***Computer Code***

[ZIP] The Mathematica code for the paper "[Perturbation Methods for Markov-Switching DSGE Models](http://www.tzha.net/articles#PERTURBATIONMSDSGE)" by Foerster, Rubio-Ramirez, Waggoner, and Zha: [DSGE\_Perturb\_Code.zip](http://www.tzha.net/code/DSGE_Perturb_Code.zip).

[ZIP] The C/C++ and Dynare 4.2 code for the 2013 ***Econometrica***paper "[Land-Price Dynamics and Macroeconomic Fluctuations](http://www.tzha.net/articles#CREDITCONSTRAINTS)" by Liu, Wang, and Zha.  For the C/C++code, click on [C\_Cpp\_Library4LWZpaper.zip](http://www.tzha.net/articles/C_Cpp_Library4LWZpaper.zip) and [C\_Cpp\_Code4LWZpaper.zip](http://www.tzha.net/code/C_Cpp_Code4LWZpaper.zip).  For the Dynare 4.2 code, click on [DynareCode4LWZpaper.zip](http://www.tzha.net/articles/DynareCode4LWZpaper.zip).  The most recent C/C++ code should be downloaded by clicking on [PublicCodeECMA\_LWZ.zip](http://www.tzha.net/code/PublicCodeECMA_LWZ.zip).

[ASCII] The RWZ algorithm [SRestrictRWZalg.m](http://www.tzha.net/code/SRestrictRWZalg.m) for implementing VAR sign restrictions of Canova, Faust, and Uhlig. The zipped file [RWZrestrictions\_FiscalPolicy.zip](http://www.tzha.net/code/RWZrestrictions_FiscalPolicy.zip) shows an empirical example of sign restrictions applied to identifying fiscal policy shocks. This new algorithm proves very efficient as compared to the existing algorithms and is coded up in Matlab. The algorithm is described in detail in the 2010 (April) ***Review of Economic Studies*** paper "[Structural Vector Autoregressions: Theory of Identification and Algorithms for Inference](http://www.tzha.net/articles#SVAR-IDENTIFICATION)" by Rubio, Waggoner, and Zha.

[ZIP] The Matlab code, [fwzmsv\_nk\_example.zip](http://www.tzha.net/code/fwzmsv_nk_example.zip) (8KB), for the new-Keynesian example in the ***Journal of Economic and Dynamic Control***paper "[Minimal State Variable Solutions to Markov-switching Rational Expectations Models](http://www.tzha.net/articles#MINIMAL)" by Farmer, Waggoner, and Zha.

[ZIP] The Matlab code for [Conditional Forecasts in Dynamic Multivariate Models](http://www.tzha.net/articles#CONDITION) by Waggoner and Zha (***Review of Economics and Statistics*** 1999). Click on [Cfprob.zip](http://www.tzha.net/code/Cfprob.zip)  (80KB) to download.

[ZIP] The Matlab code,  [GeneratingPriors.zip](http://www.tzha.net/code/GeneratingPriors.zip) (6KB), for generating Normal, Beta, Gamma, and Inverse Gamma priors in the 2011 (2) ***Quantitative Economics***paper "[Sources of Macroeconomic Fluctuations: A Regime-Switching DSGE Approach](http://www.tzha.net/articles#TARGETCHANGE)" by Liu, Waggoner, and Zha.  The file *get\_hyperpars2.m* backs out the hyperp arameter values of the prior density to meet the specified probability interval with low and high values.   You need 4 inputs: the low value, the cumulative probability at this low value, the high value, and the cumulative probability at this high value.  In general, these probabilities are specified at 0.05 and 0.95.  The zip file [GeneratingPriors.zip](https://webdrive.service.emory.edu/users/tzha/ProgramCode/GeneratingPriors.zip) contains other useful M files (see the readme\_priors.prn file).

[ZIP] The Matlab code, [LWZ\_RED\_PublicCode.zip](https://webdrive.service.emory.edu/users/tzha/ProgramCode/LWZ_RED_PublicCode.zip), for the ***Review of Economic Dynamics*** paper "[Asymmetric Expectation Effects of Regime Switches in Monetary Policy](http://www.tzha.net/articles#ASYMMETRIC-EXPECTATION)" by Liu, Waggoner, and Zha. Read the file [readme\_lwzmodel.txt](https://webdrive.service.emory.edu/users/tzha/ProgramCode/readme_lwzmodel.txt) for instructions of how to use this program.

[ZIP] The Matlab and C program, [PublicCode\_swzestimate.zip](http://www.atl-res.com/~zha/ProgramCode/PublicCode_swzestimate.zip) (4.8MB), for the ***Journal of Econometrics*** paper "[Methods for Inference in Large Multiple-Equation Markov-Switching Models](http://www.tzha.net/articles#LARGE)" by Sims, Waggoner, and Zha.  Read the file Instructions\_swz\_estimate.prnfor instructions of how to use this program.  The executable files swzmsbvario.exe and swzestimate.exe are for Windows; the executable files swzmsbvario and swzestimate for Linux.   If you wish to compile and link the C source files yourself, click on [TZCcode.zip](http://www.atl-res.com/~zha/ProgramCode/TZCcode.zip)(562KB) to download the source code.  You need a modern C++ complier, Intel MKL, and IMSL C library to compile.  For compilation questions under the Windows or Linux operating system, please write to Eric Wang at [Keyun.Wang@atl.frb.org](mailto:Keyun.Wang@atl.frb.org).

[ZIP] The Matlab code for structural VARs with linear over-identified **restrictions on both current and lagged coefficients** discussed in Cushman and Zha (1997) and Zha (1999).  This example, motivated by Dhawan and Jeske's DSGE model, uses the four variables: energy prices, durable investment, capital investment, and output.  It is assumed that energy prices follow an exogenous autoregressive process.  The code performs the three common tasks:  (1) estimates the model parameters and **impulse responses**with or without the standard Bayesian prior, (2) computes the **error bands** for impulse responses, and (3) computes the **marginal likelihood** or data density.  Click on [readme\_restrictedVAR.zip](http://www.tzha.net/code/readme_restrictedVAR.zip) (34KB) to download the core files.  Consult the file **readme\_mdd.prn**for detailed explanations and instructions.

[ASCII] The C source code for [Shocks and Government Beliefs: The Rise and Fall of American Inflation](http://www.tzha.net/articles#SHOCKS) by Sargent, Williams, and Zha.  To download this program, click on the files [modeleconomy.c](http://www.tzha.net/SWZ_USinflation/modeleconomy.c), [modeleconomy.h](http://www.tzha.net/SWZ_USinflation/modeleconomy.h), [swz\_comfuns.c](http://www.tzha.net/SWZ_USinflation/swz_comfuns.c), [swz\_comfuns.h](http://www.tzha.net/SWZ_USinflation/swz_comfuns.h), and[probconst.c](http://www.tzha.net/SWZ_USinflation/probconst.c).

[ZIP] The Matlab code [ReducedFormBVAR.zip](http://www.tzha.net/code/ReducedFormBVAR.zip) (9KB) for unconditional forecasts from a reduced-form Bayesian Vector Autoregressive (BVAR) model with the [Sims and Zha](http://www.tzha.net/articles/IER_SZ_1998.pdf) (IER, 1998)'s prior.

[ZIP] The Matlab code for estimating the Bayesian Vector Autoregressive (BVAR) models, just-identified and over-identified, with the [Sims and Zha](http://www.tzha.net/articles/IER_SZ_1998.pdf) (IER, 1998)'s prior.   Read the Word file [Readme\_BVAR.doc](http://www.tzha.net/code/Readme_BVAR.doc) to see the instruction of how to use this code and click on[AlphaModel\_Files.zip](http://www.atl-res.com/~zha/ProgramCode/AlphaModel_Files.zip) (1.1MB) to download. The code was originally written by Zha and is extensively modified by [Andy Bauer](mailto:andy.bauer@atl.frb.org), a senior economic analyst, at the Federal Reserve Bank of Atlanta.  The article by [Robertson and Tallman](http://www.tzha.net/articles/robtallman.pdf) is particularly useful for understanding the prior as well as various features of the model (e.g., the out-of-sample forecasts from this kind of BVAR model is insensitive to whether the data are of real time nature or in final revised form).

[ZIP] The Matlab code for computing the marginal likelihood or data density for structural BVAR models (including overidentified cases).  Click on [swz\_mardd.zip](http://www.tzha.net/swz_mardd.zip) (23KB) to download.  Read the file [readme\_mdd.prn](http://www.tzha.net/readme_mdd.prn) to see the instructions of how to use this code.

[ZIP] The Matlab code for a Gibbs sampler for just-identified and overidentified BVARs.  To download it, click on [GibbsVar.zip](http://www.tzha.net/code/GibbsVar.zip) (129KB).

[ZIP] The Matlab sample code that uses the Waggoner-Zha Gibbs (and optionally Metropolis) sampler, Waggoner-Zha normalization, and optionally the Sims-Zha prior.  To see an example of using this code, click on [example.zip](http://www.tzha.net/code/example.zip) (97KB).

[ZIP] The Matlab code for [Error Bands for Impulse Responses](http://home.earthlink.net/~tzha_center/papers/ErrorBandsForImpulseResponses.html) by Sims and Zha (***Econometrica*** 1999). To download it, click on [EconometricaSimsZha1999.zip](http://www.atl-res.com/~zha/ProgramCode/EconometricaSimsZha1999.zip) (482KB) and [SimpleModel\_ClassicalBootstrap.zip](http://www.atl-res.com/~zha/ProgramCode/SimpleModel_ClassicalBootstrap.zip) (438KB).

[ZIP] The Matlab code for [Block Recursion and Structural Vector Autoregressions](http://www.tzha.net/articles#BLOCK) (***Journal of Econometrics*** 1999). To download it, click on [Blkwk.zip](http://www.tzha.net/code/Blkwk.zip) (26KB), [meg.zip](http://www.tzha.net/code/meg.zip) (6KB), [TZBlk.zip](http://www.tzha.net/code/TZBlk.zip) (22KB), and [Xd12.zip](http://www.tzha.net/code/Xd12.zip) (11KB).

[ZIP] The Matlab code for [Identifying Monetary Policy in a Small Open Economy under Flexible Exchange Rates](http://home.earthlink.net/~tzha_center/papers/IdentifyingMonetaryPolicyInASmallOpenEconomy.html) by Cushman and Zha (***Journal of Monetary Economics*** 1997). To download it, click on [CushmanZha\_JME.zip](http://www.atl-res.com/~zha/ProgramCode/CushmanZha_JME.zip) (943KB) and [fig2.zip](http://www.tzha.net/fig2.zip) (203KB).

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