Let a DSGE be given by:

$$A\begin{bmatrix} x_{t+1} \\ E_t[y_{t+1}] \end{bmatrix} = B\begin{bmatrix} x_t \\ y_t \end{bmatrix} + \varepsilon_{t+1}$$

where A is invertible, x_t and y_t are predetermined and forward looking variables, respectively, and the BK conditions hodl. Then, its solution in state-space representation is given by:

$$x_{t+1} = \tilde{A}x_t + \tilde{B}\varepsilon_{t+1}$$

$$y_t = \tilde{C}x_t$$

where

$$\tilde{A} = (P_{11} - P_{12}(P_{22})^{-1}P_{21})^{-1}\Lambda_1^{-1}(P_{11} - P_{12}(P_{22})^{-1}P_{21})$$
$$\tilde{B} = (P_{11} - P_{12}(P_{22})^{-1}P_{21})^{-1}P_1A^{-1}$$
$$\tilde{C} = -(P_{22})^{-1}P_{21}$$

and where

$$\begin{bmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{bmatrix}^{-1}\begin{bmatrix} \Lambda_1 & 0 \\ 0 & \Lambda_2 \end{bmatrix}\begin{bmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{bmatrix} \equiv A^{-1}B$$

We don't have concerns with $\tilde{A}$ and $\tilde{C}$ as we have applied these formulas for a few simple models and checked their IRFs with Dynare's: their trajectory match exactly provided the variables' trajectory has the the same starting point. But what is wrong with this solution formula for $\tilde{B}$? How can the correct solution be derived with the Blanchard-Kahn method? To see that there is a problem with it, note that applying the formula for your example 3.4 yields $\frac{1}{\theta(\kappa\theta-2)}$, not the solution that you (and Dynare) obtained: $\frac{1}{\theta}$.