factor development dynamics of the business activity model for the period up to 2020, in % by 2015

The situation demonstrating consequences of the business action list for the period up to 2020, and in addition the ascertained parameters of the factual arrangement describing the genuine estimations of the mechanical generation record (IPI) and the business movement file (BAI), are appeared in Figure 3.

Factors	Scenario 1	Scenario 2	Scenario 3
Number of rural population	100	99	98
Number of graduates from	98	99	102
Number of graduates from	98	99	102
Commodity stocks	95	100	110
Freight turnover of motor	95	100	110
Mining process index	95	100	105
Freights transported by	95	100	105
Number of theatres	100	101	102
Number of clubs	100	101	102
Consumer price index	110	105	103
Monetary incomes	100	110	120
Scientists	100	101	102
Research institutes	100	102	105
Internal costs for the R&D	100	105	110

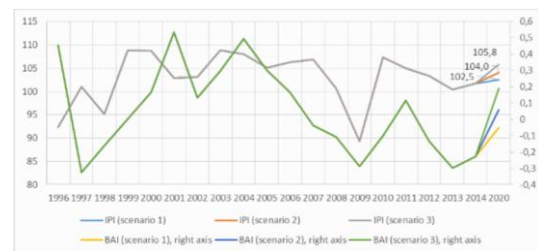


Figure 3. Forecast dynamics of the industrial production index of the Russian Federation for the period up to 2020, in growth rates

5. SUMMARY

The arrangement of devices for programming the desires of monetary specialists and surveying their effect on the mechanical creation list exhibited in this paper empowers us to actualize the situation prognostic evaluations of the advancement of key financial parameters. As per the exploration comes about, we built up that if there should arise an occurrence of safeguarding of the institutional and market patterns shaped in 2014-2015 for the period up to 2020, it is normal extremely direct development rates in modern creation, similar to the flow of 2012-2013 - the time of disturbance of auxiliary issues in the Russian economy. This situation won't add to their beating, which will altogether muddle the change of national economy to the change of macroeconomic ages in view of the work efficiency development and the rebuilding of wasteful advancement instruments that have

created lately, in light of the predominant improvement of rental systems [13].

Despite what might be expected, the third situation considered in this paper and in light of actuation of the institutional and conjuncture arrange forms assumes a noteworthy development in business movement and a progress of Russian economy to high development rates in mechanical creation (around 106% every year by 2020).

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