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The housing cost disease

Nicola Borri, Pietro Reichlin 08 September 2015

Some argue that the increasing wealth-to-income ratios observed in many advanced economies are determined by housing and capital gains. This column considers the growing wealth-to-income ratio in an economy where capital and labour are used in two sectors: construction and manufacturing. If productivity in manufacturing grows faster than in construction – a 'housing cost disease' – it has adverse effects on social welfare. Concretely, the higher the appreciation of the value of housing, the lower the welfare benefit of a rising labour efficiency in manufacturing.

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Wealth-to-income ratios have been increasing in most advanced economies since the end of WWII. In his best-selling book, *Capital in the 21st Century*, Piketty (2014) attributes this stylised fact to the decline in GDP growth rates and the long-run stability of the saving rates (see also Piketty and Saez 2014, Piketty and Zucman 2014). Since wealth is typically more unevenly distributed, Piketty and co-authors claim that these trends are responsible for the rising income and wealth inequality and recommend a worldwide tax on capital to redistribute resources across individuals and families. However,

recent research by Bonnet et al. (2014a, 2014b), Rognlie (2014) and Weil (2015) has shown that the observed trends in wealth-to-income ratios and income shares are strongly determined by the dynamics of housing and capital gains.

These results raise a number of interesting questions. What explains the rising importance of housing wealth? Are saving and growth rates the main drivers for the dynamics of total wealth, as argued by Piketty and co-authors, or not? Could a tax that directly targets housing reduce the rising wealth inequality? In recent research (Borri and Reichlin 2015), we set up a framework to think about these questions, and provide some first answers.

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We find that a potential explanation for these stylised facts is the rising labour productivity (or labour efficiency) in the manufacturing sector, compared to a relatively more stagnant productivity improvement in housing construction. We build a life-cycle model with parental altruism with these technological features and use it to investigate the impact of a rising housing wealth on wealth inequality and social welfare.

Our story is related to William Baumol's cost disease phenomenon (Baumol 1967). Baumol observed that the (relative) prices of some services increase over time. If labour is the only input in production, and wages are equalised across different sectors whose productivity increases at an unequal pace, then the relative cost and the market price of the output from the more stagnant sectors must be increasing over time. His classic example is that of the 'horn quintet', where the manpower per hour (i.e. the number of musicians in the quintet) does not change over time. If the demand for its live music performance is not much affected by its price, workers will eventually shift to this sector and the overall growth rate of the economy slows down, or even declines.

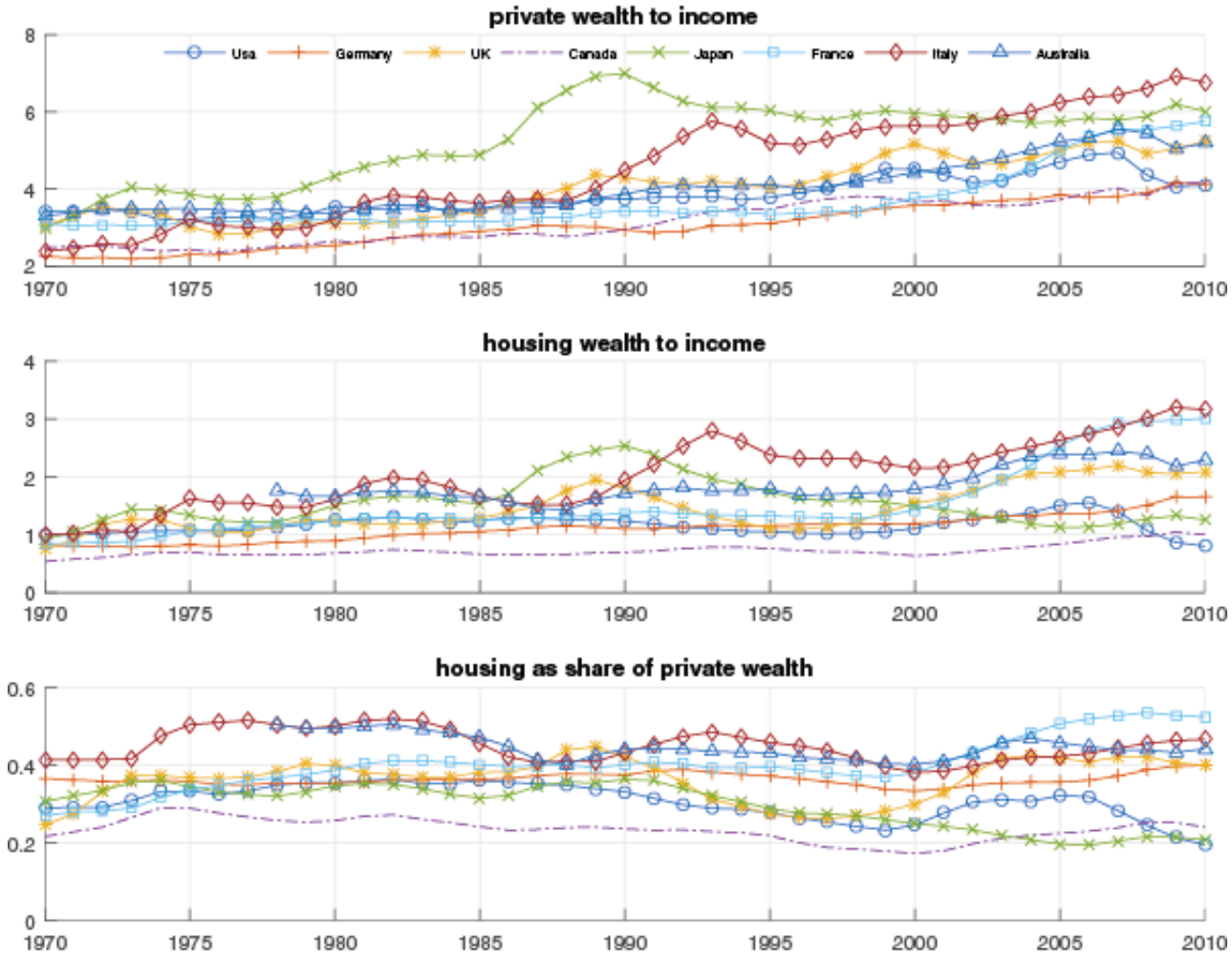
In our work, we consider a more sophisticated economy where capital and labour are used in two sectors: construction and manufacturing. We find that if productivity in manufacturing grows faster than in construction, consistent with long-run data for most advanced countries, then a version of Baumol's cost disease may be responsible for an increase in the housing share in wealth, wealth-to-income ratios and wealth inequality, a phenomenon that we label the 'housing cost disease'.

Housing and income wealth: Facts

Let us review some of the most important stylised facts. We use data from Piketty and Saez (2014), from 1970 to 2010, for a set of advanced economies (the US, Germany, the UK, Canada, Japan, France, Italy, and Australia). The mean (private) wealth-to-income ratio was equal to 2.9 in 1970 and 5.2 in 2010, an increase of 80%. Over the same period, the housing-to-income ratio increased from 0.8 to 1.9, an increase of 137%. Therefore, the business capital component of the wealth-to-income ratio increased by modest 57%. Figure 1 plots total and housing wealth-to-income ratios together with the housing share of wealth for the different countries in our sample. The figure shows that the mean increase in the ratios hides some heterogeneity across countries. The wealth-to-income ratios increased the most in Italy and Japan, while the US experienced

the smallest increase. Housing wealth increased along with total wealth for all countries, with the exception of the US (even though the US had one of the highest ratios at the beginning of the sample and experienced an increase, as for the other advanced countries, if the sample ends in 2007, at the onset of the Great Recession). The bottom panel of the figure plots housing as a share of private wealth. In 1970, the average housing share of wealth was 30%. In 2010, the same share was about 36%. The evolution of the housing share of wealth is very different across the countries in the sample. For example, it increased by 25 percentage points in France and by 15 percentage points in the UK. On the other hand, it dropped by 9 percentage points in both the US and Japan. Italy is the country with the largest housing wealth share both at the beginning (41%) and at the end (47%) of the sample.

Figure 1. Private wealth-to-income, housing wealth-to-income and housing as a share of private wealth



Evaluating the trends in wealth inequality for a different sample of countries or geographical areas (i.e. France, the UK, the US, Sweden, and Europe), we find that it declined steeply from 1950 to 1970 in all countries (with the exception of the US, where it did not change much), and then has been increasing at a slow pace since 1980. In particular, the average wealth share of both the top 10% and 1% of the wealth distribution increased by about 5% since 1970. Using a different set of data, Cragg and Ghayad (2015) find similar results for the US, where mean net worth has grown at a much faster pace than median wealth since 1989.

In Borri and Reichlin (2015), we document the existence of a positive and large correlation between a labour-augmenting productivity in manufacturing relative to construction (for more details refer to our working paper, which relies on productivity estimates from EU KLEMS Growth and Productivity Accounts) and the total and housing wealth-to-income ratios for a sample of eight advanced countries over the 1970-2007 interval. On the other hand, and contrary to the prediction of the Solow growth model and to Piketty's own interpretation, total and housing wealth-to-income ratios appear to be poorly correlated with GDP growth and saving rates since 1970. In particular, the fall in saving rates experienced by many advanced countries in the last 40 years more than compensate for the fall in GDP growth rates.

Model

Our interpretation works around a version of the Baumol's cost disease problem. We extend Baumol's analysis to a general equilibrium life-cycle model with capital and two sectors – manufacturing and construction – the latter playing the role of the stagnant sector and the former experiencing labour-augmenting technological progress. Heterogeneous altruistic households derive utility from housing services and differ in their degree of parental altruism, represented by a discount rate applied to the next generation's utility. This heterogeneity generates a partition of the set of households at steady states into a subset of 'rich' individuals receiving bequests from their parents and a subset of 'poor' individuals receiving (and giving) no bequests. Hence, bequests are a proxy for wealth inequality.

The model shows that the housing cost disease is most likely verified under the assumptions that manufacturing is more capital intensive than construction. The construction sector displays a sufficiently small elasticity of substitution between capital, and labour and housing demand is sufficiently inelastic with respect to its own price. By simulating the model for a set of realistic parameters, we show that:

- Total and housing wealth-to-income ratios increase by about 3-4 percentage points for a 100% increase in the (exogenous) labour productivity in manufacturing;
- The initial effect is stronger under our baseline value for the interest rate, and more persistent the higher the interest rate;
- Bequests respond strongly, and more than proportionally, to an increase in the labour productivity in manufacturing, as they are highly correlated with housing wealth.

The last effect is stronger the higher the equilibrium level of the interest rate, since a higher interest rate implies that net

bequests (i.e. the difference between the present value of the bequests received from the previous generation and left to the next generation) have a stronger positive effect on the present value of households' income. Interestingly, our simulations show that the capital share of income decreases with labour productivity in manufacturing when income does not include imputed rents, and it increases otherwise. This confirms the view, expressed by Rognlie (2014), that the observed rise in the capital share may be a consequence of the rising importance of housing wealth.

The change in wealth

We use the model to analyse whether a change in the composition of wealth toward housing, following a rise of efficiency in manufacturing, may not be desirable from a welfare point of view. Our welfare criterion is based on an egalitarian welfare function that takes into account the households heterogeneous degrees of altruism with respect to the next generations and allows for negative bequests. We conclude that when housing appreciation is sufficiently strong and consumption inequality sufficiently large, the steady state welfare benefit of a rising labour efficiency in manufacturing is lower than it would be in the planning optimum. In fact, a housing appreciation has two opposing effects on welfare. On the one hand, it raises the wealth of the poor old households so as to relax the non-negativity constraint on bequest values (a positive effect). On the other hand, it makes housing less affordable (a negative effect). Our analysis shows that the latter effect is stronger than the former.

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