

# Dynare Add On Readme for *Pruning in Perturbation DSGE Models*

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## 1 Overview

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This is a quick guide for the add-on for Dynare (see [www.dynare.org](http://www.dynare.org)) in MATLAB to implement all the pruning (or pruning-like) algorithms compared in *Pruning in Perturbation DSGE Models*. Tested with Dynare 4.2.4, 4.2.5, 4.3.0, 4.3.1, and 4.3.2, MATLAB 7.9.0 and 7.14.0.

## 2 Setup

Add the directory containing the unzipped files to your MATLAB path.

## 3 Usage

You can now run the different pruning algorithms directly from your .mod file by placing

```
simulations = pruning_abounds(M_,options_,order,type);
```

after a call to Dynare's stochastic simulation algorithm. E.g.,

```
stoch_simul(periods=1000, drop=100,irf=0,order = 3);  
simulations = pruning_abounds(M_,options_,order,'lan_meyer-gohde');
```

would have Dynare produce a third-order approximation, calculating a 1000 period simulation with the first 100 periods discarded and have our nonlinear moving average perturbation solution algorithm produce a 'pruned' third-order simulation

Alternatively, you can all the algorithms directly from the command line in Matlab.

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## 4 Options

The pruning algorithms are called by setting the option type:

For second order approximations (`options_.order=2` in Dynare) `type = 'kim_et_al'` the second order algorithm of KIM, J., S. KIM, E. SCHAUMBURG, AND C. A. SIMS (2008): Calculating and Using Second- Order Accurate Solutions of Discrete Time Dynamic Equilibrium Models, *Journal of Economic Dynamics and Control*, 32(11), 33973414.

`'den_haan_de_wind'` the second order algorithm of DEN HAAN, W. J., AND J. DE WIND (2012): Nonlinear and Stable Perturbation-Based Approximations, *Journal of Economic Dynamics and Control*, 36(10), 14771497.

`'lan_meyer-gohde'` the second order algorithm of LAN, H., AND A. MEYER-GOHDE (Forthcoming): Solving DSGE Models with a Nonlinear Moving Average, *Journal of Economic Dynamics and Control*.

For third order approximations (`options_.order=3` in Dynare) `type = 'andreasen'` the third order algorithm of ANDREASEN, M. M. (2012): On the Effects of Rare Disasters and Uncertainty Shocks for Risk Premia in Non-Linear DSGE Models, *Review of Economic Dynamics*, 15(3), 295316.

`'fernandez-villaverde_et_al'` the third order algorithm of FERNANDEZ-VILLAYERDE, J., P. A. GUERRO N-QUINTANA, J. RUBIO-RAMI REZ, AND M. URIBE (2011): Risk Matters: The Real Effects of Volatility Shocks, *American Economic Review*, 101(6), 253061.

`'den_haan_de_wind'` the third order algorithm of DEN HAAN, W. J., AND J. DE WIND (2012): Nonlinear and Stable Perturbation-Based Approximations, *Journal of Economic Dynamics and Control*, 36(10), 14771497.

`'lan_meyer-gohde'` the third order algorithm of LAN, H., AND A. MEYER-GOHDE (Forthcoming): Solving DSGE Models with a Nonlinear Moving Average, *Journal of Economic Dynamics and Control*.