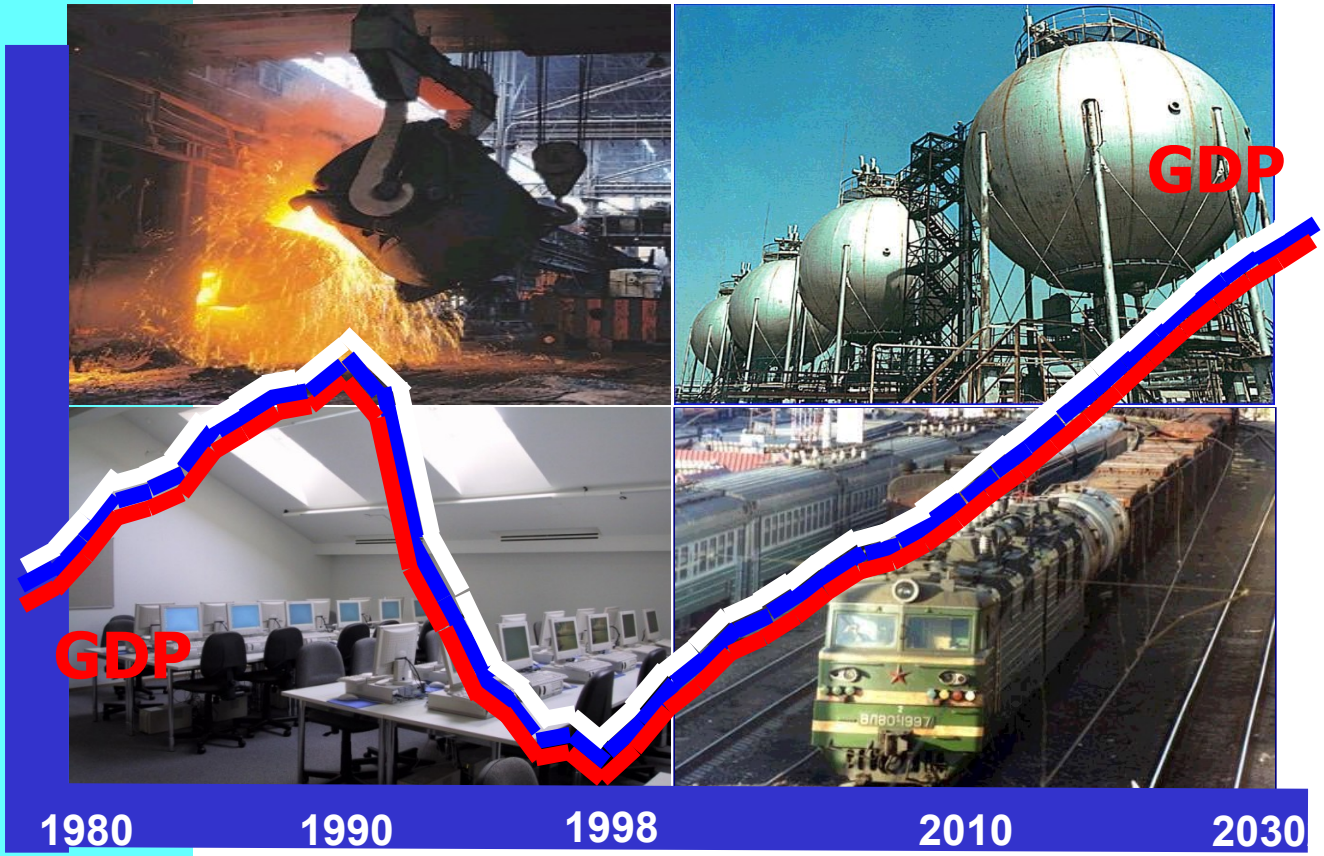
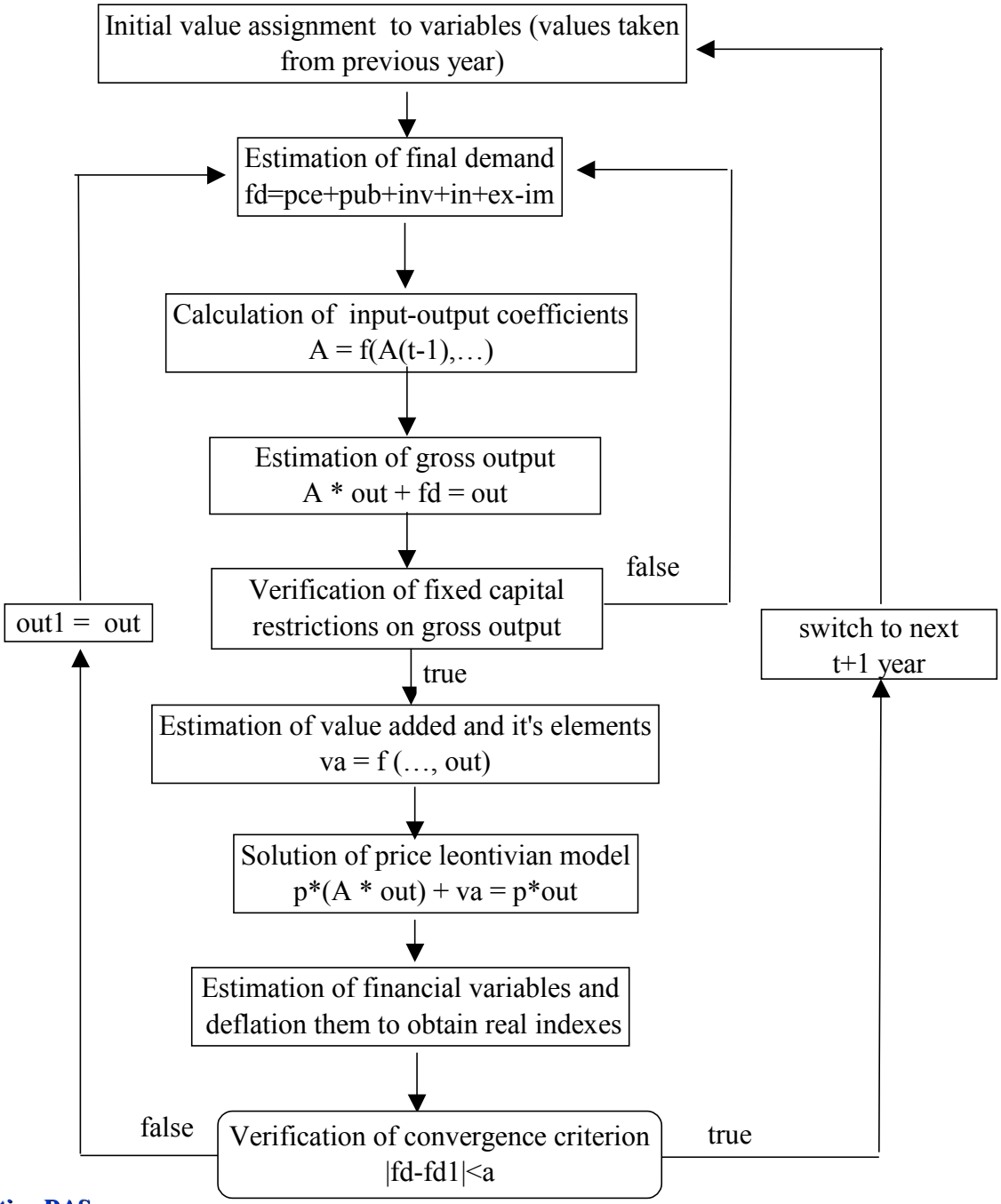
Development of new version of RIM model (and fixed capital estimation)



Moscow
2007

ИНП РАН

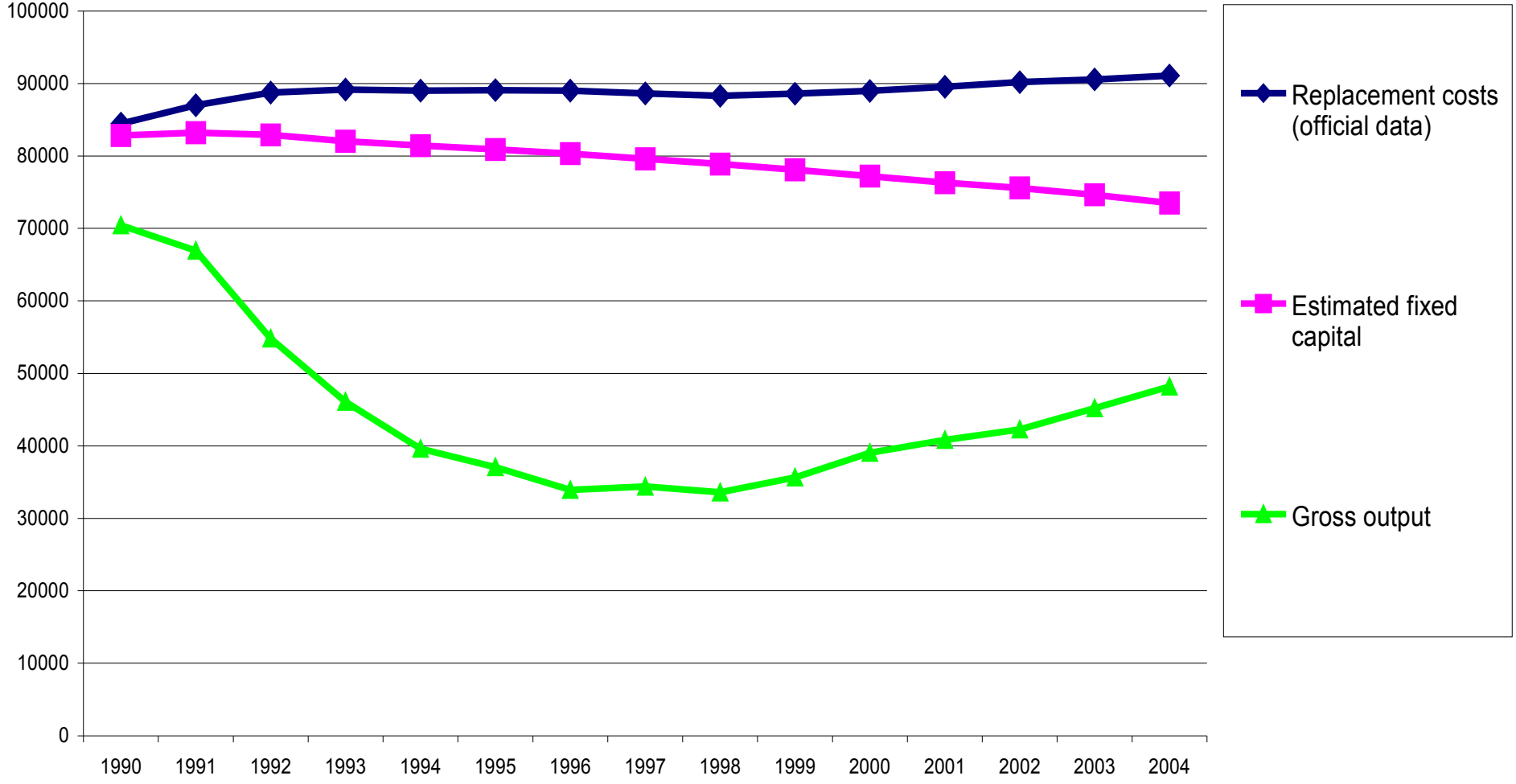


ИНП РАН

Estimation of fixed capital on years 1990-2006

- Fixed capital was evaluated basing on operating ratio survey polls rather then official data on replacement costs
- For usability fixed capital was measured in terms of gross output in constant prices corresponding to highest capital operating ratio

Capital replacement costs, estimated fixed capital, gross output



Estimation of fixed capital retirement

- Analyzing data series of fixed capital on period 1960-1990 was selected most fitting function for life-expectancy of fixed capital
- Fixed capital was assumed to have a lifetime equal to 30 years

Estimation of fixed capital retirement

$$W(t) = \sum_{i=1}^{30} a(t-i) * V(t-i) * (f(i) - f(i-1)) * \left(\frac{OUT(t)}{K(t)} - b\right)$$

W (t) - retirement of a fixed capital in year t

$a(t)$ - a correction multiplier, which is used to consider capital retirement during transformational fall in1992-1994

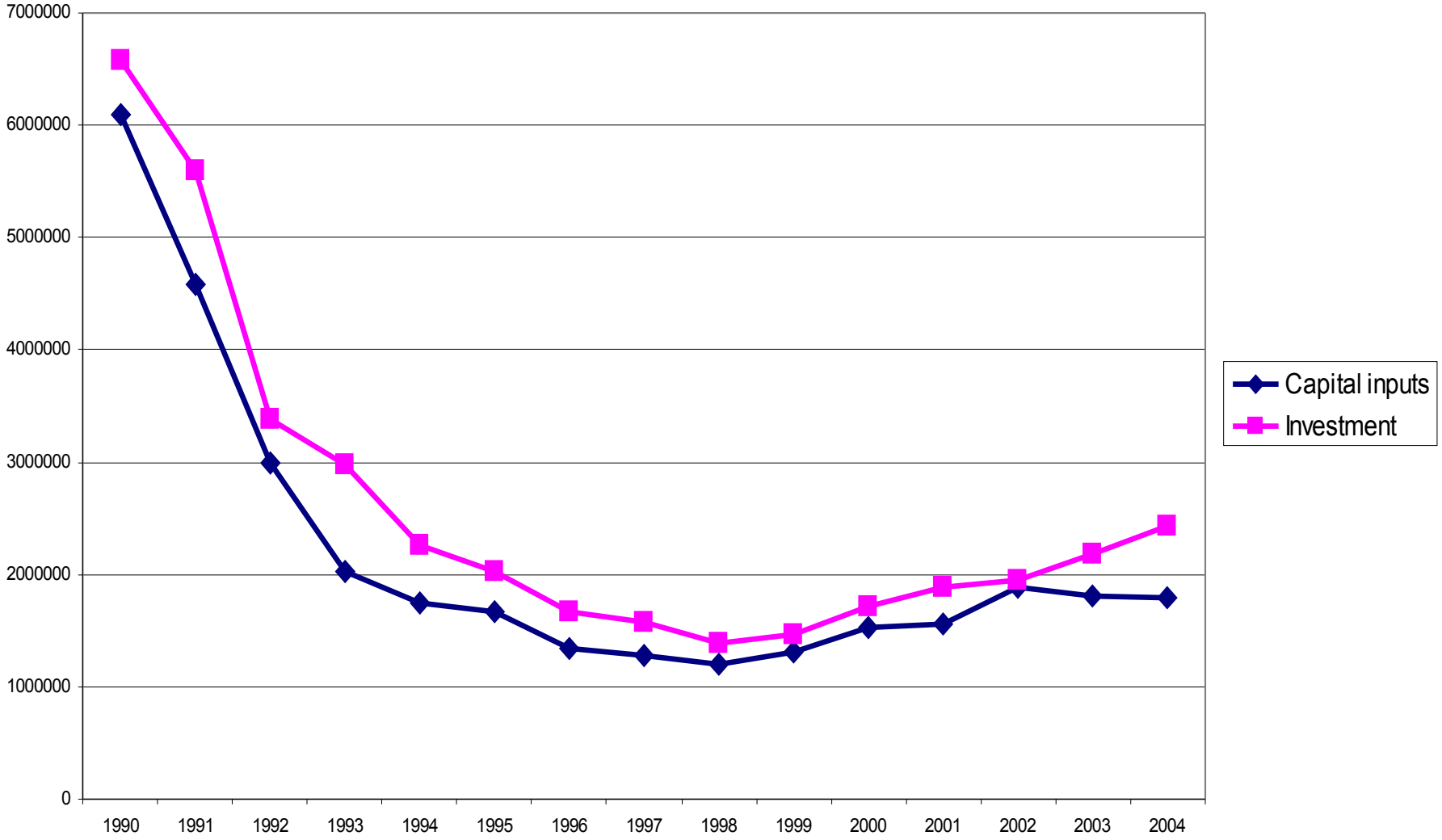
f (i) - life-expectancy function

V (t) - inputs of capacities in year t

b- coefficient representing share of fixed capital retirement caused by technological obsolescence

$\frac{OUT(t)}{K(t)}$ - fixed capital operating ratio

Capital inputs and investment



Estimation of capital inputs

$$V(t) = \alpha * Inv_{eq}(t) + \beta * Inv_{eq}(t-1) + \sum_{i=0}^{5} \gamma_i * Inv_{con}(t-i)$$

- $Inv_{eq}(t)$ – investment into equipment in year t
- $Inv_{con}(t)$ – investment into construction in year t

Estimation of investment

$$Inv(t) = a * VA(t-1) + b * DC(t) + c * K(t-1)$$

- VA(t) – value added deflated on investment goods prices index
- DC(t) – expected shortage of capital

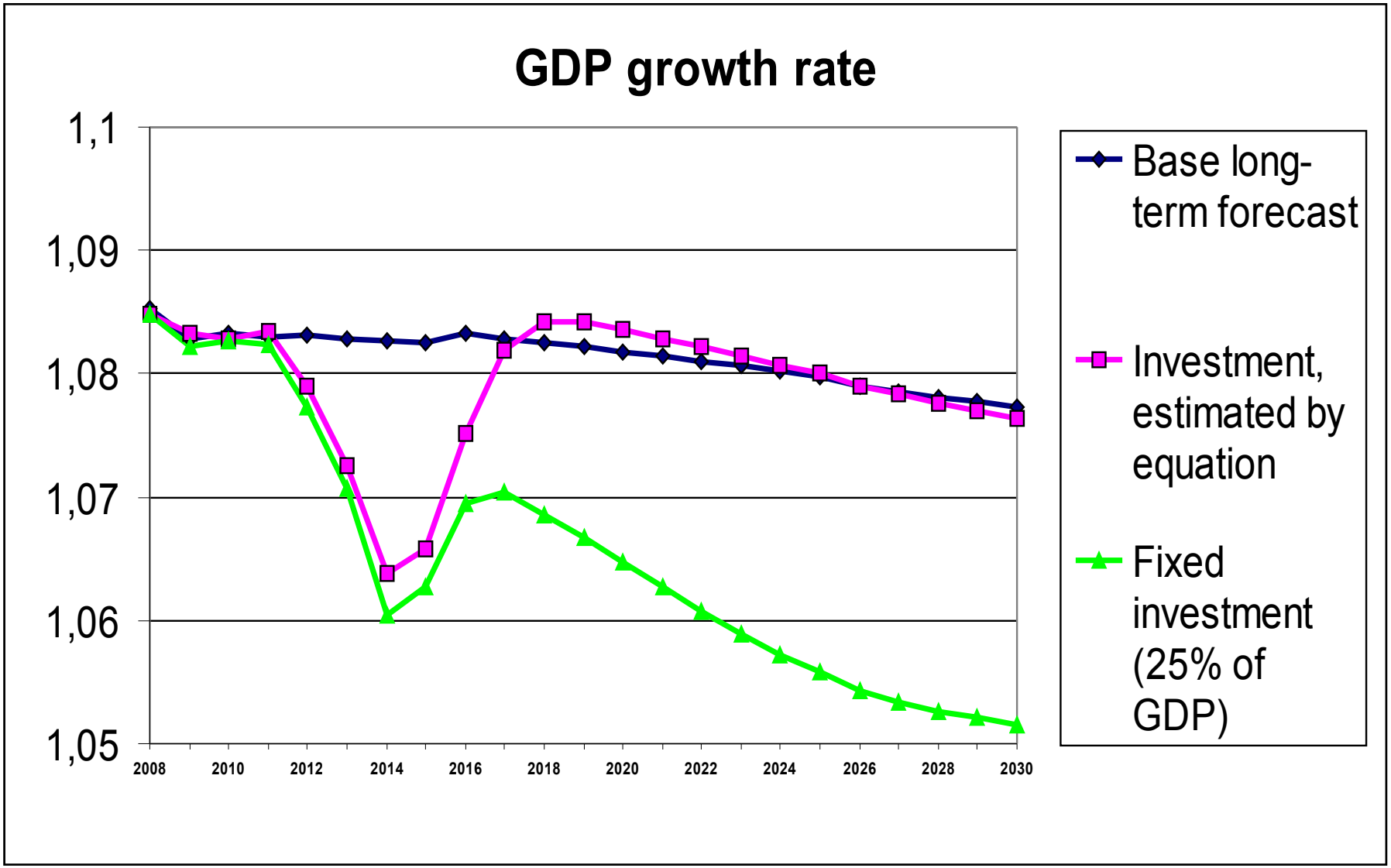
$$DC(t) = \varphi * (K(t) - W(t+1)) - OUT^{predict}(t+1)$$

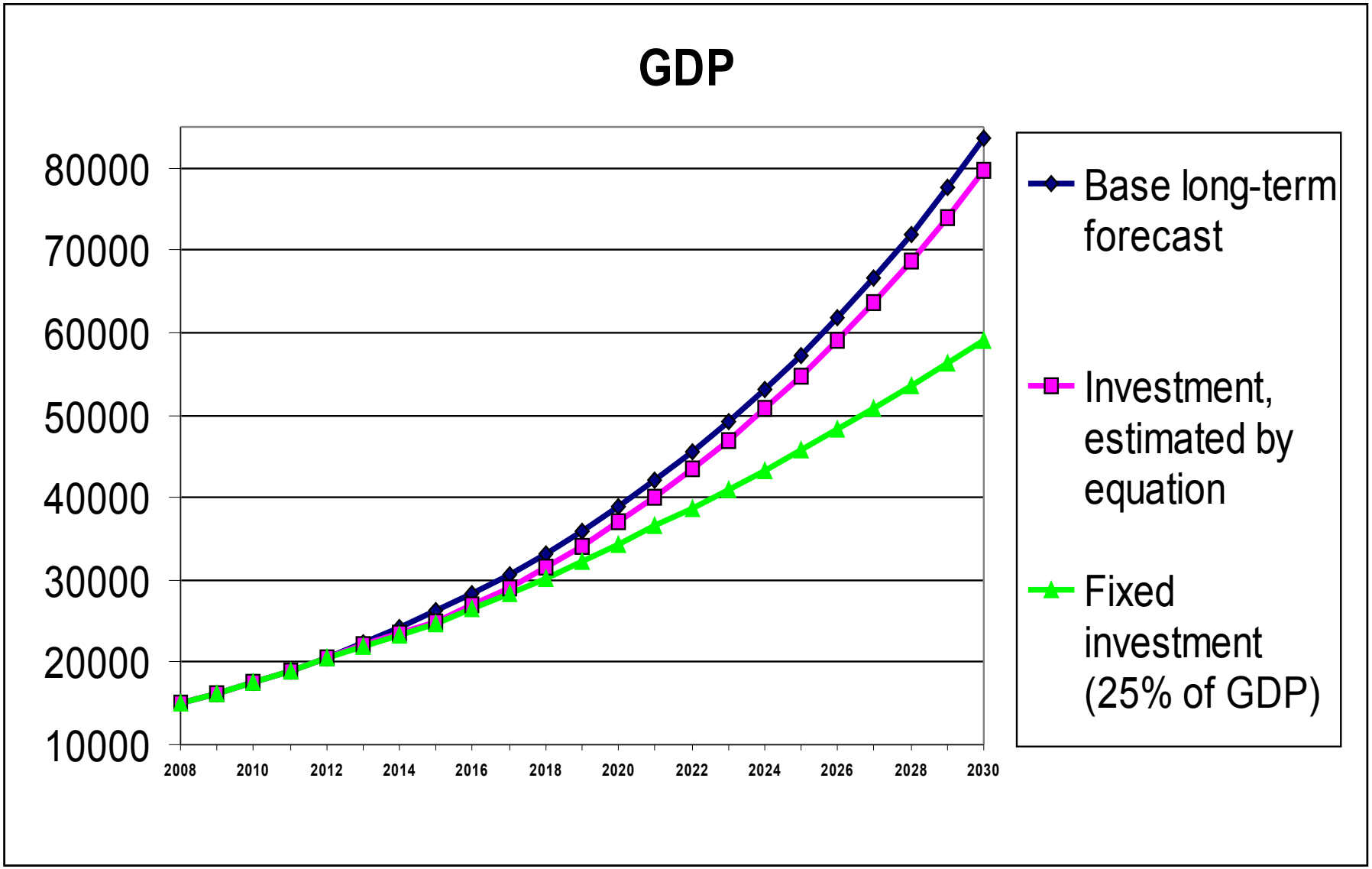
- $OUT^{predict}$ (t+1) – expected output in year t +1 calculated by linear interpolation

Definition of input output coefficients

All inputs after last base year are considered to have new technological – input –output matrix

$$a_{ij} = a_{ij}^{old} * \frac{K^{old}}{K^{old} + K^{new}} + a_{ij}^{new} * \frac{K^{new}}{K^{old} + K^{new}}$$





Investment share in GDP