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Abstract

We assess the role played by fiscal policy in explaining the dynamics of asset markets. Using a panel of ten industrialized countries, we show that a positive fiscal shock has a negative impact in both stock and housing prices. However, while stock prices immediately adjust to the shock and the effect of fiscal policy is temporary, housing prices gradually and persistently fall. Consequently, the attempts of fiscal policy to mitigate stock price developments (e.g. via taxes on capital gains) may severely de-stabilize housing markets. The empirical findings also point to significant fiscal multiplier effects in the context of severe housing busts, which gives rise to the importance of the implementation of fiscal stimulus packages. In addition, our results suggest that when governments run a budget deficit, they place an upward pressure on real interest rates, which "crowds-out" private consumption and investment. In contrast, during bust periods, unexpected variation in the fiscal stance crowds-in private spending, which reflects the "direct" and "indirect" effects of policy actions impact arising from a downward movement in real interest rates and an upward revision in price level expectations.

Keywords: Fiscal policy, asset prices, panel VAR
JEL Classification: E62, H30

Résumé

Nous évaluons l'influence de la politique budgétaire dans la dynamique des marchés d'actifs. Nous montrons qu'un choc budgétaire positif a un impact négatif aussi bien sur le prix des actifs que sur celui de l'immobilier, en étudiant un panel de 10 pays industrialisés. Cependant, si les prix des actifs s'ajustent immédiatement au choc et de façon temporaire, les prix de l'immobilier quant à eux baissent progressivement et continuellement. En conséquence, les tentatives visant à freiner la croissance du prix des actifs grâce à la politique budgétaire (par la taxation des revenus du capital par exemple) pourraient dans le même temps déstabiliser gravement le marché de l'immobilier. Les résultats empiriques indiquent également un rôle significatif joué par les multiplicateurs budgétaires dans un contexte de crise immobilière marquée, renforçant l'importance de la mise en oeuvre des plans de relance. En outre, nos résultats laissent penser que lorsque les États sont en situation de déficit budgétaire, ils exercent une pression à la hausse sur les taux d'intérêts réels qui peut évincer la consommation privée et l'investissement. En revanche, durant les périodes de récession, des variations inattendues des orientations de la politique budgétaire peuvent permettre de renforcer la dépense privée, reflètant les effets « directs » et « indirects » des politiques menées à l'origine d'un mouvement baissier sur les taux d'intérêts réels et d'une révision à la hausse des anticipations sur les prix.

Mots clés: relance budgétaire, marchés d'actifs, panel VAR
JEL Classification: E62, H30

1 Introduction

Over the last decades, important historical events have captured the attention of academics, governments and policy makers towards fiscal policy. The tax cuts during Reagan's presidency in the U.S. and the fiscal consolidations in Europe linked to the Maastricht convergence criteria, the Economic Growth and Stability Pact are just a few examples of the renewed interest on the role of fiscal policy as a tool for stabilizing the economy and its potential effects on asset markets.

More recently, the sudden occurrence of the global financial turmoil, its severity and potentially long-lasting impact, became key elements for assessing the role that external influences, oil prices, private investment, stock and credit markets play on the likelihood of an expansion and contraction ending (Agnello and Nerlich, 2010). As a result, a prompt answer from monetary policy and large fiscal stimulus have become important ingredients of the attempt to recover economic activity.

The behaviour of asset markets is indeed of major importance for financial institutions, homeowners, monetary authorities and policy makers. Not surprisingly, the relationship between macroeconomic variables, wealth, and asset returns has revived the interest on the topic by academics (Sousa, 2010a).

Yet, our understanding of the transmission of fiscal policy innovations to asset markets is far from complete. More importantly, despite the analysis of the macroeconomic effects of fiscal policy and the importance of asset markets over the business cycle, there is still an important gap in the literature, in particular, regarding the empirical relationship between fiscal policy actions and developments in asset prices.

In fact, fiscal policy can affect housing prices via subsidies, tax measures and its (wealth) effects on household's disposable income: capital taxes on housing gains, tax deductibility of interest payments, taxation of the imputed rental value of the house, and VAT on new houses are just a few examples of how fiscal policy can dramatically impact on housing markets. In fact, given that housing supply is typically inelastic in the short-run, fiscal subsidies targeted to the acquisition of a house may end up pushing up its demand and prices. Similarly, tax deductibility of interest rates may influence the demand for mortgage debt. In addition, sounder fiscal positions and lower sovereign financing needs allow for lower interest and better financing conditions for mortgage-loans, while higher government indebtedness can crowd-out resources away from home-owners (Maclennan et al., 1999).

As for the link between fiscal policy and stock prices, fiscal consolidations that lead to a permanent and substantial fall in government debt or signal sounder fiscal behaviour are typically related with increases in stock market prices (Ardagna, 2009). Similarly, fiscal policy measures may impact on sovereign risk spreads and financial markets may also be influenced by the interaction between fiscal variables and political institutions (Akitoby and Stratmann, 2008).

From the empirical point of view, the evidence on the linkages between fiscal policy, housing prices and stock prices is roughly inexistent. Using Canadian data, Darrat (1990) shows that fiscal policy plays an important role in determining stock market returns. Van Aarle et al. (2003) provide evidence supporting the relationship between fiscal policy and stock prices. Jappelli and Pistaferri (2007) highlight the role of fiscal policy measures in explaining the developments in housing markets.

The main goal of the current work is to answer the following questions: What is the impact of fiscal policy on asset prices? How are stock and housing prices affected by fiscal policy shocks? What is the magnitude and the persistence of the effects? Can fiscal policy be a powerful tool towards putting the economy in the track of recovery from a deep crisis?

Our approach is empirically used to these issues in an innovative manner. First, we analyze the effects of fiscal poly on asset prices using a panel of ten industrialized countries, namely, Belgium, Finland, France, Germany, Italy, the Netherlands, Portugal, Spain, the U.K. and the U.S.. Second, we use quarterly data, which allows us to identify more precisely the impact of fiscal policy measures. To the best of our knowledge, such fiscal data set has not yet been used in the strand of economic modelling embodied in the paper. This is also a novelty with respect to the related literature which, generally, focuses on annual data to analyze a broad set of countries. Third, we estimate a Panel Vector Auto-Regression (PVAR) and, therefore, allow for unobserved individual heterogeneity, while treating all variables in the system as endogenous. Similarly, the PVAR approach allows us to increase the efficiency of the statistical inference, which would otherwise suffer from a small number of degrees of freedom of the country-level Vector Auto-Regression (VAR).

Our work suggests that fiscal policy plays a major role in asset markets. In fact, the results show that a positive fiscal shock has a negative impact in both stock and housing prices. However, the dynamics of the reaction is quite different. In fact, stock prices immediately adjust to the shock, but the effect of fiscal policy is temporary and quickly erodes. Stock prices start recovering after eight quarters, in anticipation of the positive effects on output. On the contrary, the impact of fiscal policy on housing prices exhibits strong persistence: housing prices gradually fall after the change in the fiscal stance, the trough is reached after eight quarters, and then slowly return to their initial level. In consequence, housing prices remain depressed even thirty quarters-ahead.

This piece of evidence has an important policy implication. In the attempt of stabilizing financial markets and mitigating movements in stock prices (e.g. via taxes on capital gains), governments may negatively and persistently impact on housing markets. Consequently, the lack of synchronization in the timing of the response of stock and housing prices suggests that one can not use fiscal policy to simultaneously stabilize the two asset markets.

The empirical findings also point to a contractionary effect of fiscal policy on output and the key mechanism seems to be explained by the existence of crowding-out effects: a positive fiscal shock leads to an increase in the interest rate, that is, the cost of debt refinancing. Nevertheless, as the shock erodes and interest rate goes back to its initial level, output starts recovering and the response becomes positive at longer horizons. In consequence, the use of fiscal policy as a tool to recover the economy may be undermined by its contractionary effects in the short-run.

Finally, we show that fiscal policy actions can have significant multiplier effects when undertaken in the outcome of severe housing busts, which gives rise to the importance of the implementation of fiscal stimulus packages.

The rest of the paper is organized as follows. Section 2 presents the estimation methodology. Section 3 describes the data. Section 4 discusses the results, while Section 5 whether fiscal packages can help boosting the economic recovery. Finally, Section 6 concludes and summarizes the main policy implications.

2 Empirical Methodology

We use a Panel-data Vector Auto-Regression (PVAR) methodology to explore the linkages between fiscal policy, asset prices and real economic activity. This framework combines the panel-data approach (that allows for unobserved individual heterogeneity) with the traditional Vector Auto-Regression (VAR) approach (that treats all variables in the system as endogenous). The first-order VAR model is specified as follows:

$$Y_{it} = \Gamma_0 + \Gamma(L)Y_{it} + f_i + \varepsilon_{it} \tag{1}$$

where Y_{it} is a vector of endogenous variables, Γ_0 is a vector of constants, $\Gamma(L)$ is a matrix polynomial in the lag operator, and ε_{it} is a vector of error terms.[1] The vector of endogenous variables includes the property price index ($HOUSE_{it}$), the Gross Domestic Product (GDP_{it}), the price level (P_{it}), the primary government deficit (DEF_{it}), the interest rate (IR_{it}), and the equity price index (EQ_{it}). In practice, it can be expressed as $Y_{it} = [HOUSE_{it}, GDP_{it}, P_{it}, DEF_{it}, IR_{it}, EQ_{it}]'$. Our model also allows for country-specific fixed effects, f_i, in order to capture country-specific macroeconomic shocks. This dummy is eliminated by subtracting the means of each variable calculated for each country.

The advantage of using the PVAR approach is that it increases the efficiency of the statistical inference. In fact, the estimation of country-level VARs would suffer from a small number of degrees of freedom due to the lack of available data. Given the correlation between the fixed effects and the

[1] The vector of error terms, ε_{it}, has zero mean and a country-specific variance, σ_i.

regressors (due to the lags of the dependent variables), the commonly used mean-differencing procedure produces biased estimates (Holtz-Eakin et al., 1988), in particular, when the time dimension is small (Nickell, 1981).

We avoid the drawback of the fixed effects estimator by following a two-stage procedure in which: (*i*) we use a forward mean-differencing approach (the 'Helmert procedure') that removes only the mean of all future observations available for each country-year (Arellano and Bover, 1995); and (*ii*) we estimate the system by GMM, using the lags of the regressors as instruments, therefore, keeping the orthogonality between lagged regressors and transformed variables unchanged (Blundell and Bond, 1998). Given that the number of regressors is equal to the number of instruments, the model is "just identified" and the system GMM is equivalent to a two-stage least squares estimator applied equation by equation (Love and Zicchino, 2006).

In what concerns the impulse-response functions, we transform the system in a "recursive" VAR and impose a triangular identification structure (Hamilton, 1994). We follow the usual Choleski decomposition of variance-covariance matrix of residuals, and assume that the interest rate and the equity price adjust simultaneously to shocks to fiscal policy, while the housing price, the GDP, and the price level only react with a lag.

The ordering of the variables in the system and, specifically, for the GDP, the price level, the primary fiscal deficit and the interest rate, is common in the literature on fiscal policy. Regarding asset prices, one needs to distinguish between the ordering of equity price and housing price. The equity price was ordered last as it refers to assets that are traded in markets where auctions take place instantaneously. By its turn, the housing price was ordered first in the system for the following reasons. First, housing markets are inherently sticky and housing prices do not immediately reach the equilibrium after the fiscal policy shock. Second, there is a "time-to-build" argument showing that it takes time for developers to bring new houses to the market or to work off inventories when demand increases. Third, the matching between the needs of buyers and sellers requires time. Fourth, there are important transaction costs inherent to trading housing up or down.

3 Data and Summary Statistics

We use quarterly data for ten industrialized countries. The main sources are as follows:

- *Property Price Index* ($HOUSE_{it}$). Obtained from the Bank for International Settlements (BIS).
- *GDP* (GDP_t). Used as a proxy for economic activity and business cycle and provided by the Bureau of Economic Analysis (in the case of the U.S..), the Office for National Statistics (for the

U.K.), the Bank of Portugal (for Portugal) and the International Financial Statistics of the IMF (for the remaining countries).

- Price (P_{it}). Proxied by the GDP deflator and provided by the International Financial Statistics of the IMF.

- *Primary Fiscal Deficit* (DEF_{it}). Used as the fiscal policy instrument and provided by the Bureau of Economic Analysis (U.S.), the Office for National Statistics (U.K.), the Bank of Portugal (Portugal) or typically disseminated through the monthly publications of the General Accounting Offices, Ministries of Finance, National Central Banks and National Statistical Institutes. For the U.S., we consider the Federal Government spending and revenue, whilst, for the U.K., figures correspond to the Public Sector. In the case of the euro area countries, we use budgetary data on a cash basis. It normally refers to the Central Government, therefore, with the exclusion of the Local and/or the Regional Authorities. The latest figures are also published in the Special Data Dissemination Standard (SDDS) section of the International Monetary Fund (IMF) website, to which euro area Member States contribute.

- *Interest Rate* (IR_{it}). Proxied by the 3-month Treasury Bill rate (Belgium, France, Germany, Italy, Spain, U.K. and U.S.), the central bank rate (Finland) and the government bond yield (Netherlands and Portugal) and provided by the International Financial Statistics of the IMF.

- *Equity Price Index* (EQ_{it}). Obtained from the BIS (all countries except Portugal) and the International Financial Statistics of the IMF (Portugal).

All variables are seasonally adjusted and expressed in natural logarithms of real terms with the obvious exception of the interest rate. National currency data for all years prior to the switch of the euro area countries to the euro have been converted using the fixed euro conversion rate in order to provide comparable series across time for each country.

A summary of the descriptive statistics of the variables is reported in Table 1, while a detailed description of the data sources and data construction is provided in Appendix A. Table 1 shows that, in general, stock prices exhibit more dispersion that housing prices, therefore, reflecting the typically larger volatility that one observes in those markets. The sample average of the government deficit is about 6.6%, that is, almost double of the threshold defined by the Maastricht criteria. Note, however, that the sample includes countries such as the U.S. and the U.K. which are not euro area members. Moreover, the time coverage (1970-2007) also includes observations from periods that are prior to that set of rules that impose fiscal discipline.

Table 1: Descriptive statistics.

Variable (name)	# Observ.	Mean	St. Dev.	Minimum	Maximum
Housing prices	1327	0.7074	0.4380	-0.1646	2.1659
GDP	1483	11.3303	1.3098	8.1502	13.2703
Price level	1484	3.9652	0.7436	1.7025	4.7920
Government Deficit	1344	0.0661	0.1889	-0.8200	0.5999
Real interest rate	1359	2.5113	4.2617	-30.1844	34.2559
Equity prices	1332	0.9199	0.8108	-1.0211	3.4290

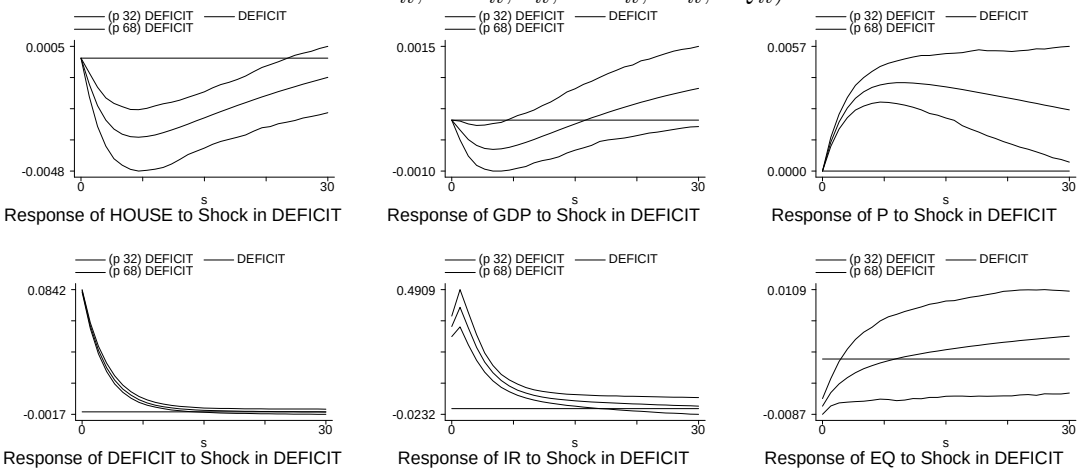
4 Empirical Results

We estimate the PVAR represented by system (1) after the fixed effects have been removed.

Figure 1 plots the impulse-responses to an orthogonalized fiscal policy shock together with 68% bootstrapped confidence bands based on 10000 draws. It shows that asset prices react in a very different manner to the shock in fiscal policy: while the effect on housing prices is significant and negative, in the case of stock prices, the findings do not reveal a statistically significant effect. Moreover, the response of housing prices is highly persistent and the trough is reached after about seven quarters, but housing prices are below their initial level for almost twenty-five quarters. In contrast, the adjustment of stock prices is quick and temporary.

Interestingly, real interest rates increase temporarily and fall gradually after one quarter, in line with the work of Gale and Orszag (2003). This evidence suggests that the credit channel from fiscal policy shocks mainly operates via the housing market. Consistently, the temporary and immediate increase in the interest rates seems to lead to a fall in the private sector's housing demand and, therefore, induce a downward adjustment in housing prices. In the case of stock prices, the credit channel matters only for a short period (of about two quarters). Notably, after the fiscal shock occurs, the rise in the interest rates makes the stock market a less attractive place for the allocation of savings. As a consequence, share prices immediately fall. However, as the shock erodes, stock prices start recovering in anticipation of the expansionary effects of fiscal policy on output.

Figure 1: Impulse-responses to a fiscal policy shock (Model with six variables: $HOUSE_{it}, GDP_{it}, P_{it}, DEF_{it}, IR_{it}, EQ_{it}$).



Actually, GDP starts to significantly fall for about six quarters before it gradually recovers. This is in accordance with the work of Perotti (2004), who uses a Structural Vector Auto-Regression (SVAR) approach to study the effects of fiscal policy on a set of five OECD countries. The author shows that while, in general, tax multipliers are negative and small, one can also find empirical support for positive tax multipliers. Similarly, Bradley and Whelan (1997) find an expansionary effect associated to contractionary fiscal policy, in particular, when undertaken in a situation of public accounts distress and coordinated with an adequate exchange rate policy.

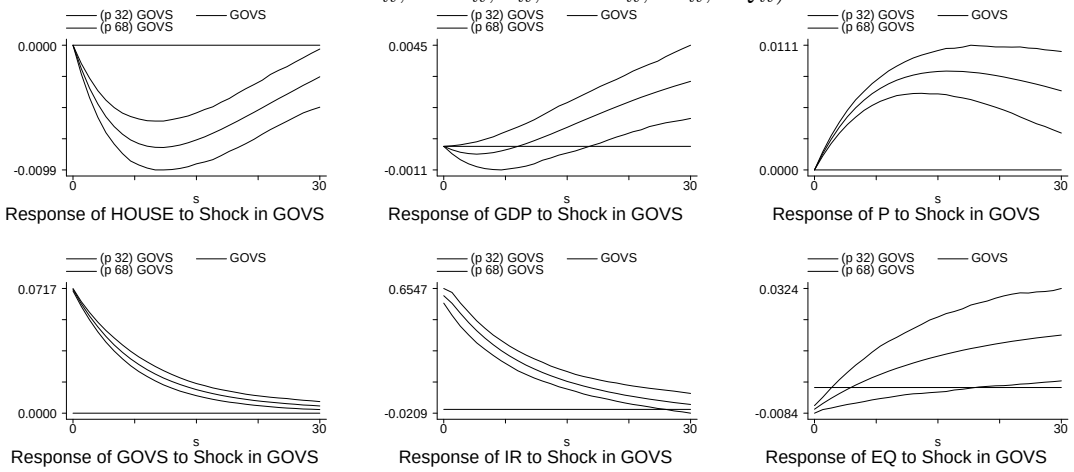
The response of the price level shows that is significantly rises after the shock with the peak effect being reached after twelve quarters. This corroborates the fiscal theory of the price level that takes into account monetary and fiscal policy interactions and assumes that fiscal policy may determine the price level even if monetary authorities pursue an inflation targeting strategy (Woodford, 1995).

These findings deserve some further comments. First, from a theoretical perspective, the structural relationship between fiscal deficit, interest rates and GDP can be interpreted as referring to the so-called "crowding-out" effect. Indeed, when governments run a budget deficit and fund it by borrowing on the domestic capital market (for instance, by selling Treasury Bills), they place an upward pressure on real interest rates. This, in turn, stimulates savings in the private sector and discourages or "crowds-out" private consumption and investment. Consequently, aggregate demand may fall. Second, fiscal policy shocks may also affect domestic interest rates through their impact on households' and firms' expectations. For example, if agents believe that the increase in debt that is used to finance the budget deficit will be funded by a raise in future taxation - that is, if they act in a Ricardian manner -, then one might observe an increase in current savings. Third, to the extent that agents' expectations are

consistent with the existence of inflationary effects due to large budget deficits, the increase in inflation (risk) premium will be embedded into interest rates and rise them. Once again, the final effect of the upward adjustment in the interest rates will be a fall in the level of real GDP.

We now assess what drives the developments in fiscal deficit. Given that a significant and positive rise in government revenue might most likely reflect an automatic (non-discretionary) fiscal policy response, we focus on government spending. In this context, it is important to emphasize that, while some of the government revenue components can be affected instantaneously by asset prices changes (for instance, revenue from taxes on equity holdings or financial transactions, and property or stamp duty taxes), this is less of a problem for government spending where changes in fiscal policy can be associated with discretionary measures. As a result, we replace the fiscal policy instrument by the government spending ($GOVS_{it}$) in model (1).

Figure 2: Impulse-responses to a government spending shock (Model with six variables: $HOUSE_{it}, GDP_{it}, P_{it}, GOVS_{it}, IR_{it}, EQ_{it}$).



The results shown in Figure 2 are in line with the previous findings. In fact, a positive government spending shock has a negative and persistent effect on housing prices, while for stock prices the adjustment is fast and the impact is temporary. Similarly, the real interest rate rises after the shock and then start falling in a gradual manner. As for GDP, it is negatively affected for about six quarters after which it recovers, thereby, suggesting the existence of important "crowding-out" effects. Summing up, unexpected variation in government spending seems to be the major driver of fiscal developments. Moreover, it negatively impinges on asset prices via the rise in interest rates. Indeed, government spending pushes housing demand back, which explains the gradual and persistent drop in housing prices. Additionally, the spending shock leads to a flight to quality, whereby investors reallocate their savings towards risk-free assets and away from risky assets. This justifies the initial drop in stock prices.

5 Can the fiscal stimulus packages help boosting recovery?

Financial crises can be contagious and damaging, and typically lead economies into recessions. Among the many causes of financial crises, one can refer: (*i*) credit booms; (*ii*) currency and maturity mismatches; (*iii*) large capital inflows; and (*iv*) unsustainable macroeconomic policies (i.e., large current account deficits and rising public debt).

Asset prices constitute a critical link between macroeconomic, monetary and financial stability (Sousa, 2010a, 2010b). History shows that significant corrections in asset prices, from their long-run equilibrium levels, may lead to financial instability (in particular, in the banking system) and, ultimately, to macroeconomic instability. Moreover, situations of busts in asset prices have important economic costs, in particular, in terms of GDP losses during the post-boom phase (Agnello and Schuknecht, 2009). The developments of the most severe financial crises (i.e., the Great Depression and the banking crisis of Japan in 1997) also generated a global downturn, therefore, suggesting that monetary policy may have a limited scope for further stimulus. Not surprisingly, in the context of the current global downturn characterized by a sharp correction of both housing and stock prices, central banks and governments have called for prompt and very expansionary fiscal policy measures. These have generally reallocated wealth toward banks and debtors and away from taxpayers.

Table 2: Fiscal stimulus packages.

Country	Amount ($ billions)	%GDP
Belgium	2.5	0.6
Germany	103.3	1.6
Finland	2.6	1.7
France	33.0	1.3
Italy	6.3	0.3
Netherlands	7.5	1.0
Portugal	2.7	1.3
Spain	113.3	6.7
United Kingdom	36.3	0.9
United States	787.0	5.5

Note: Data come from Gallagher (2009).

Table 2 summarizes, for the set of countries included in the sample, the fiscal stimulus packages announced for 2009-2010. It shows the dramatic magnitude (in percentage of the GDP) of such policies, in particular, in countries such as Spain (6.7%) and the U.S. (5.5%), but also in Finland (1.7%), Germany (1.6%), France and Portugal (1.3%) and the Netherlands (1%).

Against this background, we assess the extent to which a fiscal stimulus contributes to the strength of the economic recovery. Specifically, we investigate whether fiscal policy shocks undertaken during housing bust phases can have an important multiplier effect on the economy. For instance, Agnello and Schuknecht (2009) analyze episodes of booms and busts in real estate price in eighteen industrialized

countries. The authors show that recent housing booms have been very persistent and a number of policy variables (such as credit developments, global and local monetary conditions and short-term interest rates) are particularly important in explaining the probability of a boom or bust.

To shed some light on this question, we estimate a dummy-augmented version of the PVAR specified in (1). More specifically, we consider the following model:

$$Y_{it} = \Gamma_0 + \Gamma_B(L)Y_{it} \times D_{it}^B + \Gamma_{NB}(L)Y_{it} \times D_{it}^{NB} + f_i + \varepsilon_{it} \tag{2}$$

where Y_{it} is the same vector of endogenous variables as defined above, D_{it}^B is a dummy variable that is set equal to one in case of an episode of bust in the housing prices in period t in country i, and zero, otherwise. Similarly, D_{it}^{NB} defines a dummy variable that takes the value of one in the absence of housing price busts in period t in country i, and zero otherwise.

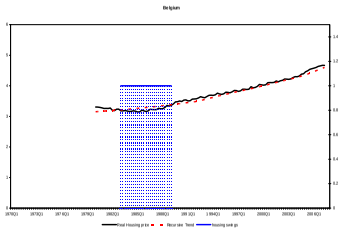
In order to detect the bust episodes, we use a non-parametric approach and, following Agnello and Schuknecht (2009), we define a bust in housing prices as a downward and persistent deviation from their trend computed by a one-sided Hodrick-Prescott (HP) filter with a smoothing parameter of 100,000. Therefore, a bust corresponds to a negative and persistent (at least twelve quarters) deviation of housing prices from the trend. Figure 3 presents, for each country, the episodes of busts that we identify using this technique.

Figure 4 displays the impulse-response functions to a fiscal shock during busts in housing prices. We can see that unexpected variation in the fiscal stance persistently drives up both housing and stock prices. Consistent with the previous findings, while the reaction of housing prices is gradual, stock prices immediately adjust to the shock. Fiscal policy also has a positive and persistent effect on GDP in a Keynesian manner. This, therefore, suggests that a stimulus package implemented during a bust in housing prices is likely to have the largest multiplier impact.

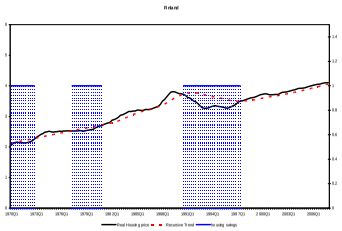
The effectiveness of fiscal policy seems to be the result of both the "direct" effects of policy measures and the "indirect" effects arising from movements in real interest rates. In a context where the private sector is unwilling to spend and invest on asset prices, an expansionary fiscal policy stimulates aggregate demand *per se*, namely, via public investment and public consumption (the "direct" effect). In addition, it may lead to a flip in expectations of market participants which can move from being deflationary to being inflationary. In fact, as time goes by and fiscal policy exerts its expansionary effects on output, consumer and firm's confidence levels may be restored, inducing an upward revision in price level expectations. This, in turn, leads to a reduction in real interest rates, thereby, amplifying the overall size of the fiscal multiplier (the "indirect" effect).

Figure 3: Persistent housing downturns: downward corrections in housing prices for consecutive 12 quarters.

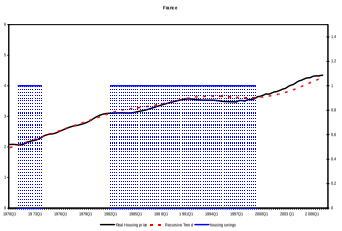
Belgium



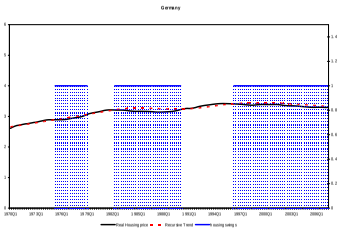
Finland



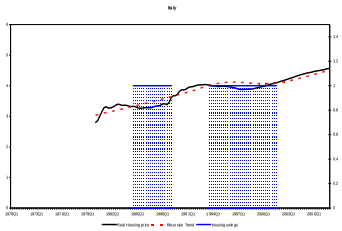
France



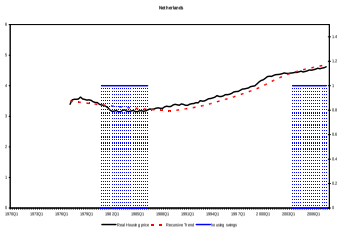
Germany



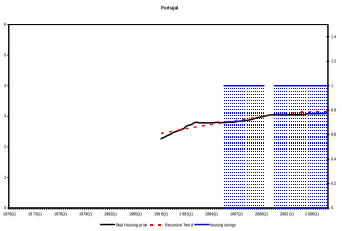
Italy



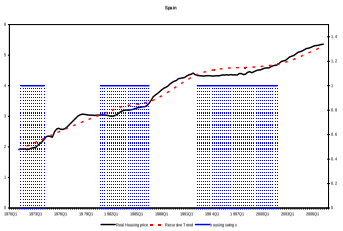
Netherlands



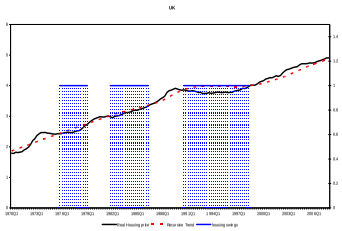
Portugal



Spain



UK



US

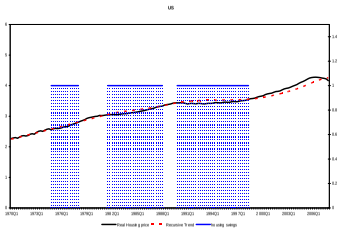
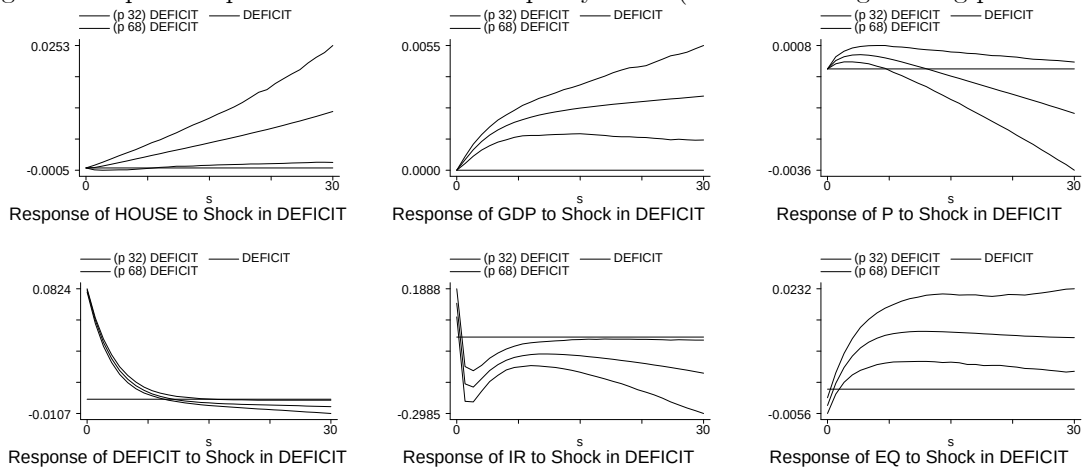


Figure 4: Impulse-response function to a fiscal policy shock (evidence during housing price busts).



Summing up, in comparison with the results of the baseline model, one concludes that, conditioning the effects of fiscal policy on the occurrence of a bust in housing prices, there is a great scope for short-term fiscal policy stimulus. In fact, our findings suggest that in the presence of a strong fall in aggregate demand and sharp corrections in real estate and financial wealth, there is little room for adverse interest rate adjustments. As a result, fiscal stimulus appears to be particularly helpful in boosting the economic recovery and less prone in crowding-out private spending.

6 Conclusion

The recent financial crisis has demonstrated that the financial system and the housing market are strongly connected and may affect the nexus between monetary stability and financial stability. Moreover, its severity became a key feature of the assessment about the impact of macroeconomic variables on the likelihood of an expansion and contraction ending. As a result, a quick response from monetary authorities and the implementation of stimulus packages by governments have become the most visible features of the attempts to promote the economic recovery. Despite this, the empirical linkages between fiscal policy innovations and asset markets have not been explored and a good understanding of the transmission mechanism of fiscal policy measures to asset prices has not been provided yet.

In the present work, we try to fill those gaps. Using a panel VAR and quarterly data for ten industrialized countries, we show that a positive fiscal policy shock has a negative impact in both stock prices and housing prices. This finding highlights that governments place an upward pressure on real interest rates when they run a budget deficit. This, in turn, "crowds-out" private consumption and investment and brings down asset prices. However, while stock prices immediately adjust to the shock

and the effect is merely temporary, housing prices exhibit strong persistence and remain depressed even thirty quarters-ahead. As a result, governments may find it difficult to mitigate movements in stock prices (e.g., via taxes on capital gains) without disrupting the behaviour of housing markets. Similarly, fiscal measures targeting the dynamics of the housing sector - for instance, tax deductibility of interest payments or reduced VAT on home purchases - may amplify the developments of financial markets.

Finally, we show that fiscal policy actions can have significant multiplier effects when undertaken in the outcome of severe housing busts, therefore, suggesting the importance of the implementation of fiscal stimulus packages. In fact, during periods of bust, unexpected variation in the fiscal stance "crowds-in" private spending and persistently drives up asset prices. In this case, the effectiveness of fiscal policy can be explained by both the "direct" and the "indirect" effects of policy measures that arise from a downward movement in real interest rates. This feature, in turn, can be linked to the upward revision in price level expectations as economic prospects start improving.

References

[1] Agnello, L., and C. Nerlich (2010). On the severity of economic downturns: lessons from cross-country evidence. European Central Bank, mimeo.

[2] Agnello L., and L. Schuknecht (2009). Booms and busts in housing markets: determinants and implications. European Central Bank, ECB Working Paper No. 1071.

[3] Akitoby, B., and T. Stratmann (2008). Fiscal policy and financial markets. *Economic Journal*, 118, 1971-1985.

[4] Ardagna, S. (2009). Financial markets' behavior around episodes of large changes in the fiscal stance. *European Economic Review*, 53(1), 37-55.

[5] Arellano, M., and O. Bover (1995). Another look at the instrumental variables estimation error component models. *Journal of Econometrics*, 68, 29-51.

[6] Blundell R., and S. Bond (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87, 115-143.

[7] Bradley, J., and K. Whelan (1997). The Irish expansionary fiscal contraction: a tale from one small European economy. *Economic Modelling*, 14(2), 175-201.

[8] Darrat, A. F. (1990). Stock returns, money, and fiscal deficits. *Journal of Financial and Quantitative Analysis*, 25, 387-398.

[9] Gale, W. G., and P. R. Orszag (2003). Economic effects of sustained budget deficits. *National Tax Journal*, 56, 463-485.

[10] Gallagher, K. P. (2009). A global survey of stimulus plans. Available at: http://rodrik.typepad.com/dani_rodriks_webog/2009/02/a-global-survey-of-stimulus-plans.html.

[11] Hamilton, J. (1994). *Time series analysis*. Princeton: Princeton University Press.

[12] Holtz-Eakin, D., Newey, W., and S. R. Harvey (1988). Estimating vector autoregressions with panel data. *Econometrica*, 56, 1371-1395.

[13] Jappelli, T., and L. Pistaferri (2007). Do people respond to tax incentives? An analysis of the Italian reform of the deductibility of home mortgage interests. *European Economic Review*, 51(2), 247-271.

[14] Love, I., and L. Zicchino (2006). Financial development and dynamic investment behavior: evidence from panel VAR. *Quarterly Review of Economics and Finance*, 46(2), 190-210.

[15] Maclennan, D., Muellbauer, J., and M. Stephens (1999), Asymmetries in housing and financial market institutions and EMU. CEPR Discussion Paper No. 2062.

[16] Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica*, 49, 1417-1426.

[17] Perotti, R. (2004). Estimating the effects of fiscal policy in OECD countries. University of Bocconi, IGIER Working Paper No. 276.

[18] Sousa, R. M. (2010a). Consumption, (dis)aggregate wealth, and asset returns. *Journal of Empirical Finance*, 17(4), 606-622.

[19] Sousa, R. M. (2010b). Housing wealth, financial wealth, money demand and policy rule: evidence from the euro area. *The North American Journal of Economics and Finance*, 21(1), 88-105.

[20] Van Aarle, B., Garretsen, H., and N. Gobbin (2003). Monetary and fiscal policy transmission in the Euro-Area: Evidence from a structural VAR analysis. *Journal of Economics and Business*, 55(5-6), 609-638.

[21] Woodford, M. (1995). Price-level determinacy without control of a monetary aggregate. *Carnegie-Rochester Conference Series on Public Policy*, 43, 1-46.

A Data Description

A.1 Belgium Data

GDP

The source is the IMF, International Financial Statistics (series " IFS.Q.124.9.9B.B$$.Z.W.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1980:1-2007:3.

Price Deflator

All variables were deflated by the GDP deflator (2000=100). The source is the IMF, International Financial Statistics (series IFS.Q.124.9.9B.BIP.Z.F.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1980:1-2007:3.

Government Spending

The source is the Belgium Ministry of Finance. Government Spending is defined as State Government expenditure on a cash basis (series "BISM.M.FJHC.BE.91"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1967:1-2008:1.

Government Revenue

The source is the Belgium Ministry of Finance. Government Revenue is defined as State Government revenue on a cash basis (series "BISM.M.FJBC.BE.91"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1967:1-2008:1.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNBE"). The series comprise the period 1970:1-2007:2.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNBE"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "12460C..ZF..."). The series comprise the period 1960:1-2008:3.

A.2 Finland Data

GDP

The source is the IMF, International Financial Statistics (series " IFS.Q.172.9.9B.B$$.Z.W.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:4

Price Deflator

All variables were deflated by the GDP deflator (2000=100). The source is the IMF, International Financial Statistics (series "IFS.Q.172.9.9B.BIP.Z.F.$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:4.

Government Spending

The source is the IMF via Finnish Ministry of Finance. Government Spending is defined as State Government expenditure on a cash basis (series "IFS.M.17282...ZF..."). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:4.

Government Revenue

The source is the IMF via Finnish Ministry of Finance. Government Revenue is defined as State Government revenue on a cash basis (series "IFS.M.17281...ZF..."). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:4.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNFI"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNFI"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Central Bank rate. The source is the IMF, International Financial Statistics (series "17260...ZF..."). The series comprise the period 1960:1-2008:3.

A.3 France Data

GDP

Data for GDP are quarterly, seasonally adjusted, and comprise the period 1970:1-2007:2. The source is the IMF, International Financial Statistics (series " IFS.Q.132.9.9B.B$C.Z.F.$$$").

Price Deflator

All variables were deflated by the GDP deflator (2000=100). Data are quarterly, seasonally adjusted, and comprise the period 1970:1-2007:2. The source is the IMF, International Financial Statistics (series "IFS.Q.132.9.9B.BIR.Z.F.$$$").

Government Spending

The source is the IMF via French Ministry of Finance. Government Spending is defined as State Government expenditure on a cash basis (series "IFS.M.13282z..ZF..."). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:2.

Government Revenue

The source is the IMF via French Ministry of Finance. Government Revenue is defined as State Government revenue on a cash basis (series "IFS.M.13281...ZF..."). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:2.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNFR"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNFR"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "13260C..ZF..."). The series comprise the period 1970:1-2008:3.

A.4 Germany Data

GDP

Data for GDP are quarterly, seasonally adjusted, and comprise the period 1960:1-2007:4. The source is the IMF, International Financial Statistics (series "IFS.Q.134.9.9B.B$C.Z.F.$$$").

Price Deflator

All variables were deflated by the GDP deflator (2000=100). Data are quarterly, seasonally adjusted, and comprise the period 1960:1-2007:2. The source is the IMF, International Financial Statistics (series "IFS.Q.134.9.9B.BIR.Z.F.$$$").

Government Spending

The source is the Bundesbank and the Monthly Reports released by the German Ministry of Finance. Government Spending is defined as General Government total expenditure on a cash basis. We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1979:1-2007:3.

Government Revenue

The source is the Bundesbank and the Monthly Reports released by the German Ministry of Finance. Government Revenue is defined as General Government total revenue on a cash basis. We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1979:1-2007:3.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNDE"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNDE"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "13460C..ZF..."). The series comprise the period 1975:3-2007:2.

A.5 Italy Data

GDP

Data for GDP are quarterly, seasonally adjusted, and comprise the period 1960:1-2007:3. The source is the IMF, International Financial Statistics (series "IFS.Q.136.9.9B.B$C.Z.F.$$$").

Price Deflator

All variables were deflated by the GDP deflator (2000=100). Data are quarterly, seasonally adjusted, and comprise the period 1980:1-2007:2. The source is the IMF, International Financial Statistics (series "IFS.Q.136.9.9B.BIR.Z.F.$$$").

Government Spending

The source is the Bank of Italy and the Italian Ministry of Finance. Government Spending is defined as Central Government primary expenditure on a cash basis. We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1960:1-2007:4.

Government Revenue

The source is the Bank of Italy and the Italian Ministry of Finance. Government Revenue is defined as Central Government total revenue on a cash basis. We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1960:1-2007:4.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNIT"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNIT"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "13660C..ZF..."). The series comprise the period 1977:1-2008:3.

A.6 Netherlands Data

GDP

The source is the IMF, International Financial Statistics (series " IFS.Q.138.9.9B.B$C.Z.W.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:4.

Price Deflator

All variables were deflated by the GDP deflator (2000=100). The source is the IMF, International Financial Statistics (series "IFS.Q.138.9.9B.BIR.Z.F.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:2.

Government Spending

The source is the IMF via Dutch Ministry of Finance. Government Spending is defined as State Government expenditure on a cash basis (series "IFS.M.138.C.C2.$$$.C.G.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:1.

Government Revenue

The source is the IMF via Dutch Ministry of Finance. Government Revenue is defined as State Government revenue on a cash basis (series "IFS.M.138.C.C1.$$$.C.G.$$$"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1970:1-2007:1.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNNL"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNNL"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Government Bond Yield. The source is the IMF, International Financial Statistics (series "13861...ZF..."). The series comprise the period 1960:1-2008:3.

A.7 Portugal Data

GDP

The source is the Bank of Portugal. We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1978:1-2007:4.

Price Deflator

All variables were deflated by the GDP deflator (2000=100). Data are quarterly, seasonally adjusted, and comprise the period 1978:1-2007:4. The source is the Bank of Portugal.

Government Spending

The source is the Bank of Portugal, collected from the Monthly Bulletin of the Directorate-General of Public Accounting. Government Spending is defined as Central Government primary spending (on a cash basis), that is, the difference between authorized expenditure and debt interest payments. We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1978:1-2007:4.

Government Revenue

The source is the Bank of Portugal, collected from the Monthly Bulletin of the Directorate-General of Public Accounting. Government Revenue is defined as Central Government total revenue (on a cash basis). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1978:1-2007:4.

Housing Price

The source is the European Central Bank (ECB). The series comprise the period 1988:1-2007:4.

Equity Price

The source is the IMF, International Financial Statistics (series "IFS.Q.18262...ZF..."). The series comprise the period 1988:1-2007:4.

Interest Rate

Proxied by the Government Bond Yield. The source is the IMF, International Financial Statistics (series "IFS.Q.18261...ZF..."). The series comprise the period 1960:1-2008:3.

A.8 Spain Data

GDP

Data for GDP are quarterly, seasonally adjusted, and comprise the period 1970:1-2007:2. The source is the IMF, International Financial Statistics (series " IFS.Q.184.9.9B.B$C.Z.F.$$$").

Price Deflator

All variables were deflated by the GDP deflator (2000=100). Data are quarterly, seasonally adjusted, and comprise the period 1970:1-2007:2. The source is the IMF, International Financial Statistics (series "IFS.Q.184.9.9B.BIR.Z.F.$$$").

Government Spending

The source is the IMF via Spanish Ministry of Finance. Government Spending is defined as State Government expenditure on a cash basis (series "IFS.M.18482...Zf..."). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1985:1-2006:4.

Government Revenue

The source is the IMF via Spanish Ministry of Finance. Government Revenue is defined as State Government revenue on a cash basis (series "IFS.M.18481...Zf..."). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1986:1-2006:4.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNES"). The series comprise the period 1971:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNES"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "18460C..ZF..."). The series comprise the period 1979:1-2008:3.

A.9 U.K. Data

GDP

Data for GDP are quarterly, seasonally adjusted, and comprise the period 1955:1-2007:4. The source is the Office for National Statistics, Release UKEA, Table A1 (series "YBHA").

Price Deflator

All variables were deflated by the GDP deflator. Data are quarterly, seasonally adjusted, and comprise the period 1955:1-2007:4. The source is the Office for National Statistics, Release MDS, Table 1.1 (series "YBGB").

Government Spending

The source is the Office for National Statistics (ONS), Release Public Sector Accounts. Government Spending is defined as total current expenditures of the Public Sector ESA 95 (series "ANLT") less net investment (series "ANNW"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1947:1-2007:4.

Government Revenue

The source is the Office for National Statistics (ONS), Release Public Sector Accounts. Government Revenue is defined as total current receipts of the Public Sector ESA 95 (series "ANBT"). We seasonally adjust quarterly data using Census X12 ARIMA, and the series comprise the period 1947:1-2007:4.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNGB"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNGB"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "11260C..ZF..."). The series comprise the period 1960:1-2008:2.

A.10 U.S. Data

GDP

The source is Bureau of Economic Analysis, NIPA Table 1.1.5, line 1. Data for GDP are quarterly, seasonally adjusted, and comprise the period 1947:1-2007:4.

Price Deflator

All variables were deflated by the GDP deflator. Data are quarterly, seasonally adjusted, and comprise the period 1967:1-2007:4. The source is the Bureau of Economic Analysis, NIPA Tables 1.1.5 and 1.1.6, line 1.

Government Spending

The source is Bureau of Economic Analysis, NIPA Table 3.2. Government Spending is defined as total Federal Government Current Expenditure (line 39). Data are quarterly, seasonally adjusted, and comprise the period 1960:1-2007:4.

Government Revenue

The source is Bureau of Economic Analysis, NIPA Table 3.2. Government Revenue is defined as government receipts at annual rates (line 36). Data are quarterly, seasonally adjusted, and comprise the period 1947:1-2007:4.

Housing Price

The source is the Bank for International Settlements (BIS) (series "QRPNUS"). The series comprise the period 1970:1-2007:4.

Equity Price

The source is the Bank for International Settlements (BIS) (series "QEPNUS"). The series comprise the period 1970:1-2007:4.

Interest Rate

Proxied by the Treasury Bill rate. The source is the IMF, International Financial Statistics (series "11160C..ZF..."). The series comprise the period 1960:1-2008:3.

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