Housing and Fiscal Policies in The Bahamas: The Importance of Foreign Ownership

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Abstract

The study examined the importance of fiscal policies to address sustainability issues in economies with a realistic housing sector. Using The Bahamas as our primary example, evidence was provided of the significant price discrepancy between foreign-owned and domestic-owned housing. Even though the percentage of foreign-owned housing is relatively small (≈ 10 percent), foreign-owned housing represents (roughly 40 percent) of total housing revenue (price × quantity) and is therefore of critical importance to regulators. Using the model of Rabanal (2018), it was revealed that policy restricting domestic credit ignores foreign demand and leads to substantial changes in output and investment. Output falls in the medium to long-run due to crowding out, as wasteful Government spending has deleterious effects on all aspects of the economy, including the housing sector. The study also found that the main result of Rabanal (2018) holds, which is that macroprudential policies are not able to curtail housing demand.

JEL Classification: E30, E62

Keywords: Housing, Fiscal Policy, The Bahamas

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1. Introduction

A house price index (HPI) is a useful tool for tracking house market dynamics. The fluctuation in house prices, whether an increase or decrease, sends a signal about the economy. According to theory, higher house prices result in the creation of more jobs, stimulate the confidence in the economy and lead to a rise in consumer spending. Conversely, lower house prices translate into reduced jobs, weakened confidence in the economy and lower consumer spending. Given the importance of housing in any economy, monitoring this crucial sector is of utmost importance to monetary policy makers.

The Bahamas is a small economy made up of limestone and of an archipelagic nature. With over 700 islands and cays, there are many foreign direct investment opportunities. Over the last decade and based on quarterly data collected from the domestic banking sector, the total value of outstanding mortgages has witnessed a downward trend. In real terms, from 2011 to 2020, total domestic credit has remained within the $8.5 billion to $9.1 billion range with an average credit-to-GDP ratio of 83.1 percent. The average is just 6.1 percentage points below the 2020 ratio. Furthermore, the loan-to-value ratios range from 43.1 percent to 73.0 percent over the period for commercial mortgages and from 79.0 percent to 82.1 percent for residential mortgages. Further, the maximum debt service currently stands at 45.9% for The Bahamas. Importantly, foreign investors can purchase from the domestic housing stock. However, all real estate purchased in The Bahamas by residents and foreigners are subject to a real property tax and or stamp tax. The taxes vary from 0.25 percent to 2.00 percent.

The model being used to develop the real estate model for The Bahamas is similar to Rabanal (2018, IMF), but with a realistic fiscal policy shock applied. Rabanal examined the foreign-demand aspect of the housing market and policies in Hong Kong SAR. However, for The Bahamas, the model is built by adding government debt and focusing on the ability to raise revenue through various tax channels. According to the model of Rabanal (2018) the Government budget is balanced each period, whereas the model for The Bahamas allow for debt issuance. In The Bahamas, taxes on capital and labour were introduced, and focus was on raising fiscal revenue through various sources. However, Rabanal (2018) was focused on macroprudential policies to curtail housing demand, whereas this study focused on fiscal policies to address sustainability issues in economies with a realistic housing sector.

The study specific to The Bahamas found that following a Government spending shock, output falls in the medium to long-run, due to crowding out. Based on the results, Government spending crowds out real estate investment over at least a four-year time horizon. In addition, the price of housing falls, as taxes on housing must increase to offset the Government spending shock. As such, fiscal adjustments have an important role to play in the housing market when taxes are

levied on both housing supply and demand. Plotting other endogenous variables also lead to the conclusion that wasteful Government spending has deleterious effects on all aspects of the economy. The impulse response functions suggest a very slow adjustment to all endogenous variables with respect to a fiscal shock. This indicates that the addition of a housing sector leads to very sluggish adjustments to fiscal shocks.

The aim of this paper is to assess the housing market in The Bahamas. The model also allows for housing market policies in the form of limits to the debt service ratios for relevant borrowers, with a threshold range of 40%-45%, as well as stamp duty taxes that affect both domestic and foreign purchases. The paper is organized in five sections. Following the introduction, Section 2 presents the model, while Section 3 provides an analysis of the estimation procedure. Section 4 discusses the results (see appendix for impulse response functions) and Section 5 provides concluding remarks.

2. The Model

The Rabanal (2018) model examined the foreign-demand aspect of the housing market and policies in Hong Kong SAR. The model used is for a small open economy real business cycle, extended to the housing sector, financial frictions, and foreign investors that can purchase the domestic housing stock. Further, the model is calibrated to Bahamian data and allows for housing market policies in the form of limits to the loan-to-value (LTV) ratios, as well as stamp duty taxes that affect domestic and foreign purchases. The model also introduces government spending shocks, capital and labour taxes and government debt.

2.1 Savers

Savers solve the following problem:

$$E_0 \sum_{t=0}^{\infty} \beta^t \left\{ \gamma \log\left(C_t^j - hC_{t-1}\right) + (1-\gamma)\xi_t^D \log\left(D_t^j\right) - \frac{\left(N_t^j\right)^{1+\varphi}}{1+\varphi} \right\}$$

$$\text{s. to } C_t^j + I_t^j + (1+\tau_t^{ADV})Q_t^D\left(D_t^j - D_{t-1}^j\right) + B_t^j + Bg_t^j + L_t^j$$

$$= W_t N_t^j (1-\tau_t^N) + R_t^k K_{t-1}^j (1-\tau_t^K) + R_{t-1}\left(B_{t-1}^j + L_{t-1}^j\right) + R_{t-1}^g Bg_{t-1}^j$$

According to the model savers choose consumption (C), housing (D) and labor (N). Further, savers invest in capital (I, K), housing D, external bonds B, internal bonds issued by the government (B_g) and they give loans to borrowers (L_t). They earn a wage (taxed at τ_t^N), return on capital R_t^K , return on external bonds and loans is assumed to be the same R, and a return on government issued debt R_g. Housing prices are given by Q_t^D and there is a shock to housing demand ξ_t^D.

2.2 Borrowers

Borrowers solve the following problem:

$$E_0 \sum_{t=0}^{\infty} (\beta^B)^t \left\{ \gamma \log\left(C_t^{B,j} - hC_{t-1}^{B,j}\right) + (1-\gamma)\xi_t^D \log\left(D_t^{B,j}\right) - \frac{\left(N_t^{B,j}\right)^{1+\varphi}}{1+\varphi} \right\}$$

$$\text{s. to } C_t^{B,j} + (1+\tau_t^{ADV})Q_t^D\left(D_t^{B,j} - D_{t-1}^{B,j}\right) + R_{t-1}L_t^j = W_t N_t^{B,j}(1-\tau_t^N) + L_{t-1}^{B,j}$$

Generally, non-durable goods, housing, and supply labour are consumed by borrowers, who as opposed to savers, do not accumulate capital and hence have available to them international capital markets. Owing to the fact that borrowers are more impatient than savers, they have a lower discount factor. The assumption infers that borrowers aim is to borrow as much as possible for future consumption, therefore, creating a borrowing constraint based on the value of the house that they own. Hence, assuming that loans extended by savers to borrowers are long-term and only a fraction of capital is refinanced every period, only the flow of new credit, as opposed to the entire stock of credit, will be subject to the current LTV capital[1].

Moreover, borrowers need to maximize their long-term utility:

$$E \sum_{t=0}^{\infty} (\beta^B)^t \left\{ \gamma \log(C_t^{B,j} - hC_{t-1}^{B} + (1-\gamma)\xi_t^D \log\left(D_t^{B,j}\right) - \frac{\left(N_t^{B,j}\right)^{1+\varphi}}{1+\varphi} \right\}$$

2.3 Foreign Buyers and Housing Market Equilibrium

According to the International Monetary Fund (2018), in Hong Kong, an estimated 5 percent of housing market purchases are undertaken, on average, by foreign buyers. However, for The Bahamas, this estimate currently stands at around 10 percent, with a substantial monetary value of almost 40 percent of the total market (Central Bank of The Bahamas 2021 staff housing price index estimates). Further, for Hong Kong, since 2012, these foreign buyers are subject to a buyer's stamp duty tax of 15 percent. Meanwhile, for The Bahamas, stamp duty on houses prices is 2.5 percent, while real property tax of 10% is charged on the appraised value of property.

Specific to Hong Kong SAR, foreign investors react to house prices, the buyer's stamp duty and the world interest rate when choosing the desired level of investment:

$$(1+\tau_t^{BSD})Q_t^D = f(\xi_t^D, D_1^*, C_1^*) + E_t[(1+\tau_{t+1}^{BSD})Q_{t+1}^D]/R_t^*$$

[1] In Iacoviello (2005), the entire stock of outstanding loans is subject to the LTV cap in each period.

where τ_t^{BSD} is the Buyer's Stamp Duty, $f(\xi_t^D, D_1^*, C_1^*)$ denotes the ratio of marginal utilities of housing and consumption (i.e. rents) for foreign investors. This ratio includes a foreign housing preference shock that follows an $AR(1)$ process in logs.

Assuming that housing is in fixed supply to a level $\bar{D}$, as in the case of Hong Kong SAR, housing supply failed to react to changes in demand at business cycles frequencies, due to the difficulty to find land available for construction (International Monetary Fund (2018)). Therefore, the housing market equilibrium can be written as follows:

$$D_t + D_t^B + D_t^* = \bar{D}$$

2.4 Consumption Goods Producers

Using a standard Cobb-Douglas technology that utilize capital, and hours from both patient and impatient households[2], the production of consumption goods is performed using the equation below:

$$Y_t = A_t(K_{t-1})^{\alpha}[(N_t)^{\varepsilon}(N_t^B)^{1-\varepsilon}]^{1-\alpha}$$

where A_t is total factor productivity, which follows an $AR(1)$ process in logs. Standard profit maximization conditions equate real wages for each household, and the rental rate of capital, to their marginal product:

$$R_t^k = (1-\alpha)\frac{Y_t}{K_{t-1}}$$

$$W_t = \alpha\varepsilon\frac{Y_t}{N_t}$$

$$W_t^B = \alpha(1-\varepsilon)\frac{Y_t}{N_t^B}$$

2.5 Fiscal Policy

Although Rabanal's model has a very simplistic fiscal policy, whereby the government does not accumulate debt, and rebates the revenues generated by the stamp duties to households in a lump-sum fashion, this is not the case for The Bahamas. While all other aspects of the model for The Bahamas follow Rabanal closely, this is where the model differs substantially. The domestic government issues debt $B_{g,t}$ at time t. Debt is held by savers in the model. Debt pays return R_t^g which is endogenous to the model. A Government spending shock (unproductive) $g_t = \rho g_{t-1} + \varepsilon_{g,t}$ leads to debt issuance. Taxes to housing, capital and labor are used to pay interest and to return debt to steady state levels. Unlike the Hong Kong study, where a balanced budget was assumed, this was not the case for The Bahamas.

[2] The assumption that labor between patient and impatient households is not fully substitutable might not necessarily be realistic, but it is a convenient assumption to solve for the steady-state of the model.

$$\tau_t^{ADV} Q_t^D (D_t - D_{t-1} + D_t^B - D_{t-1}^B) + \tau_t^{BSD} Q_t^D (D_t^* - D_{t-1}^*) = T_t + T_t^B$$

2.6 Shocks

In addition to fiscal shocks, the model includes shocks to TFP, world interest rate, domestic and foreign demand and credit shock as well as three policy shocks (LTV ratio, Ad-Valorem Stamp Duty and Buyer's Stamp Duty). All follow the $AR(1)$ process in logs:

$$\log(A_t) = (1 - \rho_A)\log(\bar{A}) + \rho_A \log(A_{t-1} + \varepsilon_{A,j}$$

$$\log(R_t^*) = (1 - \rho_{R^*})\log(\bar{R}^*) + \rho_{R^*} \log(R_{t-1}^*) + \varepsilon_{R^*,t}$$

$$\log\left(\xi_t^D\right) = \rho_D \log\left(\xi_{t-1}^D\right) + \varepsilon_{D,t}$$

$$\log\left(\xi_t^{D^*}\right) = \rho_{D^*} \log\left(\xi_{t-1}^{D^*}\right) + \varepsilon_{D^*,t}$$

Where the innovations to these shocks, and the credit shock $\varepsilon_{L,t}$, are iid normally distributed zero-mean innovations.

The model also includes three policy shocks, with the following processes:

$$LTV_t = (1 - \rho_{LTV})\overline{\overline{LTV}} + \rho_{LTV} LTV_{t-1} + \varepsilon_{LTV,t}$$

$$\tau_t^{ADV} = (1 - \rho_{ADV})\bar{\bar{\tau}}^{ADV} + \rho_{ADV}\tau_{t-1}^{ADV} + \varepsilon_{ADV,t}$$

$$\tau_t^{BSD} = (1 - \rho_{BSD})\bar{\bar{\tau}}^{BSD} + \rho_{BSD}\tau_{t-1}^{BSD} + \varepsilon_{BSD,t}$$

3. Parameters

3.1 Calibrated Parameters

The calibrated parameters used in the model for The Bahamas were similar to that of Hong Kong, with a few exceptions. Specifically, for The Bahamas, the discount factor for savers was pegged at 0.987, while for borrowers was earmarked at 0.98. Further, the capital share of output and the depreciation rate are set at values 0.3 and 0.025, respectively. The fraction of savers in the economy is benchmarked at 0.55 and for consumption in utility at 0.8 and foreign ownership housing stock is 0.1. The steady-state LTV ratio is set at 70 percent, the steady-state Ad-Valorem Stamp Duty tax, 3 percent, and the steady state Buyer's Stamp Duty tax is zero (see Table 1).

Table 1: Parameters

Calibrated Parameters			Parameters		
B	Discount factor	0.987	κ	Amortization	0.02
β^B	Discount factor borrowers	0.98	h	Habits	0.981
A	Capital share of output	0.30	φ	Labor disutility	22.15
Δ	Depreciation rate	0.025	φ_i	Investment adj. cost	5.46
E	Fraction of savers	0.55	ψ	Interest rate elasticity	0.012
Γ	Fraction of consumption in utility	0.8	ρ_{R^*}	AR(1) World Int. Rate	0.92
$D^*/\bar{D}$	Foreign ownership housing stock	0.10	ρ_D	AR(1) Housing Preference Domestic	0.96
LTV	Steady-state LTV	0.7	ρ_{D^*}	AR(1) Housing Preference Foreign	0.98
$\bar{\tau}^{ADV}$	Steady-state Ad Valorem Stamp Duty	0.03	ρ_A	AR(1) TFP Shock	0.97
$\bar{\tau}^{BSD}$	Steady-state Buyer's Stamp Duty Tax	0	σ_{R^*}	Std. Dev. World Int. Rate	0.003
ρ_{LTV}	AR(1) coefficient for LTV shock	0.9999	σ_D	Std. Dev. Housing Preference Domestic	1.07
$\rho_{\tau^{ADV}}$	AR(1) coefficient for ADV shock	0.9999	σ_{D^*}	Std. Dev. Housing Preference Foreign	0.8
$\rho_{\tau^{BSD}}$	AR(1) coefficient for BSD shock	0.9999	σ_A	Std. Dev. TFP Shock	0.015
			σ_L	Std. Dev. Credit Shock	0.0016
			σ_{LTV}	Std. Dev. LTV Shock	0.012
			σ_τ^{ADV}	Std. Dev. ADV Tax Shock	0.004
			σ_τ^{BSD}	Std. Dev. BSD Tax Shock	0.016

4. Model Results

In terms of the study, the main difference with the Rabanal (2108) and the model for The Bahamas is the inclusion of the fiscal variable. With regard to the fiscal consequences of a government spending shock, the results revealed that output falls in the medium to long-run due to crowding out. Based on the results (see Appendix), the crowding out is substantial over a four-year time horizon. Moreover, the price of housing falls, as taxes on housing increase to offset the government spending shock. Further, the results showed that labour increases because the tax rate on labor is substantially less than the tax rate on housing. In addition, plotting other endogenous variables leads to the conclusion that wasteful government spending has deleterious effects on all aspects of the economy, including the housing sector.

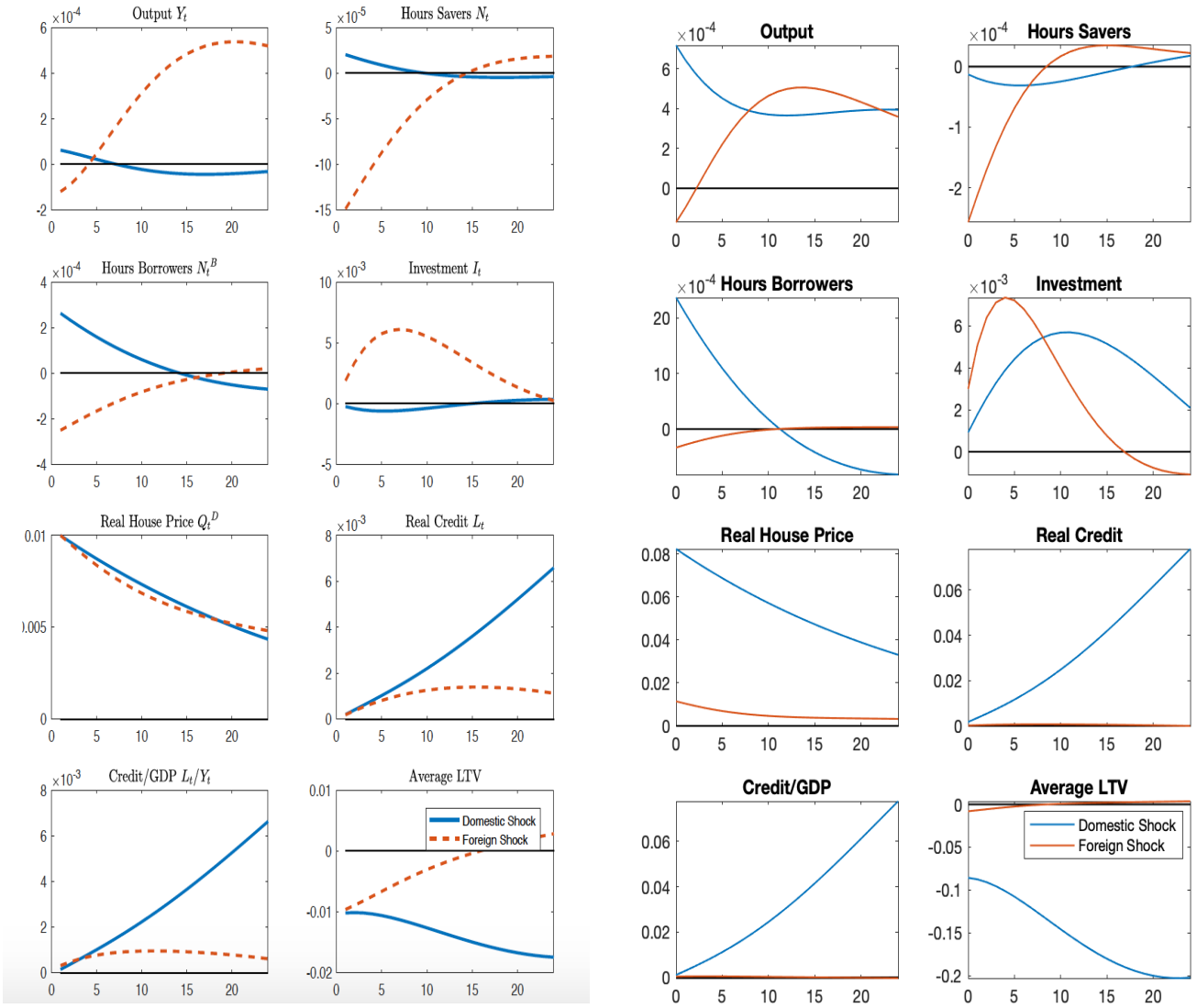
The results also revealed that real credit only increases under the domestic shock scenario. Therefore credit-to-GDP and macroprudential policies can be divorced from the housing market, especially if foreign buyers are substantial. Nevertheless, foreign demand has a substantial impact on macro aggregates like output, investment and employment.

The first impulse response functions (see Figures 1 & 2) offer direct comparisons with Rabanal (2018), which was done to show the importance of adding fiscal policy and the slight change in calibration to this model. The figures shown plots an impulse response to a foreign demand shock and reveals very little difference across the two models. The impulse response figures related to a fiscal variable (ad-valorem tax) showed that output becomes positive as investment and hours worked of borrowers both increase. The increase is in response to the rise in price due to the tax.

Therefore, the main result of Rabanal (2018) holds, which is that macroprudential policies are not able to curtail housing demand.

Figure 1: Impulse Response Functions (Left: Rabanal (2018)):

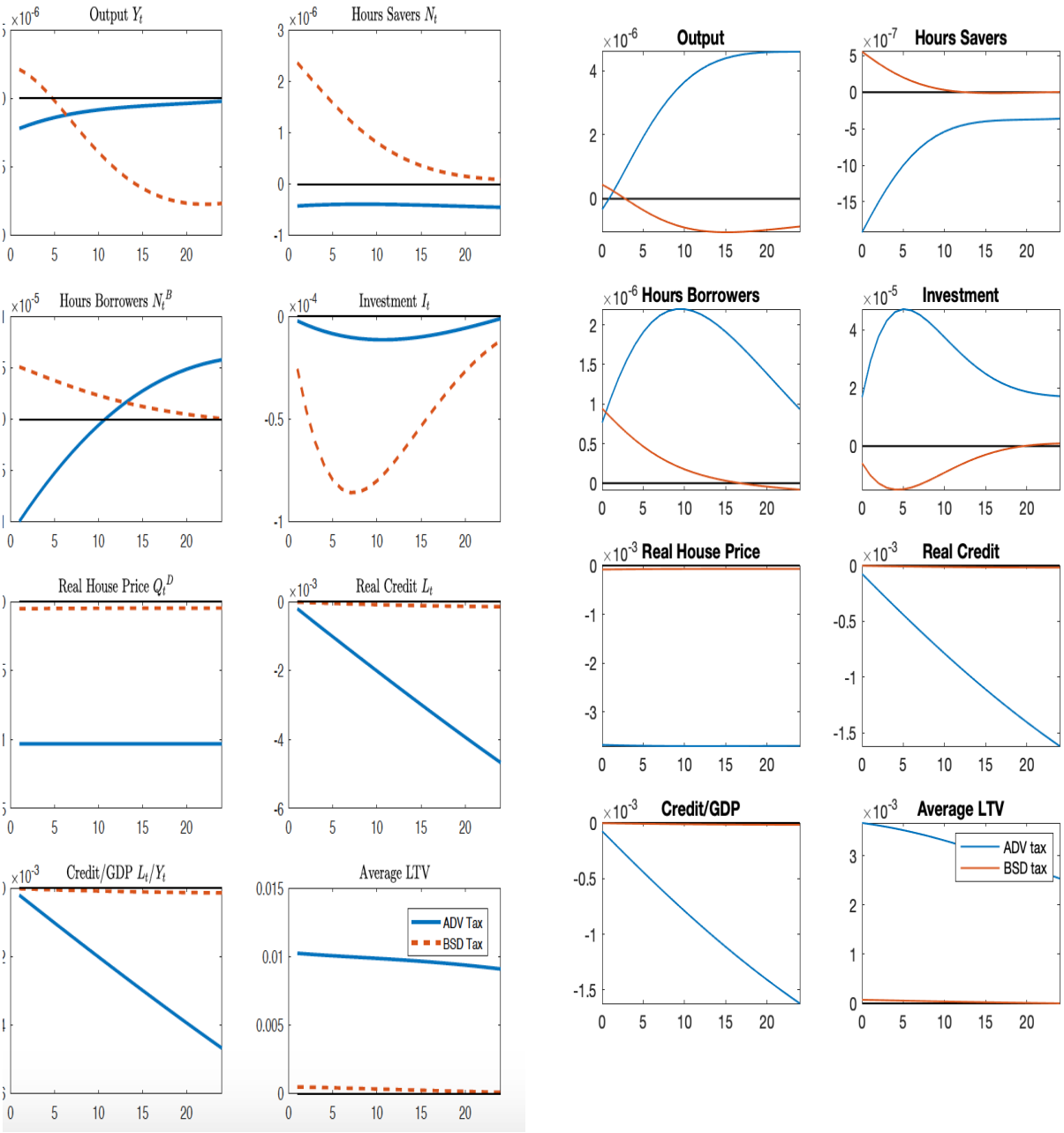
Effects of Housing Demand Shocks



Source: Authors' Estimates

Figure 2: Impluse Response Functions (Left: Rabanal (2018))

Effects of Ad-Valorem Taxes



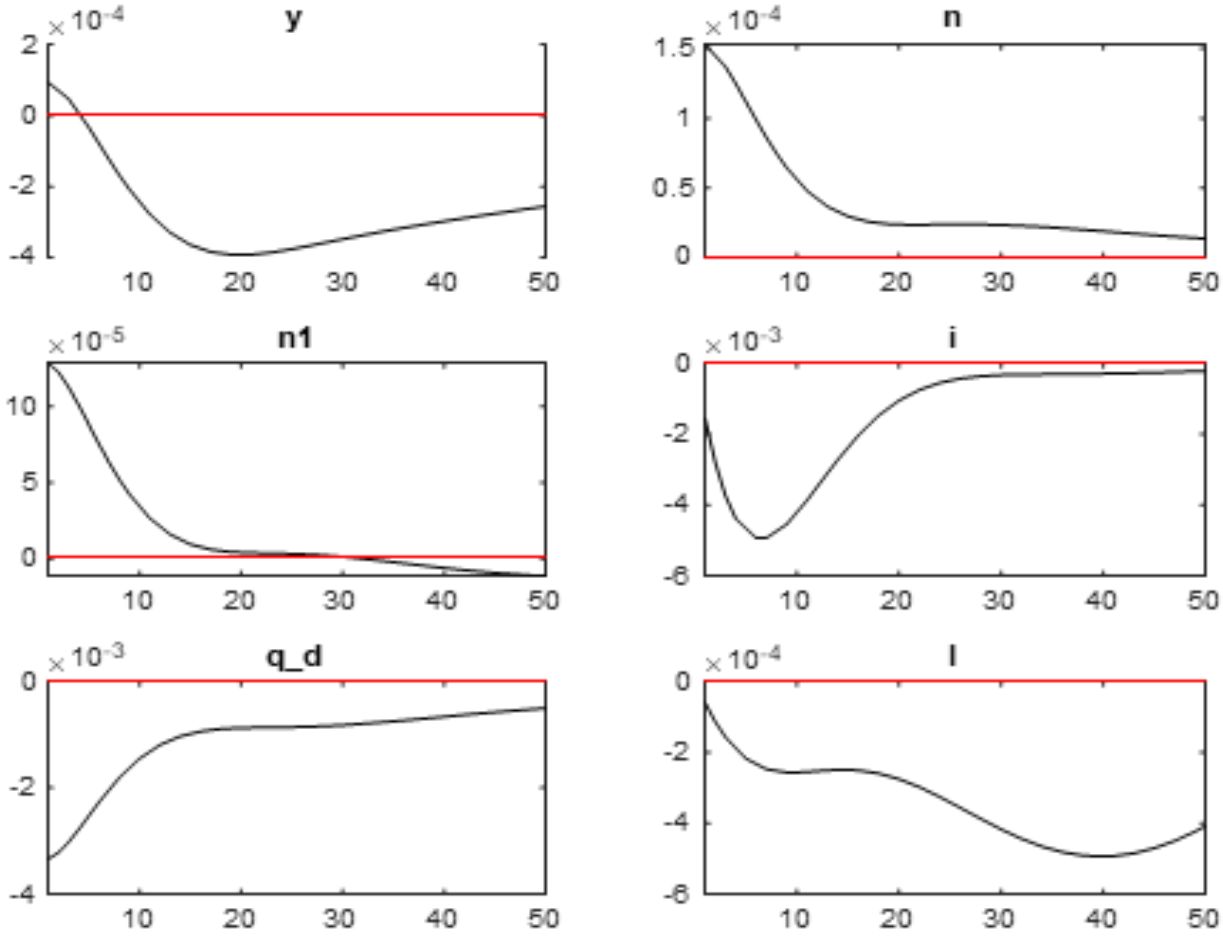
Source: Authors' Estimates

Examination of the impulse response function shocks to government spending figure, showed that the shock is extremely persistent relative to the standard New Keynesian model. The impulse response only approaches steady state after 50 quarters, suggesting that adding housing is a

crucial feature of medium-run cycles, not necessarily business cycles. This is really important for fiscal considerations because nearly all fiscal variables—even in The Bahamas—have duration that is longer than business cycle frequency. Focusing mainly on output, a one-standard deviation increase in Government spending leads to a trough of 0.4% after four years and output does not fully recover for over 12 years. Hours worked increases and investment falls due to crowding out of private investment and the housing price decline. The outcome is due to the increase in taxes that is necessary following a Government spending shock (see Figure 3).

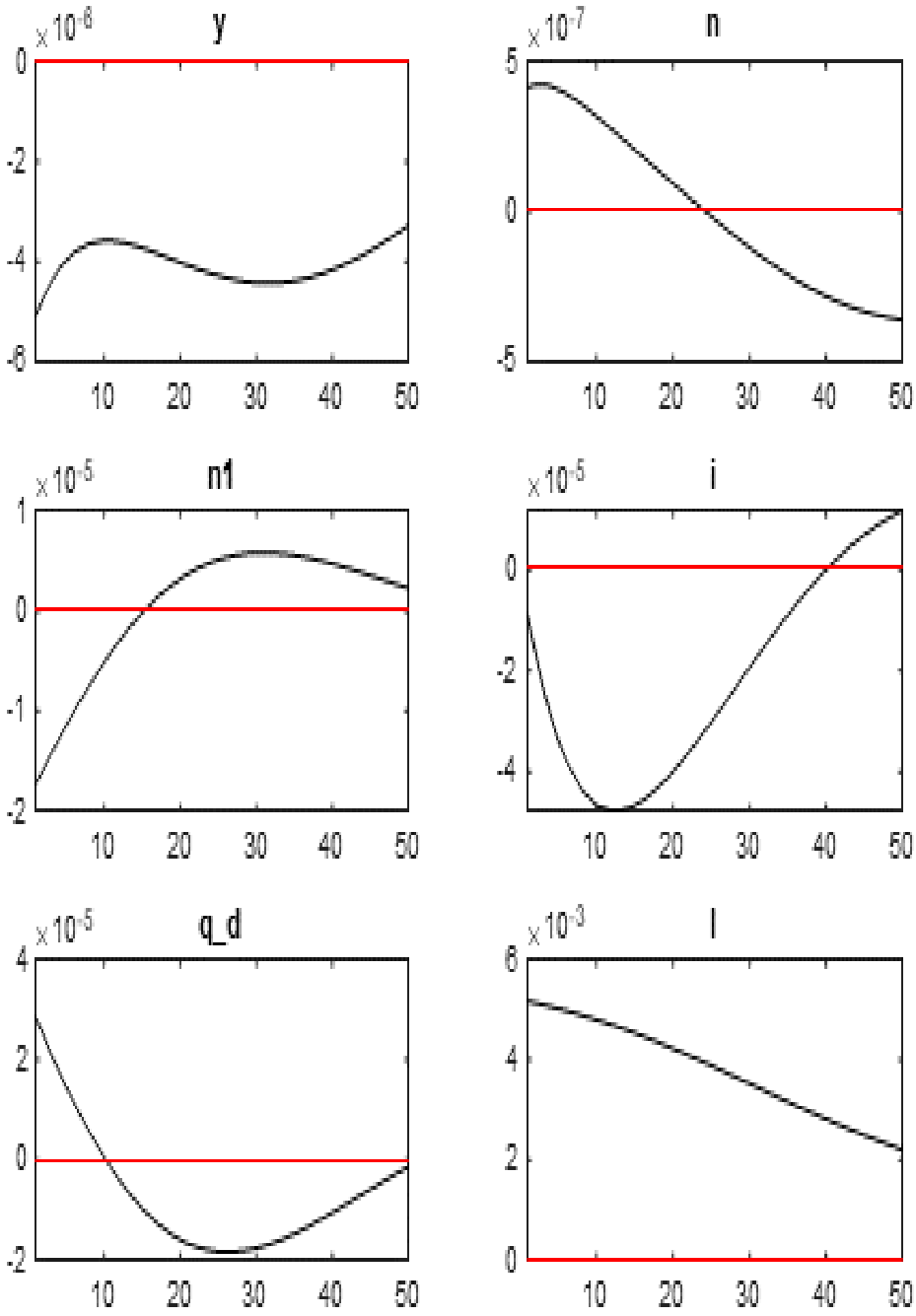
In terms of shocks to labour, given the high value on the disutility of labour and the fact that both borrowers and savers earn a wage, labour taxes have a large and significant effect, more than other taxes, such as capital, which is a unique feature of this model. Output and investment both fall initially due to the decline in labour from borrowers (n1). After an initial spike, housing prices fall dramatically. The housing price response must come from housing demand due to supply being relatively fixed. Demand falls as labour taxes are increased, as households have few dollars to allocate to housing (see Figure 4).

Figure 3: Impulse Response Functions: Shock to Government Spending



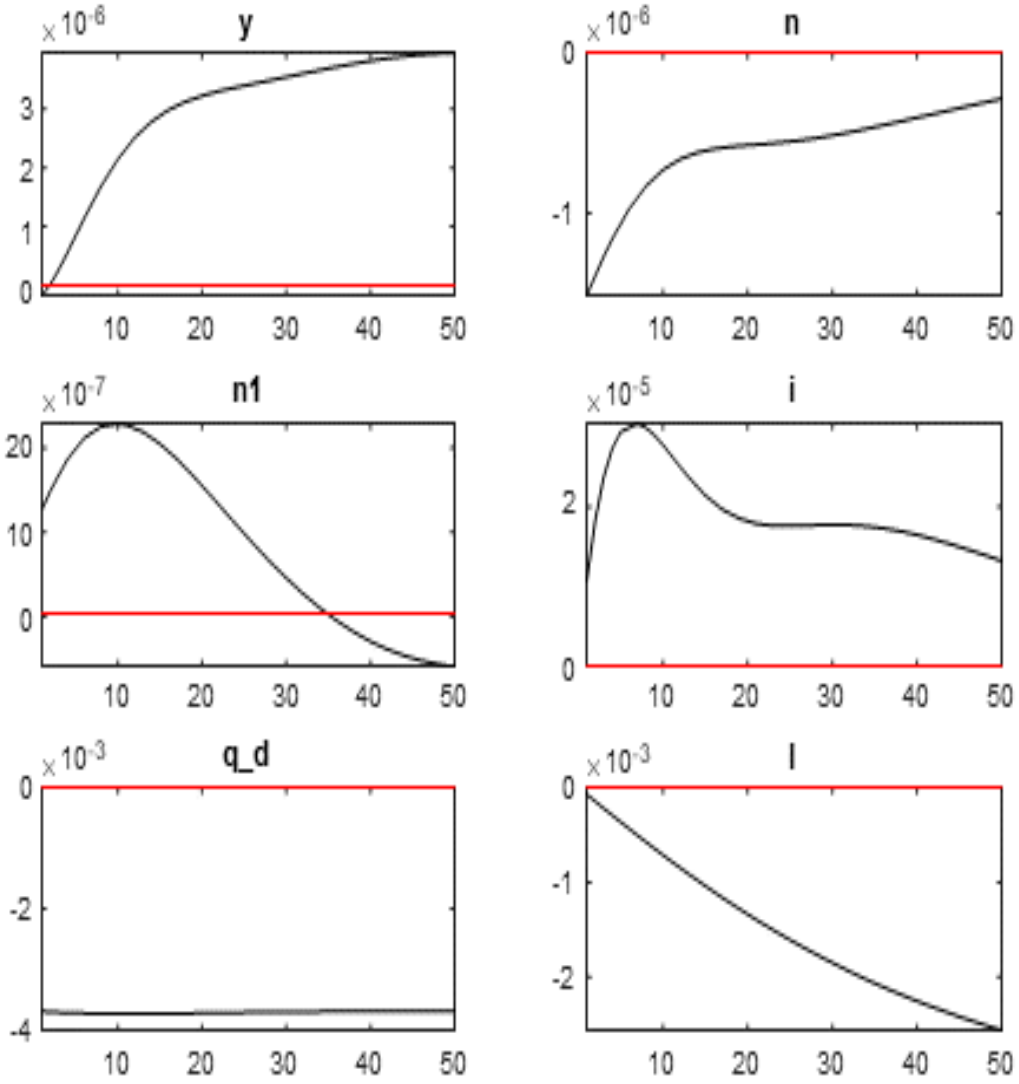
Source: Authors' Estimates

Figure 4: Impulse Response Functions: Shock to Labor Taxes



Source: Authors' Estimates

Figure 5: Impulse Response Functions: Shock to Ad Valorem



Source: Authors' Estimates

The impulse responses for the ad valorem tax is quite different from the labour tax (see Figure 5). Given that housing enters the utility function, the ad-valorem tax is similar to a consumption tax, and likewise, less distortionary. Given that utility would go to zero if no housing were consumed, the corresponding Laffer curve of the ad-valorem tax is not concave, thus, explaining the positive response of output and the positive output multiplier. There fore, if the Government needs to raise revenue, then ad-valorem taxes on housing are strictly preferred to other forms of taxes, (e.g., labour, capital).

5. Conclusion

In concluding, it is important to note that, macroprudential policy that focuses only on domestic credit will neglect the impact of the foreign investors. Further, direct tax on housing is far superior to taxing foreign demand, assuming foreign demand is not a substantial part of housing demand. Reason being, foreign demand is much more inelastic, as increasing taxes does little to change real house prices. Meanwhile, the tax directly on domestic borrowers or lenders impact the supply side and reduces real house prices, but increases alternative investment and hence GDP.

Importantly, the study found that following a Government spending shock, output falls in the medium to long-run, due to crowding out. Further, the price of housing falls, as taxes on housing will have to increase to offset the Government spending shock. As such, fiscal adjustments have an important role to play in the housing market when taxes are levied on both housing supply and demand. In addition, it was concluded that wasteful Government spending has deleterious effects on all aspects of the economy.

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