Replication of Smets and Wouters (*American Economic Review* 2007; **97**(3): 586-606) Table 6

[Version 1.0.0]

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1 Replication

In this note I show how to replicate Table 6 from Smets and Wouters "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach". Available codes on the AER website from the authors do not replicate this result. Table 6 computes counterfactual scenarios based on pre- and post-Great Moderation samples by changing shocks, structural parameters, or the monetary policy rule parameters. Codes to replicate this table are available at https://braultjosh.github.io/research/.

For the replication I make use of the updated Dynare mod file from Johannes Pfeifer.[1] As noted at the top of the mod file, there are corrections made between the version used here and the original posted on the *American Economic Review* website. For specifics on these changes, please see the notes at the top of the mod file written by Johannes Pfeifer. Note that all mode files come from the AER website, I do not re-estimate the modes in the replication codes.

Table 6 computes the standard deviation of output growth and inflation based on several counterfactual scenarios. The counterfactual scenarios are as follows:

1. What would the standard deviation of output growth and inflation have been in the 1984(1):2004(4) period if the size (and persistence) of exogenous shocks were equal to

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[1]Dynare codes are available at his GitHub page https://github.com/JohannesPfeifer/DSGE_mod/blob/master/Smets_Wouters_2007/Smets_Wouters_2007_45.mod.

the pre-1979 shock and persistence levels? These results are shown under the **Shocks** heading in Table 1.

2. What would the standard deviation of output growth and inflation have been in the 1984(1):2004(4) period if the policy parameters in the Taylor rule equaled the modes estimated in the pre-1979 modes? These results are shown under the **Policy** heading in Table 1.

3. What would the standard deviation of output growth and inflation have been in the 1984(1):2004(4) period if the structure (that is, the structural parameters) equaled the modes estimated in the pre-1979 period? In this counterfactual, the shock standard deviations and persistence parameters are the modes estimated for the 1984(1):2004(4) period. These results are shown under the **Structure** heading in Table 1.

The codes provided on my website produce the following table which matches modes across the two sub periods based on the specific counterfactual.[2]

Table 1: ACTUAL, MODEL-BASED, AND COUNTERFACTUAL STANDARD DEVIATIONS OF GDP GROWTH AND INFLATION

	1966(1):2004(4)		**1966(1):1979(2)**		**1984(1):2004(4)**		**Counterfactual 1984(1):2004(4)**		
	Actual	**Model**	**Actual**	**Model**	**Actual**	**Model**	**Shocks**	**Policy**	**Structure**
Growth	0.86	0.94	1.02	1.13	0.55	0.73	1.20	0.68	0.73
Inflation	0.62	0.57	0.55	0.81	0.25	0.34	1.30	0.39	0.35

There are very minor differences in the standard deviations here and the original Smets and Wouters AER article (of the order 10^{-2}). This could be due to the changes made in the mod file based on corrections pointed out in the notes.

[2]Curiously, it appears as if Smets and Wouters did not include the moving average parameters (for price and wage markups) and the feedback technology on exogenous spending as "shock processes", even though they are included under the shock processes heading in Table 5 in the published version of the article.