Identification of a dynamic model of Russian economy with two kinds of capital

Nicholas Olenev^{1,2,3}

 ¹ Dorodnicyn Computing Centre, FRC CSC RAS, Moscow, Russia; nolenev@mail.ru
 ² People's Friendship University of Russia, Moscow, Russia;

³ Moscow Institute of Physics and Technology, Moscow, Russia;

Paper [1] proposed an economic model with two kinds of capital - old and new. It is assumed that the old capital A(t), created during the Soviet time, from 2008 is only eliminated (see [2, 1] for explanations),

$$\dot{A} = -\mu_A A(t), \quad A(t_0) = A_0,$$
(1)

and the new capital B(t) is increased due to investments and is eliminated as a result of aging.

$$\dot{B} = J(t) - \mu_B A(t), \quad B(t_0) = B_0.$$
 (2)

This two kinnds of capital and labour L(t)

$$\dot{L} = \gamma L(t), \qquad L(t_0) = L_0. \tag{3}$$

are three factors of the Cobb-Douglas production function for GDP Y(t).

$$Y(t) = Y_0(A(t)/A_0)^{\alpha} (B(t)/B_0)^{\beta} (L(t)/L_0)^{\lambda}.$$
 (4)

For closing our model we can use the same heuristic equations for the GDP components (export E(t), import I(t), investment J(t)) as in [2] and the balance equation for "consumption" Q(t)):

$$E(t) = \varepsilon Y(t)/p(t), \tag{5}$$

$$I(t) = \iota(Y(t) - p(t)E(t))/q(t),$$
(6)

$$J(t) = \xi(Y(t) + q(t)I(t))/s(t),$$
(7)

$$Q(t) = Y(t) - s(t)J(t) + q(t)I(t) - p(t)E(t).$$
(8)

It is proposed an indirect parameter identification method for a Russian economic model by statistical time series of macroeconomic indicators of Russia 2008-2014. The procedure of identification of the model includes a parallel computing on cluster supercomputer as in [3-8].

The author of the work was supported by the Russian Scientific Foundation (project no. 14-11-00432).

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