**5.1** To further assess the choice of model class and order, the earlier designed PRBS input is applied again on the system. Now the Box-Jenkins model is determined again but with the orders for shown in Table 1.

Table 1 – OE model orders for validation

|  |  |  |
| --- | --- | --- |
| Model |  |  |
|  | 2 | 3 |
|  | 2 | 4 |
|  | 3 | 3 |
|  | 3 | 4 |
|  | 5 | 5 |
|  | 8 | 8 |
|  | 9 | 10 |
|  | 11 | 12 |

**5.2** Now the identified models are simulated using both the old PRBS input signal used for determining the model and a newly generated PRBS input signal. The results are plotted in Figure 2, where the model number is plotted on the horizontal axis and the cost in the vertical axis.

The curve has a peak before the optimal model number, while overall decreases over an increasing model number and increases after the optimum. When a new data set is loaded, the curve and peak is varying. Most of the time model 5 has the lowest cost, indicating that this is the best fitting model.

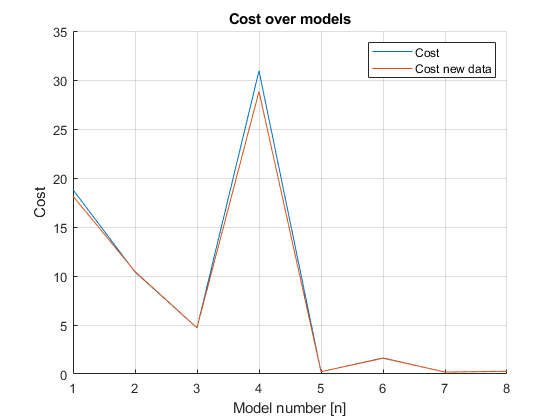


Figure 2 – Cost over different models

**5.3** The model does almost correspond to the earlier determined model, where model number 5 has an order of 5 instead of the determined 7.