

POLICY SHOCK REACTIONS IN THAI WAGE RIGIDITY ECONOMY*

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Abstract

This study analyzes the macroeconomic effects of nominal wage rigidity in Thailand, a key labor market friction that shapes business cycles and policy transmission. It quantitatively evaluates how varying degrees of wage stickiness influence the dynamic responses of macroeconomic variables to such shocks. A Dynamic Stochastic General Equilibrium (DSGE) model was developed and estimated using Thai quarterly data from 2002–2021, and then subjected to consumption, technology, fiscal, and monetary policy shocks under different wage rigidity scenarios. The simulations reveal that higher nominal wage rigidity reduces the volatility of macroeconomic adjustment. The impulse responses of output, employment, and prices exhibit smaller amplitudes and weaker cyclical fluctuations as wage stickiness increases. However, wage rigidity acts as a double-edged sword: it stabilizes the economy in the short run by dampening disruptive shocks but slows the return to equilibrium. This trade-off is central to policymakers, as it shapes the strength and speed of policy transmission. The study recommends that Thai authorities foster a balance between stability and flexibility through targeted social safety nets and labor market programs that

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cushion downturns while allowing wage adjustments to facilitate a quicker return to equilibrium.

Keywords: Wage Rigidity, DSGE Models, Monetary Policy, Fiscal Policy, Thailand

Introduction

Wage rigidity, a central concept in macroeconomics, refers to the resistance of nominal wages to adjust in line with changing labor market conditions. It is crucial because it shapes labor market outcomes and overall macroeconomic performance. When wages do not fall during downturns, firms are more likely to lay off workers than to cut pay, resulting in higher involuntary unemployment and slower recoveries. This rigidity arises from a combination of institutional arrangements, behavioral considerations, and economic constraints (Babecký et al., 2010; Dickens et al., 2007).

Wage rigidity can amplify business cycle fluctuations and inhibit the economy's self-correcting mechanism. Following a negative demand shock, flexible wages would normally decline, lowering firms' labor costs and limiting their job losses. However, with rigid wages, labor costs remain elevated, forcing firms to reduce employment more aggressively, deepening the contraction, and increasing output volatility (Kandil, 1996). This slows recovery because the labor market cannot clear efficiently.

A wide range of methodologies has been used to study wage dynamics and their determinants. Gordon (1982), using a century-long dataset for the United States, the United Kingdom, and Japan, demonstrated that the degree of wage stickiness differs across countries and over time. Blinder and Choi (1989) used interviews with actual wage-setters and found that fairness norms and other non-economic considerations strongly influence wage decisions. Card and Hyslop (1996) show that nominal wage cuts are rare in individual-level data, particularly when inflation is low. In contemporary macroeconomics, however, Dynamic

Stochastic General Equilibrium (DSGE) models have become the standard tool for analyzing wage rigidity. These models often introduce wage stickiness through a Calvo-type mechanism, enabling them to replicate the observed fluctuations in key variables. Smets and Wouters (2003) demonstrated that incorporating nominal wage rigidity improves the ability of DSGE models to match output, employment, and inflation movements. Guerron-Quintana (2010) showed that omitting wage data can yield paradoxical results, such as recessions following positive technology shocks, highlighting the central role of wage rigidity in generating coherent predictions.

Although wage rigidity is a global phenomenon, its specific forms and policy implications are highly context-dependent, justifying country-specific investigations. In Asia, several studies have pointed to particularly pronounced wage rigidities. Fan (2005) documents persistent wage stickiness in Hong Kong, even under deflation. In India, Kaur (2017) found that nominal wage rigidity contributes to employment distortion during downturns. For Thailand, which is attempting to move beyond the middle-income trap under the Thailand 4.0 strategy, labor market features, such as the extensive use of migrant labor and the transition toward a higher-skilled workforce, may interact with wage rigidity in complex ways (Tipayalai, 2020).

The interaction between macroeconomic policy and wage rigidity is another important dimension. The effectiveness of fiscal policy depends, in part, on labor market frictions (Sabir and Qamar, 2019). Sun and Tsang (2017) identified channels through which sticky wages modify both the magnitude and timing of fiscal and monetary policy effects on real activities. Given Thailand's history of substantial shocks, such as the East Asian Financial Crisis, and its reliance on a mix of fiscal and monetary tools for stabilization, understanding how wage rigidity conditions the transmission of these policies is essential for effective economic management.

Despite extensive research on wage rigidity, there is still limited evidence on how different degrees of wage stickiness shape Thailand's macroeconomic dynamics, particularly in response to policy and non-policy shocks. This study contributes to the literature by developing and estimating a DSGE model tailored to the Thai economy. Using this framework, we simulated the effects of consumption, technology, fiscal, and monetary policy shocks under alternative levels of nominal wage rigidity. The central research question is as follows: How does the degree of nominal wage rigidity modify the dynamic responses of key macroeconomic variables, including prices, wages, capital returns, employment, and output, to consumption, technology, fiscal, and monetary policy shocks in Thailand? The remainder of this paper is structured as follows. The next section reviews the theoretical and empirical literature on wage rigidity. We then present the details of the DSGE model, including the behavior of households, firms, and the government. Finally, we report our main findings and provide policy recommendations.

Objectives

The primary objective of this study is to quantitatively assess how different degrees of wage stickiness alter the dynamic responses of key macroeconomic variables to various economic shocks.

Literature Review

Originating in Keynes's *General Theory*, the hypothesis posits that nominal wages are resistant to downward adjustment, are less flexible than prices, and tend to move in the opposite direction to real wages. Workers strongly resist nominal wage cuts but are more tolerant of real wage reductions caused by higher prices (Pencavel, 2015). Consequently, in recessions, prices fall faster than money wages, so real wages rise, and this wage stickiness in downturns

generates involuntary unemployment, as firms facing weaker demand prefer to lay off workers rather than cut pay (Fan, 2005).

In empirical research, Card and Hyslop (1996) showed that in high-inflation environments, firms can reorder real wages without explicit nominal cuts, while low inflation or deflation amplifies nominal wage rigidity and restricts relative wage adjustments. They tested whether inflation greases the wheels of the labor market and confirmed that, given resistance to nominal wage cuts, moderate inflation allows real wage reductions through stable nominal pay. A pronounced spike at zero nominal wage change reveals strong rigidity, especially in low-inflation periods, and its size decreases as inflation rises, indicating that low inflation intensifies nominal wage stickiness. Franz and Pfeiffer (2006) showed that collective bargaining agreements and union rules established wage floors that remained binding throughout the business cycle, and these negotiated standards further constrained downward adjustments. Babecký et al. (2010) highlighted that enterprises that employed a larger share of permanent workers or operated under extensive union coverage exhibited stronger real and nominal wage rigidity than firms with more flexible staffing structures. Schoefer (2021) documented that incumbents' wage stickiness, combined with financial constraints that restricted firms' ability to smooth costs through pay cuts, led managers to preserve existing wage levels while curtailing new hiring, and this choice transmitted employment losses instead of wage adjustments during recessions.

On the effects side, Kandil (1996) demonstrated that nominal wage rigidity intensified the countercyclical pattern of real wages when demand shocks occurred, and the study showed a consequent amplification of output volatility through the labor income channels. Subsequently, Smets and Wouters (2003) provided empirical and theoretical evidence that wages in DSGE frameworks display nominal rigidity and demonstrated that this rigidity constrains real wage movements whenever the economy encounters an aggregate shock. This foundational contribution established wages as the principal friction that shapes

the responses of output, employment, and inflation during short-term fluctuations. In 2007, Dickens et al. (2007) reported that actual wage behavior diverges from the flexible-wage benchmark and explained that households whose labor income does not adjust promptly alter consumption plans in ways that intensify cyclical volatility.

Guerron-Quintana (2010) estimated a DSGE framework that contains a Taylor rule produced paradoxical downturns after positive technology innovations when the researcher excluded wage data, and the investigation thereby displayed the essential role that observed wage rigidity holds for reliable quantitative predictions. In 2011, Keen and Pakko (2011) conducted policy simulations that revealed that monetary authorities operating in an environment characterized by rigid wages generate macroeconomic outcomes that differ markedly from the predictions produced by flexible-wage frameworks. During 2012, Khan and Tsoukalas (2012) documented that wage stickiness diminishes the share of news shocks in the variance of key aggregates, whereas unanticipated disturbances have a stronger effect. This finding implies that the informational structure of macroeconomic fluctuations shifts when wages are adjusted slowly. In 2017, Sun and Tsang (2017) advanced the policy discussion by identifying the transmission channels through which sticky wages alter both the speed and magnitude with which fiscal or monetary interventions influence real activity.

Further research has shown how sticky nominal wages interact with other market features to influence business cycles. Den Haan et al. (2018) demonstrated that when combined with incomplete markets, where individuals cannot insure against unemployment risk, sticky wages can amplify economic downturns through a deflationary spiral. During a recession, heightened fear of unemployment increases precautionary savings, putting downward pressure on price levels. Because nominal wages are sticky and do not fall as quickly as prices, real labor costs rise, squeezing the profits of firms. This leads to lower investment

and fewer jobs, which, in turn, reinforces the initial fear and saving impulses, creating a self-perpetuating cycle that deepens the recession. Huang et al. (2022) demonstrate that the macroeconomic impact of sticky wages depends on structural features such as the returns to research and development. When returns to innovation are high, wage stickiness among a small group of workers, such as researchers, can produce large real effects from monetary shocks, implying that the importance of wage rigidity is context-dependent. Bilbiie and Trabandt (2024) explored the long-standing question of whether sticky prices or wages are more important for explaining business cycles. In a standard New Keynesian model, they established a result of "observational equivalence," showing that models with sticky wages and flexible prices can produce identical aggregate outcomes for GDP, consumption, and inflation as those with sticky prices and flexible wages do. While this creates an identification problem for econometric analysis, the two hypotheses have different implications for income distribution, with the sticky wage scenario generating acyclical real wages and pro-cyclical profits. This pattern aligns better with empirical observations and suggests its growing importance as a plausible monetary transmission mechanism.

Methodology

The research methodology employed in this study was centered on the development and simulation of a mathematical model. The Population and Sample for this research are the Thai economy, with the empirical analysis utilizing quarterly data spanning from 2002:Q1 to 2021:Q2. These data, which include GDP, the policy rate, and employment, were obtained from the World Bank database. The primary Research Instrument is a Dynamic Stochastic General Equilibrium (DSGE) framework tailored to the Thai economy, incorporating the detailed behaviors of households, labor unions, firms, and the government. This DSGE model includes wage rigidity as a critical friction, which is implemented via

the Calvo rule. Data analysis is performed using Bayesian estimation techniques, followed by simulating the dynamic effects of various economic shocks under different scenarios of wage stickiness. The details of our model are as follows.

Households: In this hypothesized economy, the representative household seeks to maximize its lifetime utility, which increases with the consumption of goods and decreases with the number of hours worked. The utility function employed in this study is adapted from standard specifications in the literature (Jääskelä & McKibbin, 2009; Justiniano & Preston, 2010; Alba et al., 2011) and is expressed as follows:

$$E_t \sum_{t=0}^{\infty} \beta^t \left(A_{C,t} \frac{(C_t)^{1-\sigma}}{1-\sigma} - A_{L,t} \frac{(L_t)^{1+\varphi}}{1+\varphi} \right), \quad (1)$$

where β represents the subjective discount factor. The parameter φ is the inverse of the Frisch elasticity of labor supply, while the parameter σ defines the coefficient of relative risk aversion. $A_{C,t}$ denotes the stochastic process that captures time-varying shocks to the household's preference for consumption. $A_{L,t}$ represents a stochastic shock to the disutility of labor, and L_t stands for the quantity of labor hours supplied by the household.

$$\ln(A_{C,t}) = (1-\rho_{AC})\ln(A_{C,ss}) + \rho_{AC}\ln(A_{C,t-1}) + \varepsilon_{AC,t} \quad |\rho_{AC}| < 1, \varepsilon_{AC,t} \sim N(0, Q_{AC}). \quad (2)$$

The representative household's nominal budget constraint is expressed by:

$$W_t L_t + R_{K,t} K_t + B_t = P_t (C_t + I_t) + \frac{B_{t+1}}{R_t}, \quad (3)$$

where W_t , K_t , $R_{K,t}$, B_t , P_t , I_t , and R_t denote nominal wage, stock of physical capital, nominal rental rate of capital, bonds held by the household, price level for the final good, investment expenditures, and nominal interest rate, respectively.

In this case, capital evolution is written as:

$$K_{t+1} = (1 - \delta)K_t + I_t \left(1 - \frac{\chi \left(\frac{I_t}{I_{t-1}} - 1 \right)^2}{2} \right), \quad (4)$$

where parameters δ and χ , respectively, denote the physical depreciation rate of capital and investment adjustment costs.

Labor sector: Households' wage-setting behavior is modeled under the assumption that they are monopolistic competitors, each supplying a differentiated labor service. These services, indexed by $k \in [0,1]$, are sold to a representative labor-aggregating firm. This firm then combines various labor types into a single composite labor input using the following technology:

$$L_t = \left(\int_0^1 L_{k,t}^{\frac{\phi_w - 1}{\phi_w}} dk \right)^{\frac{\phi_w}{\phi_w - 1}}, \quad (5)$$

where, $\phi_w > 1$ is the inverse of the substitution parameter.

The labor-aggregating firm solves

$$\max_{L_{k,t}} W_t L_t - \int_0^1 W_{k,t} L_{k,t} dk. \quad (6)$$

Using (5) and (6) to get $\left(\frac{W_t}{W_{k,t}} \right)^{\phi_w} L_t = L_{k,t}$ which imply $W_t = \left(\int_0^1 W_{k,t}^{1-\phi_w} dk \right)^{\frac{1}{1-\phi_w}}$.

Applying the Calvo rule for price rigidity (Ascari & Rossi, L., 2012), only a fraction of households, chosen independently and randomly in each period, can optimally reset their wages. The remaining households θ_w must keep their wages unchanged. Therefore, a household that can re-optimize solves the following problem:

$$\max_{WF_{k,t}} \sum_{s=0}^{\infty} E_t (\beta \theta_w)^s \left(-\frac{1}{1 + \phi_w} (L_{k,t+s})^{1+\phi_w} + \lambda_{t+s} (WF_{k,t} L_{k,t+s}) \right). \quad (7)$$

where λ_{t+s} denotes the marginal value of real income in period $t+s$.

The first-order solution of (7) can be written as

$WF_t = \frac{\varphi_w}{(\varphi_w - 1)} E_t \sum_{i=0}^{\infty} (\beta \theta_w)^i \frac{L_{t+i}^{\varphi_w}}{\lambda_{t+i}}$. Hence, the aggregate nominal wage results become $W_t^{1-\varphi_w} = \theta_w W_{t-1}^{1-\varphi_w} + (1-\theta_w) WF_t^{1-\varphi_w}$.

Intermediate Technological Firms: Technological Firms use Cobb-Douglas technology with capital and labor to produce outputs. This production function is given by $Y_{j,t} = A_{T,t} K_{j,t}^{\alpha} L_{j,t}^{1-\alpha}$, where α is the share of capital in production. $A_{T,t}$ is a technology evolution that follows a first-order autoregressive process. The solution for profit maximization provides the following price rule:

$$P_{j,t} = \frac{1}{A_{T,t}} \left(\frac{W_t}{1-\alpha} \right)^{1-\alpha} \left(\frac{R_{K,t}}{\alpha} \right)^{\alpha}. \quad (8)$$

Based on the Calvo rule, the firm has a ω probability of keeping the price of its good fixed in the next period, and the remaining probability of optimally defining its price. The problem of firms that can readjust their prices is exhibited by:

$$\text{MAX}_{AP_{j,t}} E_t \sum_{i=0}^{\infty} (\beta \omega)^i (AP_{j,t} Y_{j,t+i} - TC_{j,t+i}) \quad (9)$$

The first-order solution provides: $AP_{j,t} = \frac{\psi_Y}{(\psi_Y - 1)} E_t \sum_{i=0}^{\infty} (\beta \omega)^i MC_{j,t+i}$.

Final good firm: The final good Y_t is produced by an aggregator that collects differentiated goods from a continuum of intermediate firms $j \in [0,1]$ using the following Dixit-Stiglitz aggregator (Coibion & Gorodnichenko, 2008)

$Y_t = \left(\int_0^1 Y_{j,t}^{\frac{1}{\psi_Y}} dj \right)^{\psi_Y}$, where $Y_{j,t}$ is the demand for an intermediate good j and

$\psi_Y > 1$ denotes the producer's monopoly power.

The producer solves $\text{MAX}_{Y_t} P_t Y_t - \int_0^1 P_{j,t} Y_{j,t} dj$. The solution to the producer's maximization problem is $Y_{j,t} = Y_t \left(\frac{P_t}{P_{j,t}} \right)^{\frac{\psi_Y}{\psi_Y - 1}}$. Further simple

manipulation yields $P_t = \left(\int_0^1 P_{j,t}^{1-\psi_Y} dj \right)^{\frac{1}{1-\psi_Y}}$. Using (8), we obtain the price index

$$P_t = \left(\omega P_{t-1}^{1-\psi_Y} + (1-\omega) A P_{j,t}^{1-\psi_Y} \right)^{\frac{1}{(1-\psi_Y)}}.$$

Government Authority: The fiscal authority determines its total spending on public goods, $C_{G,t}$, by taking into account the previous level of national income and the rate of inflation. Following the approach used in previous studies (Iwata, 2009; Bhattarai & Trzeciakiewicz, 2017), the fiscal policy rule can be written as:

$$\frac{C_{G,t}}{C_{Gss}} = \left(\frac{C_{G,t-1}}{C_{Gss}} \right)^{\zeta_G} \left(\frac{Y_{ss}}{Y_{t-1}} \frac{\pi_{ss}}{\pi_{t-1}} \right)^{(1-\zeta_G)\kappa_G} A_{G,t}, \quad (10)$$

The monetary authority sets the short-term nominal interest rate according to the following simple rule (Bache et al., 2010; Pakdeesana, 2015):

$$\frac{R_t}{R_{ss}} = \left(\frac{R_{t-1}}{R_{ss}} \right)^{\zeta_M} \left(\left(\frac{Y_t}{Y_{ss}} \right)^{\kappa_Y} \left(\frac{\pi_t}{\pi_{ss}} \right)^{\kappa_\pi} \right)^{(1-\zeta_M)} A_{M,t}, \quad (11)$$

where $A_{M,t}$ and $A_{G,t}$ denote a monetary and fiscal policy evolution. The Market-clearing condition is defined by $Y_t = C_{H,t} + C_{G,t} + I_t$. The log-linearization forms of the first-order solutions were derived before conducting the simulation.

Results

This section reports the main simulation results, and some estimated parameters are listed in Table 1.

Parameter	prior mean	post. mean	HPD inf	HPD sup
σ	0.300	0.3045	0.2899	0.3189
β	0.970	0.9701	0.9686	0.9723
δ	0.011	0.0010	0.0000	0.0022
ζ_G	0.200	0.2008	0.1865	0.2133
ζ_M	0.200	0.1913	0.1115	0.2582

Parameter	prior mean	post. mean	HPD inf	HPD sup
κ_G	0.200	0.1989	0.1845	0.2108
κ_π	0.200	0.1864	0.1726	0.2237
κ_Y	0.200	0.2087	0.1841	0.2237

Table 1: Priors and posteriors of model parameters

To test the effect of wage rigidity, this work set $\omega = 0.8$.

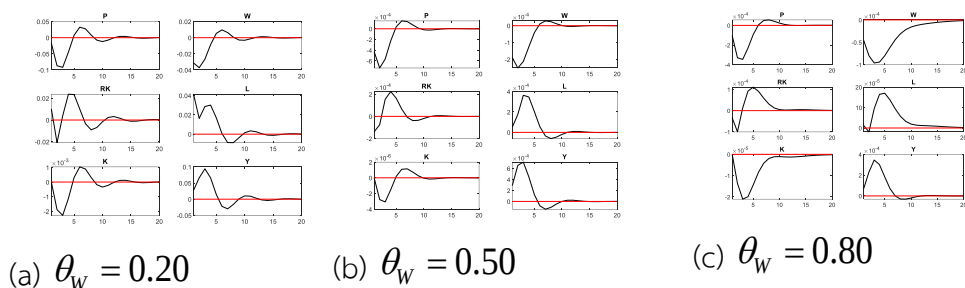


Figure 1: Consumption shock

Figure 1(a) shows the effects of a positive consumption preference shock. Increasing nominal wage rigidity systematically changes both the magnitude and shape of the impulse responses. Prices (P) always fall on impact, but the initial drop and subsequent adjustment depend on rigidity. With $\theta_w = 0.20$, the decline is barely visible and followed by a slow hump that overshoots above zero. At $\theta_w = 0.50$, the initial fall is much sharper, about -6×10^{-4} , and the return to equilibrium becomes monotonic. At $\theta_w = 0.80$, the first-period decline is smaller than in $\theta_w = 0.50$ case, and the price gap closes in roughly eight periods. Thus, increased rigidity reduces the immediate reaction and eliminates overshooting. Wages (W) display a similar but milder pattern. With $\theta_w = 0.20$, they overshoot into positive territory, around $+0.015$, before turning negative. At $\theta_w = 0.50$ and $\theta_w = 0.80$, wages start below zero and converge

monotonically. The rental rate of capital (RK) is highly sensitive to wage flexibility. When $\theta_w = 0.20$, RK rises with output, peaking around $+0.02$ and then undershooting. For $\theta_w = 0.50$, its maximum is about $+1.8 \times 10^{-4}$, followed by a small dip. At $\theta_w = 0.80$, the hump flattens further, about $+1 \times 10^{-4}$, and the adjustment is almost instantaneous, so higher rigidity stabilizes capital returns. Employment (L) initially increases in all cases, but less so when wages are rigid. With $\theta_w = 0.20$, it exhibits a broad hump, about $+0.035$, lasting several periods before turning negative. At $\theta_w = 0.50$, the response is only about $+4 \times 10^{-4}$; at $\theta_w = 0.80$, the rise is a mere $+1.5 \times 10^{-5}$ and decays without becoming negative. Capital (K) adjusts slowly in all scenarios, but its amplitude collapses as rigidity rises, i.e., from roughly -2×10^{-3} at $\theta_w = 0.20$ to about -3×10^{-6} at $\theta_w = 0.50$ and -2×10^{-5} at $\theta_w = 0.80$. With wages and employment highly inertial, firms barely revise their capital stock. For output (Y), under low rigidity, the shock lifts Y by about $+0.08$ and then generates a sizable negative overshoot before converging after 15–20 periods. At $\theta_w = 0.50$, the peak is around $+6 \times 10^{-4}$ with a milder overshoot and faster convergence, within about 12 periods. With $\theta_w = 0.80$, the hump is only $+4 \times 10^{-4}$ and equilibrium is reached in roughly ten periods. Therefore, higher nominal wage rigidity dampens and shortens the responses of prices, wages, capital, employment, and output, making fluctuations smaller and more transient.

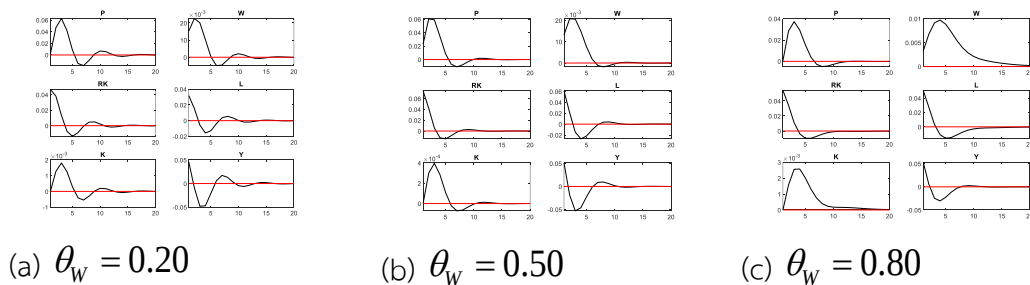


Figure 2: Technology shock

Figure 2 presents the impulse responses to technology shocks under different degrees of wage rigidity. Prices (P) jump on impact in all cases, but their subsequent cycles shrink as wages become increasingly rigid. With $\theta_w = 0.20$, an initial increase of about +0.06 is followed by a sizeable negative overshooting and persistent oscillations. At $\theta_w = 0.50$, the reversal is quicker and secondary peaks are smaller. When $\theta_w = 0.80$, the price path is almost monotonic, smoothly returning to equilibrium. Thus, higher wage rigidity compresses the price cycles. Nominal wages (W) follow a similar but milder pattern: low rigidity yields noticeable overshooting and rebound; moderate rigidity narrows the swings; and high rigidity produces an almost one-time adjustment with no undershooting. The rental rate of capital (RK) is the most sensitive, displaying pronounced booms and busts when wages are flexible, but much smoother and shorter-lived responses as rigidity increases. Labor (L) initially increases with productivity gain, then exhibits smaller and faster-fading oscillations as wage stickiness intensifies. Capital (K) adjusts slowly everywhere, but its deviations from the trend become negligible under high rigidity. The output (Y) mirrors these patterns: the initial positive impact remains, but subsequent overshooting and cyclical fluctuations diminish markedly.

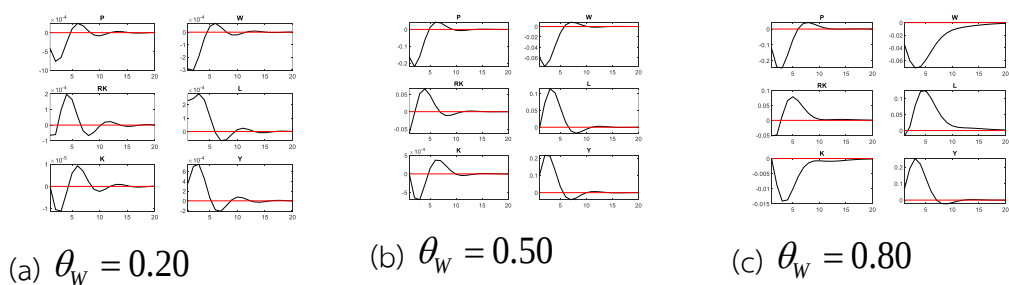


Figure 3: Fiscal policy shock

Figure 3 reports the responses to a fiscal policy shock under different degrees of nominal wage rigidity. For prices (P), $\theta_w = 0.20$ generates only a shallow dip and a quick return to equilibrium. Raising $\theta_w = 0.50$ deepens the initial fall and produces a modest overshooting rebound that fades before period 15. At $\theta_w = 0.80$, the initial drop is largest, but the recovery is smooth and monotonic, with no re-crossing of the equilibrium and the shortest-lived deviation. Nominal wages (W) move with prices but are less strong. With $\theta_w = 0.20$, wages oscillate around the equilibrium and settle by about period 15. At $\theta_w = 0.50$, the swings are roughly halved. Under high rigidity, wages fall sharply and then crawl back without overshooting, turning a two-sided cycle into a one-sided adjustment. The rental rate of capital (RK) shows a small hump and a clear undershoot at $\theta_w = 0.20$. As rigidity rises, the peak becomes larger, but the negative phase is milder and shorter as firms rely more on capital when labor costs are slow to adjust. Employment (L) and capital stock (K) both exhibit larger initial responses and wider swings as rigidity increases; however, their subsequent cycles are smoother and less oscillatory. Output (Y) reflects these patterns: wage stickiness magnifies the impact response but dampens later oscillations, making fiscal shocks more front-loaded and less volatile as the rigidity rises.

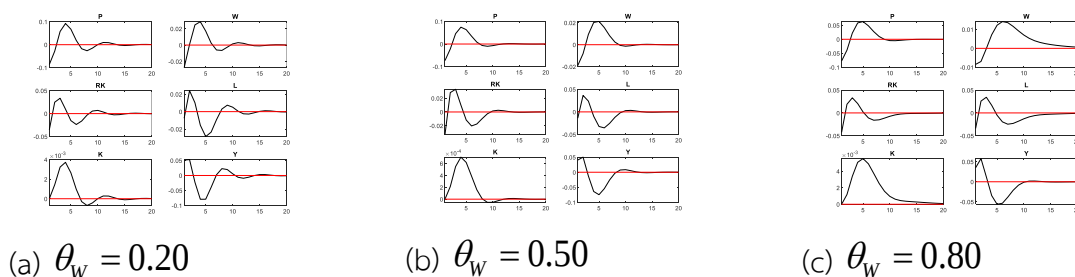


Figure 4: Monetary Policy Shock

Figure 4 shows how wage rigidity cushions the economy from monetary policy shocks. Greater wage rigidity effectively mutes high-frequency swings. This is observed in the price level (P), which has a lower peak impact and a smoother path. The rental rate of capital (RK) and overall output (Y) also stabilize more rapidly, showing less oscillation and reaching equilibrium sooner. However, this stability comes at the cost of a longer adjustment period for the labor market and capital stock. Nominal wages (W), labor (L), and capital (K) all follow a less volatile path, but their return to equilibrium is significantly delayed. In essence, wage stickiness prevents sharp and immediate disruptions but extends the time required to reach equilibrium.

Discussion

The simulation results demonstrate that a higher degree of nominal wage rigidity systematically alters the macroeconomic response to various economic shocks, a finding that is consistent with and reinforces several established theories in the literature. Specifically, increased wage stickiness generally leads to impulse responses that are smaller in amplitude, less oscillatory, and more front-loaded, which means that the economy's adjustment path becomes smoother and returns to equilibrium more directly.

Following a consumption preference shock, the model shows that greater wage rigidity dampens the responses of prices, wages, capital returns, employment, and output. However, the model also shows that this rigidity acts as a stabilizer by preventing large and volatile swings in the immediate aftermath of a shock. In the case of a positive technology shock, increased wage stickiness mutes the employment effect and smooths the adjustment paths for prices, wages, and output, converting multiphase cycles into single-phase adjustments.

These findings indirectly support the description that stickier wages lead to smoother price paths, as shown by Card and Hyslop (1996), who showed that

low inflation exacerbates nominal rigidity, implying that the degree of stickiness has direct consequences for the price dynamics. In addition, the findings provide a dynamic illustration of the mechanism identified by Smets and Wouters (2003), where nominal rigidity constrains real wage movements when the economy encounters aggregate shocks and constrains the movements in output, employment, and inflation. Furthermore, the findings support the theoretical channel described by Den Haan et al. (2018), who argue that sticky wages can amplify downturns via a deflationary spiral. The muted and more transitory response of employment under high rigidity aligns with the general principle of the Keynesian Sticky-Wage Hypothesis, which connects wage inflexibility to fluctuations in the labor market.

When analyzing a fiscal policy shock, the model indicates that greater wage rigidity acts as both a magnifier of the initial impact and a dampener of subsequent oscillations. It front-loads employment gains while making the price and wage responses larger in impact but less so in cyclical responses. This outcome illustrates the transmission channels identified by Sun and Tsang (2017), through which sticky wages alter both the speed and magnitude of fiscal interventions' influence on real activity. Finally, the response to a monetary policy shock reveals that higher wage rigidity causes immediate effects on variables to be more front-loaded while suppressing multi-cycle oscillations. For instance, the rental rate of capital adjusts more quickly, and the dynamics of employment and output shift from multiple humps to a single and smoother adjustment path. This finding is consistent with Bilbiie and Trabandt (2024), who suggest that the sticky wage scenario is a plausible monetary transmission mechanism. Collectively, the finding that wage stickiness can amplify the peak impact on capital returns while shortening the adjustment period offers a granular view that complements the findings of Keen and Pakko (2011), who showed that policy outcomes in rigid wage environments differ from those in flexible wage frameworks.

Recommendation

Conclusions

This study investigates the macroeconomic consequences of nominal wage rigidity within the Thai economy by developing and estimating a Dynamic Stochastic General Equilibrium (DSGE) model. Motivated by the established importance of wage stickiness as a critical friction that shapes the business cycle and policy effectiveness, this study addresses the need for a quantitative, country-specific analysis of Thailand. The DSGE framework was estimated using quarterly Thai data from 2002 to 2021, which allowed for an examination of how varying degrees of wage rigidity alter the economy's response to consumption, technology, fiscal, and monetary policy shocks. The central finding of this study is that a higher degree of nominal wage rigidity systematically smooths the macroeconomic adjustment process. Across all simulated shocks, increased wage stickiness consistently dampened the amplitude of fluctuations and reduced cyclical oscillations in key variables, including price, wage, capital return, employment, and output. The impulse responses became smaller, less volatile, and more front-loaded, indicating that while rigidity prevents sharp and disruptive swings, it also prolongs the economy's return to equilibrium. This dual role of wage rigidity, that is, acting as both a short-term stabilizer and a long-term impediment to adjustment, presents a significant trade-off in economic management. For instance, the impact of fiscal policy was found to be more concentrated in the short term under higher rigidity, while the cumulative effects of both fiscal and monetary interventions were diminished. From a policy perspective, these results have important implications for the Thai authorities. The findings suggest that policymakers must recognize that the structural feature of wage rigidity directly influences the transmission and efficacy of their policies. The stabilizing properties of rigid wages can be leveraged to maintain economic calm during periods of turbulence, but this comes at the cost of reduced labor

market flexibility. Therefore, an optimal policy approach would involve designing labor market and social safety net programs that provide targeted support and enhance flexibility without sacrificing the inherent stability that some degree of wage continuity provides.

The analysis demonstrates that greater nominal wage rigidity in the hypothetical model for Thailand produces smoother or less volatile responses to various macroeconomic shocks. Therefore, policymakers should recognize that rigid wages can effectively reduce cyclical volatility in prices, wages, and employment during shocks, thereby promoting economic stability. However, this same rigidity limits the labor market's ability to quickly reallocate resources, which can slow recovery and prolong episodes of reduced output and employment. The findings on fiscal policy, which becomes more front-loaded and concentrated in its immediate impact, suggest that carefully planned government spending can capitalize on this rigidity to stabilize demand without generating excessive oscillations and economic instability. Although wage rigidity diminishes the longer-term effectiveness of both monetary and fiscal tools by muting their effects, reflecting the smoothing path that implies stability, Thai authorities can use labor and social protection policies to balance stability with flexibility, allowing for targeted wage adjustments and temporary support programs to resolve economic problems, especially in times of economic distress.

Future Research

Future research should extend the quantitative analysis of wage rigidity in Thailand by including interesting features into the formulated model, such as differences between skilled and unskilled workers, public and private sectors, or permanent and temporary employment. Researchers should also consider incorporating the interaction between wage and price rigidities to better capture the joint dynamics that shape macroeconomic adjustments during such shocks.

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