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Housing prices and wealth inequality in Western Europe

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ABSTRACT

Comparative political economy (CPE) has robustly examined the political and institutional determinants of income inequality. However, the study of wealth, which is more unequally distributed than income, has been largely understudied within CPE. Using new data from the World Income Database (WID), this article examines how economic, political and institutional dynamics shape wealth-to-income ratios within Western European and OECD countries. It is found that the political and institutional determinants that affect income inequality have no short- or long-run effects on the wealth-to-income ratio. Rather, the rise in wealth-to-income ratios is driven by rising housing prices, as well as price changes in other financial assets, not home ownership or national saving rates. The article concludes by examining how the changing dynamics of housing prices and wealth inequality will increasingly shape intergenerational – and associated class-based – political conflict in Western Europe.

KEYWORDS Wealth inequality; wealth accumulation; income inequality; housing prices; comparative political economy

Comparative political economy (CPE) has long been preoccupied with the political and institutional determinants of economic inequality, particularly within Western Europe. Robust debates in CPE have examined how left-wing governments, strong unions and collaborative wage-setting institutions, progressive taxation, a redistributive welfare state and public sector employment impact on *income* inequality (Bradley *et al.* 2003; Card *et al.* 2004; Kenworthy and Pontusson 2005; Piketty and Saez 2003; Pontusson and Rueda 2010; Pontusson *et al.* 2002; Rueda 2008; Wallerstein 1999; Western and Rosenfeld 2011). In contrast, CPE has

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Supplemental data for this article can be accessed here.

spent much less time examining the determinants and consequences of *wealth* accumulation, as well as its distribution.[1]

This is puzzling given the fact that wealth is far more concentrated than income, both in the United States and in Western Europe. In 2014, the top decile in the US captured 47% of the income distribution but 73% of the wealth distribution (WID 2018). In Europe, wealth is also highly concentrated, albeit not as dramatically as in the US. By the mid-2010s, the top decile in the UK and France captured 39% and 33% of the income share, respectively, while they controlled 52% and 55% of the wealth share (WID 2018). One reason why political scientists have not examined wealth distribution is the absence of reliable comparative data: while the recently constructed World Inequality Database (WID) possesses time-series data for income inequality for most developed economies, it only possesses comparable wealth inequality data for three developed countries: the US, the UK and France.

Thomas Piketty's *Capital in the Twenty-First Century* (2014) has done much to rectify the neglect of wealth in political economy, arguing that the wealth-to-income ratio – and thus the overall level of wealth inequality – is rising in all advanced economies. He maintains that wealth accumulation is fundamentally determined by the *volume effect* of savings. If the return on capital (Piketty's 'r', which includes returns on bonds, stocks or any form of property) grows faster than national income (Piketty's 'g'), this accumulated wealth becomes more concentrated among those whose earnings are based on owning capital rather than labour power. Piketty also envisioned a second, smaller, driver of rising wealth-to-income ratios attributed to the *price effect* associated with capital gains. That is, not only do savers accumulate returns on their ownership of property, they also benefit from any appreciation of the underlying assets.

However, Piketty (together with comparative political economy scholarship in general), has tended to underestimate the importance of one crucial asset in this narrative: housing. Given that Piketty is primarily interested in top income groups where financial asset ownership is concentrated in truly large fortunes, the lack of emphasis on housing is perhaps not surprising. In contrast to financial assets, home-ownership tends to be more widely distributed among middle income earners (see Andrews and Caldera Sánchez 2011). This may imply that greater rates of homeownership reorient (housing) wealth towards a more equitable distribution; however, with the exception of Jordá *et al.* (2017) and Bonnet *et al.* (2014), few have examined exactly *how* housing impacts on wealth-to-income ratios, or its role in shaping the dynamics of wealth inequality.

In this paper, we examine the determinants of the evolution of wealth-to-income ratios in 13 Western Europe and non-European countries since

1970, using an error correction model. We find that in the short *and* long run, wealth-to-income ratios are moved largely by housing prices and, to a lesser extent, by price changes in other financial assets (stocks and government bonds). Our results also indicate that home ownership rates have no effect on wealth-to-income ratios, indicating that housing's impact on wealth accumulation is driven through price effects (reflective of unfulfilled demand for housing – see Anderson and Kurzer in this issue, 2019). Additionally, we find that those institutional and political determinants that CPE identifies as restraining income inequality by boosting wages for workers do not move wealth-to-income ratios. In other words, (asset price) factors that move the numerator of wealth-to-income ratios are more important than political and institutional factors affecting the denominator.

Our findings have two important implications for the politics of inequality in Europe. First, they suggest that studies in CPE need to take housing, and notably housing prices, more seriously. Social policy scholars in the tradition of Kemeny (1981) and Lowe (2004) have argued for decades that housing has 'far-reaching repercussions throughout society … and for the welfare system in particular' (Kemeny 1995: 174), with Lowe expressing frustration over the lack of dialogue between housing scholars and comparative political research. Kemeny's original notion held that societies prioritising home ownership would tend towards less generous welfare states because voters would oppose taxes that could prevent them from buying property – and because homeowners possess an asset that they can use as collateral to secure their own welfare rather than relying on the state (Malpass 2008). This observation on the relationship between housing tenure and welfare regime is a core research question in social policy (see Fahey and Norris 2011; Forrest and Murie 2014; Kemeny 2006; Norris 2016).

These insights have also penetrated CPE, particularly in the work of Gerber and Schelkle (2013) and Ansell (2014). Recent works in CPE have also demonstrated that house price inflation is closely connected to the institutions that shape income growth and mortgage markets (see Johnston and Regan 2017; Schwartz and Seabrooke 2008), and that housing is central to the politics of social policy preference formation, particularly where finance is concerned (Blackwell and Kohl 2018; Bohle 2014; Kohl 2018). Within the housing literature, there is a parallel discussion taking place: the state of the art suggests that pro-homeownership public policy regimes facilitate financialised approaches to the welfare state (Lennartz and Ronald 2017). Ultimately, we concur with the argument by Aalbers and Christophers (2014) that there is a real need to put housing at the centre of political economy, particularly when trying to understand the politics of financialisation.

However, this paper is not centrally concerned with the link between housing prices and the institutional configuration of the welfare state. Of course, it seems likely that welfare state configurations – particularly their approach to housing – will influence housing prices (see Fuller *et al.* 2018). Even so, that discussion concerns the determinants of housing price changes. In contrast, this paper treats housing price changes as exogenous and focuses in on the link between housing prices and the distribution of wealth. We expand on Arundel's (2017) single-case study on the links between housing and inequality in the UK, demonstrating how pronounced – and important – 'equity inequity' really is. Variations of housing regime are clearly connected to the politics of housing inflation; however, those discussions are best addressed elsewhere.

The second implication of our findings is directly related to intergenerational inequalities (which are closely related to class based inequalities, particularly as they pertain to inheritance and gift giving – see Flynn and Schwartz 2017, and Flynn in this issue, 2019). The wealth-to-income ratio is blind to certain aspects of inequality: it cannot distinguish between societies where all wealth is equally shared and societies where the same amount of wealth is concentrated in a few hands. However, wealth relative to income (particularly where that wealth is largely comprised of housing) is very well suited to identifying intergenerational inequality in access to housing. As housing prices appreciate relative to income (i.e. the wealth-to-income ratio rises), it becomes more difficult for millennials to follow their baby boomer parents onto the property ladder: their incomes simply cannot keep up with rising housing prices. In our conclusion, we reflect on how the changing dynamics of housing capital, housing prices and wealth inequality will increasingly shape intergenerational – and associated class-based – political conflict in Western Europe.

The remainder of the paper is organised as follows: first, we explain the difficulty involved in assembling wealth inequality data, and highlight the importance of rethinking how we measure wealth inequality. Second, we explain our method of measuring wealth inequality, indirectly, through the wealth-to-income ratio, and outline our theoretical claim of how housing prices impact this measure. Third, we present our empirical model and its results. The final section of the paper discusses the political implications of our findings.

The data on wealth inequality

Wealth inequality data is remarkably hard to produce, primarily because national accounts tend to focus on the flow of income and not the ownership of assets. Further, it is a lot easier to hide capital income than it is

labour income, which helps explain how the wealthiest in society can engage in tax evasion. Indeed, one of the most remarkable achievements of Piketty's book was the enormous volume of wealth data he and his colleagues assembled. Yet even between Piketty and the data housed at the WID, researchers have only managed to develop time-series wealth *share* metrics for five countries (China, France, Russia, the UK and the US).

This is simply because the value of assets is much harder to assess than annual income. In many countries, households and firms report their incomes to the government every year, based on tangible payments they have received. Consequently, valuing their incomes is as simple as counting those payments. The measurement of wealth is not so simple. Broadly speaking, capital is wealth, and capital is property, and therefore wealth is something that is owned (land, housing, business and financial assets). If it can be owned, it means that it can be traded in some market, at a given price. Therefore, the total stock of wealth in a society is equal to its total market value. The *price mechanism* fundamentally determines the value and measurement of wealth.

For relatively liquid assets that can be sold quickly, like exchange-traded stocks or bonds, it is fairly easy to establish their value: it's the price paid for them on existing markets. For intangible or illiquid assets, however, valuation is more difficult. Consider the example of Donald Trump, and other 'high net worth individuals', whose wealth has been subject to great debate (Korom *et al.* 2017): if someone's net worth is heavily influenced by something like the value of their intangible 'brand', how much is that really worth? Likewise, the same uncertainty applies to the pricing of any asset that is 'highly valued' but not easily sold (such as Italian architecture or Brazilian football). In terms of valuation challenges, housing sits somewhere in the middle: it is harder to value than stocks or bonds but easier to price than intangible or illiquid assets. It may not be possible to find the up-to-the-second valuation for a home the way you could look up the cost of one share of Disney stock. At the same time, it is easier to place a price on a two-bedroom house in the 4th *arrondissement* of Paris than it is to identify the value of the Manchester United football club.

If accurate accounting for the *total stock* of wealth/capital in a country is difficult, measuring its *distribution* is even more complex. Most central banks in the EU have opted to gather data on household consumption and finance, which allows for a relatively accurate measure of the total stock of capital owned in society, but this data tells us very little about *who owns* the capital/wealth. Most people do not have to account for their accumulated wealth until their deaths and/or the liquidation and transfer of their estates. In contrast, income data is ordinarily collected annually in most countries, through the process of paying income tax. Further, all

EU countries are requested to produce an annual survey on income and living conditions (SILC). In short, income inequality data is far easier to collect, leading most comparative political economy analyses of inequality to focus on income more than wealth (Huber and Stephens 2014).

This presents some problems. It stands to reason that wealth inequality and income inequality are positively correlated with each another. However, national (political) institutions should affect certain types of inequality more than others: wage-bargaining regimes and labour market institutions have a more direct effect on income distribution than wealth, while inheritance taxes would have a clearer influence on wealth distribution. Our argument, supported by the empirical assessment to follow, is that the politics of housing is most relevant when discussing wealth inequality. This may go some way toward explaining why housing is often missing from CPE accounts of economic inequality: housing markets have less impact (if any at all) on those measures of income inequality that comparative political economists are most wont to use.

The wealth-income ratio

Given the limitations in available wealth inequality data, the next best option is to find a proxy for wealth inequality: we select the wealth-to-income ratio. This ratio expresses the total amount of wealth in a country (as determined by market prices) in terms of national income. Piketty (2014) explains that nineteenth century wealth was once primarily composed of land and government bonds, with an aristocratic elite effectively owning all landed capital. In the twentieth century, after the shocks of the two world wars, and the subsequent birth of democratic capitalism and progressive income taxation, the wealth-to-income ratio declined throughout Western Europe, but since 1970 has climbed persistently upward (WID 2018 – see Figure 1). During the early 2010s, wealth was 5.3 times national income for Western European countries, ranging from 4.3 times national income for Germany, to 7.1 times national income for Spain (WID 2018).

Our assertion is that a rising wealth-to-income ratio can alert us to trends in *wealth inequality* so long as three conditions are met: (1) wealth is more concentrated than income; (2) rising wealth-to-income ratios are *not* fuelled by wealth accumulation among the poor; and (3) rising wealth-to-income ratios are *not* fuelled by relatively declining incomes. If these three conditions hold, or can be controlled for, then we can assume that any significant increase in the wealth-to-income ratio *also* reflects a rise in wealth inequality, and that whatever is driving up the wealth/income ratio is also responsible for rising wealth inequalities.

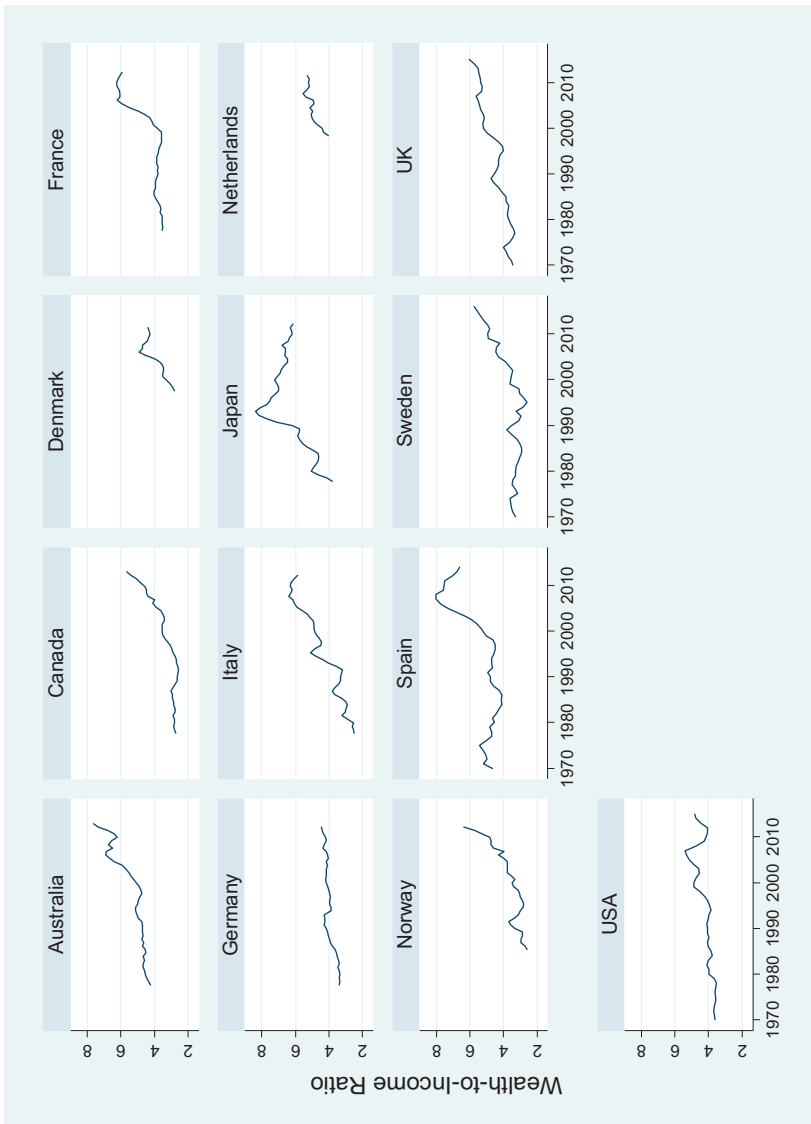

Figure 1. Wealth-to-income ratios in 13 OECD economies (1970–2015).
Source: World Inequality Database, 2018.

Available data strongly suggests that the first condition does hold: the share of wealth accruing to the wealthiest 10% of people in France, the UK and US were 70%, 33% and 55% higher, respectively, than the income shares of those countries' top 10% of earners (WID 2018). Moreover, the countries that we have data for also substantiate the second condition (that the ratio of wealth to income is not driven by wealth accumulation in poorer deciles); though the bottom 50% wealth shares are unavailable for the UK, the bottom 50% in France held 6.3% of the country's total wealth in 2014 (not much higher than the 4% of national wealth it held in the early 1960s), while in the US, the bottom 50% held negative wealth (−0.1%), indicating that they own less than they owe in debt (in the early 1960s, the bottom 50% held roughly 1% of US wealth).

The third criterion is potentially complicated by the ageing Baby Boomer population. Their incomes fall as they retire, even as they possess larger and appreciating housing wealth. Beyond the Boomers, there is substantial empirical evidence that income growth in developed economies has stagnated over the past two decades; however, there is little evidence of a widespread decline in incomes that would suggest that income declines (rather than wealth increases) were behind rising wealth-to-income ratios. Moreover, it is easy to control for this condition within our model, allowing us to determine whether housing (and other forms of capital) drive wealth upwards after controlling for income/GDP growth, as well as the proportion of the population that comprises pension-aged individuals.

Our contention with the wealth-to-income ratio is therefore twofold: first, that it serves as a plausible proxy for the distribution of wealth; second, that it is especially well-suited to identifying intergenerational wealth inequality. Ultimately, we feel that the three conditions specified above are indeed likely to hold, or can be easily accounted for in an empirical model. Below we assess whether house prices are an important determinant of wealth-to-income ratios (and therefore of wealth inequality, broadly conceived).

Housing and wealth-to-income ratios: an empirical analysis of 13 OECD countries

We examine how housing impacts wealth-to-income ratios via a panel analysis of 13 OECD countries[2] from 1970 to 2003 (selection of these countries is limited to wealth-to-income ratio data provided by the World Inequality Database). We include four non-European countries, both to expand our sample size and to determine whether housing's impact on wealth is robust beyond a strictly European sample. Our analysis ends at 2003 because this is the most recent year for which we have consistent

home-ownership time-series data, which is one of our central control variables (representative of the 'stock' of housing).[3] However, as a robustness check, we replaced home-ownership rates with household mortgage debt data provided by the European Mortgage Federation (EMF) as a control. This time series data (which spans from the mid-1990s to 2015 for 10 of the 13 countries in our sample) allows us to determine how our results are impacted by the global financial crisis and its aftermath (output provided online in Appendix A).

Because housing (and other economic and institutional variables) is likely to have short- and long-run effects on wealth-to-income ratios (like other forms of wealth, housing can be inherited), we employ an error correction model as our empirical estimator. Error correction models rest on the assumptions that a dependent and set of independent variables are co-integrated,[4] that the *first differences* of the dependent and independent variables are stationary, and that these variables possess a long-run (equilibrium) relationship that can be upset by disturbances which cause them to diverge in the short run (Box-Steffensmeier *et al.* 2014; Durr 1992; Keele and De Boef 2004).

In a standard error correction model that is derived from a first-order auto-regressive, distributive lag process, the dependent variable is first differenced (and must be stationary[5]) and the independent variables are included 'twice' in the model – once as a first difference (which gauges an independent variable's short-run effect on the dependent variable), and once as the lagged level (which, along with the beta coefficient on the error correction, determines an independent variable's long-run effect). Our baseline error correction model is written as follows:

$$\Delta W/Y_{i.t} = \beta_0 + \beta_1 W/Y_{i,t-1} + \beta_2 \sum \Delta X_{i,t} + \beta_3 \sum X_{i,t-1} + \beta_4 \sum CE_i + \beta_5 \sum TE_t + \varepsilon$$

$\Delta W/Y_{i.t}$ is the first difference of the wealth-to-income ratio for country i in year t. $W/Y_{i,t-1}$, the lagged level of the wealth-to-income ratio in country i at year $t-1$, is the error correction (i.e. what moves the variables back towards equilibrium in the long run). In order for an error correction model to be justified, the lagged level of the dependent variable must have a (negative) significant effect, otherwise there is no significant long-run adjustment process back to equilibrium (Box-Steffensmeier *et al.* 2014: 162–3).

$\sum \Delta X_{i,t}$ is a vector of the first differences of all the independent variables for country i at time t. Hence, β_2 tells us the immediate short-run effect of a change in an independent variable on the change in the wealth-to-income ratio. $\sum X_{i,t-1}$ is a vector of the (lagged) levels of all the independent variables for country i at time $t-1$. These variables represent the long-run effects of our independent variables on changes in the

wealth-to-income ratio. Crucially, however, the long-run effect of our independent variables is not only dependent upon their beta coefficients (β_3) but also the error correction, for which β_1 denotes the rate of the long-run adjustment process. The total long-run effect of our independent variables can therefore be calculated by the negative ratio of β_3 to β_1 (Vlandas 2018: 539). Because the long-run effect of an independent variable is computed from two beta coefficients rather than one, so too must be its standard error, which indicates the variable's (long-run) significance. This can easily be done via the 'nlcom' command in Stata, and we demonstrate these results in final row of Table 1 (Vlandas 2018: 539).

In line with Piketty's $r > g$ hypothesis, we incorporate controls that capture the real rate of return on different types of capital. Following from Jordá *et al.* (2017), we focus on three types of capital investment for the 'r' component of Piketty's hypothesis: stocks, (government) bonds and real estate. We therefore control for real housing inflation, the real interest rate on long-term government debt and (real) stock share price growth, in addition to real gross domestic product (GDP) growth. Data on housing inflation, interest rates on long-term government debt, and stock prices stem from the Organization for Economic Co-operation and Development (OECD 2018), while real GDP growth stems from the EU Commission's Directorate-General for Economic and Financial Affairs (DG ECFIN 2018). Moreover, because wealth accumulation is not merely determined by prices, but also the stock of wealth and the *proportion* of the population that has managed to acquire it, we also control for the long-run and short-run effects of home-ownership rates and a country's savings rate. Home-ownership data is taken from Nickell (2006), while savings rate data is taken from the OECD.

We incorporate controls from the CPE literature on income inequality to determine if political factors that mitigate income inequality also mitigate wealth accumulation. These controls include several measures of union power and organisation (union density, wage-setting centralisation and wage coordination) and the proportion of cabinet seats in a country that is held by left-wing parties. Because mass education can improve the distribution of human capital, we also control for a country's average educational attainment (the average years of schooling of the population aged 15 and above). While the proportion of the population with a higher education degree would be a more ideal measure of the distribution of educational attainment, the OECD possesses this data on a consistent time-series basis for our sample from the late 1990s and early 2000s onwards, which would restrict our panel to 5–6 years rather than 33 years per country.

We also control for a country's share of social benefits spending (as a percentage of GDP, a measure of the size of the welfare state) and its

Table 1. The short- and long-run determinants of movements in the wealth-to-income ratio.

	I	II	III	IV	V	VI	VII	VIII	IX	X
Wealth to income (t–1)	−0.062***	−0.058*	−0.050**	−0.056***	−0.061***	−0.058***	−0.057***	−0.077*	−0.060**	−0.061***
	(0.004)	(0.060)	(0.025)	(0.000)	(0.000)	(0.001)	(0.003)	(0.094)	(0.011)	(0.010)
Asset prices/returns (r)										
Δ *Housing inflation*	0.048***	0.050***	0.054***	0.051***	0.050***	0.050***	0.049***	0.042	0.040**	0.038**
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.122)	(0.011)	(0.018)
Housing inflation (t–1)	0.091***	0.094***	0.094***	0.090***	0.095***	0.095***	0.093***	0.067***	0.089***	0.088***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)	(0.001)
Δ *Interest rates on gov't bonds*	0.027*	0.030*	0.035**	0.034***	0.029*	0.028*	0.027	0.031	0.028	0.030
	(0.058)	(0.057)	(0.011)	(0.006)	(0.062)	(0.066)	(0.127)	(0.468)	(0.153)	(0.125)
Interest rates on gov't bonds (t–1)	0.024	0.030	0.035**	0.037**	0.029*	0.026*	0.022	−0.007	0.027	0.032
	(0.174)	(0.133)	(0.038)	(0.038)	(0.091)	(0.100)	(0.200)	(0.872)	(0.341)	(0.273)
Δ *Share prices*	0.040***	0.036***	0.039**	0.033**	0.035**	0.036***	0.034**	0.051	0.031**	0.030**
	(0.001)	(0.004)	(0.011)	(0.011)	(0.018)	(0.010)	(0.017)	(0.197)	(0.019)	(0.017)
Share prices (t–1)	0.037**	0.033**	0.037**	0.030**	0.031*	0.032*	0.030	0.071	0.030*	0.031*
	(0.038)	(0.043)	(0.046)	(0.024)	(0.077)	(0.054)	(0.103)	(0.145)	(0.082)	(0.071)
Growth (g)										
Δ *Real GDP growth*	−0.021	−0.046***	−0.058***	−0.055***	−0.043***	−0.045***	−0.040**	0.013	−0.041*	−0.047**
	(0.305)	(0.002)	(0.000)	(0.002)	(0.009)	(0.006)	(0.019)	(0.434)	(0.053)	(0.014)
Real GDP growth (t–1)	−0.008	−0.026	−0.027	−0.013	−0.023	−0.025	−0.014	0.058	−0.016	−0.025
	(0.779)	(0.232)	(0.324)	(0.682)	(0.363)	(0.352)	(0.578)	(0.193)	(0.605)	(0.363)
Distribution of housing										
Δ *Home-ownership rate*	−0.010	0.039	0.001	−0.089	0.048	0.033	−0.071	0.788	0.098	0.168
	(0.977)	(0.908)	(0.999)	(0.775)	(0.883)	(0.919)	(0.834)	(0.583)	(0.793)	(0.577)
Home-ownership rate (t–1)	0.035***	0.023	0.032	0.020	0.025	0.025	0.032	0.165	0.017	0.016
	(0.007)	(0.278)	(0.276)	(0.694)	(0.184)	(0.145)	(0.200)	(0.385)	(0.533)	(0.440)
Savings (s)										
Δ *Savings rate*	−0.130***									
	(0.007)									
Savings rate (t–1)	0.013									
	(0.421)									
Demographics										
Δ *Elderly population share*		−0.123								

(*continued*)

Table 1. Continued.

	I	II	III	IV	V	VI	VII	VIII	IX	X
		(0.657)								
Elderly population share (t–1)		0.007								
		(0.894)								
(Income inequality reducing) political and institutional variables										
Δ *Educational attainment*	0.005	−0.063	−0.100	−0.199	−0.038	−0.062	−0.053	0.382*	−0.105	−0.088
	(0.983)	(0.771)	(0.588)	(0.177)	(0.858)	(0.737)	(0.778)	(0.084)	(0.655)	(0.723)
Educational attainment (t–1)	0.070	0.064	0.067	0.039	0.062	0.066	0.064	0.116	0.054	0.046
	(0.181)	(0.208)	(0.261)	(0.581)	(0.235)	(0.206)	(0.290)	(0.166)	(0.367)	(0.406)
Δ *Union density*			0.137							
			(0.614)							
Union density (t–1)			0.046							
			(0.578)							
Δ *Wage centralisation*				0.223*						
				(0.098)						
Wage centralisation (t–1)				0.014						
				(0.685)						
Δ *Wage coordination*					0.000					
					(0.993)					
Wage coordination (t–1)					0.010					
					(0.438)					
Δ *Left-wing cabinet seats*						0.005				
						(0.682)				
Left-wing cabinet seats (t–1)						0.007				
						(0.582)				
Δ *Direct tax rate*							0.157			
							(0.140)			
Direct tax rate (t–1)							0.032			
							(0.217)			
Δ *Social benefits*								0.480		
								(0.155)		
Social benefits (t–1)								−0.015		

(*continued*)

Table 1. Continued.

	I	II	III	IV	V	VI	VII	VIII	IX	X
								(0.873)		
Δ *p90/p100*									0.095	
									(0.472)	
p90/p100 (t–1)									0.012	
									(0.810)	
Δ *p99/p100*										0.122
										(0.357)
p99/p100 (t–1)										0.032
										(0.559)
N	325	332	307	285	332	332	315	197	294	294
R-squared (overall)	0.4944	0.466	0.488	0.515	0.466	0.467	0.477	0.485	0.474	0.480
Long-run effect of housing prices	1.452**	1.638*	1.898**	1.604***	1.566***	1.62***	1.613**	0.874*	1.478**	1.45**
	(0.032)	(0.051)	(0.037)	(0.001)	(0.006)	(0.010)	(0.016)	(0.099)	(0.043)	(0.031)

Dependent variable is the first difference of the wealth-to-income ratio. Independent variables are standardised, dependent variable is non-standardised. Estimator used was an error correction model for 13 OECD economies from 1970 to 2003. *N*–1 time dummies, *n*–1 country dummies and the constant term included but not shown. *P*-values provided in parentheses (standard errors are clustered by country).

*, ** and *** indicate significance at a 90%, 95% and 99% confidence level.

(direct) income tax rate, as a measure of the scale of progressive taxation. Progressive taxation reduces the potential for wealth accumulation, because it limits the amount of after-tax income that individuals/households can direct towards capital investment (Guillaud *et al.* 2017; Piketty and Saez 2003). Because all the countries within our sample have progressive forms of income taxation, higher direct tax rates are likely to reflect higher rates of taxation among upper-income groups.[6] Union density data stems from the OECD, wage centralisation and coordination data from Visser (2016), left-wing cabinet seat shares from Armingeon *et al.* (2017), social benefits data from the DG ECFIN (2018), and tax and educational data from Nickell (2006).

Given that housing (and other forms of wealth) is more likely to be held by the old than the young, we control for the share of the elderly population, whose data stems from the OECD. Finally, we also control for the short- and long-run effects of income inequality, measured via p90/p100 and p99/p100 pre-tax income ratios, on the wealth-to-income ratio. When incomes at the top end of the income distribution grow more rapidly than those at the bottom, the rich – who hold greater amounts of wealth than those who are worse off – will have greater capabilities to invest in assets that further increase their wealth. Consequently, income (inequality) distributions that are positively skewed towards holders of wealth should lead to rising wealth-to-income ratios. P90/p100 and p99/p100 data are taken from the World Inequality Database (2018).

$\sum CE_i$ is a vector of country fixed effects to control for omitted variables that may prompt more rapid (or more suppressed) growth in the wealth-to-income ratio that are constant over time but vary across countries. This enables us to partially control for national regulatory frameworks, inheritance and capital gains tax regimes, systems of capitalism, welfare state regimes, housing regimes, and wider attitudes towards wealth, that impact wealth accumulation across countries but do not change much over time. $\sum TE_t$ is a vector of $(n–1)$ time dummies that control for omitted time shocks (and hence would account for years that led to common rises and falls in the wealth-to-income ratio across the developed world, such as the presence of global financial crises). A likelihood ratio (LR) test[7] indicated the presence of heteroscedasticity within panels, and hence we incorporate country clustered standard errors in all our models. Finally, we *standardised* all our independent variables, but *not* our dependent variable, so that we could compare the magnitude of short- and long-run effects across all independent variables (beta coefficients are interpreted as 'a one standard deviation change in X leads to a β change in the wealth-to-income ratio').

Results

Table 1 provides our results. Due to high collinearity between our political and institutional variables (countries with strong unions and persistent left-wing cabinets may also be likely to have more robust welfare states and higher direct taxation) we incorporate each institutional variable within its own regression model. Model I starts with the inclusion of the first difference and lagged level of a country's savings rate (which Piketty identifies as a major driver of wealth inequality). Model II incorporates the first difference and lag level of the elderly population share. Models III, IV and V incorporate the short- and long-run effects of our three different measures of union strength: union density, bargaining centralisation and wage coordination, respectively. Model VI controls for the short- and long-run effects of left-wing cabinet seats. Model VII incorporates the short- and long-run effects of direct taxation. Model VIII controls for the short- and long-run effects of social benefits spending. Models IX and X control for the short- and long-run effects of the p90/p100 and p99/p100 pre-tax income ratios, respectively. The beta coefficient for the *short-run effect* of an independent variable is provided in the rows denoted by Δ, while the *long-run effect* is provided in the rows denoted by (t–1). The beta coefficient for wealth-to-income in t–1 is the error correction (which is negative and significant throughout all models, indicating that an error correction model is justified). Recall that in order to compute the total long-run effect of an independent variable on the wealth-to-income ratio, one must divide its beta coefficient by the negative value of the beta coefficient on the error correction. We provide the total long-run predicted effect of (a standard deviation) increase in housing inflation on the wealth-to-income ratio (and its p-value) in the last row of Table 1.

In line with our theoretical expectation, house prices demonstrate both significant short- and long-run effects on the wealth-to-income ratio. From the beta coefficients in Table 1, a one standard deviation increase in real housing inflation leads to an *immediate* 0.038–0.054 rise in the wealth-to-income ratio (this is roughly equivalent to the average of the *first difference* of the wealth-to-income ratio, which is 0.059). In only one model (that where social benefits spending is controlled for) does housing inflation produce no significant short-run effect (the p-value is just over 0.100). It should be emphasised that this may be the result of a significantly reduced sample size, as social benefits spending data for most countries within the sample begins in 1995 (explaining why Model VIII has a considerably smaller number of observations relative to the other models).

The impact of house prices on the wealth-to-income ratio is even more pronounced in the long run (see the computed effect in the final row of Table 1). The long-run effect of housing inflation is significant in all 10 models, and its magnitude is considerably higher than housing inflation's short-run effect – from the last row of Table 1, the long-run effect of a standard deviation rise in real housing inflation is a *0.874–1.898* rise in the wealth-to-income ratio. This contradicts the claim by Piketty that asset prices only shape the dynamics of the W/Y ratio in the short run (i.e. short-term boom/busts).

In contrast to changes in housing prices, *home-ownership* rates demonstrate no significant short-run effect in any of our models, while they are significantly associated with long-run increases in the wealth-to-income ratio for only one of the ten models in Table 1. Somewhat surprisingly, the national savings rate (results in Model I), does not behave as Piketty would predict. Rising national savings has no long-run effect on the wealth-to-income ratio, while it *reduces* the wealth-to-income ratio in the short run. We suspect that one possible driver of this is the fact that the countries in our sample that have the highest savings rates (Germany and Japan most notably), also have some of the most restrictive credit institutions that mitigate households' (and firms') capabilities to take out loans for (wealth and real-estate) investment purposes (Fuller 2015), indicating the importance of country-specific mortgage markets in shaping the politics of wealth accumulation. In sum, our models show that it is not the *volume* of wealth (be it national savings or the pervasiveness of home-ownership) that drives increases in the wealth-to-income ratio within our models, but rather the *price effect* of real-estate and other assets.

Asset prices for stocks and long-term government debt demonstrate similar short- and long-run effects on the wealth-to-income ratio as housing inflation, as Piketty's identity (and Huber *et al.* 2017) would suggest. Increases in stock share price growth have significantly positive effects on the wealth-to-income ratios in the short run for nine of the ten models in Table 1, while increases in the real return on long-term government debt has significantly positive short-run effects on the wealth-to-income ratio in only six of the ten models. These short-run effects are similar in magnitude to those for housing inflation (the standardised short-run beta coefficients of all three asset types are not significantly different from each other). Stock prices and returns on government debt also demonstrate significant long-run effects on the wealth-to-income ratio, although their significance is not as robust as that for the long-run effect of housing inflation; the real rate of return on long-term government debt and stock prices significantly increases the wealth-to-income ratio for four and eight, respectively, of the ten models. Finally, as Piketty predicted,

real GDP (income) growth reduces the wealth-to-income ratio, but only in the short run.

Most of the political and human capital variables that the CPE (and wider inequality literature in the social sciences) identifies as reducing income inequality do not directly impact the wealth-to-income ratio. Educational attainment has no significant long-run effects, and is significantly associated with rising wealth-to-income ratios in the short run for only one of the ten models (Model VIII, which also has the most reduced sample size). Surprisingly, bargaining centralisation has a significantly positive effect on the wealth-to-income ratio in the short run, but it has no long-run effect. In contrast to their effects on income inequality, left-wing governments, strong union density, high levels of wage coordination, large social benefits spending and high rates of direct taxation have no significant short- or long-run effects on wealth-to-income ratios. Nor does the size of the elderly population move the wealth-to-income ratio in the short or the long run (see Model II). Finally, income inequality, measured as either the p99/p100 or p90/p100 income ratio, does not appear to move the wealth-to-income ratio in the short or long run: this reinforces the notion that different concepts of inequality must be examined separately.

Home-ownership rates do not fully capture households' equity, because they do not account for mortgage indebtedness. A household in negative equity cannot be reasonably treated as a wealth owner. Consequently, we conduct the same analysis above using mortgage debt (as a percentage of household disposable income) rather than home-ownership as a control. These results are presented in online Appendix A. Because the European Mortgage Federation only has mortgage debt data from the mid-1990s onwards, we removed controls in Table 1 (educational attainment and the direct tax rate, in addition to home-ownership rates) that stem from the Nickell (2006) dataset. Failing to do so would limit the time series for each country from 1995 to 2003 (yielding roughly 80 complete observations). With the removal of these variables, our sample in online Appendix A spans from the mid-1990s to 2015 for 10 of the 13 OECD countries in our original sample.[8]

Our results in online Appendix A demonstrate that housing prices had an even more marked short-run impact on wealth-to-income ratios during the 2000s and 2010s than they did from the 1970s to the early 2000s, while the impact of returns to other financial assets (stocks and bonds) and GDP growth weakened significantly for this time period. Housing prices demonstrate significantly positive short- and long-run effects for all nine models in online Appendix A. In contrast, stock prices and bond prices fail to demonstrate any short-run effects on wealth-to-income

ratios between the mid-1990s and 2015, while they surprisingly display negative long-run effects in one of the nine models in online Appendix A. Increases in mortgage debt levels significantly increase wealth-to-income ratios in the short run (in eight of the nine models), as well as in the long run (for only three of nine models). These results most likely reflect the upward pressures that financialisation and consumer credit liberalisation put on both housing prices and mortgage debt accumulation (see Fuller *et al.* 2018).

Finally, as in Table 1, the political and institutional determinants of income inequality identified in the CPE literature either displayed no direct significant short- or long-run effects on the wealth-to-income ratio (in the case of wage coordination and left-wing cabinet seats) in online Appendix A, or exhibited results counter to what the CPE literature would predict (union density and social benefits increase the wealth-to-income ratio in the long run, while bargaining centralisation increases it in the short run). The results suggest that to understand how domestic institutions shape wealth inequality, scholars need to examine cross-national variation in housing regimes and their impact on housing prices, rather than their direct effect on wealth.

Discussion and conclusion

Our results have four major implications for the comparative political economy literature on inequality in Europe. First, they suggest that CPE theories on income inequality are poorly equipped to explain wealth dynamics and disparities. It is neither the partisanship of government, nor the generosity of the welfare state, nor the strength of organised labour that *directly* moves wealth-to-income ratios. Instead, it is financial returns to capital.[9] Second, our results reveal the central role housing plays in the dynamics of wealth accumulation and wealth inequality. While CPE has become increasingly cognisant of the political importance of housing over the past decade (highlighted not only by the contributions within this volume, but also by the previous work of its contributors), it still has failed to systematically incorporate housing into inequality debates beyond institutional approaches to welfare provision. Our results indicate that current work on the political economy of housing has important insights to add on the determinants of wealth accumulation and distribution, and that housing scholars have an important space to occupy in the growing scholarship on the political economy of wealth.

Third, our results also indicate that housing prices' impact on wealth may have the potential to exacerbate cleavages between older and younger generations. Homeownership rates for millennials are steadily declining,

not only because their disposable income cannot keep pace with housing prices, but also because they have higher (student) debt burdens than their parents when they first attempt to climb the property ladder. As documented by Flynn in this issue, between the late 1970s and early 2010s, home-ownership rates among 25–34 years olds fell by a quarter in France, by nearly half in Denmark, Germany, Spain, the UK and the US, and by almost two-thirds in Italy. In the UK, the Nationwide Building Society has estimated that the cost of a first home has risen from 2.7 years of salary in 1983 to 5.2 years of salary in 2015 – the increase was far more pronounced in London, rising from 3.7 to 10.1 years, respectively.

World War II effectively reset the clock on capital accumulation, meaning that those of working age in the 1950s and 1960s were well placed to buy property, accumulate assets and pass on the capital gains in the form of inheritance. The end result is that the gross housing wealth reported by people over 50 years of age tends to be much higher than the average value of dwellings within a country: not only do the elderly control more of the housing stock, they also appear to control the best parts of it. This is particularly true of wealthier individuals: those who own multiple properties tend to live in homes that are substantially more valuable than even the over-50 average.[10] Homeownership is also associated with disproportionately high levels of *non-housing* wealth (Wind and Dewilde 2017).

Christophers (2018) has questioned whether this emphasis on intergenerational inequality is wise, making the case that it is largely incidental to class-based drivers of inequality. He argues that the increased exploitation of labour by capital in the past few decades has expanded the old/young wealth divide, and that this, rather than housing wealth inequality, is what policymakers should aim to rectify. This is an important corrective; however, it is almost exclusively focused on the denominator of the wealth-to-income ratio. That is, increased exploitation might explain the compression of incomes – but not the explosion in housing prices. This suggests that non-homeowners and homeowners should differ when it comes to policies that affect housing prices (such as new home construction or changes to tax regimes) – in ways that cross-cut class identities. In short, it seems the intergenerational housing divide is increasingly politically sensitive and not entirely subsumed by class differences. More empirical work here is certainly called for.

Fourth, and related to the point above about housing inequalities, political economists have always been concerned about the extent to which the capital owners of unproductive assets claim an increasingly larger share of the economic pie. In the eighteenth century, David Ricardo feared that as the population grew, and land became scarcer, landowners would claim a greater share of national income in the form of rents. It was this tendency

toward rent-seeking behaviour among the landowning elite that antagonised the emerging industrial class. Fighting against rent-seeking capital generated many of the political conflicts during the nineteenth century. Our analysis would suggest that perhaps the dynamics of contemporary capitalism are not that different. Wealth across Europe has become increasingly dominated by housing capital and the value of land on which it sits. Those who own this wealth are increasingly older voters who have benefited from the capital gains of massive house price increases since the 1990s, which has contributed little, if anything, to entrepreneurial activity. It pits younger voters – who are increasingly renters locked out of the housing market – against older voters, and their inheritors. It is this inequality that may shape future political conflict in Western Europe.

Notes

1. Marxian political economy, which focuses heavily on the politics of wealth and its distrubtion, is a notable exception.
2. These countries include Australia, Canada, Denmark, France, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, the UK and the US.
3. The EMF has more recent home-ownership time-series data, but on average has only seven years of data per country (from 2005 to 2014) for 9 of the 13 countries within our sample. When we include this measure of home-ownership in our model, our sample size drops to between 59 and 82 observations, and roughly half of the error correction terms in Table 1 lack significance. However, in all models, the short- and long-term effects of housing prices are still positive and significant.
4. Under the co-integration assumption, a linear combination of our time-series variables must be time stationary. This can be assessed by testing whether the residual of the *equilibrium* model ($\varepsilon = W/Y_{i,t} - \beta_0 - \beta_1 \sum X_{i,t}$) is time stationary. However, Keele and De Boef (2004) highlight that even if the co-integration assumption is not fulfilled, ECMs can still be useful because: it is theoretically desirable to estimate the long- and short-run effects of an independent variable separately, rather than combining these processes into one variable; and ECM estimates do not significantly diverge from a standard (first-order) auto-regressive, distributive lag model. Hence, even though our models in Table 1 do not satisfy the co-integration assumption, we still employ an ECM to capture housing prices' short- and long-run impacts on the wealth-to-income ratio.
5. A Fisher unit root test indicates that this assumption holds for our panel.
6. Data for marginal tax rates on upper income brackets is available from Nickell (2006), which is also the source of the direct taxation data, but exists for far fewer years than the direct taxation data.
7. Chi-squared statistic = 83.99, p-value = 0.000
8. EMF lacks mortgage debt data for Australia, Canada and Japan. However, if we use total household debt data from the OECD (which is available for all 13 countries) in the place of mortgage debt, our results in online Appendix A are largely similar.

9. Johnston and Regan (2017) and Anderson and Kurzer (in this issue) have demostrated that political institutions (wage-bargaining coordination and government composition most notably) move housing prices. Hence, while political variables may not demonstrate a direct effect on wealth-to-income ratios after controlling for housing inflation in our models above, they may have an indirect impact on wealth distribution through their impact on housing prices.
10. Property values for the 50+ population are self-reported in Wave 6 of the Survey of Health, Ageing, and Retirement in Europe; dwelling values are calculated from national accounts and dwelling stock (OECD). Even adjusting for vacant dwellings, households led by over-50s possess homes worth between about twice the average dwelling value (France) and roughly six times the average (Luxembourg).

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