

Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach

By FRANK SMETS AND RAFAEL WOUTERS*

Using a Bayesian likelihood approach, we estimate a dynamic stochastic general equilibrium model for the US economy using seven macroeconomic time series. The model incorporates many types of real and nominal frictions and seven types of structural shocks. We show that this model is able to compete with Bayesian Vector Autoregression models in out-of-sample prediction. We investigate the relative empirical importance of the various frictions. Finally, using the estimated model, we address a number of key issues in business cycle analysis: What are the sources of business cycle fluctuations? Can the model explain the cross correlation between output and inflation? What are the effects of productivity on hours worked? What are the sources of the “Great Moderation”? (JEL D58, E23, E31, E32)

A new generation of small-scale monetary business cycle models with sticky prices and wages (the New Keynesian or New Neoclassical Synthesis (NNS) models) has become popular in monetary policy analysis.¹ Following Smets and Wouters (2003), this paper estimates an extended version of these models, largely based on Lawrence J. Christiano, Martin Eichenbaum, and Charles L. Evans (CEE, 2005), on US data covering the period 1966:1–2004:4, and using a Bayesian estimation methodology. The estimated model contains many

shocks and frictions. It features sticky nominal price and wage settings that allow for backward inflation indexation, habit formation in consumption and investment adjustment costs that create hump-shaped responses of aggregate demand, and variable capital utilization and fixed costs in production. The stochastic dynamics is driven by seven orthogonal structural shocks. In addition to total factor productivity shocks, the model includes two shocks that affect the intertemporal margin (risk premium shocks and investment-specific technology shocks), two shocks that affect the intratemporal margin (wage and price mark-up shocks), and two policy shocks (exogenous spending and monetary policy shocks). Compared to the model used in Smets and Wouters (2003), there are three main differences. First, the number of structural shocks is reduced to the number of seven observables used in estimation. For example, there is no time-varying inflation target, nor a separate labor supply shock. Second, the model features a deterministic growth rate driven by labor-augmenting technological progress, so that the data do not need to be detrended before estimation. Third, the Dixit-Stiglitz aggregator in the intermediate goods and labor market is replaced by the more general aggregator developed in Miles S. Kimball (1995). This aggregator implies that the demand elasticity of differentiated goods and labor depends on their relative price. As shown in Eichenbaum and Jonas Fischer (forthcoming), the introduc-

* Smets: European Central Bank/CEPR/University of Ghent, Kaiserstrasse 29, D-60311 Frankfurt am Main, Germany (e-mail: frank.smets@ecb.int); Wouters: National Bank of Belgium/Université Catholique, Boulevard de Berlaimont 5, 1000 Brussels, Belgium (e-mail: rafael.wouters@nbb.be). The views expressed are solely our own and do not necessarily reflect those of the European Central Bank or the National Bank of Belgium. We thank seminar participants and discussants at the 2003 ECB/IMOP Workshop on Dynamic Macroeconomics, the Federal Reserve Board, Princeton University, the Federal Reserve Banks of St. Louis and Chicago, the 2004 ASSA meetings in San Diego, Köln University, Humboldt University, the European Central Bank, the Bank of Canada/Swiss National Bank/Federal Reserve Bank of Cleveland Joint Workshop on Dynamic Models Useful for Policy, and, in particular, Frank Schorfheide, Fabio Canova, Chris Sims, Mark Gertler, and two anonymous referees for very useful and stimulating comments.

¹ See Marvin Goodfriend and Robert G. King (1997), Julio J. Rotemberg and Michael Woodford (1995), Richard Clarida, Jordi Galí, and Mark Gertler (1999) and Woodford (2003).

tion of this real rigidity allows us to estimate a more reasonable degree of price and wage stickiness.

The objectives of the paper are threefold. First, as the NNS models have become the standard workhorse for monetary policy analysis, it is important to verify whether they can explain the main features of the US macro data: real GDP, hours worked, consumption, investment, real wages, prices, and the short-term nominal interest rate. CEE (2005) show that a version of the model estimated in this paper can replicate the impulse responses following a monetary policy shock identified in an unrestricted Vector Autoregression (VAR). As in Smets and Wouters (2003), the introduction of a larger number of shocks allows us to estimate the full model using the seven data series mentioned above. The marginal likelihood criterion, which captures the out-of-sample prediction performance, is used to test the NNS model against standard and Bayesian VAR models. We find that the NNS model has a fit comparable to that of Bayesian VAR models. These results are confirmed by a simple out-of-sample forecasting exercise. The restrictions implied by the NNS model lead to an improvement of the forecasting performance compared to standard VARs, in particular, at medium-term horizons. Bayesian NNS models, therefore, combine a sound, microfounded structure suitable for policy analysis with a good probabilistic description of the observed data and good forecasting performance.

Second, the introduction of a large number of frictions raises the question whether each of those frictions is really necessary to describe the seven data series. For example, CEE (2005) show that once one allows for nominal wage rigidity, there is no need for additional price rigidity in order to capture the impulse responses following a monetary policy shock. The Bayesian estimation methodology provides a natural framework for testing which frictions are empirically important by comparing the marginal likelihood of the various models. In contrast to CEE (2005), price and wage stickiness are found to be equally important. Indexation, on the other hand, is relatively unimportant in both goods and labor markets, confirming the single-equation results of Galí and Gertler (1999). While all the real frictions help in reducing the prediction errors of the NNS model, empirically the most important

are the investment adjustment costs. In the presence of wage stickiness, the introduction of variable capacity utilization is less important.

Finally, we use the estimated NNS model to address a number of key issues. First, what are the main driving forces of output developments in the United States? Broadly speaking, we confirm the analysis of Matthew D. Shapiro and Mark Watson (1988), who use a structural VAR methodology to examine the sources of business cycle fluctuations. While “demand” shocks such as the risk premium, exogenous spending, and investment-specific technology shocks explain a significant fraction of the short-run forecast variance in output, both wage mark-up (or labor supply) and, to a lesser extent, productivity shocks explain most of its variation in the medium to long run. Second, in line with Galí (1999) and Neville Francis and Valery A. Ramey (2004), productivity shocks have a significant short-run negative impact on hours worked. This is the case even in the flexible price economy, because of the slow adjustment of the two demand components following a positive productivity shock. Third, inflation developments are mostly driven by the price mark-up shocks in the short run and the wage mark-up shocks in the long run. Nevertheless, the model is able to capture the cross correlation between output and inflation at business cycle frequencies. Finally, in order to investigate the stability of the results, we estimate the NNS model for two subsamples: the “Great Inflation” period from 1966:2 to 1979:2 and the “Great Moderation” period from 1984:1 to 2004:4. We find that most of the structural parameters are stable over those two periods. The biggest difference concerns the variances of the structural shocks. In particular, the standard deviations of the productivity, monetary policy, and price mark-up shocks seem to have fallen in the second subsample, explaining the fall in the volatility of output growth and inflation in this period. We also detect a fall in the monetary policy response to output developments in the second subperiod.

In the next section, we discuss the linearized dynamic, stochastic, general-equilibrium (DSGE) model that is subsequently estimated. In Section II, the prior and posterior distribution of the structural parameters and the shock processes are discussed. In Section III, the model statistics and forecast performance are compared to those

of unconstrained VAR (and BVAR) models. In Section IV, the empirical importance of the different frictions are discussed. Finally, in Section V, we use the estimated model to discuss a number of key issues in business cycle analysis. Section VI contains the concluding remarks.

I. The Linearized DSGE Model

The DSGE model contains many frictions that affect both nominal and real decisions of households and firms. The model is based on CEE (2005) and Smets and Wouters (2003). As in Smets and Wouters (2005), we extend the model so that it is consistent with a balanced steady-state growth path driven by deterministic labor-augmenting technological progress. Households maximize a nonseparable utility function with two arguments (goods and labor effort) over an infinite life horizon. Consumption appears in the utility function relative to a time-varying external habit variable. Labor is differentiated by a union, so there is some monopoly power over wages, which results in an explicit wage equation and allows for the introduction of sticky nominal wages à la Guillermo A. Calvo (1983). Households rent capital services to firms and decide how much capital to accumulate given the capital adjustment costs they face. As the rental price of capital changes, the utilization of the capital stock can be adjusted at increasing cost. Firms produce differentiated goods, decide on labor and capital inputs, and set prices, again according to the Calvo model. The Calvo model in both wage and price setting is augmented by the assumption that prices that are not reoptimized are partially indexed to past inflation rates. Prices are therefore set in function of current and expected marginal costs, but are also determined by the past inflation rate. The marginal costs depend on wages and the rental rate of capital. Similarly, wages depend on past and expected future wages and inflation.

There are a few differences with respect to the model developed in Smets and Wouters (2005). First, the number of structural shocks is reduced to seven in order to match the number of observables that are used in estimation. Second, in both goods and labor markets we replace the Dixit-Stiglitz aggregator with an aggregator that allows for a time-varying demand elasticity, which depends on the relative price as in Kimball (1995). As shown by Eichenbaum and

Fischer (forthcoming), the introduction of this real rigidity allows us to estimate a more reasonable degree of price and wage stickiness.

In the rest of this section, we describe the log-linearized version of the DSGE model that we subsequently estimate using US data. All variables are log-linearized around their steady-state balanced growth path. Starred variables denote steady-state values.² We first describe the aggregate demand side of the model and then turn to the aggregate supply.

The aggregate resource constraint is given by

$$(1) \quad y_t = c_y c_t + i_y i_t + z_y z_t + \varepsilon_t^s.$$

Output (y_t) is absorbed by consumption (c_t), investment (i_t), capital-utilization costs that are a function of the capital utilization rate (z_t), and exogenous spending (ε_t^s); c_y is the steady-state share of consumption in output and equals $1 - g_y - i_y$, where g_y and i_y are respectively the steady-state exogenous spending-output ratio and investment-output ratio. The steady-state investment-output ratio in turn equals $(\gamma - 1 + \delta)k_y$, where γ is the steady-state growth rate, δ stands for the depreciation rate of capital, and k_y is the steady-state capital-output ratio. Finally, $z_y = R_*^k k_y$, where R_*^k is the steady-state rental rate of capital. We assume that exogenous spending follows a first-order autoregressive process with an IID-Normal error term and is also affected by the productivity shock as follows: $\varepsilon_t^s = \rho_g \varepsilon_{t-1}^s + \eta_t^s + \rho_{ga} \eta_t^a$. The latter is empirically motivated by the fact that, in estimation, exogenous spending also includes net exports, which may be affected by domestic productivity developments.

The dynamics of consumption follows from the consumption Euler equation and is given by

$$(2) \quad c_t = c_1 c_{t-1} + (1 - c_1) E_t c_{t+1} \\ + c_2 (l_t - E_t l_{t+1}) - c_3 (r_t - E_t \pi_{t+1} + \varepsilon_t^b),$$

where $c_1 = (\lambda/\gamma)/(1 + \lambda/\gamma)$, $c_2 = [(\sigma_c - 1)(W_*^h L_*/C_*)]/[\sigma_c(1 + \lambda/\gamma)]$, and $c_3 = (1 - \lambda/\gamma)/$

² Some details of the decisions faced by agents in the economy are given in the Model Appendix, available at http://www.e-aer.org/data/june07/20041254_app.pdf. An appendix with the full derivation of the steady state and the linearized model equations is available upon request.

$[(1 + \lambda/\gamma)\sigma_c]$. Current consumption (c_t) depends on a weighted average of past and expected future consumption, and on expected growth in hours worked ($l_t - E_t l_{t+1}$), the ex ante real interest rate ($r_t - E_t \pi_{t+1}$), and a disturbance term ε_t^b . Under the assumption of no external habit formation ($\lambda = 0$) and log utility in consumption ($\sigma_c = 1$), $c_1 = c_2 = 0$ and the traditional purely forward-looking consumption equation is obtained. With steady-state growth, the growth rate γ marginally affects the reduced-form parameters in the linearized consumption equation. When the elasticity of intertemporal substitution (for constant labor) is smaller than one ($\sigma_c > 1$), consumption and hours worked are complements in utility and consumption depends positively on current hours worked and negatively on expected growth in hours worked (see Susanto Basu and Kimball 2002). Finally, the disturbance term ε_t^b represents a wedge between the interest rate controlled by the central bank and the return on assets held by the households. A positive shock to this wedge increases the required return on assets and reduces current consumption. At the same time, it also increases the cost of capital and reduces the value of capital and investment, as shown below.³ This shock has similar effects as so-called net-worth shocks in Ben S. Bernanke, Gertler, and Simon Gilchrist (1999) and Christiano, Roberto Motto, and Massimo Rostagno (2003), which explicitly model the external finance premium. The disturbance is assumed to follow a first-order autoregressive process with an IID-Normal error term: $\varepsilon_t^b = \rho_b \varepsilon_{t-1}^b + \eta_t^b$.

The dynamics of investment comes from the investment Euler equation and is given by

$$(3) \quad i_t = i_1 i_{t-1} + (1 - i_1) E_t i_{t+1} + i_2 q_t + \varepsilon_t^i,$$

where $i_1 = 1/(1 + \beta\gamma^{1-\sigma_c})$, $i_2 = [1/(1 + \beta\gamma^{1-\sigma_c})\gamma^2\varphi]$, φ is the steady-state elasticity of the capital adjustment cost function, and β is the discount factor applied by households. As in CEE (2005), a higher elasticity of the cost of adjusting capital reduces the sensitivity of investment (i_t) to

the real value of the existing capital stock (q_t). Modeling capital adjustment costs as a function of the change in investment rather than its level introduces additional dynamics in the investment equation, which is useful in capturing the hump-shaped response of investment to various shocks. Finally, ε_t^i represents a disturbance to the investment-specific technology process and is assumed to follow a first-order autoregressive process with an IID-Normal error term: $\varepsilon_t^i = \rho_i \varepsilon_{t-1}^i + \eta_t^i$.

The corresponding arbitrage equation for the value of capital is given by

$$(4) \quad q_t = q_1 E_t q_{t+1} + (1 - q_1) E_t r_{t+1}^k - (r_t - E_t \pi_{t+1} + \varepsilon_t^b),$$

where $q_1 = \beta\gamma^{-\sigma_c}(1 - \delta) = [(1 - \delta)/(R_*^k + (1 - \delta))]$. The current value of the capital stock (q_t) depends positively on its expected future value and the expected real rental rate on capital ($E_t r_{t+1}^k$) and negatively on the ex ante real interest rate and the risk premium disturbance.

Turning to the supply side, the aggregate production function is given by

$$(5) \quad y_t = \phi_p (\alpha k_t^s + (1 - \alpha) l_t + \varepsilon_t^a).$$

Output is produced using capital (k_t^s) and labor services (hours worked, l_t). Total factor productivity (ε_t^a) is assumed to follow a first-order autoregressive process: $\varepsilon_t^a = \rho_a \varepsilon_{t-1}^a + \eta_t^a$. The parameter α captures the share of capital in production, and the parameter ϕ_p is one plus the share of fixed costs in production, reflecting the presence of fixed costs in production.

As newly installed capital becomes effective only with a one-quarter lag, current capital services used in production (k_t^s) are a function of capital installed in the previous period (k_{t-1}) and the degree of capital utilization (z_t):

$$(6) \quad k_t^s = k_{t-1} + z_t.$$

Cost minimization by the households that provide capital services implies that the degree of capital utilization is a positive function of the rental rate of capital,

$$(7) \quad z_t = z_1 r_t^k,$$

³ This latter effect makes this shock different from a discount factor shock (as in Smets and Wouters 2003), which affects only the intertemporal consumption Euler equation. In contrast to a discount factor shock, the risk premium shock helps to explain the comovement of consumption and investment.

where $z_1 = (1 - \psi)/\psi$ and ψ is a positive function of the elasticity of the capital utilization adjustment cost function and normalized to be between zero and one. When $\psi = 1$, it is extremely costly to change the utilization of capital and, as a result, the utilization of capital remains constant. In contrast, when $\psi = 0$, the marginal cost of changing the utilization of capital is constant and, as a result, in equilibrium the rental rate on capital is constant, as is clear from equation (7).

The accumulation of installed capital (k_t) is a function not only of the flow of investment but also of the relative efficiency of these investment expenditures as captured by the investment-specific technology disturbance

$$(8) \quad k_t = k_1 k_{t-1} + (1 - k_1) i_t + k_2 \varepsilon_t^i,$$

with $k_1 = (1 - \delta)/\gamma$ and $k_2 = (1 - (1 - \delta)/\gamma)(1 + \beta\gamma^{1-\sigma_c})\gamma^2\varphi$.

Turning to the monopolistic competitive goods market, cost minimization by firms implies that the price mark-up (μ_t^p), defined as the difference between the average price and the nominal marginal cost or the negative of the real marginal cost, is equal to the difference between the marginal product of labor (mpl_t) and the real wage (w_t):

$$(9) \quad \mu_t^p = mpl_t - w_t = \alpha(k_t^\alpha - l_t) + \varepsilon_t^a - w_t.$$

As implied by the second equality in (9), the marginal product of labor is itself a positive function of the capital-labor ratio and total factor productivity.

Due to price stickiness, as in Calvo (1983), and partial indexation to lagged inflation of those prices that can not be reoptimized, as in Smets and Wouters (2003), prices adjust only sluggishly to their desired mark-up. Profit maximization by price-setting firms gives rise to the following New-Keynesian Phillips curve:

$$(10) \quad \pi_t = \pi_1 \pi_{t-1} + \pi_2 E_t \pi_{t+1} - \pi_3 \mu_t^p + \varepsilon_t^p,$$

where $\pi_1 = \iota_p/(1 + \beta\gamma^{1-\sigma_c}\iota_p)$, $\pi_2 = \beta\gamma^{1-\sigma_c}/(1 + \beta\gamma^{1-\sigma_c}\iota_p)$, and $\pi_3 = 1/(1 + \beta\gamma^{1-\sigma_c}\iota_p)[(1 - \beta\gamma^{1-\sigma_c}\xi_p)(1 - \xi_p)/\xi_p((\phi_p - 1)\varepsilon_p + 1)]$. Inflation

(π_t) depends positively on past and expected future inflation, negatively on the current price mark-up, and positively on a price mark-up disturbance (ε_t^p). The price mark-up disturbance is assumed to follow an ARMA(1, 1) process: $\varepsilon_t^p = \rho_p \varepsilon_{t-1}^p + \eta_t^p - \mu_p \eta_{t-1}^p$, where η_t^p is an IID-Normal price mark-up shock. The inclusion of the MA term is designed to capture the high-frequency fluctuations in inflation.

When the degree of indexation to past inflation is zero ($\iota_p = 0$), equation (10) reverts to a standard, purely forward-looking Phillips curve ($\pi_1 = 0$). The assumption that all prices are indexed to either lagged inflation or the steady-state inflation rate ensures that the Phillips curve is vertical in the long run. The speed of adjustment to the desired mark-up depends, among others, on the degree of price stickiness (ξ_p), the curvature of the Kimball goods market aggregator (ε_p), and the steady-state mark-up, which in equilibrium is itself related to the share of fixed costs in production ($\phi_p - 1$) through a zero-profit condition. A higher ε_p slows down the speed of adjustment because it increases the strategic complementarity with other price setters. When all prices are flexible ($\xi_p = 0$) and the price-mark-up shock is zero, equation (10) reduces to the familiar condition that the price mark-up is constant, or equivalently that there are no fluctuations in the wedge between the marginal product of labor and the real wage.

Cost minimization by firms will also imply that the rental rate of capital is negatively related to the capital-labor ratio and positively to the real wage (both with unitary elasticity):

$$(11) \quad r_t^k = -(k_t - l_t) + w_t.$$

In analogy with the goods market, in the monopolistically competitive labor market, the wage mark-up will be equal to the difference between the real wage and the marginal rate of substitution between working and consuming (mrs_t),

$$(12) \quad \mu_t^w = w_t - mrs_t \\ = w_t - \left(\sigma_l l_t + \frac{1}{1 - \lambda/\gamma} (c_t - \lambda/\gamma c_{t-1}) \right),$$

where σ_l is the elasticity of labor supply with respect to the real wage and λ is the habit parameter in consumption.

Similarly, due to nominal wage stickiness and partial indexation of wages to inflation, real wages adjust only gradually to the desired wage mark-up:

$$(13) \quad w_t = w_1 w_{t-1} + (1 - w_1)(E_t w_{t+1} + E_t \pi_{t+1}) - w_2 \pi_t + w_3 \pi_{t-1} - w_4 \mu_t^w + \varepsilon_t^w,$$

with $w_1 = 1/(1 + \beta\gamma^{1-\sigma_c})$, $w_2 = (1 + \beta\gamma^{1-\sigma_c} \iota_w)/(1 + \beta\gamma^{1-\sigma_c})$, $w_3 = \iota_w/(1 + \beta\gamma^{1-\sigma_c})$, and $w_4 = 1/(1 + \beta\gamma^{1-\sigma_c})[(1 - \beta\gamma^{1-\sigma_c} \xi_w)(1 - \xi_w)/(\xi_w((\phi_w - 1)\varepsilon_w + 1))]$.

The real wage w_t is a function of expected and past real wages, expected, current, and past inflation, the wage mark-up, and a wage-markup disturbance (ε_t^w). If wages are perfectly flexible ($\xi_w = 0$), the real wage is a constant mark-up over the marginal rate of substitution between consumption and leisure. In general, the speed of adjustment to the desired wage mark-up depends on the degree of wage stickiness (ξ_w) and the demand elasticity for labor, which itself is a function of the steady-state labor market mark-up ($\phi_w - 1$) and the curvature of the Kimball labor market aggregator (ε_w). When wage indexation is zero ($\iota_w = 0$), real wages do not depend on lagged inflation ($w_3 = 0$). The wage-markup disturbance (ε_t^w) is assumed to follow an ARMA(1, 1) process with an IID-Normal error term: $\varepsilon_t^w = \rho_w \varepsilon_{t-1}^w + \eta_t^w - \mu_w \eta_{t-1}^w$. As in the case of the price mark-up shock, the inclusion of an MA term allows us to pick up some of the high-frequency fluctuations in wages.⁴

Finally, the model is closed by adding the following empirical monetary policy reaction function:

$$(14) \quad r_t = \rho r_{t-1} + (1 - \rho)\{r_\pi \pi_t + r_y(y_t - y_t^p)\} + r_{\Delta y}[(y_t - y_t^p) - (y_{t-1} - y_{t-1}^p)] + \varepsilon_t^r.$$

The monetary authorities follow a generalized Taylor rule by gradually adjusting the policy-controlled interest rate (r_t) in response to inflation and the output gap, defined as the difference between actual and potential output (John B. Taylor 1993). Consistently with the DSGE model, potential output is defined as the level of output that would prevail under flexible prices and wages in the absence of the two “mark-up” shocks.⁵ The parameter ρ captures the degree of interest rate smoothing. In addition, there is a short-run feedback from the change in the output gap. Finally, we assume that the monetary policy shocks (ε_t^r) follow a first-order autoregressive process with an IID-Normal error term: $\varepsilon_t^r = \rho_r \varepsilon_{t-1}^r + \eta_t^r$.

Equations (1) to (14) determine 14 endogenous variables: y_t , c_t , i_t , q_t , k_t^s , k_t , z_t , r_t^k , μ_t^p , π_t , μ_t^w , w_t , l_t , and r_t . The stochastic behavior of the system of linear rational expectations equations is driven by seven exogenous disturbances: total factor productivity (ε_t^a), investment-specific technology (ε_t^i), risk premium (ε_t^b), exogenous spending (ε_t^g), price mark-up (ε_t^p), wage mark-up (ε_t^w), and monetary policy (ε_t^r) shocks. Next we turn to the estimation of the model.

II. Parameter Estimates

The model presented in the previous section is estimated with Bayesian estimation techniques using seven key macroeconomic quarterly US time series as observable variables: the log difference of real GDP, real consumption, real investment and the real wage, log hours worked, the log difference of the GDP deflator, and the federal funds rate. A full description of the data used is given in the Data Appendix. The corresponding measurement equation is:

⁴ Alternatively, we could interpret this disturbance as a labor supply disturbance coming from changes in preferences for leisure.

⁵ In practical terms, we expand the model consisting of equations (1) to (14) with a flexible-price-and-wage version in order to calculate the model-consistent output gap. Note that the assumption of treating the wage equation disturbance as a wage mark-up disturbance rather than a labor supply disturbance coming from changed preferences has implications for our calculation of potential output.

$$(15) \quad Y_t = \begin{bmatrix} dlGDP_t \\ dlCONS_t \\ dlINV_t \\ dlWAG_t \\ lHOURS_t \\ dlP_t \\ FEDFUNDS_t \end{bmatrix} = \begin{bmatrix} \bar{\gamma} \\ \bar{\gamma} \\ \bar{\gamma} \\ \bar{\gamma} \\ \bar{l} \\ \bar{\pi} \\ \bar{r} \end{bmatrix} + \begin{bmatrix} y_t - y_{t-1} \\ c_t - c_{t-1} \\ i_t - i_{t-1} \\ w_t - w_{t-1} \\ l_t \\ \pi_t \\ r_t \end{bmatrix},$$

where l and dl stand for 100 times log and log difference, respectively; $\bar{\gamma} = 100(\gamma - 1)$ is the common quarterly trend growth rate to real GDP, consumption, investment and wages; $\bar{\pi} = 100(\Pi_* - 1)$ is the quarterly steady-state inflation rate; and $\bar{r} = 100(\beta^{-1}\gamma^{\sigma}\Pi_* - 1)$ is the steady-state nominal interest rate. Given the estimates of the trend growth rate and the steady-state inflation rate, the latter will be determined by the estimated discount rate. Finally, \bar{l} is steady-state hours worked, which is normalized to be equal to zero.

First, we estimate the mode of the posterior distribution by maximizing the log posterior function, which combines the prior information on the parameters with the likelihood of the data. In a second step, the Metropolis-Hastings algorithm is used to get a complete picture of the posterior distribution and to evaluate the marginal likelihood of the model.⁶ The model is

⁶ See Smets and Wouters (2003) for a more elaborate description of the methodology. All estimations are done with Dynare (<http://www.cpremap.cnrs.fr/dynare>). A sample of 250,000 draws was created (neglecting the first 50,000 draws). The Hessian resulting from the optimization procedure was used for defining the transition probability function that generates the new proposed draw. A step size of 0.3 resulted in a rejection rate of 0.65. The resulting sample properties are not sensitive to the step size. Two methods were used to test the stability of the sample. The first convergence diagnostic is based on Stephen P. Brooks and Andrew Gelman (1998) and compares between and within moments of multiple chains. These tests are implemented in Dynare. The second method to evaluate the stability is a graphical test based on the cumulative mean minus the overall mean (see Luc Bauwens, Michel Lubrano, and Jean-François Richards 2000). An exact statistical test

estimated over the full sample period from 1966:1 to 2004:4. In Section VD, we estimate the model over two subperiods (1966:1–1979:2 and 1984:1–2004:4) in order to investigate the stability of the estimated parameters.⁷

A. Prior Distribution of the Parameters

The priors on the stochastic processes are harmonized as much as possible. The standard errors of the innovations are assumed to follow an inverse-gamma distribution with a mean of 0.10 and two degrees of freedom, which corresponds to a rather loose prior. The persistence of the AR(1) processes is beta distributed with mean 0.5 and standard deviation 0.2. A similar distribution is assumed for the MA parameter in the process for the price and wage mark-up. The quarterly trend growth rate is assumed to be Normal distributed with mean 0.4 (quarterly growth rate) and standard deviation 0.1. The steady-state inflation rate and the discount rate are assumed to follow a gamma distribution with a mean of 2.5 percent and 1 percent on an annual basis.

Five parameters are fixed in the estimation procedure. The depreciation rate δ is fixed at 0.025 (on a quarterly basis) and the exogenous spending-GDP ratio g_y is set at 18 percent. Both these parameters would be difficult to estimate unless the investment and exogenous spending ratios were used directly in the measurement equation. Three other parameters are clearly not identified: the steady-state mark-up in the labor market (λ_w), which is set at 1.5, and the curvature parameters of the Kimball aggregators in the goods and labor market (ε_p and ε_w), which are both set at 10.

for the stability of the sample is complicated by the highly autocorrelated nature of the MH-sampler. From an economic point of view, however, the differences between subsamples and independent samples of size 100,000 or more are negligible.

⁷ The dataset used generally starts in 1947. In previous versions of this paper, however, we found that the first ten years are not representative of the rest of the sample, so that we decided to shorten the sample to 1957:1–2004:4. In addition, below in Section IV we use the first ten years as a training sample for calculating the marginal likelihood of unconstrained VARs, so that the effective sample starts in 1966:1.

TABLE 1A—PRIOR AND POSTERIOR DISTRIBUTION OF STRUCTURAL PARAMETERS

	Prior distribution			Posterior distribution			
	Distr.	Mean	St. Dev.	Mode	Mean	5 percent	95 percent
φ	Normal	4.00	1.50	5.48	5.74	3.97	7.42
σ_c	Normal	1.50	0.37	1.39	1.38	1.16	1.59
h	Beta	0.70	0.10	0.71	0.71	0.64	0.78
ξ_w	Beta	0.50	0.10	0.73	0.70	0.60	0.81
σ_l	Normal	2.00	0.75	1.92	1.83	0.91	2.78
ξ_p	Beta	0.50	0.10	0.65	0.66	0.56	0.74
ι_w	Beta	0.50	0.15	0.59	0.58	0.38	0.78
ι_p	Beta	0.50	0.15	0.22	0.24	0.10	0.38
ψ	Beta	0.50	0.15	0.54	0.54	0.36	0.72
Φ	Normal	1.25	0.12	1.61	1.60	1.48	1.73
r_π	Normal	1.50	0.25	2.03	2.04	1.74	2.33
ρ	Beta	0.75	0.10	0.81	0.81	0.77	0.85
r_y	Normal	0.12	0.05	0.08	0.08	0.05	0.12
$r_{\Delta y}$	Normal	0.12	0.05	0.22	0.22	0.18	0.27
$\bar{\pi}$	Gamma	0.62	0.10	0.81	0.78	0.61	0.96
$100(\beta^{-1} - 1)$	Gamma	0.25	0.10	0.16	0.16	0.07	0.26
\bar{l}	Normal	0.00	2.00	-0.1	0.53	-1.3	2.32
$\bar{\gamma}$	Normal	0.40	0.10	0.43	0.43	0.40	0.45
α	Normal	0.30	0.05	0.19	0.19	0.16	0.21

Note: The posterior distribution is obtained using the Metropolis-Hastings algorithm.

The parameters describing the monetary policy rule are based on a standard Taylor rule: the long-run reaction on inflation and the output gap are described by a Normal distribution with mean 1.5 and 0.125 (0.5 divided by 4) and standard errors 0.125 and 0.05, respectively. The persistence of the policy rule is determined by the coefficient on the lagged interest rate rate, which is assumed to be Normal around a mean of 0.75 with a standard error of 0.1. The prior on the short-run reaction coefficient to the change in the output gap is 0.125.

The parameters of the utility function are assumed to be distributed as follows. The intertemporal elasticity of substitution is set at 1.5 with a standard error of 0.375; the habit parameter is assumed to fluctuate around 0.7 with a standard error of 0.1, and the elasticity of labor supply is assumed to be around 2 with a standard error of 0.75. These are all quite standard calibrations. The prior on the adjustment cost parameter for investment is set around 4 with a standard error of 1.5 (based on CEE 2005) and the capacity utilization elasticity is set at 0.5 with a standard error of 0.15. The share of fixed costs in the production function is assumed to have a prior mean of 0.25. Finally, there are the parameters describing the price and wage setting. The Calvo probabilities are assumed to be

around 0.5 for both prices and wages, suggesting an average length of price and wage contracts of half a year. This is compatible with the findings of Mark Bils and Peter J. Klenow (2004) for prices. The prior mean of the degree of indexation to past inflation is also set at 0.5 in both goods and labor markets.⁸

B. Posterior Estimates of the Parameters

Table 1 gives the mode, the mean, and the 5 and 95 percentiles of the posterior distribution of the parameters obtained by the Metropolis-Hastings algorithm.

The trend growth rate is estimated to be around 0.43, which is somewhat smaller than the average growth rate of output per capita over the sample. The posterior mean of the steady-state inflation rate over the full sample is about 3 percent on an annual basis. The mean of the discount rate is estimated to be quite small (0.65 percent on an annual basis). The implied mean steady-state nominal and real interest

⁸ We have analyzed the sensitivity of the estimation results to the prior assumptions by increasing the standard errors of the prior distributions of the behavioral parameters by 50 percent. Overall, the estimation results are very similar.

TABLE 1B—PRIOR AND POSTERIOR DISTRIBUTION OF SHOCK PROCESSES

	Prior distribution			Posterior distribution			
	Distr.	Mean	St. Dev.	Mode	Mean	95 percent	5 percent
σ_a	Invgamma	0.10	2.00	0.45	0.45	0.41	0.50
σ_b	Invgamma	0.10	2.00	0.24	0.23	0.19	0.27
σ_g	Invgamma	0.10	2.00	0.52	0.53	0.48	0.58
σ_l	Invgamma	0.10	2.00	0.45	0.45	0.37	0.53
σ_r	Invgamma	0.10	2.00	0.24	0.24	0.22	0.27
σ_p	Invgamma	0.10	2.00	0.14	0.14	0.11	0.16
σ_w	Invgamma	0.10	2.00	0.24	0.24	0.20	0.28
ρ_a	Beta	0.50	0.20	0.95	0.95	0.94	0.97
ρ_b	Beta	0.50	0.20	0.18	0.22	0.07	0.36
ρ_g	Beta	0.50	0.20	0.97	0.97	0.96	0.99
ρ_l	Beta	0.50	0.20	0.71	0.71	0.61	0.80
ρ_r	Beta	0.50	0.20	0.12	0.15	0.04	0.24
ρ_p	Beta	0.50	0.20	0.90	0.89	0.80	0.96
ρ_w	Beta	0.50	0.20	0.97	0.96	0.94	0.99
μ_p	Beta	0.50	0.20	0.74	0.69	0.54	0.85
μ_w	Beta	0.50	0.20	0.88	0.84	0.75	0.93
ρ_{ga}	Beta	0.50	0.20	0.52	0.52	0.37	0.66

Note: The posterior distribution is obtained using the Metropolis-Hastings algorithm.

rates are, respectively, about 6 percent and 3 percent on an annual basis.

A number of observations are worth making regarding the estimated processes for the exogenous shock variables (Table 1B). Overall, the data appear to be very informative on the stochastic processes for the exogenous disturbances. The productivity, the government spending, and the wage mark-up processes are estimated to be the most persistent, with an AR(1) coefficient of 0.95, 0.97, and 0.96, respectively. The mean of the standard error of the shock to the productivity process is 0.45. The high persistence of the productivity and wage mark-up processes implies that, at long horizons, most of the forecast error variance of the real variables will be explained by those two shocks. In contrast, both the persistence and the standard deviation of the risk premium and monetary policy shock are relatively low (0.18 and 0.12, respectively).

Turning to the estimates of the main behavioral parameters, it turns out that the mean of the posterior distribution is typically relatively close to the mean of the prior assumptions. There are a few notable exceptions. The degree of both price and wage stickiness is estimated to be quite a bit higher than 0.5. The average duration of wage contracts is somewhat less than a year; whereas the average duration of price contracts is about three quarters. The

mean of the degree of price indexation (0.24) is, on the other hand, estimated to be much less than 0.5.⁹ In addition, the elasticity of the cost of changing investment is estimated to be higher than assumed a priori, suggesting an even slower response of investment to changes in the value of capital. Finally, the posterior mean of the fixed cost parameter is estimated to be much higher than assumed in the prior distribution (1.6) and the share of capital in production is estimated to be much lower (0.19). Overall, it appears that the data are quite informative on the behavioral parameters, as indicated by the lower variance of the posterior distribution relative to the prior distribution. Two exceptions are the elasticity of labor supply and the elasticity of the cost of changing the utilization of capital, where the posterior and prior distributions are quite similar.¹⁰

Finally, turning to the monetary policy reaction function parameters, the mean of the long-run reaction coefficient to inflation is estimated to be relatively high (2.0). There is a considerable degree of interest rate smoothing, as the

⁹ When relaxing the prior distributions, it turns out that the degree of wage stickiness rises even more, whereas the degree of price indexation falls by more.

¹⁰ Figures with the prior and posterior distributions of all the parameters are available upon request.

mean of the coefficient on the lagged interest rate is estimated to be 0.81. Policy does not appear to react very strongly to the output gap level (0.09), but does respond strongly to changes in the output-gap (0.22) in the short run.

III. Forecast Performance: Comparison with VAR Models

In this section, we compare the out-of-sample forecast performance of the estimated DSGE model with that of various VARs estimated on the same dataset. The marginal likelihood, which can be interpreted as a summary statistic for the model's out-of-sample prediction performance, forms a natural benchmark for comparing the DSGE model with alternative specifications and other statistical models.¹¹ As Sims (2003) has pointed out, however, it is important to use a training sample in order to standardize the prior distribution across widely different models. In order to check for robustness, we also consider a more traditional out-of-sample root mean squared error (RMSE) forecast exercise in this section.

Table 2 compares the marginal likelihood of the DSGE model and various unconstrained VAR models, all estimated over the full sample period (1966:1–2004:4) and using the period 1956:1–1965:4 as a training sample. Several results are worth emphasizing. First, the tightly parameterized DSGE model performs much better than an unconstrained VAR in the same vector of observable variables, Y_t (first column of Table 2). The bad empirical performance of unconstrained VARs may not be too surprising, as it is known that overparameterized models typically perform poorly in out-of-sample fore-

TABLE 2—COMPARISON OF THE MARGINAL LIKELIHOOD OF ALTERNATIVE VAR MODELS AND THE DSGE MODEL

Order of the VAR	No other prior	Sims and Zha (1998) prior
VAR(1)	−928.0	−940.9
VAR(2)	−966.6	−915.8
VAR(3)	−1018.1	−908.7
VAR(4)	−1131.2	−906.6
VAR(5)	—	−907.7
Memo: DSGE model	−905.8	−905.8

Note: In order to increase the comparability of the marginal likelihood of the various models, all models are estimated using the period 1956:1–1965:4 as a training sample (Sims 2003).

cast exercises. One indication of this is that the marginal likelihood of the unconstrained VAR model deteriorates quickly as the lag order increases. For that reason, in the second column of Table 2, we consider the Bayesian VAR model proposed by Christopher A. Sims and Tao Zha (1998). This BVAR combines a Minnesota-type prior (see Robert B. Litterman 1984) with priors that take into account the degree of persistence and cointegration in the variables. In order to allow the data to decide on the degree of persistence and cointegration, in this BVAR we enter real GDP, consumption, investment, and the real wage in log levels. When setting the tightness of the prior, we choose a set of parameters recommended by Sims (2003) for quarterly data.¹² The second column of Table 2 shows that the marginal likelihood of the Sims-Zha BVAR increases significantly compared to the unconstrained VAR. Moreover, the best BVAR model (BVAR(4)) does as well as the DSGE model.¹³

Overall, the comparison of marginal likelihoods

¹¹ As discussed in John Geweke (1998), the Metropolis-Hastings-based sample of the posterior distribution can be used to evaluate the marginal likelihood of the model. Following Geweke (1998), we calculate the modified harmonic mean to evaluate the integral over the posterior sample. An alternative approximation is the Laplace approximation around the posterior mode, which is based on a normal distribution. In our experience, the results of both approximations are very close in the case of our estimated DSGE model. This is not too surprising, given the generally close correspondence between the histograms of the posterior sample and the normal distribution around the estimated mode for the individual parameters. Given the large advantage of the Laplace approximation in terms of computational costs, we will use this approximation for comparing alternative model specifications in the next section.

¹² In order to determine the tightness of the priors, we use standard values as suggested in Sims (2003) (see also Sims and Zha 1998). In particular, the decay parameter is set at 1.0, the overall tightness is set at 10, the parameter determining the weight on the “sum of coefficients” or “own-persistence” is set at 2.0, and the parameter determining the weight on the “co-persistence” is set at 5. Moreover, the vector of prior standard deviations of the equation shocks is based on the VAR(1) residuals estimated over the training period.

¹³ The marginal likelihood can be further increased by optimizing the tightness of the “own persistence” prior. For example, setting this parameter equal to 10 increases the marginal likelihood of the BVAR(4) model to −896.

TABLE 3—OUT-OF-SAMPLE PREDICTION PERFORMANCE

	GDP	dP	Fedfunds	Hours	Wage	CONS	INV	Overall
<i>VAR(1)</i>	<i>RMSE-statistic for different forecast horizons</i>							
1q	0.60	0.25	0.10	0.46	0.64	0.60	1.62	-12.87
2q	0.94	0.27	0.18	0.78	1.02	0.95	2.96	-8.19
4q	1.64	0.34	0.36	1.45	1.67	1.54	5.67	-3.25
8q	2.40	0.53	0.64	2.13	2.88	2.27	8.91	1.47
12q	2.78	0.63	0.79	2.41	4.09	2.74	10.97	2.36
<i>BVAR(4)</i>	<i>Percentage gains (+) or losses (-) relative to VAR(1) model</i>							
1q	2.05	14.14	-1.37	-3.43	2.69	12.12	2.54	3.25
2q	-2.12	15.15	-16.38	-7.32	-0.29	10.07	2.42	0.17
4q	-7.21	31.42	-12.61	-8.58	-3.82	1.42	0.43	0.51
8q	-15.82	33.36	-13.26	-13.94	-8.98	-8.19	-11.58	-4.10
12q	-15.55	37.59	-13.56	-4.66	-15.87	-3.10	-23.49	-9.84
<i>DSG</i>	<i>Percentage gains (+) or losses (-) relative to VAR(1) model</i>							
1q	5.68	2.05	-8.24	0.68	5.99	20.16	9.22	3.06
2q	14.93	10.62	-17.22	10.34	6.20	25.85	16.79	2.82
4q	20.17	46.21	1.59	19.52	9.21	26.18	21.42	6.82
8q	22.55	68.15	28.33	22.34	15.72	21.82	25.95	11.50
12q	32.17	74.15	40.32	27.05	21.88	23.28	41.61	13.51

Notes: All models are estimated starting in 1966:1. The forecast period is 1990:1–2004:4. VAR(1) and BVAR(4) models are reestimated each quarter, the DSGE model each year. The overall measure of forecast performance is the log determinant of the uncentered forecast error covariance matrix. Gains and losses in the overall measure are expressed as the difference in the overall measure divided by the number of variables and by two to convert the variance to standard errors (times 100).

shows that the estimated DSGE model can compete with standard BVAR models in terms of empirical one-step-ahead prediction performance. These results are confirmed by a more traditional out-of-sample forecasting exercise reported in Table 3. Table 3 reports out-of-sample RMSEs for different forecast horizons over the period 1990:1 to 2004:4. For this exercise, the VAR(1), BVAR(4), and DSGE model were initially estimated over the sample 1966:1–1989:4. The models were then used to forecast the seven data series contained in Y_t from 1990:1 to 2004:4, whereby the VAR(1) and BVAR(4) models were reestimated every quarter, and the DSGE model was reestimated every year. The measure of overall performance reported in the last column of Table 3 is the log determinant of the uncentered forecast error covariance matrix.

The out-of-sample forecast statistics confirm the good forecast performance of the DSGE model relative to the VAR and BVAR models. At the one-quarter-ahead horizon, the BVAR(4) and the DSGE model improve with about the same magnitude over the VAR(1) model, confirming the results from Table 2. Over longer horizons up to three years, however, the DSGE model does considerably better than both the VAR(1) and BVAR(4) model. Somewhat sur-

prisingly, the BVAR(4) model performs worse than the simple VAR(1) model at longer horizons. Moreover, the improvement appears to be quite uniform across the seven macro variables.

IV. Model Sensitivity: Which Frictions Are Empirically Important?

The introduction of a large number of frictions raises the question of which of those are really necessary to capture the dynamics of the data. In this section, we examine the contribution of each of the frictions to the marginal likelihood of the DSGE model.

Table 4 presents the estimates of the mode of the parameters and the marginal likelihood when each friction (price and wage stickiness, price and wage indexation, investment adjustment costs and habit formation, capital utilization, and fixed costs in production) is drastically reduced one at a time. This table also gives an idea of the robustness of the parameters and the model performance with respect to the various frictions included in the model. For comparison, the first column reproduces the baseline estimates (mode of the posterior) and the marginal likelihood based on the Laplace approximation for the model without training sample.

TABLE 4—TESTING THE EMPIRICAL IMPORTANCE OF THE NOMINAL AND REAL FRICTIONS IN THE DSGE MODEL

Base	$\xi_p = 0.1$	$\xi_w = 0.1$	$\iota_p = 0.0$	$\iota_w = 0.0$	$\varphi = 0.1$	$h = 0.1$	$\psi = 0.99$	$\Phi = 1.1$	
<i>Marginal likelihood</i>									
	−923	−975	−973	−918	−927	−1084	−959	−924	−949
<i>Mode of the structural parameters</i>									
φ	5.48	4.41	2.78	5.45	5.62	0.10	1.26	5.33	5.19
σ_c	1.39	1.31	1.80	1.43	1.42	2.78	1.90	1.39	1.27
h	0.71	0.70	0.34	0.70	0.71	0.12	0.10	0.70	0.71
ξ_w	0.73	0.55	0.10	0.75	0.75	0.89	0.73	0.73	0.78
σ_l	1.92	1.48	0.25	1.91	1.91	5.24	1.21	1.79	2.33
ξ_p	0.65	0.10	0.48	0.66	0.69	0.86	0.62	0.59	0.80
ι_w	0.59	0.71	0.68	0.61	0.01	0.39	0.61	0.63	0.58
ι_p	0.22	0.84	0.24	0.01	0.24	0.08	0.21	0.21	0.19
ψ	0.54	0.82	0.66	0.54	0.50	0.02	0.69	0.99	0.45
Φ	1.61	1.79	1.64	1.60	1.61	1.15	1.44	1.62	1.10
r_π	2.03	2.15	2.15	2.01	2.01	2.03	2.24	2.04	1.98
ρ	0.81	0.79	0.75	0.81	0.82	0.84	0.81	0.80	0.80
r_y	0.08	0.08	0.08	0.08	0.09	0.23	0.12	0.08	0.10
$r_{\Delta y}$	0.22	0.21	0.25	0.22	0.22	0.30	0.29	0.23	0.25
α	0.19	0.21	0.20	0.19	0.19	0.20	0.19	0.18	0.13
<i>Mode of the autoregressive parameters of the exogenous shock processes</i>									
ρ_a	0.95	0.96	0.97	0.96	0.95	0.99	0.97	0.96	0.96
ρ_b	0.18	0.19	0.67	0.18	0.18	0.89	0.79	0.18	0.28
ρ_g	0.97	0.96	0.97	0.97	0.97	0.99	0.97	0.97	0.96
ρ_l	0.71	0.71	0.78	0.70	0.69	0.99	0.90	0.73	0.74
ρ_r	0.12	0.14	0.13	0.12	0.11	0.02	0.03	0.13	0.11
ρ_p	0.90	0.97	0.94	0.88	0.88	0.60	0.93	0.92	0.85
ρ_w	0.97	0.98	0.98	0.97	0.97	0.92	0.98	0.97	0.95
μ_p	0.74	0.20	0.71	0.59	0.77	0.34	0.76	0.71	0.67
μ_w	0.88	0.75	0.14	0.91	0.88	0.96	0.95	0.90	0.87

We focus first on the nominal frictions. Reducing the degree of nominal price and wage stickiness to a Calvo probability of 0.10 is about equally costly in terms of a deterioration of the marginal likelihood. In both cases the marginal likelihood falls very significantly by about 50. A lower degree of price stickiness leads to a strong increase in the estimated degree of price indexation from 0.22 to 0.84. In addition, the variance and the persistence of the price mark-up shocks increase as a result. The other parameters are less affected. The main impact of reducing the degree of wage stickiness on the other parameters concerns the elasticity of wages with respect to employment: the labor supply elasticity becomes much smaller and falls from a value of 1.92 to 0.25. In terms of short-run dynamics, these changes more or less cancel out, leaving the impact of labor effort on wage dynamics unaffected. In this case, the variance and the persistence of the wage mark-up shock increases.

While both Calvo frictions are empirically quite important, neither price nor wage index-

ation plays a very important role in the model dynamics. On the contrary, restricting the price indexation parameter to a very low value of 0.01 leads to an improvement of the marginal likelihood, suggesting that empirically it would be better to leave this friction out. Moreover, leaving out either friction does not have any noticeable impact on the other parameters.

Turning to the real frictions, the most important in terms of the marginal likelihood are the investment adjustment costs. Reducing the elasticity of adjustment costs to a very low level leads to a deterioration of the marginal likelihood by 160. Also, reducing habit formation in consumption is quite costly, although much less so than reducing investment adjustment costs. The reduced hump-shaped endogenous dynamics of the model due to these restrictions is compensated mainly by higher and more persistent exogenous shocks to productivity, investment, consumption, and government spending. The other real frictions fall, while the nominal rigidities increase. The presence of variable capital

utilization does not seem to matter for the model's performance. Shutting this off comes at no cost. What is costly is to reduce the share of fixed costs in production to 10 percent. Contrary to the discussion in Robert G. King and Sergio T. Rebelo (2000), the absence of variable capital utilization does not increase the standard error of the productivity shock in our model. In contrast, reducing the fixed costs in production does mechanically increase the standard deviation of the productivity shock.

Overall, the results from this sensitivity exercise illustrate that the estimated parameters appear relatively robust to changes in the frictions, one by one. Price and wage indexation and variable capital utilization are of minor importance in terms of the overall empirical performance of the model. On the real side, investment adjustment costs are the most important friction. On the nominal side, both wage and price stickiness are very important.

V. Applications

After having shown that the estimated model fits the US macroeconomic data quite well, we use it to investigate a number of key macroeconomic issues. In this section, we address the following questions. First, what are the main driving forces of output? Second, can the model replicate the cross correlation between output and inflation? Third, what is the effect of a productivity shock on hours worked? And fourth, why have output and inflation become less volatile? We study these issues in each subsection in turn.

A. What Are the Main Driving Forces of Output?

Figure 1 gives the forecast error variance decomposition of output, inflation, and the federal funds rate at various horizons based on the mode of the model's posterior distribution reported in Section III. In the short run (within a year) movements in real GDP are primarily driven by the exogenous spending shock and the two shocks that affect the intertemporal Euler equations, i.e., the risk premium shock which affects both the consumption and investment Euler equation and the investment-specific technology shock which affects the investment Euler equation. Together, they account for more

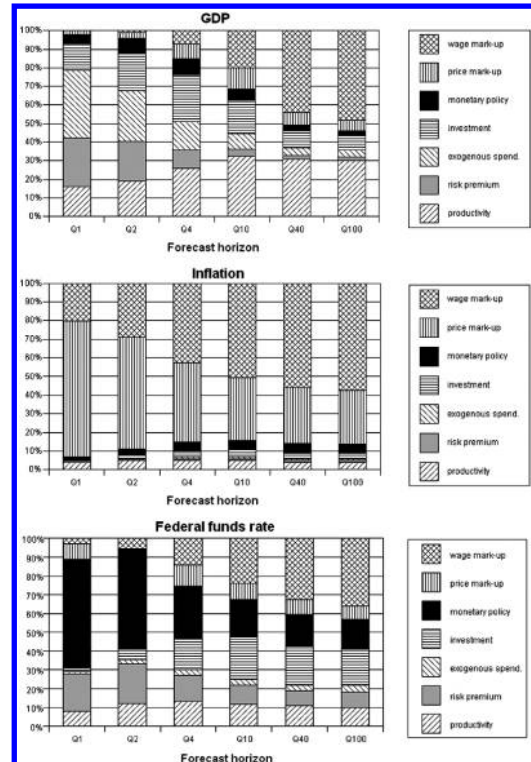


FIGURE 1. FORECAST ERROR VARIANCE DECOMPOSITION
(At the mode of the posterior distribution)

than 50 percent of the forecast error variance of output up to one year. Each of those shocks can be categorized as “demand” shocks in the sense that they have a positive effect on output, hours worked, inflation, and the nominal interest rate under the estimated policy rule. This is illustrated in Figure 2, which shows the estimated mean impulse response functions to each of those three shocks. Not surprisingly, the risk premium shock explains a big part of the short-run variations in consumption, while the investment shock explains the largest part of investment in the short run (not shown).¹⁴

In line with the results of Matthew D. Shapiro and Mark Watson (1989), however, it is primarily two “supply” shocks, the productivity and the wage mark-up shock, that account for most of the output variations in the medium to long run. Indeed, even at the two-year horizon, to-

¹⁴ The full set of impulse response functions, as well as the associated confidence sets, are available upon request.

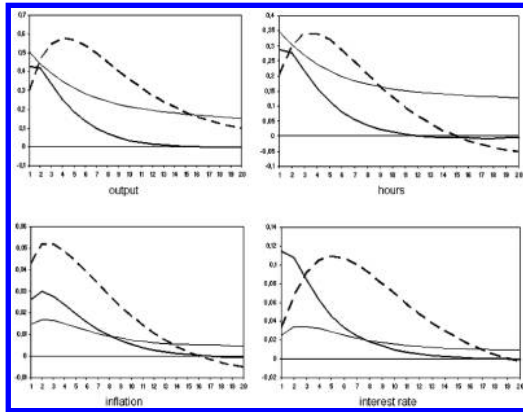


FIGURE 2. THE ESTIMATED MEAN IMPULSE RESPONSES TO "DEMAND" SHOCKS

Note: Bold solid line: risk premium shock; thin solid line: exogenous spending shock; dashed line: investment shock.

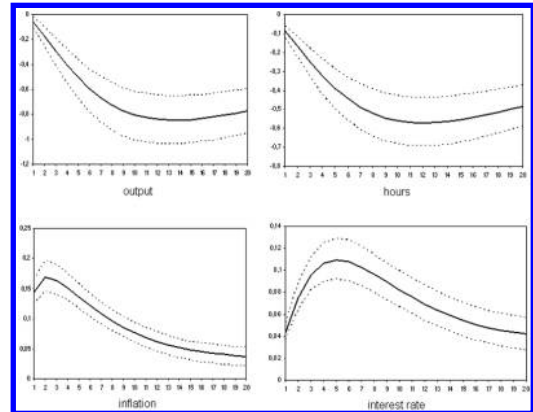


FIGURE 3. THE ESTIMATED IMPULSE RESPONSE TO A WAGE MARK-UP SHOCK

Note: The solid line is the mean impulse response; the dotted lines are the 10 percent and 90 percent posterior intervals.

gether the two shocks account for more than 50 percent of the variations in output. In the longer run, the wage mark-up shock dominates the productivity shock. Those shocks also become dominant forces in the long-run developments of consumption and, to a lesser extent, investment. Not surprisingly, the wage-markup shock is also the dominant factor behind long-run movements in hours worked. As shown in Figure 3, a typical positive wage mark-up shock gradually reduces output and hours worked by 0.8 and 0.6 percent, respectively. Confirming the large identified VAR literature on the role of monetary policy shocks (e.g. Christiano, Eichenbaum, and Evans 2000), monetary policy shocks contribute only a small fraction of the forecast variance of output at all horizons.

Figure 4 shows the historical contribution of each of four types of shocks (productivity, demand, monetary policy, and mark-up shocks) to annual output growth over the sample period. It is interesting to compare the main sources of the various recessions over this period. While the recessions of the early 1990s and the beginning of the new millennium are driven mainly by demand shocks, the recession of 1974 is due primarily to positive mark-up shocks (associated with the oil crisis). Monetary policy shocks play a dominant role only in the recession of the early 1980s when the Federal Reserve, under the chairmanship of Paul Volker, started the disinflation process.

B. Determinants of Inflation and the Output-Inflation Cross Correlation

Figure 1 also contains the variance decomposition of inflation. It is quite clear that, at all horizons, price and wage mark-ups are the most important drivers of inflation. In the short run, price mark-ups dominate, whereas in the medium to long run, wage mark-ups become relatively more important. Even at the medium- to long-run horizons, the other shocks explain only a minor fraction of the total variation in inflation. Similarly, monetary policy shocks account for only a small fraction of inflation volatility. This is also clear from Figure 4, which depicts the historical contribution of the different types of shocks to inflation over the sample period. The dominant source of secular shifts in inflation is driven by price and wage mark-up shocks. Monetary policy did, however, play a role in the rise of inflation in the 1970s and the subsequent disinflation during the Volker period. Moreover, negative demand shocks contributed to low inflation in the early 1990s and the start of the new millennium.

There are at least two reasons why the various demand and productivity shocks have only limited effects on inflation. First, the estimated slope of the New Keynesian Phillips curve is very small, so that only large and persistent changes in the marginal cost will have an impact on inflation. Second, and more importantly,

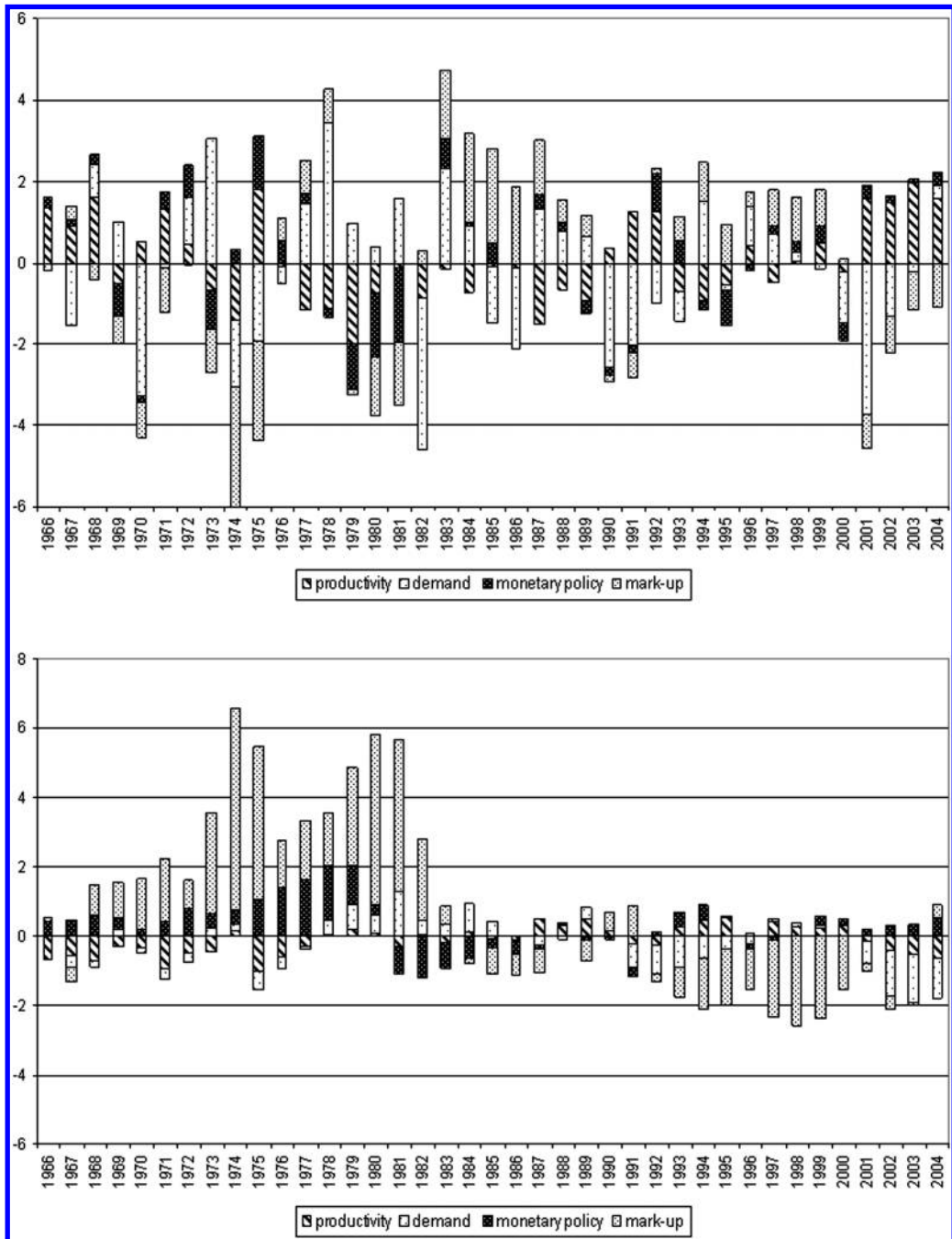


FIGURE 4. HISTORICAL DECOMPOSITION OF GDP GROWTH AND INFLATION
(Annual per capita GDP growth (deviation from trend growth))

Notes: The demand shocks include the risk premium, investment-specific technology, and exogenous spending shocks; the mark-up shocks include the price and wage mark-up shocks. Trend per-capita growth is estimated at 1.73 percent, whereas mean inflation is estimated at 3.17 percent.

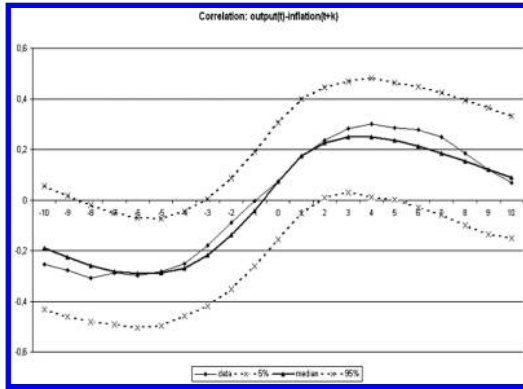


FIGURE 5. THE ACTUAL AND MODEL-BASED CROSS-CORRELATION FUNCTION BETWEEN OUTPUT AND INFLATION

Note: Output is Hodrick-Prescott filtered real GDP.

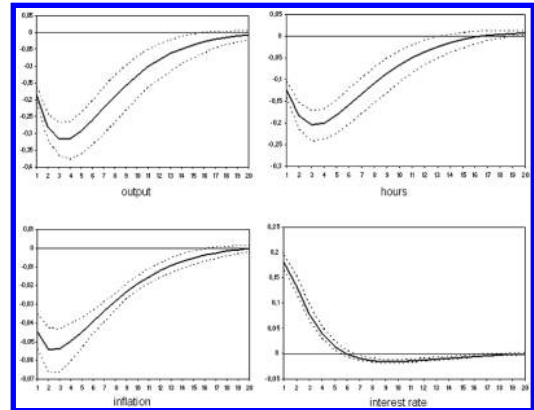


FIGURE 6. THE IMPULSE RESPONSES TO A MONETARY POLICY SHOCK

Note: The solid line is the mean impulse response; the dotted lines are the 10 percent and 90 percent posterior intervals.

under the estimated monetary policy reaction function, the Fed responds quite aggressively to emerging output gaps and their impact on inflation. This is reflected in the fact that at the short- and medium-term horizon more than 60 percent of variations in the nominal interest rate are due to the various demand and productivity shocks, in particular the risk premium shock (third panel of Figure 1). Only in the long run does the wage mark-up shock become a dominant source of movements in nominal interest rates.

In the light of these results, it is interesting to see to what extent our model can replicate the empirical correlation function between output and inflation as, for example, highlighted in Galí and Gertler (1999). Figure 5 plots the empirical correlation function of output (detrended using the Hodrick-Prescott filter) and inflation (estimated over the period 1966:1–2004:4), as well as the median and the 5 percent and 95 percent equivalent generated by the model's posterior distribution. In order to generate this distribution, 1,000 draws from the posterior distribution of the model parameters are used to generate artificial samples of output and inflation of the same sample size as the actual dataset. For each of those 1,000 artificial samples, the autocorrelation function is calculated and the median and 5 and 95 percentiles are derived. Figure 5 clearly shows that the DSGE model is able to replicate both the negative correlation between inflation one to two years in the past

and current output, and the positive correlation between current output and inflation one year ahead. Moreover, the correlations generated by the DSGE model are significantly different from zero. Decomposing the cross-covariance function in contributions by the different types of shocks, we find that the negative correlation between current inflation and future output is driven primarily by the price and wage mark-up shocks. In contrast, the positive correlation between the current output gap and future inflation is the result of both demand shocks and mark-up shocks. Monetary policy shocks do not play a role for two reasons. First, they account for only a small fraction of inflation and output developments. Second, as shown in Figure 6, according to the estimated DSGE model, the peak effect of a policy shock on inflation occurs before its peak effect on output.

C. The Effect of a Productivity Shock on Hours Worked

Following Galí (1999), there has been a lively debate about the effects of productivity shocks on hours worked and about the implications of this finding for the role of those shocks in US business cycles. Galí (1999), Francis and Ramey (2005), and Galí and Pau Rabanal (2004) have argued that due to the presence of nominal price rigidities, habit formation, and

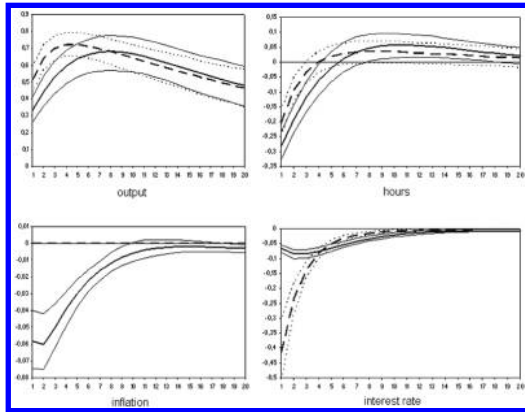


FIGURE 7. THE ESTIMATED IMPULSE RESPONSES TO A PRODUCTIVITY SHOCK

Note: The solid lines represent the estimated actual mean responses and the 10 percent and 90 percent posterior interval; the dashed lines represent the counterfactual flexible-wage-and-price responses.

adjustment costs to investment, positive productivity shocks lead to an immediate fall in hours worked. Given the strongly positive correlation between output and hours worked over the business cycle, this implies that productivity shocks cannot play an important role in the business cycle. In contrast, using alternative VAR specifications and identification strategies, Christiano, Eichenbaum, and Robert Vigfusson (2004), Luca Dedola and Stefano Neri (2004), and Gert Peersman and Roland Straub (2005) have argued that the empirical evidence on the effect of a productivity shock on hours worked is not very robust and could be consistent with a positive impact on hours worked.

In Section VA we have already discussed that productivity shocks play an important, but not dominant, role in driving output developments beyond the one-year horizon in our estimated model. At business cycle frequencies, they account for about 25–30 percent of the forecast error variance. Figure 7 presents the response of the actual and the flexible-price level of output, hours worked, and nominal interest rate to a productivity shock in the estimated model. Overall, the estimates confirm the analysis of Galí (1999) and Francis and Ramey (2004). A positive productivity shock leads to an expansion of aggregate demand, output, and real wages, but an immediate and significant reduc-

tion in hours worked. Hours worked turn significantly positive only after two years.¹⁵ Under the estimated monetary policy reaction function, nominal and real interest rates fall, but not enough to prevent the opening up of an output gap and a fall in inflation. Moreover, our estimation results show that it is mainly the estimated degree of habit persistence and the importance of capital adjustment costs that explain the negative impact of productivity on hours worked, thereby confirming the analysis of Francis and Ramey (2004). Indeed, also under flexible prices, hours worked would fall significantly as indicated in the upper-right-hand panel of Figure 7. Given these estimates, it is unlikely that a more accommodative monetary policy would lead to positive employment effects. The relatively low medium-run positive effects on hours worked are due to two factors. First, although persistent, the productivity shock is temporary. As a result, output already starts returning to baseline when the effects on hours worked start materializing. A different stochastic process for the productivity shock, which implies a gradual introduction of higher total factor productivity, could increase the effect on hours worked.¹⁶ Second, a positive productivity shock reduces the fixed cost per unit of production, and therefore less labor is required for a given output.

D. The “Great Inflation” and the “Great Moderation”: Subsample Estimates

In this section we first compare the estimates for two subsamples in order to investigate the stability of the full-sample estimates, and then examine, using those estimates, why output and inflation volatility have fallen in the most recent period. The first subsample, corresponding to the period 1966:2–1979:2, captures the period of the “Great Inflation” and ends with the appointment of Paul Volcker as chairman of the Federal Reserve Board of Governors. The second subsample, 1984:1–2004:4, captures the

¹⁵ This picture does not change very much when we do not allow for a positive effect of productivity on exogenous spending.

¹⁶ See, for instance, Rotemberg (2003) for arguments favoring a slow appearance of major productivity advances in output growth.

TABLE 5—SUBSAMPLE ESTIMATES

	Structural parameters					Shock processes			
	1966:1–1979:2		1984:1–2004:4			1966:1–1979:2		1984:1–2004:4	
	Mode	SD	Mode	SD		Mode	SD	Mode	SD
φ	3.61	1.03	6.23	1.12	σ_a	0.58	0.05	0.35	0.02
σ_c	1.39	0.22	1.47	0.13	σ_b	0.22	0.04	0.18	0.02
h	0.63	0.07	0.68	0.04	σ_g	0.54	0.05	0.41	0.03
ξ_w	0.65	0.07	0.74	0.13	σ_l	0.52	0.09	0.39	0.05
σ_l	1.52	0.65	2.30	0.67	σ_r	0.20	0.02	0.12	0.01
ξ_p	0.55	0.08	0.73	0.04	σ_p	0.22	0.03	0.11	0.01
ι_w	0.58	0.13	0.46	0.16	σ_w	0.20	0.02	0.21	0.03
ι_p	0.45	0.18	0.21	0.09	ρ_a	0.97	0.01	0.94	0.02
ψ	0.34	0.13	0.69	0.11	ρ_b	0.39	0.17	0.14	0.08
Φ	1.43	0.09	1.54	0.09	ρ_g	0.91	0.03	0.96	0.01
r_π	1.65	0.19	1.77	0.29	ρ_l	0.60	0.10	0.64	0.07
ρ	0.81	0.03	0.84	0.02	ρ_r	0.22	0.10	0.29	0.10
r_y	0.17	0.03	0.08	0.05	ρ_p	0.51	0.24	0.74	0.13
$r_{\Delta y}$	0.20	0.03	0.16	0.02	ρ_w	0.96	0.02	0.82	0.15
$\bar{\pi}$	0.72	0.11	0.67	0.10	μ_p	0.46	0.20	0.59	0.18
$\beta^{-1} - 1$	0.14	0.06	0.12	0.05	μ_w	0.84	0.07	0.62	0.17
\bar{l}	0.03	0.62	−0.55	1.21	ρ_{ga}	0.58	0.11	0.39	0.11
$\bar{\gamma}$	0.33	0.04	0.44	0.02					
α	0.19	0.02	0.21	0.02					

Note: SD stands for standard deviation.

more recent period of the “Great Moderation,” in which not only was inflation relatively low and stable, but also output and inflation volatility fell considerably (e.g., Margaret M. McConnell and Gabriel Perez-Quiros 2000). Table 5 compares the mode of the posterior distribution of the DSGE model parameters over both periods.

The most significant differences between the two subperiods concern the variances of the stochastic processes. In particular, the standard errors of the productivity, monetary policy, and price mark-up shocks (and to a lesser extent the investment shock) seem to have fallen. The persistence of those processes has changed much less. One exception is the risk premium shock, which has become even less persistent in the second subperiod.

Somewhat surprisingly, the steady-state inflation rate is only marginally lower in the second subperiod (2.6) versus the first period (2.9). What is different is the central bank’s reaction coefficient to the output gap, which is halved and is no longer significant in the second period. In contrast, the response to inflation is only marginally higher in the second period, and the response to the change in the output gap is the

same. These results are consistent with the findings of Athanasios Orphanides (2003), who shows, using real-time data estimates, that what has changed in US monetary policy behavior since the early 1980s is the relative response to output. They are, however, at odds with the results of Jean Boivin and Marc Giannoni (2006), which find that a stronger central bank response to inflation in the second subperiod can account for a smaller output response to monetary policy shocks estimated in identified VARs. In our case, the lower response to the output gap actually increases the output response of a monetary policy shock in the second period.

Interestingly, it turns out that the degree of price and wage stickiness has increased in the second period, while the degree of indexation has fallen. The latter is consistent with single-equation subsample estimates of a hybrid New Keynesian Phillips curve by Galí and Gertler (1999). This finding is also consistent with the story that low and stable inflation may reduce the cost of not adjusting prices and therefore lengthen the average price duration leading to a flatter Phillips curve. At the same time, it may also reduce rule-of-thumb behavior and indexation

TABLE 6—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	1.01	1.13	0.59	0.73	1.21	0.70	0.75
Inflation	0.62	0.57	0.55	0.81	0.25	0.34	1.30	0.39	0.32

Notes: “Actual” refers to the data-based standard deviations over the indicated sample; “model” refers to the standard deviations generated by the DSGE model estimated over the indicated sample. The counterfactual standard deviations for the period 1984:1–2004:4 refer to the standard deviations that would have occurred in this period if the shock processes (“shocks”), the monetary policy rule (“policy”), or the structural parameters (“structure”) would have been the same as the ones estimated in the 1966:1–1979:2 sample.

leading to a lower coefficient on lagged inflation in the Phillips curve. The effects are most visible in the goods market, less so in the labor market. Finally, there is also some limited evidence of increased real rigidities in the second subsample. For example, the elasticity of adjusting capital increases from 3.6 to 6.4 in the second subsample.

In order to assess the sources behind the great moderation of the last two decades, Table 6 provides the results of a counterfactual exercise in which we examine what the standard deviation of output growth and inflation would have been in the most recent period if the US economy had faced the same shocks as in the 1970s, if the monetary policy reaction function as estimated in the pre-1979 period would have been the same, or if the structure of the economy would have remained unchanged. Table 6 first of all confirms that both output growth and inflation were significantly less volatile in the second subsample. The estimated DSGE model captures this reduction in volatility, although it overestimates the standard deviation somewhat in both periods. Turning to the counterfactual exercise, it turns out that the most important drivers behind the reduction in volatility are the shocks, which appear to have been more benign in the last period. A reversal to the monetary policy reaction function of the 1970s would have contributed to somewhat higher inflation volatility and lower output growth volatility, but these effects are very small compared to the overall reduction in volatility. Finally, the changes in the structural parameters do not appear to have contributed to a major change in the volatility of the economy. Overall, these results appear to confirm recent findings of James H. Stock and Mark W. Watson (2003)

and Sims and Zha (2006) that most of the structural change can be assigned to changes in the volatility of the shocks. It remains an interesting research question whether policy has contributed to the reduction of those shocks.

VI. Concluding Remarks

In this paper, we have shown that modern micro-founded NNS models are able to fit the main US macro data very well, if one allows for a sufficiently rich stochastic structure and set of frictions. Our results support the earlier approaches by Rotemberg and Woodford (1997) and Christiano, Eichenbaum, and Evans (2005). Although the estimated structural model is highly restricted, it is able to compete with standard VAR and BVAR models in out-of-sample forecasting, indicating that the theory embedded in the structural model is helpful in improving the forecasts of the main US macro variables, in particular at business cycle frequencies.

Of course, the estimated model remains stylized and should be further developed. In particular, a deeper understanding of the various nominal and real frictions that have been introduced would increase the confidence in using this type of model for welfare analysis. Our analysis also raises questions about the deeper determinants of the various “structural” shocks, such as productivity and wage mark-up shocks that are identified as being important driving factors of output and inflation developments. We hope to have shown, however, that the Bayesian approach followed in this paper offers an effective tool for comparing and selecting between such alternative microfounded model specifications.

REFERENCES

- Altig, David E., Lawrence J. Christiano, Martin Eichenbaum, and Jesper Linde. 2004. "Firm-Specific Capital, Nominal Rigidities, and the Business Cycle." Federal Reserve Bank of Cleveland Working Paper 0416.
- Basu, Susanto, and Miles S. Kimball. 2002. "Long-Run Labor Supply and the Elasticity of Intertemporal Substitution for Consumption." Unpublished.
- Bauwens, Luc, Michel Lubrano, and Jean-François Richard. 2000. *Bayesian Inference in Dynamic Econometric Models*. Oxford: Oxford University Press.
- Bernanke, Ben S., Mark Gertler, and Simon Gilchrist. 1999. "The Financial Accelerator in a Quantitative Business Cycle Framework." In *Handbook of Macroeconomics Volume 1C*, ed. John B. Taylor and Michael Woodford, 1341–93. Amsterdam: Elsevier Science, North-Holland.
- Bils, Mark, and Peter J. Klenow. 2004. "Some Evidence on the Importance of Sticky Prices." *Journal of Political Economy*, 112(5): 947–85.
- Bovin, Jean, and Marc Giannoni. 2006. "Has Monetary Policy Become More Effective?" Centre for Economic Policy Research Discussion Paper 5463.
- Brooks, Stephen P., and Andrew Gelman. 1998. "General Methods for Monitoring Convergence of Iterative Simulations." *Journal of Computational and Graphical Statistics*, 7(4): 434–55.
- Calvo, Guillermo A. 1983. "Staggered Prices in a Utility-Maximizing Framework." *Journal of Monetary Economics*, 12(3): 383–98.
- Chang, Yongsung, João F. Gomes, and Frank Schorfheide. 2002. "Learning-by-Doing as a Propagation Mechanism." *American Economic Review*, 92(5): 1498–1520.
- Christiano, Lawrence J., Martin Eichenbaum, and Charles L. Evans. 1999. "Monetary Policy Shocks: What Have We Learned and to What End?" In *Handbook of Macroeconomics Volume 1A*, ed. John B. Taylor and Michael Woodford, 65–148. Amsterdam: Elsevier Science, North-Holland.
- Christiano, Lawrence J., Martin Eichenbaum, and Charles L. Evans. 2005. "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy." *Journal of Political Economy*, 113(1): 1–45.
- Christiano, Lawrence J., Martin Eichenbaum, and Robert Vigfusson. 2004. "What Happens after a Technology Shock?" Unpublished.
- Christiano, Lawrence J., Roberto Motto, and Massimo Rostagno. 2003. "The Great Depression and the Friedman-Schwartz Hypothesis." *Journal of Money, Credit, and Banking*, 35(6): 1119–97.
- Clarida, Richard, Jordi Galí, and Mark Gertler. 1999. "The Science of Monetary Policy: A New Keynesian Perspective." *Journal of Economic Literature*, 37(4): 1661–1707.
- Dedola, Luca, and Stefano Neri. 2004. "What Does a Technology Shock Do? A VAR Analysis with Model-Based Sign Restriction." Centre for Economic Policy Research Working Paper 4537.
- Eichenbaum, Martin, and Jonas Fisher. Forthcoming. "Estimating the Frequency of Reoptimisation in Calvo-style Models." *Journal of Monetary Economics*.
- Francis, Neville, and Valerie A. Ramey. 2005. "Is the Technology-Driven Real Business Cycle Hypothesis Dead? Shocks and Aggregate Fluctuations Revisited." *Journal of Monetary Economics*, 52(8): 1379–99.
- Galí, Jordi. 1999. "Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations?" *American Economic Review*, 89(1): 249–71.
- Galí, Jordi, and Mark Gertler. 1999. "Inflation Dynamics: A Structural Econometric Analysis." *Journal of Monetary Economics*, 44(2): 195–222.
- Galí, Jordi, and Pau Rabanal. 2005. "Technology Shocks and Aggregate Fluctuations: How Well Does the Real Business Cycle Model Fit Postwar U.S. Data?" In *NBER Macroeconomics Annual 2004*, Volume 19, ed. Mark Gertler and Kenneth Rogoff, 225–88. Cambridge, MA: MIT Press.
- Geweke, John. 1998. "Using Simulation Methods for Bayesian Econometric Models: Inference, Development, and Communication." Unpublished.
- Goodfriend, Marvin, and Robert G. King. 1997. "The New Neoclassical Synthesis and the Role of Monetary Policy." In *NBER Macroeconomics Annual 1997*, ed. Ben S. Bernanke and Julio J. Rotemberg, 231–83. Cambridge, MA: MIT Press.
- Kimball, Miles S. 1995. "The Quantitative Analytics of the Basic Neomonetarist Model."

- Journal of Money, Credit, and Banking*, 27(4): 1241–77.
- King, Robert G., and Sergio T. Rebelo.** 1999. "Resuscitating Real Business Cycles." In *Handbook of Macroeconomics Volume 1B*, ed. John B. Taylor and Michael Woodford, 927–1007. Amsterdam: Elsevier Science, North-Holland.
- Litterman, Robert B.** 1984. "Forecasting and Policy Analysis with Bayesian Vector Autoregression Models." *Federal Reserve Bank of Minneapolis Quarterly Review*, 8(4): 30–41.
- McConnell, Margaret M., and Gabriel Perez-Quiros.** 2000. "Output Fluctuations in the United States: What Has Changed since the Early 1980's?" *American Economic Review*, 90(5): 1464–76.
- Orphanides, Athanasios.** 2003. "Historical Monetary Policy Analysis and the Taylor Rule." *Journal of Monetary Economics*, 50(5): 983–1022.
- Peersman, Gert, and Roland Straub.** 2004. "Technology Shocks and Robust Sign Restrictions in a Euro Area SVAR." European Central Bank Working Paper 373.
- Rotemberg, Julio J.** 2003. "Stochastic Technical Progress, Smooth Trends, and Nearly Distinct Business Cycles." *American Economic Review*, 93(5): 1543–59.
- Rotemberg, Julio J., and Michael Woodford.** 1997. "An Optimization-Based Econometric Framework for the Evaluation of Monetary Policy." In *NBER Macroeconomics Annual 1997*, ed. Ben. S. Bernanke and Julio. J. Rotemberg, 297–346. Cambridge, MA: MIT Press.
- Shapiro, Matthew D., and Mark Watson.** 1988. "Sources of Business Cycle Fluctuations." In *NBER Macroeconomics Annual 1988*, ed. Stanley Fischer, 111–48. Cambridge, MA: MIT Press.
- Sims, Christopher A.** 2003. "Probability Models for Monetary Policy Decisions." Unpublished.
- Sims, Christopher A., and Tao Zha.** 1998. "Bayesian Methods for Dynamic Multivariate Models." *International Economic Review*, 39(4): 949–68.
- Sims, Christopher A., and Tao Zha.** 2006. "Were There Regime Switches in U.S. Monetary Policy?" *American Economic Review*, 96(1): 54–81.
- Smets, Frank, and Raf Wouters.** 2003. "An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area." *Journal of the European Economic Association*, 1(5): 1123–75.
- Smets, Frank, and Raf Wouters.** 2005. "Comparing Shocks and Frictions in U.S. and Euro Area Business Cycles: A Bayesian DSGE Approach." *Journal of Applied Econometrics*, 20(2): 161–83.
- Stock, James, H., and Mark W. Watson.** 2003. "Has the Business Cycle Changed?" Paper presented at the Monetary Policy and Uncertainty Symposium, Federal Reserve Bank of Kansas City. Jackson Hole, WY.
- Taylor, John B.** 1993. "Discretion versus Policy Rules in Practice." *Carnegie-Rochester Conference Series on Public Policy*, 39(0): 195–214.
- Woodford, Michael.** 2003. *Interest and Prices*. Princeton: Princeton University Press.

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23. Josef Hollmayr, Christian Matthes. 2015. Learning about fiscal policy and the effects of policy uncertainty. *Journal of Economic Dynamics and Control* **59**, 142-162. [[CrossRef](#)]
24. Paul De Grauwe, Corrado Macchiarelli. 2015. Animal spirits and credit cycles. *Journal of Economic Dynamics and Control* **59**, 95-117. [[CrossRef](#)]
25. Richard Harrison. 2015. Estimating the effects of forward guidance in rational expectations models. *European Economic Review* **79**, 196-213. [[CrossRef](#)]
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30. Callum Jones, Mariano Kulish. 2015. A graphical representation of an estimated DSGE model. *Applied Economics* 1-7. [[CrossRef](#)]
31. Melisso Boschi, Massimiliano Marzo, Simone Salotti. 2015. Domestic versus international determinants of European business cycles: a GVAR approach. *Empirical Economics* **49**, 403-421. [[CrossRef](#)]
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37. Alexander Kriwoluzky, Christian A. Stoltenberg. 2015. Monetary Policy and the Transaction Role of Money in the US. *The Economic Journal* **125**:10.1111/eoj.2015.125.issue-587, 1452-1473. [[CrossRef](#)]
38. Ludger Linnemann, Andreas Schabert. 2015. Liquidity premia and interest rate parity. *Journal of International Economics* **97**, 178-192. [[CrossRef](#)]
39. Hyeonwoo Kim, Ippei Fujiwara, Bruce E. Hansen, Masao Ogaki. 2015. Purchasing Power Parity and the Taylor Rule. *Journal of Applied Econometrics* **30**:10.1002/jae.v30.6, 874-903. [[CrossRef](#)]
40. Claire A. Reicher. 2015. A Note on the Identification of Dynamic Economic Models with Generalized Shock Processes. *Oxford Bulletin of Economics and Statistics* n/a-n/a. [[CrossRef](#)]
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42. Kaiji Chen, Ayşe İmrohoroglu. 2015. Debt in the US economy. *Economic Theory* . [[CrossRef](#)]
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44. Stéphane Lhuissier, Margarita Zabelina. 2015. On the stability of Calvo-style price-setting behavior. *Journal of Economic Dynamics and Control* **57**, 77-95. [[CrossRef](#)]
45. Gabriela Best. 2015. A New Keynesian model with staggered price and wage setting under learning. *Journal of Economic Dynamics and Control* **57**, 96-111. [[CrossRef](#)]

46. Jesús Fernández-Villaverde, Grey Gordon, Pablo Guerrón-Quintana, Juan F. Rubio-Ramírez. 2015. Nonlinear adventures at the zero lower bound. *Journal of Economic Dynamics and Control* **57**, 182-204. [[CrossRef](#)]
47. Raffaella Giacomini, Barbara Rossi. 2015. Forecasting in Nonstationary Environments: What Works and What Doesn't in Reduced-Form and Structural Models. *Annual Review of Economics* **7**, 207-229. [[CrossRef](#)]
48. Gunnar Bårdsen, Luca Fanelli. 2015. Frequentist Evaluation of Small DSGE Models. *Journal of Business & Economic Statistics* **33**, 307-322. [[CrossRef](#)]
49. Francisco J. Buera, Benjamin Moll. 2015. Aggregate Implications of a Credit Crunch: The Importance of Heterogeneity. *American Economic Journal: Macroeconomics* **7**:3, 1-42. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
50. Mehmet Balcilar, Rangan Gupta, Anandamayee Majumdar, Stephen M. Miller. 2015. Was the recent downturn in US real GDP predictable?. *Applied Economics* **47**, 2985-3007. [[CrossRef](#)]
51. Richhild Moessner. 2015. Reactions of real yields and inflation expectations to forward guidance in the United States. *Applied Economics* **47**, 2671-2682. [[CrossRef](#)]
52. Alexandru Minea, Lavinia Mustea. 2015. A fresh look at fiscal multipliers: one size fits it all? Evidence from the Mediterranean area. *Applied Economics* **47**, 2728-2744. [[CrossRef](#)]
53. Hirokuni Iiboshi, Tatsuyoshi Matsumae, Ryoichi Namba, Shin-Ichi Nishiyama. 2015. Estimating a DSGE model for Japan in a data-rich environment. *Journal of the Japanese and International Economies* **36**, 25-55. [[CrossRef](#)]
54. Petre Caraiani. 2015. Estimating DSGE models across time and frequency. *Journal of Macroeconomics* **44**, 33-49. [[CrossRef](#)]
55. Raffaella Giacomini. 2015. Economic theory and forecasting: lessons from the literature. *The Econometrics Journal* n/a-n/a. [[CrossRef](#)]
56. Tae-Seok Jang, Stephen Sacht. 2015. Animal Spirits and the Business Cycle: Empirical Evidence from Moment Matching. *Metroeconomica* n/a-n/a. [[CrossRef](#)]
57. Mutiu Gbade Rasaki, Christopher Malikane. 2015. Macroeconomic shocks and fluctuations in African economies. *Economic Systems* . [[CrossRef](#)]
58. Domenico Giannone, Michele Lenza, Giorgio E. Primiceri. 2015. Prior Selection for Vector Autoregressions. *Review of Economics and Statistics* **97**, 436-451. [[CrossRef](#)]
59. Timothy Cogley, Christian Matthes, Argia M. Sbordone. 2015. Optimized Taylor rules for disinflation when agents are learning. *Journal of Monetary Economics* **72**, 131-147. [[CrossRef](#)]
60. Tomas Havranek, Roman Horvath, Zuzana Irsova, Marek Rusnak. 2015. Cross-country heterogeneity in intertemporal substitution. *Journal of International Economics* **96**, 100-118. [[CrossRef](#)]
61. Yunqing Wang, Qigui Zhu. 2015. Energy price shocks, monetary policy and China's economic fluctuations. *Asian-Pacific Economic Literature* **29**:10.1111/apel.2015.29.issue-1, 126-141. [[CrossRef](#)]
62. Richhild Moessner. 2015. Reactions of US government bond yields to explicit FOMC forward guidance. *The North American Journal of Economics and Finance* . [[CrossRef](#)]
63. Charles Whalen, Felix Reichling. 2015. Estimates of the Frisch Elasticity of Labor Supply: A Review. *Eastern Economic Journal* . [[CrossRef](#)]
64. Shen Guo, Lezheng Liu, Yan Zhao. 2015. The business cycle implications of land financing in China. *Economic Modelling* **46**, 225-237. [[CrossRef](#)]
65. Natalia Khorunzhina. 2015. Real business-cycle model with habits: Empirical investigation. *Economic Modelling* **46**, 61-69. [[CrossRef](#)]
66. Edward Herbst. 2015. Using the "Chandrasekhar Recursions" for Likelihood Evaluation of DSGE Models. *Computational Economics* **45**, 693-705. [[CrossRef](#)]

67. Stefano Eusepi, Bruce Preston. 2015. Consumption heterogeneity, employment dynamics and macroeconomic co-movement. *Journal of Monetary Economics* **71**, 13-32. [[CrossRef](#)]
68. Patrick Minford, Zhirong Ou, Michael Wickens. 2015. Revisiting the Great Moderation: Policy or Luck?. *Open Economies Review* **26**, 197-223. [[CrossRef](#)]
69. Laurent E. Calvet, Veronika Czellar. 2015. Through the looking glass: Indirect inference via simple equilibria. *Journal of Econometrics* **185**, 343-358. [[CrossRef](#)]
70. Tomáš Havránek. 2015. MEASURING INTERTEMPORAL SUBSTITUTION: THE IMPORTANCE OF METHOD CHOICES AND SELECTIVE REPORTING. *Journal of the European Economic Association* n/a-n/a. [[CrossRef](#)]
71. Daisuke Ikeda. 2015. Optimal Inflation Rates with the Trending Relative Price of Investment. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
72. Christian Dreger, Jürgen Wolters. 2015. On the empirical relevance of the Lucas critique: the case of euro area money demand. *Empirica* . [[CrossRef](#)]
73. Thomai Filippeli, Konstantinos Theodoridis. 2015. DSGE priors for BVAR models. *Empirical Economics* **48**, 627-656. [[CrossRef](#)]
74. Yasin Mimir. 2015. Financial Intermediaries, Credit Shocks and Business Cycles. *Oxford Bulletin of Economics and Statistics* n/a-n/a. [[CrossRef](#)]
75. Luca Guerrieri, Matteo Iacoviello. 2015. OccBin: A toolkit for solving dynamic models with occasionally binding constraints easily. *Journal of Monetary Economics* **70**, 22-38. [[CrossRef](#)]
76. Gregory E. Givens, Michael K. Salemi. 2015. Inferring monetary policy objectives with a partially observed state. *Journal of Economic Dynamics and Control* **52**, 190-208. [[CrossRef](#)]
77. Lilia Maliar, Serguei Maliar. 2015. Merging simulation and projection approaches to solve high-dimensional problems with an application to a new Keynesian model. *Quantitative Economics* **6**, 1-47. [[CrossRef](#)]
78. Isaiah Andrews, Anna Mikusheva. 2015. Maximum likelihood inference in weakly identified dynamic stochastic general equilibrium models. *Quantitative Economics* **6**, 123-152. [[CrossRef](#)]
79. JONAS D.M. FISHER. 2015. On the Structural Interpretation of the Smets-Wouters “Risk Premium” Shock. *Journal of Money, Credit and Banking* **47**:10.1111/jmcb.2015.47.issue-2-3, 511-516. [[CrossRef](#)]
80. PUNNOOSE JACOB. 2015. Deep Habits, Price Rigidities, and the Consumption Response to Government Spending. *Journal of Money, Credit and Banking* **47**:10.1111/jmcb.2015.47.issue-2-3, 481-510. [[CrossRef](#)]
81. FILIPA SÁ, TOMASZ WIELADEK. 2015. Capital Inflows and the U.S. Housing Boom. *Journal of Money, Credit and Banking* **47**:10.1111/jmcb.2015.47.issue-S1, 221-256. [[CrossRef](#)]
82. Luca Sala. 2015. DSGE Models in the Frequency Domains. *Journal of Applied Econometrics* **30**, 219-240. [[CrossRef](#)]
83. Efram Castelnuovo. 2015. Monetary policy shocks and Cholesky VARs: an assessment for the Euro area. *Empirical Economics* . [[CrossRef](#)]
84. Arnold Zellner, Jacques Kibambe Ngoie. 2015. Evaluation of the Effects of Reduced Personal and Corporate Tax Rates on the Growth Rates of the U.S. Economy. *Econometric Reviews* **34**, 56-81. [[CrossRef](#)]
85. Robert Kollmann. 2015. Tractable Latent State Filtering for Non-Linear DSGE Models Using a Second-Order Approximation and Pruning. *Computational Economics* **45**, 239-260. [[CrossRef](#)]
86. Kerk L. Phillips. 2015. How non-traded goods may generate quasi-quadratic costs for capital adjustment. *Economics Letters* **127**, 24-26. [[CrossRef](#)]
87. Roberto Pancrazi. 2015. The heterogeneous Great Moderation. *European Economic Review* **74**, 207-228. [[CrossRef](#)]
88. João Madeira. 2015. Firm-specific capital, inflation persistence and the sources of business cycles. *European Economic Review* **74**, 229-243. [[CrossRef](#)]

89. Vivien Lewis, Arnoud Stevens. 2015. Entry and markup dynamics in an estimated business cycle model. *European Economic Review* **74**, 14-35. [[CrossRef](#)]
90. Federico Etro, Lorenza Rossi. 2015. New-Keynesian Phillips curve with Bertrand competition and endogenous entry. *Journal of Economic Dynamics and Control* **51**, 318-340. [[CrossRef](#)]
91. Yong Ma, Shushu Li. 2015. Bayesian estimation of China's monetary policy transparency: A New Keynesian approach. *Economic Modelling* **45**, 236-248. [[CrossRef](#)]
92. Yasuo Hirose, Atsushi Inoue. 2015. The Zero Lower Bound and Parameter Bias in an Estimated DSGE Model. *Journal of Applied Econometrics* n/a-n/a. [[CrossRef](#)]
93. Marián Vávra. 2015. Empirical evidence of joint nonlinearity in economic area and US economic variables using two modified multivariate nonlinearity tests. *Applied Economics Letters* 1-6. [[CrossRef](#)]
94. Rangan Gupta, Patrick T. Kanda, Mampho P. Modise, Alessia Paccagnini. 2015. DSGE model-based forecasting of modelled and nonmodelled inflation variables in South Africa. *Applied Economics* **47**, 207-221. [[CrossRef](#)]
95. Eric S. Lin, Ta-Sheng Chou. 2015. Finite-Sample Refinement of GMM Approach to Nonlinear Models Under Heteroskedasticity of Unknown Form. *Econometric Reviews* 150106054539009. [[CrossRef](#)]
96. Kwang Hwan Kim. 2015. Explaining the Delayed Effect of Monetary Policy: The Role of Inventories and Factor-hoarding. *International Economic Journal* **29**, 37-55. [[CrossRef](#)]
97. Marcin Kolasa, Michał Rubaszek. 2015. Forecasting using DSGE models with financial frictions. *International Journal of Forecasting* **31**, 1-19. [[CrossRef](#)]
98. Barbara Annicchiarico, Fabio Di Dio. 2015. Environmental policy and macroeconomic dynamics in a new Keynesian model. *Journal of Environmental Economics and Management* **69**, 1-21. [[CrossRef](#)]
99. Marco Del Negro, Marc P. Giannoni, Frank Schorfheide. 2015. Inflation in the Great Recession and New Keynesian Models. *American Economic Journal: Macroeconomics* **7**:1, 168-196. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
100. Mark Gertler, Peter Karadi. 2015. Monetary Policy Surprises, Credit Costs, and Economic Activity. *American Economic Journal: Macroeconomics* **7**:1, 44-76. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
101. Semih Tumen, Deren Unalmis, Ibrahim Unalmis, D. Filiz Unsal. 2015. Taxing fossil fuels under speculative storage. *Energy Economics* . [[CrossRef](#)]
102. Reiner Franke, Tae-Seok Jang, Stephen Sacht. 2015. Moment matching versus Bayesian estimation: Backward-looking behaviour in a New-Keynesian baseline model. *The North American Journal of Economics and Finance* **31**, 126-154. [[CrossRef](#)]
103. Stefan Avdjiev. 2015. News Driven Business Cycles and data on asset prices in estimated DSGE models. *Review of Economic Dynamics* . [[CrossRef](#)]
104. Maik H. Wolters. 2015. Evaluating Point and Density Forecasts of DSGE Models. *Journal of Applied Econometrics* **30**:10.1002/jae.v30.1, 74-96. [[CrossRef](#)]
105. Nora Traum, Shu-Chun S. Yang. 2015. When Does Government Debt Crowd Out Investment?. *Journal of Applied Econometrics* **30**:10.1002/jae.v30.1, 24-45. [[CrossRef](#)]
106. Michael Dotsey, Wenli Li, Fang Yang. 2015. Home production and Social Security reform. *European Economic Review* **73**, 131-150. [[CrossRef](#)]
107. Andreas Schabert. 2015. Optimal central bank lending. *Journal of Economic Theory* . [[CrossRef](#)]
108. Dominic Quint. 2015. Is it really more dispersed?. *International Economics and Economic Policy* . [[CrossRef](#)]
109. Piero Ferri, Annalisa Cristini, Anna Maria Variato. 2015. Endogenous fluctuations, markups, capacity and credit constraints. *Journal of Economic Interaction and Coordination* . [[CrossRef](#)]
110. YONGSEUNG JUNG. 2015. Price Stability in Economies with Habit Persistence. *Journal of Money, Credit and Banking* **47**:4, 517. [[CrossRef](#)]

111. ARTURO ORMEÑO, KRISZTINA MOLNÁR. 2015. Using Survey Data of Inflation Expectations in the Estimation of Learning and Rational Expectations Models. *Journal of Money, Credit and Banking* 47:4, 673. [[CrossRef](#)]
112. Rossana Merola. 2015. The role of financial frictions during the crisis: An estimated DSGE model. *Economic Modelling* 48, 70. [[CrossRef](#)]
113. Bruce Mizrach. 2015. A video interview of James Stock. *Studies in Nonlinear Dynamics & Econometrics* 19. . [[CrossRef](#)]
114. Stefan Laseen, Andrea Pescatori, Jarkko Turunen. 2015. Systemic Risk: A New Trade-off for Monetary Policy?. *IMF Working Papers* 15, 1. [[CrossRef](#)]
115. Hylton Hollander, Guangling Liu. 2015. The equity price channel in a New-Keynesian DSGE model with financial frictions and banking. *Economic Modelling* . [[CrossRef](#)]
116. Federico Di Pace, Stefania Villa. 2015. Factor Complementarity and Labour Market Dynamics. *European Economic Review* . [[CrossRef](#)]
117. Paul J. J. Welfens. 2014. Issues of modern macroeconomics: new post-crisis perspectives on the world economy. *International Economics and Economic Policy* 11, 481-527. [[CrossRef](#)]
118. Stephane Dees, M. Hashem Pesaran, L. Vanessa Smith, Ron P. Smith. 2014. Constructing Multi-Country Rational Expectations Models. *Oxford Bulletin of Economics and Statistics* 76:10.1111/obes.2014.76.issue-6, 812-840. [[CrossRef](#)]
119. Chunping Liu, Patrick Minford. 2014. Comparing behavioural and rational expectations for the US post-war economy. *Economic Modelling* 43, 407-415. [[CrossRef](#)]
120. Carlos Castillo. 2014. Inflation targeting and exchange rate volatility smoothing: A two-target, two-instrument approach. *Economic Modelling* 43, 330-345. [[CrossRef](#)]
121. Sohei Kaihatsu, Takushi Kurozumi. 2014. What caused Japan's Great Stagnation in the 1990s? Evidence from an estimated DSGE model. *Journal of the Japanese and International Economies* 34, 217-235. [[CrossRef](#)]
122. Paul Beaudry, Franck Portier. 2014. News-Driven Business Cycles: Insights and Challenges. *Journal of Economic Literature* 52:4, 993-1074. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
123. ONDRA KAMENIK, MICHAEL KUMHOF. 2014. Trade Openness and Exchange Rate Regimes. *Journal of Money, Credit and Banking* 46:10.1111/jmcb.2014.46.issue-8, 1657-1686. [[CrossRef](#)]
124. Alwyn Young. 2014. Structural Transformation, the Mismeasurement of Productivity Growth, and the Cost Disease of Services. *American Economic Review* 104:11, 3635-3667. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
125. Florin O. Bilbiie. 2014. Delegating optimal monetary policy inertia. *Journal of Economic Dynamics and Control* 48, 63-78. [[CrossRef](#)]
126. Benjamin Born, Johannes Pfeifer. 2014. Policy risk and the business cycle. *Journal of Monetary Economics* 68, 68-85. [[CrossRef](#)]
127. Jan in 't Veld, Robert Kollmann, Beatrice Pataracchia, Marco Ratto, Werner Roeger. 2014. International capital flows and the boom-bust cycle in Spain. *Journal of International Money and Finance* 48, 314-335. [[CrossRef](#)]
128. Saroj Bhattarai, Jae Won Lee, Woong Yong Park. 2014. Price indexation, habit formation, and the Generalized Taylor Principle. *Journal of Economic Dynamics and Control* 48, 218-225. [[CrossRef](#)]
129. Michael Hatcher, Patrick Minford. 2014. STABILISATION POLICY, RATIONAL EXPECTATIONS AND PRICE-LEVEL VERSUS INFLATION TARGETING: A SURVEY. *Journal of Economic Surveys* n/a-n/a. [[CrossRef](#)]
130. Campbell Leith, Ioana Moldovan, Raffaele Rossi. 2014. Monetary and fiscal policy under deep habits. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]

131. Dario Caldara, Richard Harrison, Anna Lipińska. 2014. PRACTICAL TOOLS FOR POLICY ANALYSIS IN DSGE MODELS WITH MISSING SHOCKS. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.7, 1145-1163. [[CrossRef](#)]
132. Edward Herbst, Frank Schorfheide. 2014. SEQUENTIAL MONTE CARLO SAMPLING FOR DSGE MODELS. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.7, 1073-1098. [[CrossRef](#)]
133. Nalan Baştürk, Cem Çakmakli, S. Pinar Ceyhan, Herman K. Van Dijk. 2014. POSTERIOR-PREDICTIVE EVIDENCE ON US INFLATION USING EXTENDED NEW KEYNESIAN PHILLIPS CURVE MODELS WITH NON-FILTERED DATA. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.7, 1164-1182. [[CrossRef](#)]
134. Claudia Foroni, Massimiliano Marcellino. 2014. MIXED-FREQUENCY STRUCTURAL MODELS: IDENTIFICATION, ESTIMATION, AND POLICY ANALYSIS. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.7, 1118-1144. [[CrossRef](#)]
135. Fabio Canova, Filippo Ferroni, Christian Matthes. 2014. CHOOSING THE VARIABLES TO ESTIMATE SINGULAR DSGE MODELS. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.7, 1099-1117. [[CrossRef](#)]
136. Vasco Cúrdia, Marco del Negro, Daniel L. Greenwald. 2014. RARE SHOCKS, GREAT RECESSIONS. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.7, 1031-1052. [[CrossRef](#)]
137. Ruy Lama, Pau Rabanal. 2014. Deciding to enter a monetary union: The role of trade and financial linkages. *European Economic Review* **72**, 138-165. [[CrossRef](#)]
138. Haroon Mumtaz, Francesco Zanetti. 2014. Factor Adjustment Costs: A Structural Investigation. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
139. Jean-Christophe Poutineau, Gauthier Vermandel. 2014. Cross-border banking flows spillovers in the Eurozone: Evidence from an estimated DSGE model. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
140. João Madeira. 2014. Overtime Labor, Employment Frictions, and the New Keynesian Phillips Curve. *Review of Economics and Statistics* **96**, 767-778. [[CrossRef](#)]
141. Fabio Canova. 2014. Bridging DSGE models and the raw data. *Journal of Monetary Economics* **67**, 1-15. [[CrossRef](#)]
142. Fabio Milani. 2014. Learning and time-varying macroeconomic volatility. *Journal of Economic Dynamics and Control* **47**, 94-114. [[CrossRef](#)]
143. Ignazio Angeloni, Ester Faia, Roland Winkler. 2014. Exit strategies. *European Economic Review* **70**, 231-257. [[CrossRef](#)]
144. EMANUEL GASTEIGER. 2014. Heterogeneous Expectations, Optimal Monetary Policy, and the Merit of Policy Inertia. *Journal of Money, Credit and Banking* **46**:10.1111/jmcb.2014.46.issue-7, 1535-1554. [[CrossRef](#)]
145. Sergio Afonso Lago Alves. 2014. Lack of divine coincidence in New Keynesian models. *Journal of Monetary Economics* **67**, 33-46. [[CrossRef](#)]
146. Saroj Bhattacharai, Jae Won Lee, Woong Yong Park. 2014. Inflation dynamics: The role of public debt and policy regimes. *Journal of Monetary Economics* **67**, 93-108. [[CrossRef](#)]
147. Markku Lanne, Jani Luoto. 2014. Does Output Gap, Labour's Share or Unemployment Rate Drive Inflation?. *Oxford Bulletin of Economics and Statistics* **76**:10.1111/obes.2014.76.issue-5, 715-726. [[CrossRef](#)]
148. Alejandro Justiniano, Giorgio E. Primiceri, Andrea Tambalotti. 2014. Household leveraging and deleveraging. *Review of Economic Dynamics* . [[CrossRef](#)]
149. Frank Smets, Anders Warne, Rafael Wouters. 2014. Professional forecasters and real-time forecasting with a DSGE model. *International Journal of Forecasting* **30**, 981-995. [[CrossRef](#)]

150. Haroon Mumtaz, Konstantinos Theodoridis. 2014. THE INTERNATIONAL TRANSMISSION OF VOLATILITY SHOCKS: AN EMPIRICAL ANALYSIS. *Journal of the European Economic Association* n/a-n/a. [[CrossRef](#)]
151. Markus Jochmann. 2014. Modeling U.S. Inflation Dynamics: A Bayesian Nonparametric Approach. *Econometric Reviews* 140917052731003. [[CrossRef](#)]
152. Guido Ascari, Argia M. Sbordone. 2014. The Macroeconomics of Trend Inflation. *Journal of Economic Literature* 52:3, 679-739. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
153. Branimir Jovanovic, Marjan Petreski. 2014. Monetary policy, exchange rates and labor unions in SEE and the CIS during the financial crisis. *Economic Systems* 38, 309-332. [[CrossRef](#)]
154. Fang Yao. 2014. Stabilising Taylor rules when the supply shock has a unit root. *Journal of Macroeconomics* 41, 16-20. [[CrossRef](#)]
155. John C. Driscoll, Steinar Holden. 2014. Behavioral economics and macroeconomic models. *Journal of Macroeconomics* 41, 133-147. [[CrossRef](#)]
156. CHARLES T. CARLSTROM, TIMOTHY S. FUERST, MATTHIAS PAUSTIAN. 2014. Fiscal Multipliers under an Interest Rate Peg of Deterministic versus Stochastic Duration. *Journal of Money, Credit and Banking* 46:10.1111/jmcb.2014.46.issue-6, 1293-1312. [[CrossRef](#)]
157. Adrian Pagan, Tim Robinson. 2014. Methods for assessing the impact of financial effects on business cycles in macroeconometric models. *Journal of Macroeconomics* 41, 94-106. [[CrossRef](#)]
158. Valerio Ercolani, João Valle e Azevedo. 2014. The effects of public spending externalities. *Journal of Economic Dynamics and Control* 46, 173-199. [[CrossRef](#)]
159. Salih Fendoğlu. 2014. Optimal monetary policy rules, financial amplification, and uncertain business cycles. *Journal of Economic Dynamics and Control* 46, 271-305. [[CrossRef](#)]
160. Erica X.N. Li, Francisco Palomino. 2014. Nominal rigidities, asset returns, and monetary policy. *Journal of Monetary Economics* 66, 210-225. [[CrossRef](#)]
161. PAOLO ANGELINI, STEFANO NERI, FABIO PANETTA. 2014. The Interaction between Capital Requirements and Monetary Policy. *Journal of Money, Credit and Banking* 46:10.1111/jmcb.2014.46.issue-6, 1073-1112. [[CrossRef](#)]
162. Howard Kung. 2014. Macroeconomic linkages between monetary policy and the term structure of interest rates. *Journal of Financial Economics* . [[CrossRef](#)]
163. Janett Neugebauer,, Dennis Wesselbaum. 2014. Staggered Wages, Sticky Prices, and Labor Market Dynamics in Matching Models. *Applied Economics Quarterly* 60, 159-177. [[CrossRef](#)]
164. Lieven Baele, Geert Bekaert, Seonghoon Cho, Koen Inghelbrecht, Antonio Moreno. 2014. Macroeconomic Regimes. *Journal of Monetary Economics* . [[CrossRef](#)]
165. Vasco Cúrdia, Andrea Ferrero, Ging Cee Ng, Andrea Tambalotti. 2014. Has U.S. monetary policy tracked the efficient interest rate?. *Journal of Monetary Economics* . [[CrossRef](#)]
166. Raffaella GiacominiThe Relationship Between DSGE and VAR Models 1-25. [[CrossRef](#)]
167. Refet S. Gürkaynak, Burçin Kısacıköğlu, Barbara RossiDo DSGE Models Forecast More Accurately Out-Of-Sample than VAR Models? 27-79. [[CrossRef](#)]
168. Kenichi Tamegawa. 2014. Demand uncertainty, inventory and business cycles. *Journal of Business Economics and Management* 15, 664-683. [[CrossRef](#)]
169. Cosmin L. Ilut, Martin Schneider. 2014. Ambiguous Business Cycles. *American Economic Review* 104:8, 2368-2399. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
170. Ana Fostel, John Geanakoplos. 2014. Endogenous Collateral Constraints and the Leverage Cycle. *Annual Review of Economics* 6, 771-799. [[CrossRef](#)]
171. Massimiliano Marcellino, Yuliya Rychalovska. 2014. Forecasting with a DSGE Model of a Small Open Economy within the Monetary Union. *Journal of Forecasting* 33:10.1002/for.v33.5, 315-338. [[CrossRef](#)]

172. MICHAEL B. DEVEREUX, OZGE SENAY, ALAN SUTHERLAND. 2014. Nominal Stability and Financial Globalization. *Journal of Money, Credit and Banking* **46**:10.1111/jmcb.2014.46.issue-5, 921-959. [[CrossRef](#)]
173. Hakan Yilmazkuday. 2014. Gasoline prices, transport costs, and the U.S. business cycles. *Journal of Economic Dynamics and Control* **45**, 165-179. [[CrossRef](#)]
174. Luca Guerrieri, Dale Henderson, Jinill Kim. 2014. MODELING INVESTMENT-SECTOR EFFICIENCY SHOCKS: WHEN DOES DISAGGREGATION MATTER?. *International Economic Review* **55**:10.1111/iere.2014.55.issue-3, 891-917. [[CrossRef](#)]
175. Huixin Bi, Nora Traum. 2014. ESTIMATING FISCAL LIMITS: THE CASE OF GREECE. *Journal of Applied Econometrics* n/a-n/a. [[CrossRef](#)]
176. Zhongjun Qu. 2014. Inference in dynamic stochastic general equilibrium models with possible weak identification. *Quantitative Economics* **5**, 457-494. [[CrossRef](#)]
177. Emiliano Santoro, Ivan Petrella, Damjan Pfajfar, Edoardo Gaffeo. 2014. Loss aversion and the asymmetric transmission of monetary policy. *Journal of Monetary Economics* . [[CrossRef](#)]
178. Jae Won Lee. 2014. Monetary policy with heterogeneous households and imperfect risk-sharing. *Review of Economic Dynamics* **17**, 505-522. [[CrossRef](#)]
179. Renzo Orsi, Davide Raggi, Francesco Turino. 2014. Size, trend, and policy implications of the underground economy. *Review of Economic Dynamics* **17**, 417-436. [[CrossRef](#)]
180. Richard Dennis. 2014. Imperfect credibility and robust monetary policy. *Journal of Economic Dynamics and Control* **44**, 218-234. [[CrossRef](#)]
181. Karl Walentin. 2014. Housing Collateral and the Monetary Transmission Mechanism. *The Scandinavian Journal of Economics* **116**:10.1111/sjoe.2014.116.issue-3, 635-668. [[CrossRef](#)]
182. Thorsten Beck, Andrea Colciago, Damjan Pfajfar. 2014. The role of financial intermediaries in monetary policy transmission. *Journal of Economic Dynamics and Control* **43**, 1-11. [[CrossRef](#)]
183. Michael T. Kiley, Jae W. Sim. 2014. Bank capital and the macroeconomy: Policy considerations. *Journal of Economic Dynamics and Control* **43**, 175-198. [[CrossRef](#)]
184. Hans Dewachter, Raf Wouters. 2014. Endogenous risk in a DSGE model with capital-constrained financial intermediaries. *Journal of Economic Dynamics and Control* **43**, 241-268. [[CrossRef](#)]
185. Ching-Yang Lin, Hiroaki Miyamoto. 2014. An estimated search and matching model of the Japanese labor market. *Journal of the Japanese and International Economies* **32**, 86-104. [[CrossRef](#)]
186. Martin Ellison, Andreas Tischbirek. 2014. Unconventional government debt purchases as a supplement to conventional monetary policy. *Journal of Economic Dynamics and Control* **43**, 199-217. [[CrossRef](#)]
187. Robert Barsky, Alejandro Justiniano, Leonardo Melosi. 2014. The Natural Rate of Interest and Its Usefulness for Monetary Policy. *American Economic Review* **104**:5, 37-43. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
188. Florin O. Bilbiie, Ippei Fujiwara, Fabio Ghironi. 2014. Optimal monetary policy with endogenous entry and product variety. *Journal of Monetary Economics* **64**, 1-20. [[CrossRef](#)]
189. Colin Ellis, Haroon Mumtaz, Pawel Zabczyk. 2014. What Lies Beneath? A Time-varying FAVAR Model for the UK Transmission Mechanism. *The Economic Journal* **124**:10.1111/econj.2014.124.issue-576, 668-699. [[CrossRef](#)]
190. Sami Alpanda, Uluc Aysun. 2014. International Transmission of Financial Shocks in an Estimated DSGE Model. *Journal of International Money and Finance* . [[CrossRef](#)]
191. Carlos J. Garcia, Wildo D. Gonzalez. 2014. Why does monetary policy respond to the real exchange rate in small open economies? A Bayesian perspective. *Empirical Economics* **46**, 789-825. [[CrossRef](#)]
192. Rüdiger Bachmann, Christian Bayer. 2014. Investment Dispersion and the Business Cycle. *American Economic Review* **104**:4, 1392-1416. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]

193. Jamie Hall, Michael K. Pitt, Robert Kohn. 2014. Bayesian inference for nonlinear structural time series models. *Journal of Econometrics* **179**, 99-111. [[CrossRef](#)]
194. GIOVANNI MELINA, STEFANIA VILLA. 2014. FISCAL POLICY AND LENDING RELATIONSHIPS. *Economic Inquiry* **52**:10.1111/ecin.2014.52.issue-2, 696-712. [[CrossRef](#)]
195. Martin Kliem, Alexander Kriwoluzky. 2014. Toward a Taylor rule for fiscal policy. *Review of Economic Dynamics* **17**, 294-302. [[CrossRef](#)]
196. Sohei Kaihatsu, Takushi Kurozumi. 2014. Sources of business fluctuations: Financial or technology shocks?. *Review of Economic Dynamics* **17**, 224-242. [[CrossRef](#)]
197. Raymond J. Hawkins, Jeffrey K. Speakes, Dan E. Hamilton. 2014. Monetary policy and PID control. *Journal of Economic Interaction and Coordination* . [[CrossRef](#)]
198. Marc-Andre Luik, Dennis Wesselbaum. 2014. Bubbles over the U.S. Business Cycle: A Macroeconometric Approach. *Journal of Macroeconomics* . [[CrossRef](#)]
199. Joern H. Block, Danny Miller, Dominik Wagner. 2014. Bayesian methods in family business research. *Journal of Family Business Strategy* **5**, 97-104. [[CrossRef](#)]
200. Uluc Aysun, Sanglim Lee. 2014. Can time-varying risk premiums explain the excess returns in the interest rate parity condition?. *Emerging Markets Review* **18**, 78-100. [[CrossRef](#)]
201. Stelios D. Bekiros, Alessia Paccagnini. 2014. Bayesian forecasting with small and medium scale factor-augmented vector autoregressive DSGE models. *Computational Statistics & Data Analysis* **71**, 298-323. [[CrossRef](#)]
202. Siddhartha Chib, Srikanth Ramamurthy. 2014. DSGE Models with Student- t Errors. *Econometric Reviews* **33**, 152-171. [[CrossRef](#)]
203. John Geweke, Gianni Amisano. 2014. Analysis of Variance for Bayesian Inference. *Econometric Reviews* **33**, 270-288. [[CrossRef](#)]
204. Myrto Kalouptsi. 2014. Time to Build and Fluctuations in Bulk Shipping. *American Economic Review* **104**:2, 564-608. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
205. Miguel Casares, Antonio Moreno, Jesús Vázquez. 2014. An estimated New-Keynesian model with unemployment as excess supply of labor. *Journal of Macroeconomics* . [[CrossRef](#)]
206. Christopher Erceg, Jesper Lindé. 2014. IS THERE A FISCAL FREE LUNCH IN A LIQUIDITY TRAP?. *Journal of the European Economic Association* **12**:10.1111/jeea.2014.12.issue-1, 73-107. [[CrossRef](#)]
207. SARAH ZUBAIRY. 2014. ON FISCAL MULTIPLIERS: ESTIMATES FROM A MEDIUM SCALE DSGE MODEL. *International Economic Review* **55**:10.1111/iere.2014.55.issue-1, 169-195. [[CrossRef](#)]
208. Alice Albonico, Sarantis Kalyvitis, Evi Pappa. 2014. Capital maintenance and depreciation over the business cycle. *Journal of Economic Dynamics and Control* **39**, 273-286. [[CrossRef](#)]
209. Waqas Ahmed, M. Ali Choudhary, Sajawal Khan, Saima Naeem, Gylfi Zoega. 2014. Determinants of wage stickiness in a developing economy. *Economic Modelling* **38**, 296-304. [[CrossRef](#)]
210. Michael Wickens. 2014. How Useful are DSGE Macroeconomic Models for Forecasting?. *Open Economies Review* . [[CrossRef](#)]
211. Vo Phuong Mai Le, Kent Matthews, David Meenagh, Patrick Minford, Zhiguo Xiao. 2014. Banking and the Macroeconomy in China: A Banking Crisis Deferred?. *Open Economies Review* . [[CrossRef](#)]
212. Steven P. Cassou, Hedieh Shadmani, Jesús Vázquez. 2014. Did asymmetric monetary preferences for the output gap disappear during recent economic times?. *Applied Economics Letters* **21**, 113-117. [[CrossRef](#)]
213. Alessandro Barattieri, Susanto Basu, Peter Gottschalk. 2014. Some Evidence on the Importance of Sticky Wages. *American Economic Journal: Macroeconomics* **6**:1, 70-101. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
214. Lawrence J. Christiano, Roberto Motto, Massimo Rostagno. 2014. Risk Shocks. *American Economic Review* **104**:1, 27-65. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]

215. Hans Dewachter, Leonardo Iania, Marco Lyrio. 2014. INFORMATION IN THE YIELD CURVE: A MACRO-FINANCE APPROACH. *Journal of Applied Econometrics* **29**:10.1002/jae.v29.1, 42-64. [[CrossRef](#)]
216. Michael Magill, Martine Quinzii. 2014. Anchoring expectations of inflation. *Journal of Mathematical Economics* **50**, 86-105. [[CrossRef](#)]
217. Fang Zhang. 2014. Monetary policy for rationally inattentive economies with staggered price setting. *Journal of Economic Dynamics and Control* **38**, 184-208. [[CrossRef](#)]
218. Reiner Franke, Stephen Sacht. 2014. SOME OBSERVATIONS ON THE HIGH-FREQUENCY VERSIONS OF A STANDARD NEW-KEYNESIAN MODEL. *Bulletin of Economic Research* **66**:10.1111/boer.2014.66.issue-1, 72-94. [[CrossRef](#)]
219. Patrick Hürtgen. 2014. Consumer misperceptions, uncertain fundamentals, and the business cycle. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
220. Jaya Dey. 2014. Evaluating monetary policy under preferences with zero wealth effect: A Bayesian approach. *Journal of Economic Dynamics and Control* **38**, 209-234. [[CrossRef](#)]
221. Jacques Kibambe Ngoie. 2014. Federal Research Spending and Innovation in The US Economy. *Journal of Policy Modeling* . [[CrossRef](#)]
222. Alejandro Justiniano, Giorgio E. Primiceri, Andrea Tambalotti. 2014. The effects of the saving and banking glut on the U.S. economy. *Journal of International Economics* . [[CrossRef](#)]
223. Lilia Maliar, Serguei Maliar Numerical Methods for Large-Scale Dynamic Economic Models 325-477. [[CrossRef](#)]
224. Juan Pablo Medina Guzman, Jorge Roldos. 2014. Monetary and Macroprudential Policies to Manage Capital Flows. *IMF Working Papers* **14** . [[CrossRef](#)]
225. Marzie Taheri Sanjani. 2014. Financial Frictions in Data: Evidence and Impact. *IMF Working Papers* **14**, 1. [[CrossRef](#)]
226. Semih Tumen, Deren Unalmis, Ibrahim Unalmis, D. Filiz Unsal. 2014. Taxing Fossil Fuels under Speculative Storage. *IMF Working Papers* **14**, 1. [[CrossRef](#)]
227. Ales Bulir, Jaromír Hurník, Katerina Smidkova. 2014. Inflation Reports and Models: How Well Do Central Banks Really Write?. *IMF Working Papers* **14**, 1. [[CrossRef](#)]
228. Raffaella Giacomini The Relationship Between DSGE and VAR Models 1-25. [[CrossRef](#)]
229. Refet S. Gürkaynak, Burçin Kısacıkoğlu, Barbara Rossi Do DSGE Models Forecast More Accurately Out-Of-Sample than VAR Models? 27-79. [[CrossRef](#)]
230. Benjamin Born, Alexandra Peter, Johannes Pfeifer. 2013. Fiscal news and macroeconomic volatility. *Journal of Economic Dynamics and Control* **37**, 2582-2601. [[CrossRef](#)]
231. Jonathan Benchimol. 2013. Risk aversion in the Eurozone. *Research in Economics* . [[CrossRef](#)]
232. Francesco Nucci, Marianna Ruggi. 2013. Performance pay and changes in U.S. labor market dynamics. *Journal of Economic Dynamics and Control* **37**, 2796-2813. [[CrossRef](#)]
233. Tommy Sveen, Lutz Weinke. 2013. The Taylor principle in a medium-scale macroeconomic model. *Journal of Economic Dynamics and Control* **37**, 3034-3043. [[CrossRef](#)]
234. Miguel Casares. 2013. On firm-level, industry-level, and aggregate employment fluctuations. *Journal of Economic Dynamics and Control* **37**, 2963-2978. [[CrossRef](#)]
235. Edouard Challe, Chryssi Giannitsarou. 2013. Stock prices and monetary policy shocks: A general equilibrium approach. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
236. Raoul Minetti, Tao Peng. 2013. Lending constraints, real estate prices and business cycles in emerging economies. *Journal of Economic Dynamics and Control* **37**, 2397-2416. [[CrossRef](#)]
237. Francesco Furlanetto, Martin Seneca. 2013. Investment shocks and consumption. *European Economic Review* . [[CrossRef](#)]

238. MICHAŁ BRZOZA-BRZEZINA, MARCIN KOLASA. 2013. Bayesian Evaluation of DSGE Models with Financial Frictions. *Journal of Money, Credit and Banking* 45:10.1111/jmcb.2013.45.issue-8, 1451-1476. [[CrossRef](#)]
239. Munechika Katayama, Kwang Hwan Kim. 2013. The delayed effects of monetary shocks in a two-sector New Keynesian model. *Journal of Macroeconomics* 38, 243-259. [[CrossRef](#)]
240. ROBERT KOLLMANN. 2013. Global Banks, Financial Shocks, and International Business Cycles: Evidence from an Estimated Model. *Journal of Money, Credit and Banking* 45:10.1111/jmcb.2013.45.issue-8, 159-195. [[CrossRef](#)]
241. Marcos Soares da Silva, Jose Angelo Divino. 2013. The role of banking regulation in an economy under credit risk and liquidity shock. *The North American Journal of Economics and Finance* 26, 266-281. [[CrossRef](#)]
242. Federico S. Mandelman, Francesco Zanetti. 2013. Flexible prices, labor market frictions and the response of employment to technology shocks. *Labour Economics* . [[CrossRef](#)]
243. Junhee Lee, Wooheon Rhee. 2013. Financial Factors in the Business Cycle of a Small Open Economy: The Case of Korea. *Open Economies Review* 24, 881-900. [[CrossRef](#)]
244. Tim Schwarzmüller, Nikolai Stähler. 2013. Reforming the labor market and improving competitiveness: an analysis for Spain using FiMod. *SERIEs* 4, 437-471. [[CrossRef](#)]
245. Patrick Fève, Julien Matheron, Jean-Guillaume Sahuc. 2013. A Pitfall with Estimated DSGE-Based Government Spending Multipliers. *American Economic Journal: Macroeconomics* 5:4, 141-178. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
246. André Kurmann,, Christopher Otrok. 2013. News Shocks and the Slope of the Term Structure of Interest Rates. *American Economic Review* 103:6, 2612-2632. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
247. Jordi Gali. 2013. NOTES FOR A NEW GUIDE TO KEYNES (I): WAGES, AGGREGATE DEMAND, AND EMPLOYMENT. *Journal of the European Economic Association* 11:10.1111/jeea.2013.11.issue-5, 973-1003. [[CrossRef](#)]
248. Martin M. Andreasen, Marcelo Ferman, Pawel Zabczyk. 2013. The business cycle implications of banks' maturity transformation. *Review of Economic Dynamics* 16, 581-600. [[CrossRef](#)]
249. Efram Castelnuovo. 2013. What does a Monetary Policy Shock Do? An International Analysis with Multiple Filters*. *Oxford Bulletin of Economics and Statistics* 75:10.1111/obes.2013.75.issue-5, 759-784. [[CrossRef](#)]
250. Matthias Gubler, Matthias S. Hertweck. 2013. Commodity price shocks and the business cycle: Structural evidence for the U.S. *Journal of International Money and Finance* 37, 324-352. [[CrossRef](#)]
251. Christian Merkl. 2013. Disinflationary booms?. *Economics Letters* 121, 105-109. [[CrossRef](#)]
252. Jesús Vázquez, Ramón María-Dolores, Juan-Miguel Londoño. 2013. On the informational role of term structure in the US monetary policy rule. *Journal of Economic Dynamics and Control* 37, 1852-1871. [[CrossRef](#)]
253. Renato Faccini, Stephen Millard, Francesco Zanetti. 2013. Wage Rigidities in an Estimated Dynamic, Stochastic, General Equilibrium Model of the UK Labour Market. *The Manchester School* 81:10.1111/manc.2013.81.issue-s1, 66-99. [[CrossRef](#)]
254. Kwang Hwan Kim, Munechika Katayama. 2013. Non-separability and sectoral comovement in a sticky price model. *Journal of Economic Dynamics and Control* 37, 1715-1735. [[CrossRef](#)]
255. Fiorella De Fiore, Oreste Tristani. 2013. Optimal Monetary Policy in a Model of the Credit Channel*. *The Economic Journal* 123:10.1111/ecoj.2013.123.issue-571, 906-931. [[CrossRef](#)]
256. Vo Phuong Mai Le, David Meenagh, Patrick Minford, Zhirong Ou. 2013. What Causes Banking Crises? An Empirical Investigation for the World Economy. *Open Economies Review* 24, 581-611. [[CrossRef](#)]
257. Guangling Dave Liu. 2013. Will the Sarb always Succeed in Fighting Inflation with Contractionary Policy?. *South African Journal of Economics* 81:10.1111/saje.2013.81.issue-3, 330-345. [[CrossRef](#)]

258. Francesco Furlanetto, Gisle J. Natvik, Martin Seneca. 2013. Investment shocks and macroeconomic co-movement. *Journal of Macroeconomics* **37**, 208-216. [[CrossRef](#)]
259. Chi-Young Choi, Róisín O'Sullivan. 2013. Heterogeneous response of disaggregate inflation to monetary policy regime change: The role of price stickiness. *Journal of Economic Dynamics and Control* **37**, 1814-1832. [[CrossRef](#)]
260. Marco Airaudo. 2013. Monetary policy, stock prices, and consumption externalities. *Economics Letters* **120**, 537-541. [[CrossRef](#)]
261. Michael T. Kiley. 2013. Output gaps. *Journal of Macroeconomics* **37**, 1-18. [[CrossRef](#)]
262. Mirko Abbritti, Stephan Fahr. 2013. Downward wage rigidity and business cycle asymmetries. *Journal of Monetary Economics* . [[CrossRef](#)]
263. Giovanni Dosi, Giorgio Fagiolo, Mauro Napoletano, Andrea Roventini. 2013. Income distribution, credit and fiscal policies in an agent-based Keynesian model. *Journal of Economic Dynamics and Control* **37**, 1598-1625. [[CrossRef](#)]
264. Johannes Gareis, Eric Mayer. 2013. Euler equations and money market interest rates: The role of monetary policy and risk premium shocks. *Economics Letters* **120**, 27-31. [[CrossRef](#)]
265. Gary Koop, M. Hashem Pesaran, Ron P. Smith. 2013. On Identification of Bayesian DSGE Models. *Journal of Business & Economic Statistics* **31**, 300-314. [[CrossRef](#)]
266. Punnoose Jacob, Gert Peersman. 2013. Dissecting the dynamics of the US trade balance in an estimated equilibrium model. *Journal of International Economics* **90**, 302-315. [[CrossRef](#)]
267. Pablo Guerron-Quintana, Atsushi Inoue, Lutz Kilian. 2013. Frequentist inference in weakly identified dynamic stochastic general equilibrium models. *Quantitative Economics* **4**, 197-229. [[CrossRef](#)]
268. Rangan Gupta, Rudi Steinbach. 2013. A DSGE-VAR model for forecasting key South African macroeconomic variables. *Economic Modelling* **33**, 19-33. [[CrossRef](#)]
269. Kaiji Chen, Zheng Song. 2013. Financial frictions on capital allocation: A transmission mechanism of TFP fluctuations. *Journal of Monetary Economics* . [[CrossRef](#)]
270. Kent Matthews. 2013. No Plan B: But is There a 'Third Way'?. *Economic Affairs* **33**:10.1111/ecaf.2013.33.issue-2, 220-231. [[CrossRef](#)]
271. HAROON MUMTAZ, FRANCESCO ZANETTI. 2013. The Impact of the Volatility of Monetary Policy Shocks. *Journal of Money, Credit and Banking* **45**:10.1111/jmcb.2013.45.issue-4, 535-558. [[CrossRef](#)]
272. Pablo A. Guerron-Quintana. 2013. Common and idiosyncratic disturbances in developed small open economies. *Journal of International Economics* **90**, 33-49. [[CrossRef](#)]
273. Stéphane Auray, Paul Gomme, Shen Guo. 2013. Nominal Rigidities, Monetary Policy and Pigou Cycles. *The Economic Journal* **123**:10.1111/eoj.2013.123.issue-568, 455-473. [[CrossRef](#)]
274. Leonardo Auernheimer, Danilo R. Trupkin. 2013. The role of inventories and capacity utilization as shock absorbers. *Review of Economic Dynamics* . [[CrossRef](#)]
275. Patrick Minford, Zhirong Ou. 2013. Taylor Rule or optimal timeless policy? Reconsidering the Fed's behavior since 1982. *Economic Modelling* **32**, 113-123. [[CrossRef](#)]
276. Joshua C.C. Chan, Gary Koop. 2013. Modelling breaks and clusters in the steady states of macroeconomic variables. *Computational Statistics & Data Analysis* . [[CrossRef](#)]
277. Macroprudential Frameworks in Asia . [[CrossRef](#)]
278. Alejandro Justiniano,, Giorgio E. Primiceri,, Andrea Tambalotti. 2013. Is there a Trade-Off between Inflation and Output Stabilization?. *American Economic Journal: Macroeconomics* **5**:2, 1-31. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]

279. Stephan Fahr, Roberto Motto, Massimo Rostagno, Frank Smets, Oreste Tristani. 2013. A monetary policy strategy in good and bad times: lessons from the recent past. *Economic Policy* **28**:10.1111/ecop.2013.28.issue-74, 243-288. [[CrossRef](#)]
280. Jean-Marie Dufour, Lynda Khalaf, Maral Kichian. 2013. Identification-robust analysis of DSGE and structural macroeconomic models. *Journal of Monetary Economics* **60**, 340-350. [[CrossRef](#)]
281. Julio A. Carrillo, Céline Poilly. 2013. How do financial frictions affect the spending multiplier during a liquidity trap?. *Review of Economic Dynamics* **16**, 296-311. [[CrossRef](#)]
282. Giuseppe Ciccarone, Francesco Giuli, Danilo Liberati. 2013. Incomplete interest rate pass-through under credit and labor market frictions. *Economic Modelling* . [[CrossRef](#)]
283. Michael Funke, Michael Paetz. 2013. Housing prices and the business cycle: An empirical application to Hong Kong. *Journal of Housing Economics* **22**, 62-76. [[CrossRef](#)]
284. Gabriel Fagan, James R. Lothian, Paul D. Mcnelis. 2013. WAS THE GOLD STANDARD REALLY DESTABILIZING?. *Journal of Applied Econometrics* **28**:10.1002/jae.v28.2, 231-249. [[CrossRef](#)]
285. Hikaru Saijo. 2013. Estimating DSGE models using seasonally adjusted and unadjusted data. *Journal of Econometrics* **173**, 22-35. [[CrossRef](#)]
286. Kolver Hernandez. 2013. A system reduction method to efficiently solve DSGE models. *Journal of Economic Dynamics and Control* **37**, 571-576. [[CrossRef](#)]
287. John F. Cogan, John B. Taylor, Volker Wieland, Maik H. Wolters. 2013. Fiscal consolidation strategy. *Journal of Economic Dynamics and Control* **37**, 404-421. [[CrossRef](#)]
288. Eric Mayer, Nikolai Stähler. 2013. The debt brake: business cycle and welfare consequences of Germany's new fiscal policy rule. *Empirica* **40**, 39-74. [[CrossRef](#)]
289. Robert Kollmann, Marco Ratto, Werner Roeger, Jan in't Veld. 2013. Fiscal policy, banks and the financial crisis. *Journal of Economic Dynamics and Control* **37**, 387-403. [[CrossRef](#)]
290. BIANCA DE PAOLI, PAWEL ZABCZYK. 2013. Cyclical Risk Aversion, Precautionary Saving, and Monetary Policy. *Journal of Money, Credit and Banking* **45**:10.1111/jmcb.2013.45.issue-1, 1-36. [[CrossRef](#)]
291. Christopher J. Erceg, Jesper Lindé. 2013. Fiscal consolidation in a currency union: Spending cuts vs. tax hikes. *Journal of Economic Dynamics and Control* **37**, 422-445. [[CrossRef](#)]
292. Günter Coenen, Roland Straub, Mathias Trabandt. 2013. Gauging the effects of fiscal stimulus packages in the euro area. *Journal of Economic Dynamics and Control* **37**, 367-386. [[CrossRef](#)]
293. Efram Castelnuovo. 2013. Monetary policy shocks and financial conditions: A Monte Carlo experiment. *Journal of International Money and Finance* **32**, 282-303. [[CrossRef](#)]
294. Satoko Takamatsu. 2013. Competitive depreciation and the role of distorting taxes in an interdependent economy. *Journal of International Money and Finance* **32**, 462-477. [[CrossRef](#)]
295. Martin Bodenstein, Luca Guerrieri, Christopher J. Gust. 2013. Oil shocks and the zero bound on nominal interest rates. *Journal of International Money and Finance* **32**, 941-967. [[CrossRef](#)]
296. Tiago C. Berriel, Saroj Bhattarai. 2013. Hedging Against the Government: A Solution to the Home Asset Bias Puzzle. *American Economic Journal: Macroeconomics* **5**:1, 102-134. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
297. Yongsung Chang, Sun-Bin Kim, Frank Schorfheide. 2013. LABOR-MARKET HETEROGENEITY, AGGREGATION, AND POLICY (IN)VARIANCE OF DSGE MODEL PARAMETERS. *Journal of the European Economic Association* **11**:10.1111/jeea.2013.11.issue-s1, 193-220. [[CrossRef](#)]
298. Michał Brzoza-Brzezina, Marcin Kolasa, Krzysztof Makarski. 2013. The anatomy of standard DSGE models with financial frictions. *Journal of Economic Dynamics and Control* **37**, 32-51. [[CrossRef](#)]
299. Marcelle Chauvet, Simon PotterForecasting Output 141-194. [[CrossRef](#)]

300. Barbara Annicchiarico, Fabio Di Dio, Francesco Felici. 2013. Structural reforms and the potential effects on the Italian economy. *Journal of Policy Modeling* **35**, 88-109. [[CrossRef](#)]
301. Marco Del Negro, Frank Schorfheide DSGE Model-Based Forecasting 57-140. [[CrossRef](#)]
302. Carlos J. García, Wildo D. González. 2013. Exchange rate intervention in small open economies: The role of risk premium and commodity price shocks. *International Review of Economics & Finance* **25**, 424-447. [[CrossRef](#)]
303. Sebastian Schmidt, Volker Wieland The New Keynesian Approach to Dynamic General Equilibrium Modeling: Models, Methods and Macroeconomic Policy Evaluation 1439-1512. [[CrossRef](#)]
304. Volker Wieland, Maik Wolters Forecasting and Policy Making 239-325. [[CrossRef](#)]
305. SAMI ALPANDA. 2013. IDENTIFYING THE ROLE OF RISK SHOCKS IN THE BUSINESS CYCLE USING STOCK PRICE DATA. *Economic Inquiry* **51**:10.1111/ecin.2013.51.issue-1, 304-335. [[CrossRef](#)]
306. HIBIKI ICHIUE, TAKUSHI KUROZUMI, TAKEKI SUNAKAWA. 2013. INFLATION DYNAMICS AND LABOR MARKET SPECIFICATIONS: A BAYESIAN DYNAMIC STOCHASTIC GENERAL EQUILIBRIUM APPROACH FOR JAPAN'S ECONOMY. *Economic Inquiry* **51**:10.1111/ecin.2013.51.issue-1, 273-287. [[CrossRef](#)]
307. Steffen R. Henzel, Johannes Mayr. 2013. The mechanics of VAR forecast pooling—A DSGE model based Monte Carlo study. *The North American Journal of Economics and Finance* **24**, 1-24. [[CrossRef](#)]
308. Jon Faust, Jonathan H. Wright Forecasting Inflation 2-56. [[CrossRef](#)]
309. Giorgio Di Giorgio, Salvatore Nisticò. 2013. Productivity shocks, stabilization policies and the dynamics of net foreign assets. *Journal of Economic Dynamics and Control* **37**, 210-230. [[CrossRef](#)]
310. Salem Abo-Zaid. 2013. Optimal monetary policy and downward nominal wage rigidity in frictional labor markets. *Journal of Economic Dynamics and Control* **37**, 345-364. [[CrossRef](#)]
311. Karen Poghosyan, Otilia Boldea. 2013. Structural versus matching estimation: Transmission mechanisms in Armenia. *Economic Modelling* **30**, 136-148. [[CrossRef](#)]
312. André Minella, Nelson F. Souza-Sobrinho. 2013. Monetary policy channels in Brazil through the lens of a semi-structural model. *Economic Modelling* **30**, 405-419. [[CrossRef](#)]
313. Ali Dib, Caterina Mendicino, Yahong Zhang. 2013. Price-level targeting rules and financial shocks: The case of Canada. *Economic Modelling* **30**, 941-953. [[CrossRef](#)]
314. Michael Woodford. 2013. Macroeconomic Analysis Without the Rational Expectations Hypothesis. *Annual Review of Economics* **5**, 303-346. [[CrossRef](#)]
315. Sami Alpanda. 2013. Extending the Textbook Dynamic AD-AS Framework with Flexible Inflation Expectations, Optimal Policy Response to Demand Changes, and the Zero-Bound on the Nominal Interest Rate. *Modern Economy* **04**, 145-160. [[CrossRef](#)]
316. Kengo Nutahara. 2013. Asset Prices, Nominal Rigidities, and Monetary Policy: Role of Price Indexation. *Theoretical Economics Letters* **03**, 182-187. [[CrossRef](#)]
317. Antonio Minniti, Francesco Turino. 2013. Multi-product firms and business cycle dynamics. *European Economic Review* **57**, 75-97. [[CrossRef](#)]
318. Christopher J. Erceg, Andrew Levin. 2013. Labor Force Participation and Monetary Policy in the Wake of the Great Recession. *IMF Working Papers* **13**, 1. [[CrossRef](#)]
319. Giovanni Melina, Stefania Villa. 2013. Fiscal Policy and Lending Relationships. *IMF Working Papers* **13**, i. [[CrossRef](#)]
320. Michal Andrle. 2013. What Is in Your Output Gap? Unified Framework & Decomposition into Observables. *IMF Working Papers* **13**, 1. [[CrossRef](#)]
321. Michal Andrle. 2013. Understanding DSGE Filters in Forecasting and Policy Analysis. *IMF Working Papers* **13**, 1. [[CrossRef](#)]

322. Sonali Jain-Chandra, Min Jung Kim, Sung Ho Park, Jerome Shin. 2013. The Impact of Foreign Bank Deleveraging on Korea. *IMF Working Papers* **13**, 1. [[CrossRef](#)]
323. Cristiano Cantore, Paul Levine, Giovanni Melina. 2013. A Fiscal Stimulus and Jobless Recovery. *IMF Working Papers* **13**, i. [[CrossRef](#)]
324. JORDI GALÍ, FRANK SMETS, RAFAEL WOUTERS. 2012. Slow Recoveries: A Structural Interpretation. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-s2, 9-30. [[CrossRef](#)]
325. José-Víctor Ríos-Rull, Frank Schorfheide, Cristina Fuentes-Albero, Maxym Kryshko, Raül Santaaulàlia-Llopis. 2012. Methods versus substance: Measuring the effects of technology shocks. *Journal of Monetary Economics* **59**, 826-846. [[CrossRef](#)]
326. FABIO MILANI, JOHN TREADWELL. 2012. The Effects of Monetary Policy “News” and “Surprises”. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-8, 1667-1692. [[CrossRef](#)]
327. Elmar Mertens. 2012. Are spectral estimators useful for long-run restrictions in SVARs?. *Journal of Economic Dynamics and Control* **36**, 1831-1844. [[CrossRef](#)]
328. Paul Levine, Joseph Pearlman, George Perendia, Bo Yang. 2012. Endogenous Persistence in an estimated DSGE Model Under Imperfect Information*. *The Economic Journal* **122**, 1287-1312. [[CrossRef](#)]
329. Branimir Jovanovic, Marjan Petreski. 2012. Monetary policy in a small open economy with fixed exchange rate: The case of Macedonia. *Economic Systems* **36**, 594-608. [[CrossRef](#)]
330. HASHMAT KHAN, JOHN TSOUKALAS. 2012. The Quantitative Importance of News Shocks in Estimated DSGE Models. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-8, 1535-1561. [[CrossRef](#)]
331. ROBERT G. KING, MARK W. WATSON. 2012. Inflation and Unit Labor Cost. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-s2, 111-149. [[CrossRef](#)]
332. Martin Bodenstein, Luca Guerrieri, Lutz Kilian. 2012. Monetary Policy Responses to Oil Price Fluctuations. *IMF Economic Review* **60**, 470-504. [[CrossRef](#)]
333. Boris Hofmann, Gert Peersman, Roland Straub. 2012. Time variation in U.S. wage dynamics. *Journal of Monetary Economics* **59**, 769-783. [[CrossRef](#)]
334. ROBERT AMANO, MALIK SHUKAYEV. 2012. Risk Premium Shocks and the Zero Bound on Nominal Interest Rates. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-8, 1475-1505. [[CrossRef](#)]
335. Francisco J. André, M. Alejandro Cardenete, M. Carmen Lima. 2012. USING A CGE MODEL TO IDENTIFY THE POLICY TRADE-OFF BETWEEN UNEMPLOYMENT AND INFLATION. THE EFFICIENT PHILLIPS CURVE. *Economic Systems Research* **24**, 349-369. [[CrossRef](#)]
336. Daniel F. Waggoner, Tao Zha. 2012. Confronting model misspecification in macroeconomics. *Journal of Econometrics* **171**, 167-184. [[CrossRef](#)]
337. Edward Herbst, Frank Schorfheide. 2012. Evaluating DSGE model forecasts of comovements. *Journal of Econometrics* **171**, 152-166. [[CrossRef](#)]
338. Matti Estola, Alia Dannenberg. 2012. Testing the neo-classical and the Newtonian theory of production. *Physica A: Statistical Mechanics and its Applications* **391**, 6519-6527. [[CrossRef](#)]
339. Gisle James Natvik. 2012. Government Spending Shocks and Rule-of-Thumb Consumers with Steady-State Inequality*. *The Scandinavian Journal of Economics* **114**:10.1111/sjoe.2012.114.issue-4, 1414-1436. [[CrossRef](#)]
340. Martin M. Andreasen. 2012. An estimated DSGE model: Explaining variation in nominal term premia, real term premia, and inflation risk premia. *European Economic Review* **56**, 1656-1674. [[CrossRef](#)]
341. Vivien Lewis, Céline Poilly. 2012. Firm entry, markups and the monetary transmission mechanism. *Journal of Monetary Economics* **59**, 670-685. [[CrossRef](#)]

342. Han Chen, Vasco Cúrdia, Andrea Ferrero. 2012. The Macroeconomic Effects of Large-scale Asset Purchase Programmes*. *The Economic Journal* **122**:10.1111/ecoj.2012.122.issue-564, F289-F315. [[CrossRef](#)]
343. Paul Mizen, Serafeim Tsoukas. 2012. The response of the external finance premium in Asian corporate bond markets to financial characteristics, financial constraints and two financial crises. *Journal of Banking & Finance* **36**, 3048-3059. [[CrossRef](#)]
344. Olivier Coibion,, Yuriy Gorodnichenko. 2012. Why Are Target Interest Rate Changes so Persistent?. *American Economic Journal: Macroeconomics* **4**:4, 126-162. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
345. Mark Bils,, Peter J. Klenow,, Benjamin A. Malin. 2012. Reset Price Inflation and the Impact of Monetary Policy Shocks. *American Economic Review* **102**:6, 2798-2825. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
346. EDDA CLAUS, MARDI DUNGEY. 2012. U.S. Monetary Policy Surprises: Identification with Shifts and Rotations in the Term Structure. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-7, 1443-1453. [[CrossRef](#)]
347. ROMAIN DUVAL, LUKAS VOGEL. 2012. How Do Nominal and Real Rigidities Interact? A Tale of the Second Best. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-7, 1455-1474. [[CrossRef](#)]
348. Cristiano Cantore, Paul Levine, Giovanni Melina, Bo Yang. 2012. A fiscal stimulus with deep habits and optimal monetary policy. *Economics Letters* **117**, 348-353. [[CrossRef](#)]
349. Ulrich K. Müller. 2012. Measuring prior sensitivity and prior informativeness in large Bayesian models. *Journal of Monetary Economics* **59**, 581-597. [[CrossRef](#)]
350. LUIGI PACIELLO. 2012. Monetary Policy and Price Responsiveness to Aggregate Shocks under Rational Inattention. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-7, 1375-1399. [[CrossRef](#)]
351. MARTHA A. STARR. 2012. CONSUMPTION, SENTIMENT, AND ECONOMIC NEWS. *Economic Inquiry* **50**:10.1111/ecin.2012.50.issue-4, 1097-1111. [[CrossRef](#)]
352. MARCIN KOLASA, MICHAŁ RUBASZEK, PAWEŁ SKRZYPczyński. 2012. Putting the New Keynesian DSGE Model to the Real-Time Forecasting Test. *Journal of Money, Credit and Banking* **44**:10.1111/jmcb.2012.44.issue-7, 1301-1324. [[CrossRef](#)]
353. Matthieu Darracq Pariès, Stéphane Moyen. 2012. Monetary policy and inflationary shocks under imperfect credibility. *Economics Letters* **116**, 571-574. [[CrossRef](#)]
354. Miguel Casares, Antonio Moreno, Jesús Vázquez. 2012. Wage stickiness and unemployment fluctuations: an alternative approach. *SERIEs* **3**, 395-422. [[CrossRef](#)]
355. Bianca De Paoli, Pawel Zabczyk. 2012. WHY DO RISK PREMIA VARY OVER TIME? A THEORETICAL INVESTIGATION UNDER HABIT FORMATION. *Macroeconomic Dynamics* **16**, 252-266. [[CrossRef](#)]
356. G. Fiorentini, C. Planas, A. Rossi. 2012. The marginal likelihood of dynamic mixture models. *Computational Statistics & Data Analysis* **56**, 2650-2662. [[CrossRef](#)]
357. Jacopo Cimadomo, Agnès Bénassy-Quéré. 2012. Changing patterns of fiscal policy multipliers in Germany, the UK and the US. *Journal of Macroeconomics* **34**, 845-873. [[CrossRef](#)]
358. Michał Rubaszek. 2012. THE ROLE OF TWO INTEREST RATES IN THE INTERTEMPORAL CURRENT ACCOUNT MODEL. *Macroeconomic Dynamics* **16**, 176-189. [[CrossRef](#)]
359. Volker Wieland, Tobias Cwik, Gernot J. Müller, Sebastian Schmidt, Maik Wolters. 2012. A new comparative approach to macroeconomic modeling and policy analysis. *Journal of Economic Behavior & Organization* **83**, 523-541. [[CrossRef](#)]
360. FABRIZIO MATTESINI, LORENZA ROSSI. 2012. Monetary Policy and Automatic Stabilizers: The Role of Progressive Taxation. *Journal of Money, Credit and Banking* **44**, 825-862. [[CrossRef](#)]

361. Stefan Mittnik, Willi Semmler. 2012. Regime dependence of the fiscal multiplier. *Journal of Economic Behavior & Organization* **83**, 502-522. [[CrossRef](#)]
362. Markku Lanne, Arto Luoma, Jani Luoto. 2012. BAYESIAN MODEL SELECTION AND FORECASTING IN NONCAUSAL AUTOREGRESSIVE MODELS. *Journal of Applied Econometrics* **27**:10.1002/jae.v27.5, 812-830. [[CrossRef](#)]
363. Neil R. Ericsson, Erica L. Reisman. 2012. Evaluating a Global Vector Autoregression for Forecasting. *International Advances in Economic Research* **18**, 247-258. [[CrossRef](#)]
364. John B. Taylor, Volker Wieland. 2012. Surprising Comparative Properties of Monetary Models: Results from a New Model Database. *Review of Economics and Statistics* **94**, 800-816. [[CrossRef](#)]
365. Mathias Hoffmann, Michael U. Krause, Thomas Laubach. 2012. Trend growth expectations and U.S. house prices before and after the crisis. *Journal of Economic Behavior & Organization* **83**, 394-409. [[CrossRef](#)]
366. Sebastian Giesen, Oliver Holtemöller, Juliane Scharff, Rolf Scheufele. 2012. The Halle Economic Projection Model. *Economic Modelling* **29**, 1461-1472. [[CrossRef](#)]
367. Campbell Leith, Ioana Moldovan, Raffaele Rossi. 2012. Optimal monetary policy in a New Keynesian model with habits in consumption. *Review of Economic Dynamics* **15**, 416-435. [[CrossRef](#)]
368. Cem Çebi. 2012. The interaction between monetary and fiscal policies in Turkey: An estimated New Keynesian DSGE model. *Economic Modelling* **29**, 1258-1267. [[CrossRef](#)]
369. Christopher A. Sims. 2012. Statistical Modeling of Monetary Policy and Its Effects. *American Economic Review* **102**:4, 1187-1205. [[Citation](#)] [[View PDF article](#)] [[PDF with links](#)]
370. Refet S. Gürkaynak,, Jonathan H. Wright. 2012. Macroeconomics and the Term Structure. *Journal of Economic Literature* **50**:2, 331-367. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
371. Michal Andrle. 2012. Structural correlation decompositions for business cycle analysis. *Economics Letters* **115**, 390-391. [[CrossRef](#)]
372. Jesús Vázquez, Ramón María-Dolores, Juan M. Londoño. 2012. The Effect of Data Revisions on the Basic New Keynesian Model. *International Review of Economics & Finance* **24**, 235-249. [[CrossRef](#)]
373. Julio A. Carrillo. 2012. How well does sticky information explain the dynamics of inflation, output, and real wages?. *Journal of Economic Dynamics and Control* **36**, 830-850. [[CrossRef](#)]
374. Efram Castelnuovo. 2012. POLICY SWITCH AND THE GREAT MODERATION: THE ROLE OF EQUILIBRIUM SELECTION. *Macroeconomic Dynamics* **16**, 449-471. [[CrossRef](#)]
375. Giovanni Di Bartolomeo, Patrizio Tirelli, Nicola Acocella. 2012. Inflation targets and endogenous wage markups in a New Keynesian model. *Journal of Macroeconomics* **34**, 391-403. [[CrossRef](#)]
376. Frank Schorfheide,, Kenneth I. Wolpin. 2012. On the Use of Holdout Samples for Model Selection. *American Economic Review* **102**:3, 477-481. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
377. John Geweke,, Gianni Amisano. 2012. Prediction with Misspecified Models. *American Economic Review* **102**:3, 482-486. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
378. Günter Coenen,, Roland Straub,, Mathias Trabandt. 2012. Fiscal Policy and the Great Recession in the Euro Area. *American Economic Review* **102**:3, 71-76. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
379. Janice Eberly, Sergio Rebelo, Nicolas Vincent. 2012. What explains the lagged-investment effect?. *Journal of Monetary Economics* **59**, 370-380. [[CrossRef](#)]
380. YASUO HIROSE, TAKUSHI KUROZUMI. 2012. DO INVESTMENT-SPECIFIC TECHNOLOGICAL CHANGES MATTER FOR BUSINESS FLUCTUATIONS? EVIDENCE FROM JAPAN. *Pacific Economic Review* **17**:10.1111/paer.2012.17.issue-2, 208-230. [[CrossRef](#)]
381. Markus Knell, Alfred Stiglbauer. 2012. REFERENCE NORMS, STAGGERED WAGES, AND WAGE LEADERSHIP: THEORETICAL IMPLICATIONS AND EMPIRICAL EVIDENCE*. *International Economic Review* **53**:10.1111/iere.2012.53.issue-2, 569-592. [[CrossRef](#)]

382. G. C. LIM, PAUL D. MCNELIS. 2012. MACROECONOMIC VOLATILITY AND COUNTERFACTUAL INFLATION-TARGETING IN HONG KONG. *Pacific Economic Review* 17:10.1111/paer.2012.17.issue-2, 304-325. [[CrossRef](#)]
383. Gernot Müller. 2012. Fiskalpolitik und Finanzmärkte: Perspektiven für Forschung und Wirtschaftspolitik. *Perspektiven der Wirtschaftspolitik* 13:10.1111/pers.2012.13.issue-s1, 13-35. [[CrossRef](#)]
384. Sergey Slobodyan,, Raf Wouters. 2012. Learning in a Medium-Scale DSGE Model with Expectations Based on Small Forecasting Models. *American Economic Journal: Macroeconomics* 4:2, 65-101. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
385. Olivier Coibion. 2012. Are the Effects of Monetary Policy Shocks Big or Small?. *American Economic Journal: Macroeconomics* 4:2, 1-32. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
386. Dario Caldara, Jesús Fernández-Villaverde, Juan F. Rubio-Ramírez, Wen Yao. 2012. Computing DSGE models with recursive preferences and stochastic volatility. *Review of Economic Dynamics* 15, 188-206. [[CrossRef](#)]
387. Nikolai Stähler, Carlos Thomas. 2012. FiMod — A DSGE model for fiscal policy simulations. *Economic Modelling* 29, 239-261. [[CrossRef](#)]
388. HENNING WEBER. 2012. Product Replacement Bias in Inflation and Its Consequences for Monetary Policy. *Journal of Money, Credit and Banking* 44:10.1111/jmcb.2012.44.issue-2-3, 255-299. [[CrossRef](#)]
389. GUIDO ASCARI, TIZIANO ROPELE. 2012. Sacrifice Ratio in a Medium-Scale New Keynesian Model. *Journal of Money, Credit and Banking* 44:10.1111/jmcb.2012.44.issue-2-3, 457-467. [[CrossRef](#)]
390. Fabio Canova, Filippo Ferroni. 2012. The dynamics of US inflation: Can monetary policy explain the changes?. *Journal of Econometrics* 167, 47-60. [[CrossRef](#)]
391. Gauti B. Eggertsson. 2012. Was the New Deal Contractionary?. *American Economic Review* 102:1, 524-555. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
392. Urban Jermann,, Vincenzo Quadrini. 2012. Macroeconomic Effects of Financial Shocks. *American Economic Review* 102:1, 238-271. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
393. Federico S. Mandelman. 2012. Monetary and exchange rate policy under remittance fluctuations. *Journal of Development Economics* . [[CrossRef](#)]
394. JAE WON LEE. 2012. Aggregate Implications of Heterogeneous Households in a Sticky-Price Model. *Journal of Money, Credit and Banking* 44:10.1111/jmcb.2012.44.issue-1, 1-22. [[CrossRef](#)]
395. HESS CHUNG, JEAN-PHILIPPE LAFORTE, DAVID REIFSCHNEIDER, JOHN C. WILLIAMS. 2012. Have We Underestimated the Likelihood and Severity of Zero Lower Bound Events?. *Journal of Money, Credit and Banking* 44:10.1111/jmcb.2012.44.issue-s1, 47-82. [[CrossRef](#)]
396. EFREM CASTELNUOVO. 2012. Estimating the Evolution of Money's Role in the U.S. Monetary Business Cycle. *Journal of Money, Credit and Banking* 44:10.1111/jmcb.2012.44.issue-1, 23-52. [[CrossRef](#)]
397. Glenn D. Rudebusch,, Eric T. Swanson. 2012. The Bond Premium in a DSGE Model with Long-Run Real and Nominal Risks. *American Economic Journal: Macroeconomics* 4:1, 105-143. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
398. Günter Coenen,, Christopher J. Erceg,, Charles Freedman,, Davide Furceri,, Michael Kumhof,, René Lalonde,, Douglas Laxton,, Jesper Lindé,, Annabelle Mourougane,, Dirk Muir,, Susanna Mursula,, Carlos de Resende,, John Roberts,, Werner Roeger,, Stephen Snudden,, Mathias Trabandt,, Jan in't Veld. 2012. Effects of Fiscal Stimulus in Structural Models. *American Economic Journal: Macroeconomics* 4:1, 22-68. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
399. 2012. Identification and frequency domain quasi-maximum likelihood estimation of linearized dynamic stochastic general equilibrium models. *Quantitative Economics* 3, 95-132. [[CrossRef](#)]
400. David Gbaguidi. 2012. La courbe de Phillips : temps d'arbitrage et/ou arbitrage de temps. *L'Actualité économique* 88, 87. [[CrossRef](#)]

401. Davide Debortoli, Junior Maih, Ricardo Nunes. 2012. LOOSE COMMITMENT IN MEDIUM-SCALE MACROECONOMIC MODELS: THEORY AND APPLICATIONS. *Macroeconomic Dynamics* 1. [\[CrossRef\]](#)
402. Kengo Nutahara, Masaru Inaba. 2012. An application of business cycle accounting with misspecified wedges. *Review of Economic Dynamics* . [\[CrossRef\]](#)
403. Fabio MilaniThe Modeling of Expectations in Empirical DSGE Models: A Survey 3-38. [\[CrossRef\]](#)
404. Eric R. SimsNews, Non-Invertibility, and Structural VARs 81-135. [\[CrossRef\]](#)
405. Efram CastelnuovoFitting U.S. Trend Inflation: A Rolling-Window Approach 201-252. [\[CrossRef\]](#)
406. Fabio Milani, Ashish RajbhandariExpectation Formation and Monetary DSGE Models: Beyond the Rational Expectations Paradigm 253-288. [\[CrossRef\]](#)
407. Anna Kormilitsina, Denis NekipelovApproximation Properties of Laplace-Type Estimators 291-318. [\[CrossRef\]](#)
408. Denis Tkachenko, Zhongjun QuFrequency Domain Analysis of Medium Scale DSGE Models with Application to Smets and Wouters (2007) 319-385. [\[CrossRef\]](#)
409. Tae-Seok JangStructural Estimation of the New-Keynesian Model: A Formal Test of Backward- and Forward-Looking Behavior 421-467. [\[CrossRef\]](#)
410. Kengo Nutahara. 2012. Note on Nominal Rigidities and News-Driven Business Cycles. *Theoretical Economics Letters* 02, 431-434. [\[CrossRef\]](#)
411. Harun Alp, Selim Elekdag. 2012. Shock Therapy! What Role for Thai Monetary Policy?. *IMF Working Papers* 12, 1. [\[CrossRef\]](#)
412. Ruy Lama, Pau Rabanal. 2012. Deciding to Enter a Monetary Union: TheRole of Trade and Financial Linkages. *IMF Working Papers* 12, 1. [\[CrossRef\]](#)
413. Vadim Khramov. 2012. Assessing Dsge Models with Capital Accumulation and Indeterminacy. *IMF Working Papers* 12, 1. [\[CrossRef\]](#)
414. Selim Elekdag, Subir Lall, Harun Alp. 2012. An Assessment of Malaysian Monetary Policy During the Global Financial Crisis of 2008-09. *IMF Working Papers* 12, 1. [\[CrossRef\]](#)
415. Subir Lall, Selim Elekdag, Harun Alp. 2012. Did Korean Monetary Policy Help Soften the Impact of the Global Financial Crisis of 2008-2009?. *IMF Working Papers* 12, 1. [\[CrossRef\]](#)
416. Todd B. Walker, Eric M. Leeper, Shu-Chun S. Yang. 2012. Fiscal Foresight and Information Flows. *IMF Working Papers* 12, i. [\[CrossRef\]](#)
417. LUIGI PACIELLO. 2011. Does Inflation Adjust Faster to Aggregate Technology Shocks than to Monetary Policy Shocks?. *Journal of Money, Credit and Banking* 43:10.1111/jmcb.2011.43.issue-8, 1663-1684. [\[CrossRef\]](#)
418. Lawrence J. Christiano, Mathias Trabandt, Karl Walentin. 2011. Introducing financial frictions and unemployment into a small open economy model. *Journal of Economic Dynamics and Control* 35, 1999-2041. [\[CrossRef\]](#)
419. Marco Del Negro, Stefano Eusepi. 2011. Fitting observed inflation expectations. *Journal of Economic Dynamics and Control* 35, 2105-2131. [\[CrossRef\]](#)
420. Timothy Cogley, Bianca De Paoli, Christian Matthes, Kalin Nikolov, Tony Yates. 2011. A Bayesian approach to optimal monetary policy with parameter and model uncertainty. *Journal of Economic Dynamics and Control* 35, 2186-2212. [\[CrossRef\]](#)
421. Pär Österholm. 2011. The limited usefulness of macroeconomic Bayesian VARs when estimating the probability of a US recession. *Journal of Macroeconomics* . [\[CrossRef\]](#)
422. Christian Matthes, Mu-Chun Wang. 2011. What drives inflation in New Keynesian models?. *Economics Letters* . [\[CrossRef\]](#)

423. Jonathan Benchimol, André Fourçans. 2011. Money and risk in a DSGE framework: A Bayesian application to the Eurozone. *Journal of Macroeconomics* . [[CrossRef](#)]
424. Jordi Galí. 2011. Are central banks' projections meaningful?. *Journal of Monetary Economics* . [[CrossRef](#)]
425. Matteo Iacoviello, Fabio Schiantarelli, Scott Schuh. 2011. INPUT AND OUTPUT INVENTORIES IN GENERAL EQUILIBRIUM*. *International Economic Review* **52**:10.1111/iere.2011.52.issue-4, 1179-1213. [[CrossRef](#)]
426. Francesco Zanetti. 2011. Banking and the role of money in the business cycle. *Journal of Macroeconomics* . [[CrossRef](#)]
427. Sharon Kozicki. 2011. Macro has progressed. *Journal of Macroeconomics* . [[CrossRef](#)]
428. MALIN ADOLFSON, STEFAN LASÉEN, JESPER LINDÉ, LARS E.O. SVENSSON. 2011. Optimal Monetary Policy in an Operational Medium-Sized DSGE Model. *Journal of Money, Credit and Banking* **43**:10.1111/jmcb.2011.43.issue-7, 1287-1331. [[CrossRef](#)]
429. Kevin X.D. Huang, Qinglai Meng. 2011. Increasing returns and unsynchronized wage adjustment in sunspot models of the business cycle. *Journal of Economic Theory* . [[CrossRef](#)]
430. Zi Zhou, Yawu Zheng Asset Prices, Monetary Policy and China's Economic Fluctuations 353-356. [[CrossRef](#)]
431. Valerie A. Ramey. 2011. Can Government Purchases Stimulate the Economy?. *Journal of Economic Literature* **49**:3, 673-685. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
432. Francesco Giuli, Massimiliano Tancioni. 2011. Real rigidities, productivity improvements and investment dynamics. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
433. Vo Phuong Mai Le, David Meenagh, Patrick Minford, Michael Wickens. 2011. How much nominal rigidity is there in the US economy? Testing a new Keynesian DSGE model using indirect inference. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
434. Guido Lorenzoni. 2011. News and Aggregate Demand Shocks. *Annual Review of Economics* **3**, 537-557. [[CrossRef](#)]
435. M. HASHEM PESARAN, RON P. SMITH. 2011. BEYOND THE DSGE STRAITJACKET1. *The Manchester School* **79**:10.1111/manc.2011.79.issue-s2, 5-16. [[CrossRef](#)]
436. CARLOS THOMAS. 2011. Search Frictions, Real Rigidities, and Inflation Dynamics. *Journal of Money, Credit and Banking* **43**:10.1111/jmcb.2011.43.issue-6, 1131-1164. [[CrossRef](#)]
437. Eric Mayer, Johann Scharler. 2011. Noisy information, interest rate shocks and the Great Moderation. *Journal of Macroeconomics* . [[CrossRef](#)]
438. BARBARA ROSSI, SARAH ZUBAIRY. 2011. What Is the Importance of Monetary and Fiscal Shocks in Explaining U.S. Macroeconomic Fluctuations?. *Journal of Money, Credit and Banking* **43**:10.1111/jmcb.2011.43.issue-6, 1247-1270. [[CrossRef](#)]
439. Efreem Castelnuovo. 2011. Testing the Structural Interpretation of the Price Puzzle with a Cost-Channel Model*. *Oxford Bulletin of Economics and Statistics* no-no. [[CrossRef](#)]
440. Steve Ambler, Alain Guay, Louis Phaneuf. 2011. Endogenous business cycle propagation and the persistence problem: The role of labor-market frictions. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
441. WING LEONG TEO, PO CHIEH YANG. 2011. WELFARE COST OF INFALTION IN A NEW KEYNESIAN MODEL. *Pacific Economic Review* **16**:10.1111/paer.2011.16.issue-3, 313-338. [[CrossRef](#)]
442. Gregory E. Givens. 2011. Unemployment insurance in a sticky-price model with worker moral hazard. *Journal of Economic Dynamics and Control* **35**, 1192-1214. [[CrossRef](#)]
443. Sergey Slobodyan, Raf Wouters. 2011. Learning in an estimated medium-scale DSGE model. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]

444. Tobias Cwik, Volker Wieland. 2011. Keynesian government spending multipliers and spillovers in the euro area. *Economic Policy* 26:10.1111/ecop.2011.26.issue-67, 493-549. [[CrossRef](#)]
445. Zheng Liu, Daniel F. Waggoner, Tao Zha. 2011. Sources of macroeconomic fluctuations: A regime-switching DSGE approach. *Quantitative Economics* 2, 251-301. [[CrossRef](#)]
446. Kensuke Miyazawa. 2011. The Taylor Rule in Japan. *Japanese Economy* 38, 79-104. [[CrossRef](#)]
447. Guido Ascari, Efram Castelnuovo, Lorenza Rossi. 2011. Calvo vs. Rotemberg in a trend inflation world: An empirical investigation. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
448. Johan Söderberg. 2011. Customer markets and the welfare effects of monetary policy. *Journal of Monetary Economics* . [[CrossRef](#)]
449. FABIO CANOVA, TOBIAS MENZ. 2011. Does Money Matter in Shaping Domestic Business Cycles? An International Investigation. *Journal of Money, Credit and Banking* 43:10.1111/jmcb.2011.43.issue-4, 577-607. [[CrossRef](#)]
450. Simon Gilchrist, Egon Zakrajšek. 2011. Monetary Policy and Credit Supply Shocks. *IMF Economic Review* 59, 195-232. [[CrossRef](#)]
451. Carlos J. Garcia, Jorge E. Restrepo, Scott Roger. 2011. Hybrid Inflation Targeting Regimes. *Journal of International Money and Finance* . [[CrossRef](#)]
452. Barbara Annicchiarico, Alessandra Pelloni, Lorenza Rossi. 2011. Endogenous growth, monetary shocks and nominal rigidities. *Economics Letters* . [[CrossRef](#)]
453. Lukas Vogel. 2011. Interacting nominal and real labour market rigidities. *Economics Letters* 111, 264-267. [[CrossRef](#)]
454. Raj Chetty,, Adam Guren,, Day Manoli,, Andrea Weber. 2011. Are Micro and Macro Labor Supply Elasticities Consistent? A Review of Evidence on the Intensive and Extensive Margins. *American Economic Review* 101:3, 471-475. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
455. Martin M. Andreasen. 2011. Non-linear DSGE models and the optimized central difference particle filter. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
456. Leon Berkelmans. 2011. Imperfect information, multiple shocks, and policy's signaling role. *Journal of Monetary Economics* 58, 373-386. [[CrossRef](#)]
457. Gonzalo Fernández-de-Córdoba, Jesús Vázquez. 2011. Unions, monetary shocks and the labour market cycle. *Economic Modelling* 28, 1140-1149. [[CrossRef](#)]
458. Atsushi Inoue, Barbara Rossi. 2011. Testing for weak identification in possibly nonlinear models. *Journal of Econometrics* 161, 246-261. [[CrossRef](#)]
459. Robert B. Barsky, Eric R. Sims. 2011. News shocks and business cycles. *Journal of Monetary Economics* . [[CrossRef](#)]
460. Sami Alpanda, Kevin Kotzé, Geoffrey Woglom. 2011. FORECASTING PERFORMANCE OF AN ESTIMATED DSGE MODEL FOR THE SOUTH AFRICAN ECONOMY. *South African Journal of Economics* 79, 50-67. [[CrossRef](#)]
461. Fabio Canova, Filippo Ferroni. 2011. Multiple filtering devices for the estimation of cyclical DSGE models. *Quantitative Economics* 2, 73-98. [[CrossRef](#)]
462. Martin Bodenstein, Christopher J. Erceg, Luca Guerrieri. 2011. Oil shocks and external adjustment. *Journal of International Economics* 83, 168-184. [[CrossRef](#)]
463. Kuang-Liang Chang, Nan-Kuang Chen, Charles Ka Yui Leung. 2011. The dynamics of housing returns in Singapore: How important are the international transmission mechanisms?. *Regional Science and Urban Economics* . [[CrossRef](#)]
464. Paul Beaudry, Fabrice Collard, Franck Portier. 2011. Gold rush fever in business cycles. *Journal of Monetary Economics* 58, 84-97. [[CrossRef](#)]

465. Jordi Galí. 2011. THE RETURN OF THE WAGE PHILLIPS CURVE. *Journal of the European Economic Association* no-no. [[CrossRef](#)]
466. Thomas J. Sargent,, Paolo Surico. 2011. Two Illustrations of the Quantity Theory of Money: Breakdowns and Revivals. *American Economic Review* **101**:1, 109-128. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
467. IPPEI FUJIWARA, YASUO HIROSE, MOTOTSUGU SHINTANI. 2011. Can News Be a Major Source of Aggregate Fluctuations? A Bayesian DSGE Approach. *Journal of Money, Credit and Banking* **43**:10.1111/jmcb.2011.43.issue-1, 1-29. [[CrossRef](#)]
468. Mikael Juselius. 2011. Testing Steady-State Restrictions of Linear Rational Expectations Models when Data are Highly Persistent*. *Oxford Bulletin of Economics and Statistics* no-no. [[CrossRef](#)]
469. Lawrence Christiano, Martin Eichenbaum, Sergio Rebelo. 2011. When Is the Government Spending Multiplier Large?. *The Journal of Political Economy* **119**, 78-121. [[CrossRef](#)]
470. Pablo A. Guerron-Quintana. 2011. The implications of inflation in an estimated new Keynesian model. *Journal of Economic Dynamics and Control* . [[CrossRef](#)]
471. Pelin Ilbas. 2011. Revealing the preferences of the US Federal Reserve. *Journal of Applied Econometrics* n/a-n/a. [[CrossRef](#)]
472. Nora Traum, Shu-Chun S. Yang. 2011. Monetary and fiscal policy interactions in the post-war U.S.#. *European Economic Review* **55**, 140-164. [[CrossRef](#)]
473. Maxym Kryshko. 2011. Bayesian Dynamic Factor Analysis of a Simple Monetary DSGE Model. *IMF Working Papers* **11**, 1. [[CrossRef](#)]
474. Maxym Kryshko. 2011. Data-Rich DSGE and Dynamic Factor Models. *IMF Working Papers* **11**, 1. [[CrossRef](#)]
475. Selim Elekdag, Harun Alp. 2011. The Role of Monetary Policy in Turkey during the Global Financial Crisis. *IMF Working Papers* **11**, 1. [[CrossRef](#)]
476. IMF. Monetary and Capital Markets Department Global Financial Stability Report, September 2011: Grappling with Crisis Legacies . [[CrossRef](#)]
477. FRANCESCA MONTI. 2010. Combining Judgment and Models. *Journal of Money, Credit and Banking* **42**:10.1111/jmcb.2010.42.issue-8, 1641-1662. [[CrossRef](#)]
478. Maarten Dossche, Freddy Heylen, Dirk Van den Poel. 2010. The Kinked Demand Curve and Price Rigidity: Evidence from Scanner Data*. *Scandinavian Journal of Economics* **112**, 723-752. [[CrossRef](#)]
479. Stephan Fahr, Frank Smets. 2010. Downward Wage Rigidities and Optimal Monetary Policy in a Monetary Union*. *Scandinavian Journal of Economics* **112**, 812-840. [[CrossRef](#)]
480. Vanda Almeida, Gabriela Castro, Ricardo Mourinho Félix. 2010. Improving competition in the non-tradable goods and labour markets: the Portuguese case. *Portuguese Economic Journal* **9**, 163-193. [[CrossRef](#)]
481. CHARLOTTA GROTH, HASHMAT KHAN. 2010. Investment Adjustment Costs: An Empirical Assessment. *Journal of Money, Credit and Banking* **42**:10.1111/jmcb.2010.42.issue-8, 1469-1494. [[CrossRef](#)]
482. José-Víctor Ríos-Rull, Raúl Santaella-Llopis. 2010. Redistributive shocks and productivity shocks. *Journal of Monetary Economics* **57**, 931-948. [[CrossRef](#)]
483. Takeshi Kimura, Takushi Kurozumi. 2010. Endogenous nominal rigidities and monetary policy. *Journal of Monetary Economics* **57**, 1038-1048. [[CrossRef](#)]
484. Vo Phuong Mai Le, Patrick Minford, Michael Wickens. 2010. The 'Puzzles' methodology: En route to Indirect Inference?. *Economic Modelling* **27**, 1417-1428. [[CrossRef](#)]
485. Ray C. Fair. 2010. Has macro progressed?. *Journal of Macroeconomics* . [[CrossRef](#)]

486. Ellen R. McGrattan,, Edward C. Prescott. 2010. Unmeasured Investment and the Puzzling US Boom in the 1990s. *American Economic Journal: Macroeconomics* 2:4, 88-123. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
487. Jean-Pierre Danthine, André Kurmann. 2010. The business cycle implications of reciprocity in labor relations. *Journal of Monetary Economics* 57, 837-850. [[CrossRef](#)]
488. YASUO HIROSE, SAORI NAGANUMA. 2010. STRUCTURAL ESTIMATION OF THE OUTPUT GAP: A BAYESIAN DSGE APPROACH. *Economic Inquiry* 48, 864-879. [[CrossRef](#)]
489. Atsushi Inoue, Barbara Rossi. 2010. Identifying the Sources of Instabilities in Macroeconomic Fluctuations. *Review of Economics and Statistics* 110801094742003. [[CrossRef](#)]
490. Giovanni Di Bartolomeo, Lorenza Rossi, Massimiliano Tancioni. 2010. Monetary policy, rule-of-thumb consumers and external habits: a G7 comparison. *Applied Economics* 1-18. [[CrossRef](#)]
491. DANIEL LEIGH. 2010. Monetary Policy and the Lost Decade: Lessons from Japan. *Journal of Money, Credit and Banking* 42, 833-857. [[CrossRef](#)]
492. Pablo A. Guerron-Quintana. 2010. What you match does matter: the effects of data on DSGE estimation. *Journal of Applied Econometrics* 25:10.1002/jae.v25:5, 774-804. [[CrossRef](#)]
493. Uluc Aysun. 2010. Testing for Balance Sheet Effects in Emerging Markets: A Non-Crisis Setting*. *International Finance* 13:10.1111/inf.2010.13.issue-2, 223-256. [[CrossRef](#)]
494. Philip Arestis, Alexander Mihailov. 2010. CLASSIFYING MONETARY ECONOMICS: FIELDS AND METHODS FROM PAST TO FUTURE. *Journal of Economic Surveys* no-no. [[CrossRef](#)]
495. John B. Taylor. 2010. Comment on: "Global effects of fiscal stimulus during the crisis" by Charles Freedman, Michael Kumhof, Douglas Laxton, Dick Muir, Susanna Mursula. *Journal of Monetary Economics* 57, 527-530. [[CrossRef](#)]
496. Volker Wieland, Maik H. Wolters. 2010. The diversity of forecasts from macroeconomic models of the US economy. *Economic Theory* . [[CrossRef](#)]
497. Rochelle M. Edge, Michael T. Kiley, Jean-Philippe Laforte. 2010. A comparison of forecast performance between federal reserve staff forecasts, simple reduced-form models, and a DSGE model. *Journal of Applied Econometrics* 25, 720-754. [[CrossRef](#)]
498. Sami Alpanda, Kevin Kotzé, Geoffrey Woglom. 2010. THE ROLE OF THE EXCHANGE RATE IN A NEW KEYNESIAN DSGE MODEL FOR THE SOUTH AFRICAN ECONOMY. *South African Journal of Economics* 78:10.1111/saje.2010.78.issue-2, 170-191. [[CrossRef](#)]
499. Eric M. Leeper, Michael Plante, Nora Traum. 2010. Dynamics of fiscal financing in the United States. *Journal of Econometrics* 156, 304-321. [[CrossRef](#)]
500. Federico S. Mandelman. 2010. Business cycles and monetary regimes in emerging economies: A role for a monopolistic banking sector#. *Journal of International Economics* 81, 122-138. [[CrossRef](#)]
501. Keith Kuester. 2010. Real price and wage rigidities with matching frictions#. *Journal of Monetary Economics* 57, 466-477. [[CrossRef](#)]
502. Alejandro Justiniano, Bruce Preston. 2010. Can structural small open-economy models account for the influence of foreign disturbances?#. *Journal of International Economics* 81, 61-74. [[CrossRef](#)]
503. Grégory Walque, Michael Krause, Stephen Millard, Juan Jimeno, Hervé Le Bihan, Frank Smets. 2010. SOME MACROECONOMIC AND MONETARY POLICY IMPLICATIONS OF NEW MICRO EVIDENCE ON WAGE DYNAMICS. *Journal of the European Economic Association* 8:10.1111/jeea.2010.8.issue-2-3, 506-513. [[CrossRef](#)]
504. Matteo Iacoviello,, Stefano Neri. 2010. Housing Market Spillovers: Evidence from an Estimated DSGE Model. *American Economic Journal: Macroeconomics* 2:2, 125-164. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
505. Richard Dennis. 2010. When is discretion superior to timeless perspective policymaking?#. *Journal of Monetary Economics* 57, 266-277. [[CrossRef](#)]

506. Yuriy Gorodnichenko, Serena Ng. 2010. Estimation of DSGE models when the data are persistent#. *Journal of Monetary Economics* **57**, 325-340. [[CrossRef](#)]
507. Frank Schorfheide, Keith Sill, Maxym Kryshko. 2010. DSGE model-based forecasting of non-modelled variables. *International Journal of Forecasting* **26**, 348-373. [[CrossRef](#)]
508. Liam Graham, Stephen Wright. 2010. Information, heterogeneity and market incompleteness#. *Journal of Monetary Economics* **57**, 164-174. [[CrossRef](#)]
509. Alejandro Justiniano, Giorgio E. Primiceri, Andrea Tambalotti. 2010. Investment shocks and business cycles#. *Journal of Monetary Economics* **57**, 132-145. [[CrossRef](#)]
510. Nikolay Iskrev. 2010. Local identification in DSGE models#. *Journal of Monetary Economics* **57**, 189-202. [[CrossRef](#)]
511. Anton Nakov, Andrea Pescatori. 2010. Oil and the Great Moderation. *The Economic Journal* **120**:10.1111/ecoj.2010.120.issue-543, 131-156. [[CrossRef](#)]
512. PATRICK FÈVE, JULIEN MATHERON, JEAN-GUILLAUME SAHUC. 2010. Disinflation Shocks in the Eurozone: A DSGE Perspective. *Journal of Money, Credit and Banking* **42**:10.1111/jmcb.2010.42.issue-2-3, 289-323. [[CrossRef](#)]
513. Frank Smets, Kai Christoffel, Günter Coenen, Roberto Motto, Massimo Rostagno. 2010. DSGE models and their use at the ECB. *SERIEs* **1**, 51-65. [[CrossRef](#)]
514. FABRICE COLLARD, HARRIS DELLAS. 2010. Monetary Misperceptions, Output, and Inflation Dynamics. *Journal of Money, Credit and Banking* **42**:10.1111/jmcb.2010.42.issue-2-3, 483-502. [[CrossRef](#)]
515. Jesús Fernández-Villaverde. 2010. The econometrics of DSGE models. *SERIEs* **1**, 3-49. [[CrossRef](#)]
516. Jesús Vázquez. 2010. Comment on "Spain in the Euro: A General Equilibrium Analysis" by Andrés, Hurtado, Ortega and Thomas. *SERIEs* **1**, 97-99. [[CrossRef](#)]
517. Siddhartha Chib, Srikanth Ramamurthy. 2010. Tailored randomized block MCMC methods with application to DSGE models. *Journal of Econometrics* **155**, 19-38. [[CrossRef](#)]
518. Romain Houssa, Christopher Otrok, Radu Pustelenghe. 2010. A Model for Monetary Policy Analysis for Sub-Saharan Africa. *Open Economies Review* **21**, 127-145. [[CrossRef](#)]
519. Äzer Karagedikli, Troy Matheson, Christie Smith, Shaun P. Vahey. 2010. RBCs AND DSGEs: THE COMPUTATIONAL APPROACH TO BUSINESS CYCLE THEORY AND EVIDENCE. *Journal of Economic Surveys* **24**:10.1111/joes.2010.24.issue-1, 113-136. [[CrossRef](#)]
520. James Davidson. 2010. "Two Orthogonal Continents? Testing a Two-country DSGE Model of the US and the EU Using Indirect Inference" by Mai Le, David Meenagh, Patrick Minford and Mike Wickens: Discussion. *Open Economies Review* **21**, 45-47. [[CrossRef](#)]
521. Philip Arestis, Georgios Chortareas, John D. Tsoukalas. 2010. Money and Information in a New Neoclassical Synthesis Framework. *The Economic Journal* **120**:10.1111/ecoj.2010.120.issue-542, F101-F128. [[CrossRef](#)]
522. Martin Møller Andreasen. 2010. How to Maximize the Likelihood Function for a DSGE Model. *Computational Economics* **35**, 127-154. [[CrossRef](#)]
523. Jordi Galí Monetary Policy and Unemployment 487-546. [[CrossRef](#)]
524. Lawrence J. Christiano, Mathias Trabandt, Karl Walentin DSGE Models for Monetary Policy Analysis 285-367. [[CrossRef](#)]
525. Luca Benati, Charles Goodhart Monetary Policy Regimes and Economic Performance 1159-1236. [[CrossRef](#)]
526. Stephanie Schmitt-Grohé, Martín Uribe The Optimal Rate of Inflation 653-722. [[CrossRef](#)]
527. Alexei Onatski, Noah Williams. 2010. Empirical and policy performance of a forward-looking monetary model. *Journal of Applied Econometrics* **25**, 145-176. [[CrossRef](#)]

528. Christian Kascha, Francesco Ravazzolo. 2010. Combining inflation density forecasts. *Journal of Forecasting* **29**:10.1002/for.v29:1/2, 231-250. [[CrossRef](#)]
529. Michael Woodford Optimal Monetary Stabilization Policy 723-828. [[CrossRef](#)]
530. Jean Boivin, Michael T. Kiley, Frederic S. Mishkin How Has the Monetary Transmission Mechanism Evolved Over Time? 369-422. [[CrossRef](#)]
531. Vito Polito, Mike Wickens. 2010. Optimal monetary policy using an unrestricted VAR. *Journal of Applied Econometrics* n/a-n/a. [[CrossRef](#)]
532. Mark Gertler, Nobuhiro Kiyotaki Financial Intermediation and Credit Policy in Business Cycle Analysis 547-599. [[CrossRef](#)]
533. Bennett T. McCallum, Edward Nelson Money and Inflation 97-153. [[CrossRef](#)]
534. Shu-Chun S. Yang, Nora Traum. 2010. Monetary and Fiscal Policy Interactions in the Post-War U.S. *IMF Working Papers* **10**, 1. [[CrossRef](#)]
535. Juan Pablo Medina Guzman, Ruy Lama. 2010. Is Exchange Rate Stabilization a+L4510n Appropriate Cure for the Dutch Disease?. *IMF Working Papers* **10**, 1. [[CrossRef](#)]
536. Kaiji Chen, Ayşe İmrohoroglu, Selahattin İmrohoroglu. 2009. A quantitative assessment of the decline in the U.S. current account#. *Journal of Monetary Economics* **56**, 1135-1147. [[CrossRef](#)]
537. Fabio Milani. 2009. Expectations, learning, and the changing relationship between oil prices and the macroeconomy#. *Energy Economics* **31**, 827-837. [[CrossRef](#)]
538. Fabrice Collard, Harris Dellas, Frank Smets. 2009. Imperfect information and the business cycle. *Journal of Monetary Economics* **56**, S38-S56. [[CrossRef](#)]
539. Klaus Adam. 2009. Monetary policy and aggregate volatility#. *Journal of Monetary Economics* **56**, S1-S18. [[CrossRef](#)]
540. Charles T. Carlstrom, Timothy S. Fuerst, Matthias Paustian. 2009. Monetary policy shocks, Choleski identification, and DNK models#. *Journal of Monetary Economics* **56**, 1014-1021. [[CrossRef](#)]
541. Olivier Blanchard. 2009. The State of Macro. *Annual Review of Economics* **1**, 209-228. [[CrossRef](#)]
542. Virginia Queijo von Heideken. 2009. How Important are Financial Frictions in the United States and the Euro Area?. *Scandinavian Journal of Economics* **111**:10.1111/sjoe.2009.111.issue-3, 567-596. [[CrossRef](#)]
543. Pablo A. Acosta, Emmanuel K.K. Lartey, Federico S. Mandelman. 2009. Remittances and the Dutch disease#. *Journal of International Economics* **79**, 102-116. [[CrossRef](#)]
544. Marco Del Negro,, Frank Schorfheide. 2009. Monetary Policy Analysis with Potentially Misspecified Models. *American Economic Review* **99**:4, 1415-1450. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
545. Luca Benati,, Paolo Surico. 2009. VAR Analysis and the Great Moderation. *American Economic Review* **99**:4, 1636-1652. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
546. LEIGH A. RIDDICK, TONI M. WHITED. 2009. The Corporate Propensity to Save. *The Journal of Finance* **64**:10.1111/jofi.2009.64.issue-4, 1729-1766. [[CrossRef](#)]
547. PATRICK FÈVE, ALAIN GUAY. 2009. The Response of Hours to a Technology Shock: A Two-Step Structural VAR Approach. *Journal of Money, Credit and Banking* **41**:10.1111/jmcb.2009.41.issue-5, 987-1013. [[CrossRef](#)]
548. mr steinbach, pt mathuloe, bw smit. 2009. AN OPEN ECONOMY NEW KEYNESIAN DSGE MODEL OF THE SOUTH AFRICAN ECONOMY. *South African Journal of Economics* **77**:10.1111/saje.2009.77.issue-2, 207-227. [[CrossRef](#)]
549. Mattias Villani. 2009. Steady-state priors for vector autoregressions. *Journal of Applied Econometrics* **24**, 630-650. [[CrossRef](#)]
550. Ferre De Graeve, Marina Emiris, Raf Wouters. 2009. A structural decomposition of the US yield curve#. *Journal of Monetary Economics* **56**, 545-559. [[CrossRef](#)]

551. Meredith J. Beechey, Jonathan H. Wright. 2009. The high-frequency impact of news on long-term yields and forward rates: Is it real?#. *Journal of Monetary Economics* 56, 535-544. [[CrossRef](#)]
552. Robert Amano, Kevin Moran, Stephen Murchison, Andrew Rennison. 2009. Trend inflation, wage and price rigidities, and productivity growth. *Journal of Monetary Economics* 56, 353-364. [[CrossRef](#)]
553. Mu-Chun Wang. 2009. Comparing the DSGE model with the factor model: an out-of-sample forecasting experiment. *Journal of Forecasting* 28:10.1002/for.v28:2, 167-182. [[CrossRef](#)]
554. Jean Boivin,, Marc P. Giannoni,, Ilian Mihov. 2009. Sticky Prices and Monetary Policy: Evidence from Disaggregated US Data. *American Economic Review* 99:1, 350-384. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
555. V. V. Chari,, Patrick J. Kehoe,, Ellen R. McGrattan. 2009. New Keynesian Models: Not Yet Useful for Policy Analysis. *American Economic Journal: Macroeconomics* 1:1, 242-266. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
556. Michael Woodford. 2009. Convergence in Macroeconomics: Elements of the New Synthesis. *American Economic Journal: Macroeconomics* 1:1, 267-279. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
557. Robert Shimer. 2009. Convergence in Macroeconomics: The Labor Wedge. *American Economic Journal: Macroeconomics* 1:1, 280-297. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
558. Jordi Galí,, Luca Gambetti. 2009. On the Sources of the Great Moderation. *American Economic Journal: Macroeconomics* 1:1, 26-57. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
559. Daniel Leigh. 2009. Monetary Policy and the Lost Decade: Lessons From Japan. *IMF Working Papers* 09, 1. [[CrossRef](#)]
560. Carlos Garcia, Jorge Restrepo, Scott Roger. 2009. Hybrid Inflation Targeting Regimes. *IMF Working Papers* 09, 1. [[CrossRef](#)]
561. MICHAEL WOODFORD. 2008. How Important Is Money in the Conduct of Monetary Policy?. *Journal of Money, Credit and Banking* 40:10.1111/jmcb.2008.40.issue-8, 1561-1598. [[CrossRef](#)]
562. MARK GERTLER, LUCA SALA, ANTONELLA TRIGARI. 2008. An Estimated Monetary DSGE Model with Unemployment and Staggered Nominal Wage Bargaining. *Journal of Money, Credit and Banking* 40:10.1111/jmcb.2008.40.issue-8, 1713-1764. [[CrossRef](#)]
563. Timothy Cogley,, Argia M. Sbordone. 2008. Trend Inflation, Indexation, and Inflation Persistence in the New Keynesian Phillips Curve. *American Economic Review* 98:5, 2101-2126. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
564. R. Bonci, F. Columba. 2008. Monetary policy effects: new evidence from the Italian flow-of-funds. *Applied Economics* 40, 2803-2818. [[CrossRef](#)]
565. M DELNEGRO, F SCHORFHEIDE. 2008. Forming priors for DSGE models (and how it affects the assessment of nominal rigidities)#. *Journal of Monetary Economics* 55, 1191-1208. [[CrossRef](#)]
566. Luca Benati. 2008. Investigating Inflation Persistence Across Monetary Regimes *. *Quarterly Journal of Economics* 123:10.1162/qjec.2008.123.issue-3, 1005-1060. [[CrossRef](#)]
567. K CHRISTOFFEL, K KUESTER. 2008. Resuscitating the wage channel in models with unemployment fluctuations#. *Journal of Monetary Economics* 55, 865-887. [[CrossRef](#)]
568. L SALA, U SODERSTROM, A TRIGARI. 2008. Monetary policy under uncertainty in an estimated model with labor market frictions#. *Journal of Monetary Economics* 55, 983-1006. [[CrossRef](#)]
569. Alejandro Justiniano,, Giorgio E. Primiceri. 2008. The Time-Varying Volatility of Macroeconomic Fluctuations. *American Economic Review* 98:3, 604-641. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
570. Domenico Giannone, Michele Lenza, Lucrezia Reichlin. 2008. Explaining The Great Moderation: It Is Not The Shocks. *Journal of the European Economic Association* 6, 621-633. [[CrossRef](#)]
571. Nikola Bokan, Andrew Hughes Hallett. 2008. The Impact of Tax and Market Distortions on the Phillips Curve and the Natural Rate of Unemployment. *Economics: The Open-Access, Open-Assessment E-Journal* 2, 1. [[CrossRef](#)]

572. Marvin Goodfriend. 2007. How the World Achieved Consensus on Monetary Policy. *Journal of Economic Perspectives* **21**:4, 47-68. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
573. Jordi Galsí, Mark Gertler. 2007. Macroeconomic Modeling for Monetary Policy Evaluation. *Journal of Economic Perspectives* **21**:4, 25-45. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]