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Housing and Personal Wealth in a Global Context

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Abstract

Housing is the single most important component of personal wealth in most countries. The special characteristics of housing markets are therefore key to understanding personal portfolios, saving, the household distribution of wealth, and the monetary transmission mechanism. This paper discusses how housing markets and institutions differ across countries, paying particular attention to the UK and the EU, but extending its reach as well to other OECD countries such as Japan and emerging market countries such as South Africa. It analyzes how those differences help to create contrasts in the impact on consumption of housing as a component of personal wealth. The impacts of rates of home ownership, credit market characteristics, interest rates, and macroeconomic conditions are studied. Implications for monetary, fiscal, and other policies are discussed.

Keywords: housing, wealth, consumption, interest rates, monetary transmission
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1 Introduction

Housing markets are now internationally recognized to rival financial markets for understanding economic fluctuations in economies with developed financial systems. Real estate has emerged as an asset class central to both household and business portfolio decisions. Housing wealth accounted for 41 per cent of net wealth of UK households, at the end of 2004, almost twice the percentage represented by pension wealth. The comparable figure for the USA at the end of 2004 was 39 per cent. International institutions such as the OECD, IMF, BIS (Bank for International Settlements) have recently raised concerns over the potential over-valuation of residential housing markets—by as much as 30 per cent—and the potential implications for an increased risk of a serious down-turn in the world economy. The European Central Bank (ECB) has also taken a great interest in the issues posed for monetary policy in the eurozone. In commercial property, the deepening of cross-border markets and the search for investment opportunities by pension funds and other large investors is leading to increased professionalization of commercial property portfolio management not just in Europe but in the major economies of Asia. Households, via owner-occupied housing and their pension assets, are exposed to fluctuations in real estate markets as well as in equity and bond markets.

In the UK, housing market developments continue to be a major issue for the Bank of England, HM Treasury (HMT), and the Department for Communities and Local Government (DCLG). The question of whether the UK's different housing and credit market institutions posed too high a risk for the UK to adopt the euro, emerged as the single most important factor in the negative outcome of the Five Economic Tests (report published by HMT in June 2003). As a consequence, HMT commissioned the *Miles Review of the Mortgage Market*, which reported in March 2004. Also reflecting concerns over housing affordability and the UK's unusually weak new building response to high house prices, the *Barker Review of New Housing* was simultaneously commissioned by HMT producing its final report in March 2004. Since the Barker review, both the Office of the Deputy Prime Minister (ODPM) and HMT have launched major initiatives to reform planning, financing and housing delivery systems, to address the long-term housing affordability problems. Kate Barker's further review of land use planning, focusing on the link between planning and economic growth, *Barker Review of Land Use Planning, Interim Report* was published in July 2006. However, the balance between private renting and owner-occupation, which could have implications for flexible labour markets and the exposure of households to risk, has received little explicit public analysis in the UK. The same is true of the scope for property taxes in addressing stability, affordability, distributional, and efficiency issues.

These UK policy concerns are reflected in a number of international controversies. In macroeconomics, these include the role of housing in monetary transmission and in financial stability, see for example, Rajan (2005) and the main theme of the Federal Reserve's 2007 Jackson Hole Symposium, as well as in debates about longer run national saving and pensions. A critical question about which there is much controversy is how consumer spending is affected by a rise in housing wealth, particularly via its role as collateral for borrowing. In these controversies, the role played by institutional differences in housing and credit markets through time and across countries is often neglected, for example in the simplistic views espoused by *The Economist*.

The debate about housing supply policies, for example land use planning, construction of social housing, and policies on rent controls, reflects concern about housing affordability behind which lie serious distributional worries. In a number of countries, the real house price appreciation of the last decade marks one of the largest wealth redistributions from young to old in recorded history. Governments are subject to pressure both from the young who would like housing to be more affordable and the middle-aged and old who are concerned with preserving the value of their wealth. The 'social exclusion' of the young without wealth-owning relatives to transfer a housing deposit or guarantee a mortgage is likely to have widened long-term economic inequality despite efforts by governments to use social benefits to help the poor. The changing spatial variation in house prices within a country, reflecting varying land prices, is an important aspect of shifts in inequality between households at different locations.

In most poor countries and transition economies, housing finance systems are still developing, so that housing wealth plays a different, but evolving, macroeconomic role as the collateral function of housing wealth develops. In many poor countries, formal property titles are missing, particularly for urban squatters and many of the rural poor. Lack of access to shelter is often a major characteristic of poverty. Policies on land use, title registration, the legal framework, and how limited resources should be spent on providing housing outside the market system will then have important repercussions on inequality and the generational transmission of inequality.

Section 2 of this paper addresses the question of monetary transmission to household spending and of the link between housing wealth and consumption. Section 3 reviews the international empirical evidence on the housing to consumption link. It argues that most studies are flawed by the failure to include relevant 'controls'. Section 4 concludes with discussion of some policy issues and macroeconomic and distributional implications.

2 Consumer expenditure, housing wealth and institutions

Consumer expenditure accounts for the greater part of GDP and is very important in monetary transmission, that is, the mechanism whereby short-term interest rates affect GDP. Interest rates have both direct and indirect effects on consumer spending.[1] There are three indirect effects: via expected income growth; via income uncertainty or volatility; and through asset prices. Together, these appear to be quantitatively more important than the direct effects, which are of ambiguous sign both in theory and in empirical work.

The indirect effects of an increase in interest rates tend to lead to a decline in consumer spending. However, the size of these effects depends on institutional features that differ across countries. For example, if higher house prices were to reduce consumer spending, as seems to have been the case in Italy and Japan, this indirect channel may actually lead to higher, not lower, spending.

1 For a more detailed discussion see MacLennan et al. (2000).

While a decrease in interest rates will generally increase the market value of housing, it has often been argued that the rise in personal wealth that results is in a sense illusory. In a closed economy with a fixed population, if households in general tried to make use of their capital gains on housing by selling their property, they would force down house prices. While at the individual level, housing wealth appears spendable, for the economy as a whole it is not. A super-rational representative household would take this into account. That households are not so rational in this collective sense perhaps has contributed to the size of consumption booms and resulting balance of payments and inflation problems, for example in the UK in the late 1980s. However, one should not exaggerate the degree to which economies are 'closed' with respect to housing. The upper end of the housing market in London and the south east now has a very considerable element of foreign ownership. Even more important, the internationalization of credit markets implies that as long as foreign lenders are willing to advance credit to households on the basis of domestic collateral values, these values will be far less constrained than was once the case by domestic income and domestic saving. International migration is another reason why the closed economy view is out of place. For example, in the cases of Ireland and the UK, immigration has been an important contributor to the rise in house prices of the last decade, while significant numbers of UK retirees have capitalized on their housing wealth in choosing to live abroad.

The size of the housing wealth effect depends on a number of factors. Liberal credit markets increase the collateral role of housing wealth so that higher house prices release constraints on household borrowing and spending. In countries such as Italy, where the legal system impedes the functioning of this collateral mechanism, this credit channel will be weaker than elsewhere. Another institutional feature affecting the efficiency of credit markets concerns the sharing of information on individuals' credit histories by financial institutions, thus reducing the problem of asymmetric information which impedes lending. The USA, for example, is highly developed here, and moreover has national institutions, such as FannieMae, which reduces loan risk for individual lenders.[2] Another factor is the size of transactions costs for housing: the lower these costs, which include taxes, and the charges of real estate agents and lawyers, the more liquid and so potentially spendable, is housing wealth. The tax system can have other effects: for example, if housing is tax advantaged for inheritance tax as is the case in Japan, older people will be less inclined to reduce their housing equity to maintain spending. This reduces the housing wealth effect.

A high rate of owner-occupation can be another factor increasing the housing wealth effect. Over half of German households are renters, for example. While the household sector directly or indirectly owns much of the rental stock, for example, via pension funds, a rise in the value of the rental stock has a smaller wealth effect than a similar rise in value of the owner-occupied stock. This is partly because the collateral mechanism is missing—pensions cannot usually be used for collateral. Also pensions are far less liquid than other assets.

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2 The securitization of loans and hedging through the derivatives markets, spreading the incidence of risk into the financial system, is another factor easing credit availability. In view of the burgeoning incidence of bad loans in the US sub-prime market in 2007, this may well have been taken too far in the USA.

Offsetting the wealth and collateral effects of house price rises are the income and substitution effects. If housing is relatively expensive, consumers have less to spend on other goods. A rise in house prices should cause renters to save more: not only will future rents tend to follow house prices, but those with hopes of becoming owners one day need to save more for the initial deposit. The credit system is again important here. In countries like Italy, where large deposits are required of first-time buyers, the young need to save a lot harder in response to house price rises than in the UK or the Netherlands where loan-to-value ratios can be as high as 100 per cent. This could imply a negative impact of house prices on consumer spending in countries with illiberal credit systems.

So far, we have discussed only the house price-to-consumer spending linkage. But institutional and historical differences can also impact profoundly on the link between short-term interest rates and house prices themselves. Most obviously, for a given response of consumption to house prices, countries with high ratios of housing wealth to income, such as the UK, will experience greater interest rate sensitivity than countries with lower ratios. Second, the degree to which mortgage interest rates are sensitive to variations in short-term market rates will be important. Countries where most of the mortgage stock is in the form of fixed rate loans will have far less sensitivity to short term interest rates.

Cameron et al. (2006) have studied UK house price determination with regional panel data for 1972-2003. In the UK, one can distinguish several components in the interest rate-to-house price transmission channel. The first is a negative real interest rate effect, strengthened by the financial deregulation of the 1980s. The second is a negative nominal interest rate effect, which has become somewhat weaker with the easing of credit conditions.[3] The third effect is non-linear, and operates through a downside risk measure which is zero if the rate of return in recent years was positive, but equals the average lagged return if this return is negative. There are also various indirect effects via income, uncertainty proxies and other asset prices. MacLennan et al. (2000: 80) investigate the theory of house price volatility and explain that

> price volatility increases with more volatile demand and supply, and lower elasticities. Characteristics favouring high demand volatility are low transactions costs, easy credit availability as reflected in high loan-to-value ratios, thus permitting high levels of gearing, and a high proportion of floating rate mortgages. The market rented sector offers a potential safetyvalve which can divert demand from the owner-occupied market when prices are very high. This suggests that countries with small market rented sectors are more likely to have volatile house prices, ceteris paribus.

Countries with bigger feedbacks from house price shocks are likely to experience greater house price volatility: a house price shock, which raises expenditure and therefore income, feeds back on itself, thus amplifying the initial shock. Countries with a less elastic supply of housing should also experience greater house price volatility; see Malpezzi and Maclennan (2001) for a comparison of the USA and the UK, and Glaeser

3 Controlling for the easing of credit conditions greatly improves the significance and robustness of these estimates, particularly of the real rate of interest.

et al. (2006) for the impact of variations in this elasticity over USA locations and over time. Cameron et al. (2006) find that much of the rise in UK house prices since 1997 is due to income and population growth with little supply response. Finally, ceteris paribus, one expects an economy with greater income and inflation volatility also to have more volatile house prices. MacLennan et al. (2000) argue that in countries with pay-as-you-go social security and pension systems, large market rented sectors, high transactions costs for housing, restricted consumer credit availability or fixed-rate mortgage markets, consumer expenditure is likely to be driven mainly by income and income uncertainty, with relatively weak or even perverse house price and interest rate effects. The opposite will tend to be true in countries such as the UK, where institutional features lie at the other end of the spectrum, and where low supply elasticities increase asset price volatility.

3 A survey of the evidence on the effects of housing assets on consumption

Recent empirical studies of the housing–consumption link on macro data include Case et al. (2005), Catte et al. (2004), Iacoviello (2004), Barrel and Davis (2004), Dvornak and Kohler (2003), Byrne and Davis (2003), Ludwig and Sloek (2002) and Boone et al. (2001). Earlier studies include Hendry et al. (1990), Brodin and Nymoen (1992), Kennedy and Andersen (1994), and Muellbauer and Murphy (1995).

Case et al. (2005) claim that for, a panel of USA states and a panel of 14 countries, the housing wealth effect is larger than the stock market wealth effect. However, the econometrics of this paper are questionable. Their equilibrium correction model (ECM) used on a panel of USA states and 14 OECD countries takes the form

$$\begin{aligned}\Delta \log c_t = {} & \alpha \Delta \log c_{t-1} + \beta_1 \Delta \log y_t + \beta_2 \Delta \log \text{ stock}_t + \beta_3 \Delta \log \text{ house}_t \\ & + \gamma \left[\log c_{t-1} - \log y_{t-1} \right] + \beta_4 \Delta \log \text{ stock}_{t-1} + \text{ fixed effects} + \varepsilon_t \end{aligned} \quad (1)$$

where y is real income, stock is stock market wealth, and house is owner-occupied housing wealth. A 1986 dummy interacted with Δ log house checks for shifts. Among the omitted controls are long-run housing asset and stock market wealth, interest rates, the unemployment rate, and income growth expectations effects. It can also be argued that for USA states, stock market wealth is imputed to the state levels with crude methods, while the housing wealth data are measured better. Changes in housing market wealth at the state level are likely to be strongly correlated with missing unemployment data, mis-measured income growth and omitted income growth expectations. The wealth data are end of period which increases their endogeneity; though the authors claim changes in timing have little effect on the estimates.

For the OECD part of their study, pooling 14 countries denies heterogeneity between countries implied by institutional differences as discussed above. Shifts in credit conditions are also omitted from the OECD country data though, for example, Finland, Norway, Sweden, the UK, and the Netherlands all went through revolutions in credit availability. The rise in house prices is highly correlated with the shift in credit conditions. Not surprisingly, the supposed housing wealth effect is larger for the OECD countries, where credit conditions went through larger changes than for USA states after 1982.

Barrell and Davis (2004) estimate equations for the G5 countries with an equilibrium correction allowing a constant elasticity long-run net wealth effect and real interest rate effects, but no controls for shifts in credit conditions, unemployment rates or expected income growth. They estimate both single country equations and pooled equations imposing common long-run coefficients. Byrne and Davis (2003) estimate equations for G7 countries with no controls for shifts in credit conditions, interest rates, unemployment rates or expected income growth. They do not distinguish housing wealth but test for differences between liquid and illiquid assets effects. For most countries they find liquid asset effects smaller than those from illiquid assets, and typically negative for the USA and especially the UK. Since they define liquid assets as gross liquid assets minus debt, this is a classic symptom of omitted variable bias: credit market liberalization is associated with rises in debt relative to income and relative to gross liquid assets. The omitted variable has a positive effect on consumption but is negatively correlated with net liquid assets, and so biases the latter's effect in a negative direction.

In contrast to Case et al., Catte et al. (2004) note institutional differences and find major heterogeneity for the parameters in different OECD economies. They estimate ECM models which do have long-run wealth effects, as well as interest rate and unemployment effects. However, they do not control for income expectations explicitly or for the effects of financial liberalization, and this is liable to bias up the estimated housing wealth or collateral effects on consumption. This is also true of Kennedy and Andersen (1994) who study consumption in the form of saving ratios. Nevertheless, this study confirms the heterogeneity of wealth effects across countries, including an apparently negative housing wealth effect for Italy, which could be the result of an ill-functioning mortgage market there.[4]

Boone et al. (2001) are sensitive to the potential importance of credit market liberalization and find some evidence for shifts in long-run relationships, particularly for the UK, USA and Canada using dummies for credit market liberalization. They control for interest rate and unemployment dynamics. They also find a negative housing wealth coefficient for Italy. However, they do not attempt to control for income growth expectations or the effect of credit market liberalization on the long-term consumption/income ratio.

Brodin and Nymoen (1992) study aggregate consumption in Norway as a function of income, wealth and inflation. Their model aggregates all wealth, including housing wealth and includes no controls for credit market liberalization, interest rates, unemployment etc. The estimated elasticity of consumption with regard to wealth is large, almost half that for income, almost certainly biased up by the omission of controls.

Muellbauer and Murphy (1995) study UK regional panel data for 11 regions and include a more complete set of controls than earlier studies. They handle income growth expectations through the fitted values from parsimonious income forecasting equations, and check for interaction effects of these with uncertainty indicators. The shifts in credit conditions are proxied using an indicator derived from data on loan-to-value ratios for

4 It may be that the modest liberalization of credit that has occurred in Italy in recent years could attenuate such findings on the latest data.

mortgages to first-time buyers, a forerunner of the one discussed below. They include interest rate and unemployment effects. Assets are aggregated into liquid and illiquid categories (measured at the end of the previous year), where the latter includes housing wealth, and shifts in wealth effects with credit conditions are checked. As a check on the aggregation of physical and financial illiquid wealth, a separate allowance is made for a real house price effect, but this always proves insignificant. One problem with the study is the omission of the direct effect on consumption of credit conditions discussed below. The other was the authors' scepticism over the accuracy of the regional accounts income data. Subsequently, Cameron and Muellbauer (2000) established that these data seriously understated the rise in relative incomes in the south east in the 1980s, probably resulting in an upward bias in the housing wealth effects being estimated.[5]

Regarding research on micro data, Bover (2005) and Bostic et al. (2005) study housing wealth effects on respectively Spanish and USA cross-sectional data. Bover uses sophisticated instrumental variables to estimate a marginal propensity to spend out of housing wealth in Spain of between 1 and 2 per cent. Bostic et al. use pooled cross-sections, merging CEX and SCF data but their parameter estimates grossly violate the basic presumption that if permanent labour income and assets both double, consumption should roughly double.

For UK micro data, Campbell and Cocco (2005) and Attanasio et al. (2005) reach diametrically opposite conclusions. The latter use micro data from the Family Expenditure Survey for 1978-2001 to explain consumption spending in terms of age and cohort dummies, household demography, housing tenure, regional house price growth rates and the level of house prices. They find bigger house price growth rate effects for the young, with the middle-aged next and the old last; and similar effects for home owners as for renters. The log level of regional house prices has a similar effect for all three age groups. However, the residuals from regressing regional house prices on regional incomes have their biggest effects on the young. Attanasio et al. argue that since housing wealth increases with age these findings suggest that house prices are just a proxy for omitted income expectations and have no independent role to play in explaining consumption. However, since consumption is likely to be strongly influenced by current income, and also influenced by financial asset ownership (also increasing with age and differing by region), access to credit and variations in unemployment rates and interest rates, the failure to control for these other variants implies that no conclusions about the effects of housing assets on consumption can be drawn. The young's consumption is likely to be more sensitive to current income, and regional house prices are correlated with current income. Morever, the relaxation of credit constraints in the 1980s would have had the largest effects on the consumption of the young while at the same time driving up house prices, so inducing the correlation found puzzling by Attanasio et al. Further, the collateral role of housing wealth suggests that young house owners, who are more likely to be credit constrained, could well be as sensitive as older owners to rises in house prices.

Campbell and Cocco study micro data from the FES from 1988-2000, after credit market liberalization had largely occurred. They explain changes in consumption per head for different cohorts classified by region, controlling for income growth, regional unemployment, interest rates as well as housing tenure, mortgage debt and regional

5 This was the reason the authors did not publish the study.

house prices. They find the largest house price effects for the older homeowners and the lowest for renters. The fact that the latter (in the form of national house prices) is still significant suggests that house prices contain a general 'confidence' or expectations effect. They acknowledge their findings are not fully 'structural'. Their findings suggest that those of Attanasio et al. are due to poor economic controls.

For aggregate time series data, the failure to control for shifts in credit conditions is often likely to be critical. Although the implications of financial liberalization have aroused interest, controversy, and a growing literature (such as Bayoumi 1993a, 1993b; Schmidt-Hebbel and Serven 1997; Bandiera et al. 2000; Honohan 1999), there has not been an entirely satisfactory applied analysis of these implications in the consumption literature. One major difficulty has been to find an indicator of credit market deregulation with which to model the direct and interaction effects of financial liberalization.

Aron and Muellbauer (2006a) study consumption in the UK and South Africa. The contrast is interesting since South Africa is almost unique in experiencing an easing of credit conditions without the usual house price boom. For the UK, they use the consumer credit conditions index, CCI, derived by Fernandez-Corugedo and Muellbauer (2006). This is derived from modelling data on ten credit indicators, from which a common credit indicator and a risk indicator are extracted, after controlling for standard economic and demographic variables. For South Africa, they estimate joint debt and consumption equations with an unobservable credit supply indicator entering both consumption and debt equations. This indicator is proxied by a linear spline function (effectively a set of time dummies) and the parameters are estimated, subject to cross-equation restrictions, from a joint estimation of the household consumption and debt equations. As in Aron and Muellbauer (2000), they distinguish three facets of financial liberalization, a distinction which the previous literature does not bring out clearly. Financial liberalization reduces credit constraints on households engaging in smoothing consumption when they expect significant income growth. This is the standard mechanism addressed in the literature on credit constraints. Second, credit liberalization reduces deposits required of first-time buyers of housing; see Engelhardt (1996) for micro evidence. This involves a rise in the long-term consumption/income ratio, particularly for younger households. Third, it increases the availability of collateral-backed loans for households which already possess collateral. This should make housing assets effectively more spendable. The three facets thus imply both a shift in the average propensity to consume and important interaction effects, for example with housing wealth, income growth expectations, interest rates and indicators of uncertainty.

In the absence of shifts in credit conditions, a sensible time series specification for a consumption function, following Muellbauer and Lattimore (1995), can be written as follows:

$$\Delta \log c_t \approx \alpha\Big[\alpha_0 - \alpha_1 r_{1t} - \alpha_2 \theta_t + \alpha_3 E_t \Delta \log ym_{t+k} + \gamma_1 LA_{t-1}/y_t + \gamma_2 IFA_{t-1}/y_t + \gamma_3 HA_{t-1}/y_t + \log y_t - \log c_{t-1}\Big] + \beta_1 \Delta \log y_t - \beta_2 (DB_{t-1}/y_t)\Delta \log nr_t + \varepsilon_t \quad (2)$$

Here c is consumption, r is the real interest rate, θ is an indicator of income uncertainty, $E_t \Delta \log ym_{t+k}$ is a forecast of the growth rate of non-property income,[6] LA/y is the ratio of liquid assets minus debt to non-property income, IFA/y is the ratio of illiquid financial assets to non-property income, and HA/y is the ratio of housing wealth to non-property income. The speed of adjustment is α and the term in square brackets can be thought of as reflecting the behaviour of households not facing immediate credit constraints. The specification comes from a log approximation of a consumption function where consumption depends on human capital and other wealth and where habits or adjustment costs induce lagged adjustment (see Muellbauer 1988). Asset to income ratios give a better approximation to the underlying linear additive structure of human and non-human capital than does the more conventional log-assets formulation. The γs are marginal propensities for the different assets, which are allowed to differ. If they are equal, assets can be combined into net worth, here an easily testable hypothesis. The specification enforces long-run homogeneity in that doubling real income and real assets doubles consumption. A higher propensity to spend for liquid assets is consistent with Carroll's (1997, 2001) buffer stock theory of saving and with reasoning and evidence by Zeldes (1989).

The terms on the second line of (2) can be thought of as arising from credit or liquidity constraints: the rate of growth of income will tend to dominate consumption growth of such households. The rate of change of the nominal rate of interest on debt, nr, weighted by the debt to income ratio, DB/y, measures the short-term impact of higher debt service costs on those with debt.

If credit conditions ease, one can expect shifts in a number of these parameters. The following should increase: α_0, α_1, α_3, γ_3,[7] and the following parameters should decrease: α_2, β_1, β_2. Aron and Muellbauer (2006a) allow these parameters to shift for the UK with the index of credit conditions, CCI, mentioned above. The expected shifts in parameters all occur, though both β_1 and its shift are insignificant.[8] The marginal propensity to spend out of housing assets at the maximum value of CCI is estimated to be similar to that of illiquid financial assets, namely around 0.03, which, in turn, is below that of net liquid assets, at around 0.13. These are lower values of the housing assets effect than commonly found in the literature. We find that a four-quarter moving average of observations on illiquid financial assets fits far better than the end of previous quarter value, consistent with findings by Lettau and Ludvigson (2004).[9] Since much of illiquid financial assets is in pension funds, this plausibly reflects the slow adaptation of contribution and pay-out rates to changes in asset values. The real interest rate effect is negative and significant and there is mild evidence that it strengthens as CCI rises, while the debt-weighted nominal interest rate change, also negative, weakens significantly as CCI rises. This is exactly what one should expect: easier access to credit weakens the spending restrictions on indebted consumers when interest rates rise. With

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6 With horizon k and near future growth rates more heavily weighted than more distant growth rates.

7 For example, see Poterba and Manchester (1989).

8 Together with the strongly significant shift in the parameter α_2 associated with income uncertainty, this is consistent with a buffer-stock saving interpretation of behaviour, see Aron and Muellbauer (2006) for details.

9 However, Lettau and Ludvigson understate the empirical significance of the stock market effect over one or two year horizons.

easier access to credit, intertemporal substitution should play a bigger role: hence the enhanced real interest rate effect, and indeed the enhanced role for income growth expectations, for which there is also strong empirical evidence.

If equation (2) is estimated without CCI effects, the fit is worse, with a lower speed of adjustment, and the real interest rate effect drops out. This is not surprising, given the rise in real rates which took place as credit supply conditions eased from the end of 1980: the model without CCI thus suffers from an omitted variable bias on the real interest rate effect. The asset effects remain significant, with broadly similar illiquid financial and housing wealth effects.

If equation (1.1) of Case et al. (2005) is estimated, the fit deteriorates sharply. The financial assets effect then becomes insignificant, while the housing assets effects are between five and seven times as large and jointly significant. We interpret their findings as spurious: driven by large omitted variable biases and misspecification. Note that their specification omits unemployment rate changes (embodied in our uncertainty proxy θ), real and nominal interest rates, the credit conditions index and level asset effects.

On data for South Africa, see Aron and Muellbauer (2006b) for the asset data, similar specifications yield similar results to those obtained for the UK. The data support most of the shifts in the parameters of (2) outlined above. An important difference from the UK study is that without a separately estimated CCI, Aron and Muellbauer (2006b) estimate a CCI for South Africa using information from jointly estimated debt and consumption equations with common dummies linked to known episodes of credit market liberalization. As noted above, credit market liberalization in South Africa, beginning in around 1981, coincided with a long down-trend in real house prices after the gold boom of the late 1970s and early 1980s had driven the market to a peak. The 1980s continuing into the 1990s were marked by high and volatile real interest rates, poor income growth and political uncertainty, in which the housing market suffered. Yet the debt to income ratio trended up, as a consequence of domestic liberalization of credit. This helps distinguish direct from indirect effects of credit liberalization.

Given a volatile history, and until recently, fairly subdued growth, house price to income ratios and debt to income ratios remain substantially below UK levels. However, with sharp declines in nominal and real interest rates in the last three years, subdued inflation, and growth in 2005 close to 5 per cent, consumption, house prices and debt have all risen sharply together. With widely used models in the literature, it would be easy to attribute too much to the housing market channel. Nevertheless, as in the UK, even with comprehensive controls, our model implies a highly significant housing asset effect on consumption in South Africa. Indeed, all three marginal propensities to consume out of assets are estimated to be higher in South Africa than in the UK. In part, this could be due to underestimation of some assets. But it could also reflect the correlation of asset prices with South Africa's economic and political turmoil, which, despite our efforts, the income growth expectations and uncertainty proxies included in our model may not fully measure.

Interestingly enough, in unpublished research with Keiko Murata on Japanese consumption, we find no evidence of significant credit market liberalization in the 1980s or 1990s in Japan. Furthermore, we find a negative land price effect on consumption. As noted above, this is likely to be partly a consequence of the structure

of inheritance tax in Japan which advantages inheritance of land or housing and so causes most households to refrain from home equity loans. Financial wealth effects are significant, however.

4 Policy issues and inequality

Some issues for macro policy and inequality will be illustrated with examples from South Africa, the UK, and the eurozone. These have resonance elsewhere, particularly in emerging market and transition countries with rapidly developing credit markets.

4.1 South Africa

South Africa's credit regime is globally one of the most innovative and liberal, and the easy acquisition of debt has fuelled consumption. Falling nominal interest rates since 2003, more affordable mortgages and ease of remortgaging have generated rises in mortgage debt and in house prices. The resulting more valuable housing collateral itself promotes borrowing and spending. The inflationary consequences via the output gap, the trade balance and hence the exchange rate—unless there are other factors keeping the exchange rate high—are well understood.[10] The potential trade-off for interest rate policy poses serious dilemmas for the monetary policy committee (MPC).

Higher consumption occurs at the expense of personal saving, constraining the domestic funds potentially available for corporate investment. South Africa's low rate of gross saving of about 15 per cent of GDP (including the public sector) compares poorly with emerging market economies with similar levels of income per head such as Chile. Low domestic saving also means an increased reliance on foreign saving, exacerbating the economic vulnerability to reversible capital inflows. Debt to income ratios for South Africa are less than half those in the UK, suggesting scope for future increases.

There are important implications for monetary policy. The Reserve Bank supervises the banking sector. As explained earlier, we find that much of the rise in the consumption-to-income ratio has been the result of financial liberalization, which has enhanced the effective spendability of illiquid assets, through increasing their use as loan collateral. It has also had a direct effect on the propensity to consume, for example, because of reduced down-payments for housing purchases. A somewhat less liberal credit market, achievable through increased capital requirements for risky mortgage lending, would enhance saving.

The MPC's interest rate policy should not have to take sole responsibility for this issue, given the policy trade-offs. There are several considerations pointing to the desirability of complementary fiscal measures on households to help stabilize the property market and the macro-economy, namely well-designed property and land taxes. Denmark, which has a very liberal and efficient mortgage market and the highest mortgage stock relative to GDP in the world, has a record of remarkable macroeconomic stability, see Muellbauer (2005). The reasons for this are threefold. First, fixed rate mortgages are the

[10] The Bank of England's MPC has been struggling with similar dilemmas for much of the last eight years. Since the presention of this paper in Helsinki, these issues have increasingly been worrying the markets, causing the Rand to come under pressure, with the Reserve Bank responding with interest rate rises, see the speech by the Governor, http://www.bis.org/review/r060905d.pdf

dominant form of borrowing. This means mortgage costs respond only slowly to short-term interest rates. Second, in the Danish system of property taxes, there is a national, progressive tax with annual revaluations of property.[11] In economic upswings when house price rises outpace incomes, tax revenue rises faster than income, so stabilizing spending. Also, knowing that tax liabilities will increase as values rise, discourages the portfolio demand for property. Furthermore, local land taxes tend to encourage the supply of land. Finally, by law, a maximum of 90 per cent of the value of a home can be used as collateral. Borrowing above this limit is unsecured and so more expensive and influenced by credit rating criteria.[12] With all three measures in place, the automatic stabilizers function powerfully, greatly reducing the risks of overshooting, permitting lower interest rates and encouraging saving. Not surprisingly, no European country has more powerful automatic stabilizers, see the UK Treasury's fiscal report for the five economic tests for euro entry (HMT 2003).

Large real house price rises also have disturbing implications for the distribution of resources between the young and older households already owning homes, and between poorer and more affluent households. In the context of South Africa's extremes of wealth inequality, a progressive and transparent property tax would keep housing more affordable for the young and the poor, and tap the wealth of the most affluent, without much effect on their incentives to engage in economic activity. Such a tax is therefore ideally placed to meet growth, distribution and stability objectives. For further discussion of housing subsidies, see below.

Another important set of considerations points to the desirability of such a fiscal measure. Nominal as well as real interest rates matter for economic activity. This is both for tax reasons and because households have a short-term cashflow perspective on financing their debt. Suppose that as inflation declines, nominal interest rates fall in line, keeping real interest rates (not tax adjusted) constant. Businesses can deduct interest payments from taxable profits. But with constant real rates such benefits decline. For households, the opposite will be true. South African households get no tax relief on interest payments on debt, but they do pay tax on nominal interest receipts from saving deposits. As nominal interest rates decline with inflation, this 'inflation tax' on households falls. Thus, in these circumstances, taxation effectively decreases for households, but increases for firms. With firms the main savers in South Africa, the saving rate may be lowered—even though, with higher after tax real returns on their deposits, some households would be expected to save more.

Why might households *as a whole* save less with lower inflation? Empirical evidence from research on the determinants of household debt and of house prices,[13] suggests that the *nominal* interest payment on household debt relative to household cashflow (the debt service ratio) is an important factor driving both debt and house prices. As nominal interest rates fall with inflation, mortgages appear more affordable, generating rises in debt and in house prices. In South Africa, this is likely by far to outweigh the rise in

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11 To protect those with low incomes relative to their housing wealth, pensioners have the option to defer payment until the property is sold.

12 In South Africa in 1998, capital requirements on banks were raised for lending at mortgage loan-to-value ratios in excess of 85 per cent. Legal limits would clearly be a stronger response.

13 On debt, see Fernadez-Corugedo and Muellbauer (2006), Aron and Muellbauer (2006a), and Miles (2004); on house prices in South Africa, Aron et al. (2004).

saving induced by higher after-tax returns on deposits. Higher house prices in turn raise the collateral households can offer, and create an even greater demand for and supply of debt.[14] Rebalancing the tax burden away from firms and towards households, particularly in ways that reduce the risk of house price bubbles, can raise the domestic saving rate and make the task of monetary policy easier. This rebalancing is likely to result in higher and steadier growth rates.[15] Without such complementary tax measures, if interest rates were the sole policy instrument to constrain household spending, interest rates would have to be kept higher. The real exchange rate would be higher than it would have been otherwise, and growth lower. The economy would be vulnerable to uncertain capital inflows, and the exchange rate subject to volatility, when the trade balance deteriorated.

South Africa is a deeply unequal society and has one of the highest unemployment rates in the world. According to the 1995 and 2000 household surveys, Statistics South Africa (2002), the percentages of total household spending accounted for by the top quintile in 2000 and 1995 (in parenthesis) were 64 per cent (63 per cent), the top two quintiles 82 per cent (82 per cent), and the top three quintiles 92 per cent (93 per cent). If anything, such surveys are likely to understate the spending of the most affluent. As Turner (1976), Mayo et al. (1986) and many others have argued, providing subsidized housing in the form of 'site and basic service'[16] allows poor families to expand their housing shelter over time as savings and resources permit. Using their own labour develops skills, so contributing to human as well as physical capital accumulation, and helps develop the habit of saving and a stake in the community. In the South African context, using tax revenue to subsidize site and service for many poor households seems obviously preferable to providing higher quality and costly subsidized housing for the few. Since 1994, housing policy in South Africa has vacillated between the two, as some housing ministers felt site and service was 'too demeaning'. However, recently, policy has again been more progressive.

4.2 The UK

Reference has already been made to some UK policy issues in the introduction. The Bank of England follows housing and mortgage markets very closely but seems puzzled by the shifts in the correlation of real house price growth and consumption in recent years.[17] Bivariate relationships are never stable for long when the true relationships are multivariate. Aron and Muellbauer's results explain substantial shifts in the bivariate relationship given the major downturn in illiquid financial asset values in the early years

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14 Both inflation tax and the short-term cashflow perspective reasons (especially the second), were factors in the UK experience since the mid 1990s. Inflation and nominal interest rates fell, as did inflation expectations, notably after the new monetary policy framework was introduced in 1997. This period saw large rises in household debt to income ratios, in house price to income ratios, lower household saving ratios and larger trade deficits relative to GDP.

15 To an extent this rebalancing may already have occurred, for instance through capital gains tax.

16 For example, concrete foundations, sewage and access to water and electricity.

17 See, for example, minutes of the Monetary Policy Committee meeting held on 8-9 February 2006, para. 9, and Minutes of Evidence by Mervyn King to the Treasury Select Committee 30 November 2004. Also see Aoki et al. (2002), and Benito et al. (2006) who document the breakdown in the new Bank of England model on this point.

of the millennium, and from other changes including the decline in net liquid assets relative to income.

The Bank has also had to concern itself with potential risks to financial stability. There have been debates about whether there is a 'bubble' in the housing market—with more than 30 per cent overvaluation estimated by the OECD—and whether therefore heavily indebted UK households, and UK domestic demand more generally, face a bleak future. The econometric evidence in Cameron et al. (2006) is that, in 2003-05, values were close to fundamentals, given incomes, interest rates, and the tax and land planning regimes. The upward trend in world interest rates and uncertainties about the degree and timing of the unwinding of global macroeconomic imbalances create some risks for the future, however.

In principle, fiscal policy, land use planning policy and other interventions, such as building subsidized social housing, also have an influence on the level of house prices, and so on the macro economy as well as on housing affordability and the intergenerational distribution of wealth. The UK government has clearly found this a difficult area for decision making. On the fiscal side, the phasing out of mortgage interest tax relief was completed in 2000. Stamp duty rates on transactions have been raised several times. The 50 per cent discount on property tax (council tax) on second and further homes has been made optional for local authorities. But the zero marginal tax rate for more expensive homes[18] and the additionally regressive tax structure below that threshold, have been retained, while the scheduled revaluation of properties in 2007 after 16 years, has been postponed. It is clear that property taxes without regular revaluations or indexation to prices are far less useful for macro stabilization. The example of Denmark, where revaluations are annual, illustrates this well, as discussed above.

The UK, along with many other countries, is perceived to be facing a pensions crisis. One fiscal policy contribution has been to extend tax advantages for Real Estate Investment Trusts and for self invested pension funds investing, for example, in collective schemes owning rental properties. That such tax breaks for relative wealthy investors may make housing affordability more problematic for lower income younger households seems not to have been a major consideration.[19] The government has instead focused on the weak supply response of the UK house building industry, behind which lies a sluggish planning system, last revised in 1991 in the direction of greater restrictiveness. Since 1997, planning controls have effectively been tightened further, both by forcing more building onto 'brownfield' sites and away form 'greenfield' sites, and from increased use of 'Section 106' agreements by which land for social housing and other side payments are negotiated, often with long delays, from developers in return for planning permission. The Barker Review (2003, 2004) of new housing and the Barker Review (2006) of land use planning have been developing policy alternatives.

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18 To put it simply, the tax bill on a GB£20m home is the same as on a GB£1m home.

19 Though it probably was a factor in the late exclusion of individual property investments from self invested pensions in December 2005, when the Treasury had earlier signalled their inclusion and the financial services industry was geared up in readiness.

4.3 The eurozone

The UK is far from alone in facing such policy dilemmas. The Dutch government, also faced with a great house price boom has struggled with fiscal issues, finding it politically difficult to reduce tax relief on mortgage interest, or to raise property taxes. The Dutch planning system, once well known for its relative efficiency, is perceived to have been overwhelmed by demand. The Dutch boom, together with higher domestic inflation and so a loss of competitiveness, has been an important factor in the economic difficulties faced by the country in recent years. It illustrates well the dilemmas for monetary policy in the eurozone stemming from the institutional differences discussed earlier.

While the Netherlands experienced a major credit market liberalization in the 1990s, Italy remains with the least developed mortgage markets in core Europe. As noted above, this has much to do with the legal system which makes mortgage repossession very difficult, so undermining the housing collateral function. While low interest rates and increased banking competition have led to rising debt levels in recent years, Italian household debt remains far below the levels in the European countries with more liberal credit regimes. Two of the studies of G7 consumption functions with fairly comprehensive controls found negative housing wealth effects for Italy, as noted above. The interpretation is that with high deposit requirements, potential first time buyers need to save more when house prices rise, while tenants may take higher house prices as an indicator of future rent rises. It is likely that the rises in Italian house prices in recent years are due to low interest rates and foreign demand, fuelled by easy credit and earlier capital gains in northern Europe. This part of the monetary transmission mechanism appears to run in reverse for Italy, contributing to near recession domestic demand conditions in recent years. While it is possible that some improvement has taken place in credit availability in Italy, so that the negative housing wealth effect is weaker or may even have been neutralized by now, it is clear that these asymmetries in monetary transmission are holding back growth in the eurozone. For Italian society, with the oldest first-time buyers in Europe, the ill-performing credit market, contributes to low rates of household formation and birth rates, and so indirectly to Italy's demographic and pensions problems. Unfortunately the level of economic literacy on these complex issues by the general public everywhere and most politicians is such that reasoned debate is difficult. As we have seen, even among professional economists there is widespread confusion about the macroeconomic role of housing and the empirical magnitudes involved.

Related issues arise in the context of policies for economic development. De Soto (2000) argues that, in the context of developing countries, the access to credit which well developed property rights for land provide, has profound implications for entrepreneurship, investment and growth. He goes so far as to argue that the development of such rights in the West explains why capitalism has been so productive there, while the absence of proper land titles in many developing countries explains the failure of capitalism there. However, this is overstating the case since other factors are also involved in generating a deep institutional structure of financial intermediation.[20]

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20 See Buckley and Kalarickal (2006: 28-38) for a more detailed discussion of the issues and policy lessons for titling and land use regulation.

4.4 Measuring inequality of wealth

One of the key findings of the research on consumer spending discussed in this paper has been that different propensities to spend are associated with different types of wealth and that these propensities depend on property rights, credit market and other institutions. This will also be true for welfare analysis. For example, households having the benefit of the use of publicly owned housing with long term security of tenure, effectively 'own' an asset even though they cannot trade these rights or use them as collateral. As Yemtsov (2006) notes and the discussion by Jim Davies highlighted, in the analysis of the privatization of housing in transition economies, some value needs to be associated with these use rights, making the gain in wealth when privatization occurs less pronounced than if they are ignored. There could be a number of obstacles towards the achievement of full property rights even after privatization, for example, ill-defined obligations in apartment blocks for collective maintenance, heating etc., the lack of a developed property market and/or high transactions costs and, of course, an undeveloped use of housing collateral in the banking system. This introduces problems of valuation.

Problems of valuation are nothing new, of course. They are also rife in the context of pensions. For example, how is one to value state pensions due to be paid out in 20 years, when governments may devalue these rights in the context of rising but uncertain ratios of retired to working age populations? Occupational pensions, whether linked to final salary or to funds invested are subject to obvious risks to salaries and to asset returns, and may even be at risk when companies fail. Transfer values can often lie below the value of historical contributions cumulated at some market return. In divorce cases where the spouses' pension rights are part of the overall asset 'pot', it is usual to apply substantial discounts to these rights.

Credit constraints and transactions costs typically imply that values are context-dependent and can differ from individual to individual without the market being able to correct for these differences. The liquidity advantages of cash are obvious and compensate for lower returns. When economists discuss 'the distribution of wealth', they typically add cash and other assets together using market values or approximations to these values. Sometimes valuation problems are acknowledged by examining the robustness of inequality measures to alternative valuation assumptions. The point being made here is that these problems are more pervasive than generally acknowledged. For example, from the point of view of financing consumption in a short run perspective, the findings reviewed in this paper suggests applying substantial discounts to illiquid assets of various kinds, and that these discounts will vary with each economy's institutional environment. From a longer term welfare perspective and from the point of view of intergenerational transmission of inequality, one might well wish to value illiquid assets closer to cash. This is analogous to the point that the inequality of short term consumption and the inequality of discounted utility over a longer horizon could differ considerably.

Closely related issues arise in the discussion of gender and the distribution of wealth in developing countries by Deere and Doss (2006). They argue that assets have functions of well being *and* empowerment and that ownership can have complex dimensions such as the ability to farm, the right to bequeath and security of tenure, in the context of land. Assets can be more or less community owned and less or more individually owned, and

divorce or separation can have very different implications for different types of assets and ownership. Differences in the inheritance regime could have a significant impact on the value an individual places on assets of different types and, of course, on the transmission of inequality. Both for macroeconomics and for welfare analysis therefore this more nuanced view of wealth is needed.

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